3B Scientific

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nastavna sredstva i oprema

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NATURAL SCIENCES

3bscientific.com

Biology • Environment • Chemistry

MEMORABLE TEACHING MADE EASY!

Dear customer,

Discover the variety of possibilities for making your teaching even more memorable and exciting. We have assembled a wide range of products and experiments for you for teaching various course content in biology. We can offer you detailed models, high-quality preparations and realistic replicas that illustrate the structures of plants, animals, humans and the earth as well as numerous experiment sets to aid independent study, practicing and learning.

From page 104 onwards, you can browse through the selection of products relating to the earth sciences, ecology and chemistry. These include models of the structure of the earth, rock collections, measuring equipment for water and soil analysis, molecule construction kits and chemical measuring instruments. New and worthy of particular mention are the powerful and comprehensive Coach 7 measuring and analysis software, the VinciLab data logger and the €lab lab interface, as well as the numerous sensors for the measurement of biological and chemical parameters (page 152 onwards).

Representing a further innovation in our range are the devices for neurophysiological studies on intact earthworms. You can find these on page 94 onwards.

Let yourself be inspired by our wide range. It's well worth a look!

Our competent team will be happy to advise you personally and is looking forward to receiving your suggestions and orders!

We look forward to hearing from you!
The 3B Scientific team

› NEW IN ZOOLOGY

Limbs of various mammals
The dissected real limbs enable scientific comparison of the anatomy of the front or rear legs of selected mammals and allow conclusions to be drawn about their walking and running behavior.

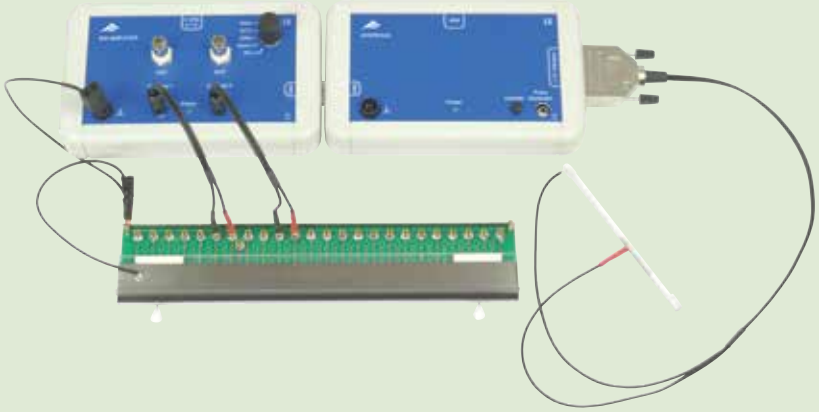
Page 59

FSC www.fsc.org MIX Paper from responsible sources FSC® C009717

NEW IN NEUROPHYSIOLOGY

Earthworm Experiment
Set of equipment for neurophysiological experiments on intact earthworms.

Page 94



NEW IN COMPUTER-ASSISTED EXPERIMENTATION

Computer-assisted Experimentation in Teaching
- Coach 7 – The most versatile and comprehensive software for teaching the MINT subjects
- VinciLab – A modern, universal, graphical data logger with two processors and 8 GB of memory
- Numerous sensors for many areas of application

Page 153

NEW IN INSTRUMENTATION

PCR Thermocycler
The thermocycler makes it possible to amplify a very small starting quantity of DNA for analysis.

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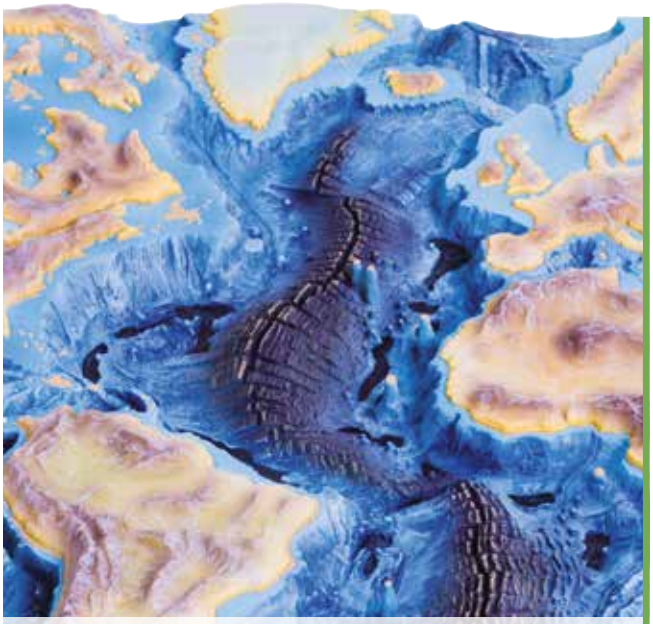

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BIOLOGY

ENVIRONMENT AND CHEMISTRY

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MICROSCOPY

LABORATORY EQUIPMENT

INDEX

BIOLOGY

Your demands are our motivation! In order to enrich your biology lessons with illustrative materials, 3B Scientific has been setting quality standards in the production of dissections, replicas and models since 1948.

The brand now has a worldwide presence with subsidiaries in Brazil, China, England, France, Germany, Hungary, Italy, Japan, Russia, South Korea, Spain, Thailand, Turkey and the USA.

The 3B Scientific® models of the human skull now have magnetic joints that make it even easier to take apart. Many other models have functional magnets – they are labeled with this symbol in the catalog.

Page 8

HUMAN BIOLOGY

Many models illustrating human biology and all human skeletons are accurate castings. This guarantees you natural textures and realistic properties. All details are painted byhand so as to show even very complex structures precisely. Of course, we use only toxicologically harmless materials.


Page 40


Page 48

ZOOLOGY

Our animal skeletons, assembled from durably prepared bones, impressively depict the richness in detail and the fine structure of the bones.


Page 66

HEALTH EDUCATION

We have much more to offer you, e.g. our popular and cost-effective teaching resources on the topics of contraception and first aid as well as teaching materials for the prevention of addiction.

BOTANY

Attention to detail and faithfulness to reality are two special features of our botanical models. A complement to the theme is provided by high-quality specimens for microscopic study. They are characterized by excellent preparation, high-contrast presentation and long durability.

Page 80

CELL BIOLOGY

A glance into the cellular interior is offered by our true-to-nature models with up to 40,000 times magnification and the corresponding series of microscope slides. Selected student experiments on genetics complement the topic.

STRUCTURE OF BONES, SKELETONS

Magnetic connections for easy, hands-on demonstrations

Stan the Classic Human Skeleton Model
The Classic Skeleton Model Stan has been the standard of quality in hospitals, schools, universities, and laboratories for over 50 years. Stan is the most affordable full-size skeleton of this quality available anywhere, ideal for active use in teaching and demonstrations. This human skeleton model is easy to handle, anatomically correct (cast from real specimen) and economically priced.

All 3B Scientific human skeleton models offer highest quality in workmanship and materials!

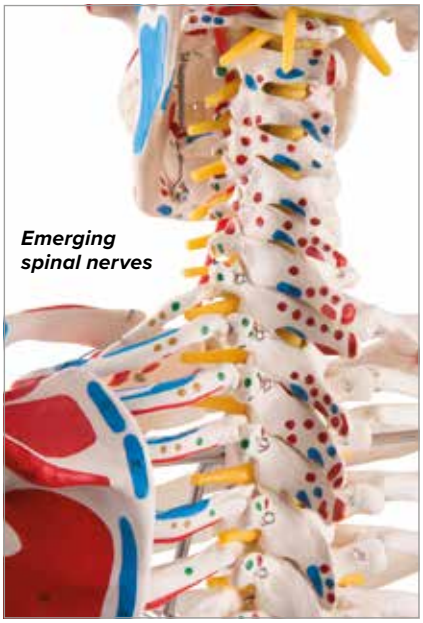
- Life-size and realistic weight
- Top quality cast from real specimens
- Extremely accurate in every detail, final assembly carried out by hand
- Made from a durable, unbreakable synthetic material
- 3 part assembled skull with magnetic connections
- Limbs can be removed quickly and easily
- Movable joints for demonstration purposes
- On a stable metal stand with 5 wheels for secure transfer from room to room
- Transparent dust cover included
- Developed in Germany

High quality human skeleton models, cast from a real specimen

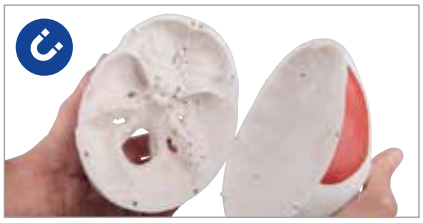
Stan on Pelvic Mounted Roller Stand
176.5 cm; 9.57 kg
B-1020171

Stan on Hanging Stand
192.5 cm; 8.77 kg
B-1020172

Recommended: Heavy Duty Protective Cover, Black (not shown)
Protect your investment with our heavy-duty protective cover. Suitable for all full-size skeletons
B-1020761



Sam is your all-purpose teaching tool for all levels of student education



Sam the Classic Skeleton with Elasticated Ligaments, Labels, Muscle Insertions and Origins
This skeleton contains all the standard benefits of a 3B Scientific® Skeleton plus a bendable vertebral column, ligaments, painted muscles and over 600 labeled and identified structures. Sam's fully flexible vertebral column allows you to demonstrate all natural postures, including the movements of the skull and head joints. The unique combination of a flexible vertebral column, muscle origins and insertions, numbered bones, flexible joint ligaments, and a disc prolapsed between the 3rd and 4th lumbar vertebrae allow you to display over 600 structures of medical/anatomical interest with this top of the line model. Comes complete with an identification guide.

Sam the Super Skeleton does it all:
- Over 600 hand-numbered, labelled details, includes detailed guide for easy identification
- Hand-painted muscle origins and insertions
- Flexible spine and ligaments for natural postures (can be removed from stand)
- Slipped disc between the 3rd and 4th lumbar vertebrae
- Protruding spinal nerves and vertebral arteries
- Full flexibility of limbs on left side, right side has full flexibility of knee and hip with limited flexibility of elbow and shoulder

Sam on Pelvic Mounted Roller Stand
176.5 cm; 10 kg
B-1020176

Sam on Hanging Stand
192.5 cm; 10 kg
B-1020177

Recommended: Heavy Duty Protective Cover, Black (not shown)
Protect your investment with our heavy-duty protective cover. Suitable for all full-size skeletons.
B-1020761

› MINI SKELETONS: INCREDIBLE DETAIL AND FULLY ARTICULATING JOINTS!

Shorty the Mini Skeleton
- Top of the range miniature human skeleton models
- 3-part removable skull (skullcap, base of skull, mandible)
- Removable arms and legs
- Specially mounted hip joints to demonstrate natural rotation of the hips
- Made from durable, unbreakable plastic, hand assembled
- Can be taken off of the base when required

A. Shorty the Mini Skeleton, Pelvic Mounted
88 cm; 1.5 kg
B-1000039

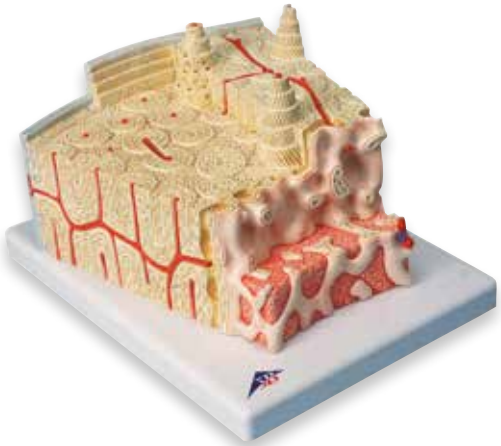
Shorty the Mini Skeleton, Hanging Stand (not shown)
On hanging stand that can be placed on the floor or hung on the wall.
94 cm; 1.7 kg
B-1000040

B. Shorty with Painted Muscles, Pelvic Mounted
Muscle origins (red) and insertions (blue) on the left half.
88 cm; 1.7 kg
B-1000044

Shorty with Painted Muscles, Hanging Stand (not shown)
On hanging stand that can be placed on the floor or hung on the wall.
94 cm; 1.7 kg
B-1000045

Cancellous Bone
The model shows the spongy bone inside the bone. Its filigree architecture is determined by influences such as pressure, bending and torsion. Using innovative micro CT technology, we have managed to reconstruct an exact 3-dimensional copy of a piece of cancellous bone from an original and enlarge it 100 times.
17x17x23 cm; 0.29 kg
B-1009698

MICRO*anatomy*™ Bone Structure Model, enlarged 80 times
This model depicts a section of lamellar bone, showing the typical structure of tubular bone. Planes are shown in cross and longitudinal section through all levels of the bone and bone marrow. Typical elements are easily identified and help in understanding the structure and function of the Haversian systems. This representation graphically illustrates the individual bone components including spongy and compact substance, endosteum, cortical substance, osteocytes, Volkmann and Haversian canals.
26x19x14.5 cm; 0.8 kg
B-1000154



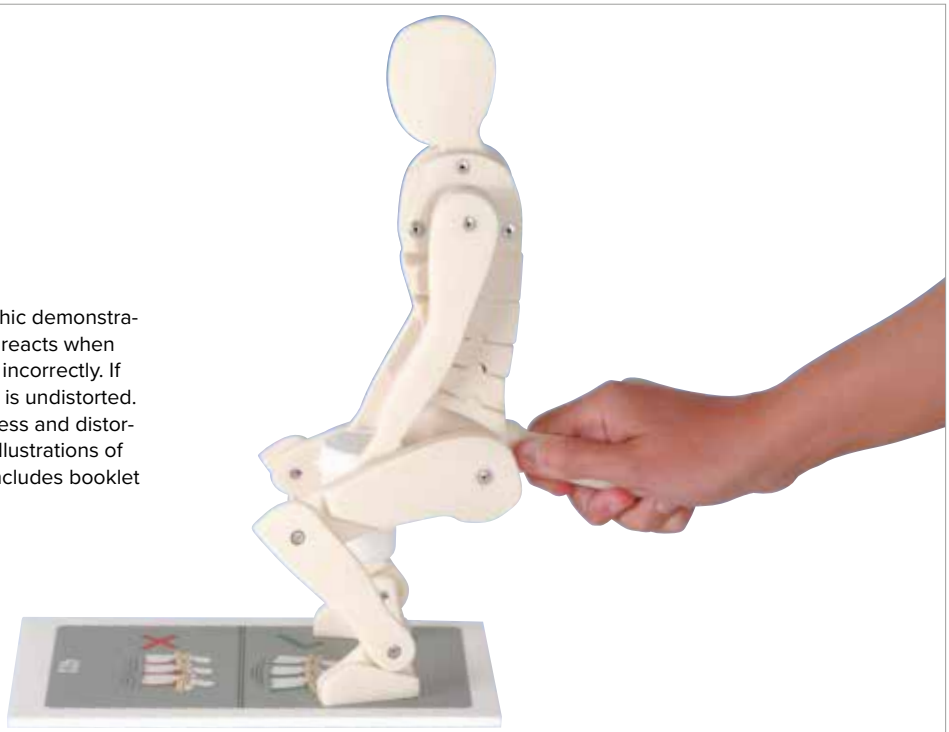
Atlas and Axis
Wire mounted
B-1000140

Atlas and Axis, with occipital plate
Wire mounted together on removable stand.
B-1000142

Cervical Section
Real life replica consisting of occipital plate, the 7 vertebrae with discs, cervical nerves, vertebral arteries and spinal cord.
Flexibly mounted on stand.
19 cm; 0.3 kg
B-1000144

Lumbar Section
High quality model of the 5 lumbar vertebrae with discs, sacrum with flap, coccyx, spinal nerves and spinal cord.
On removable stand.
34 cm; 0.6 kg
B-1000146

Anatomical Lifting Manikin
This functional figure provides a graphic demonstration of how the human spinal column reacts when heavy objects are lifted correctly and incorrectly. If the correct posture is used, the spine is undistorted. Incorrect posture exhibits obvious stress and distortion to the lumbar spine. Anatomical illustrations of the spine are featured on the base. Includes booklet with detailed information.
28x21x21.5 cm; 1.4 kg
B-1005101



STRUCTURE OF BONES, SPINES

Classic Spines

› Fully flexible spine models for hands-on demonstrations!

All models of the classic series are of the highest quality, made of an extremely durable material for everyday use. They are anatomically correct and precisely detailed, and show even the finest structures. Flexibly mounted for more realistic demonstrations.

Other features of all spines in the Classic Series include:

+ Full pelvis and occipital plate
+ Fully flexible mounting
+ L3-L4 disc prolapsed
+ Spinal nerve exits
+ Cervical vertebral artery

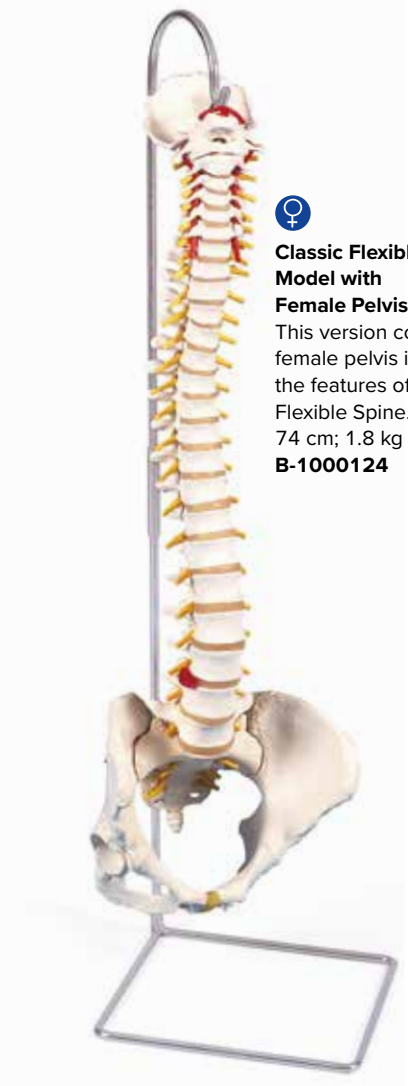
3B BONElike™ Child's Vertebral Column Model
This true-to-life anatomical replica of the vertebral column of a child around 5 years of age is especially interesting for those working in the areas of anatomy, paediatrics, orthopaedics and paediatric radiology.
The unique material of the spine model makes it almost visually indistinguishable from a real vertebral column. It is particularly useful in studying the phases of bone growth:
- Vertebrae – partially incomplete development of vertebral bodies and vertebral arches
- Sacrum – as yet incomplete fusion of individual sacral vertebrae. This commences at around the age of 15
- Pelvis – still open Y cartilage as main growth plate of the acetabulum.

The hip, pubic and ischial bone parts are not yet connected (didactically fixed with brackets in the model). These fuse around the age of 14-16.
B-1000118

› HIP, PUBIC AND ISCHIAL BONE BEFORE FUSING

Classic Flexible Spine Model with Femur Heads*
Same features as the Classic Flexible Spine, plus the femur heads.
Male pelvis with femur heads.
83 cm; 2.1 kg
B-1000122

Classic Flexible Spine Model*
Affordable spine model, extremely popular in medical education. Male pelvis.
74 cm; 1.8 kg
B-1000121



Classic Flexible Spine Model with Female Pelvis*
This version comes with a female pelvis in addition to the features of the Classic Flexible Spine.
74 cm; 1.8 kg
B-1000124

*Stands sold separately.

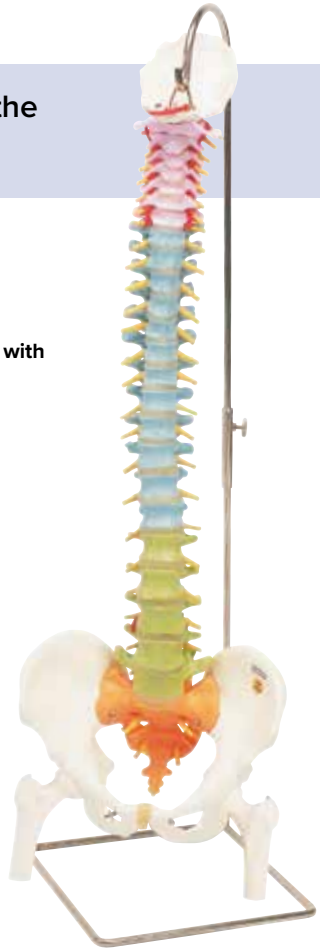
Didactic Spine Model

Colored for simplified education – visible even from a distance in the classroom!

The 5 different sections of the spinal column are differentiated by color on these models:
- 7 cervical vertebrae
- 12 thoracic vertebrae
- 5 lumbar vertebrae
- Sacrum
- Coccyx

Didactic colors help to easily follow explanation about the human spine, even from a distance. They are extremely durable models of high quality.

Other great features of all spines in the Didactic Series include:
- Full pelvis and occipital plate
- Fully flexible mounting throughout spine
- L3-L4 disc prolapsed on spine
- Spinal nerve exits
- Cervical vertebral artery
- Didactic coloring
- Male pelvis



Didactic Flexible Spine Model with Femur Heads*
Male pelvis with femur heads
82 cm; 2.1 kg
B-1000129

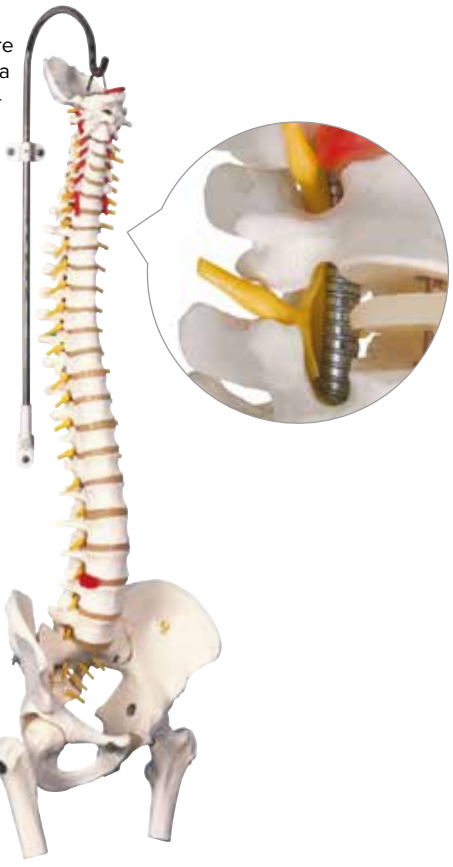
Didactic Flexible Spine Model (not shown)*
Male pelvis
74 cm; 1.9 kg
B-1000128

Highly Flexible Spines

Special mounting with flexible core adds stability for active hands-on use!

The spine models in the Highly Flexible Series are specially mounted on a flexible core, adding extra stability. This makes them ideal for active, hands-on use and demonstrations of movement, great for medical and patient education. These spines are extremely durable.

More features of spines in the Highly Flexible Series include:
- Complete pelvis and occipital plate
- Full flexible mounting throughout spine with added core for more stability
- L3-L4 disc prolapsed on spinal column
- Spinal nerve exits
- Cervical vertebral artery
- Male pelvis



Highly Bendable Spine Model with Femur Heads*
Male pelvis with femur heads
83 cm; 2.3 kg
B-1000131

Highly Bendable Spine Model (not shown)*
Male pelvis
74 cm; 1.4 kg
B-1000130

Multifunctional Stand for Spinal Columns, 3-part
The stand can be placed on the floor or desk, or mounted on a wall. Measures 86 cm tall on a 24 cm square base.
0.75 kg
B-1000132

STRUCTURE OF BONES, LIMBS

Benefits of wire mounted bone models:

Once flexed, the joints stay in the position you choose for demonstration purposes. The individual bones will always remain in a natural anatomical position.

Hand Skeleton (wire mounted)*
B-1019367

Leg Skeleton*
B-1019359

Arm Skeleton with Scapula and Clavicle*
B-1019377

Leg Skeleton with Hip Bone*
B-1019366

Foot Skeleton
(wire mounted)*
B-1019355

* Please note that you will receive either a left or right version by default

Benefits of flexibly mounted bone models:

The flexible bungee mounting enables the individual bones to be pulled back into their natural positioning after having been pulled apart for close up studies. The entire model will remain in its natural anatomical positioning when not pulled apart.

Loose Foot and Ankle Skeleton
(elastic bungee mounted)*
B-1019358

Loose Hand Skeleton with Ulna and Radius*
Loosely mounted on bungee string, Ulna and radius wire mounted.
B-1019369

LIFE-SIZE

Classic Flexible Joint Models
- Extremely realistic life size model of joints with tendons
- Fully movable to demonstrate the full range of physiological motion

Flexible Shoulder
16x12x20 cm; 0.35 kg
B-1000159

Flexible Elbow
12x12x39 cm; 0.35 kg
B-1000165

Flexible Hip
17x12x33 cm; 0.55 kg
B-1000161

Flexible Knee
12x12x34 cm; 0.4 kg
B-1000163

HALF LIFE-SIZE

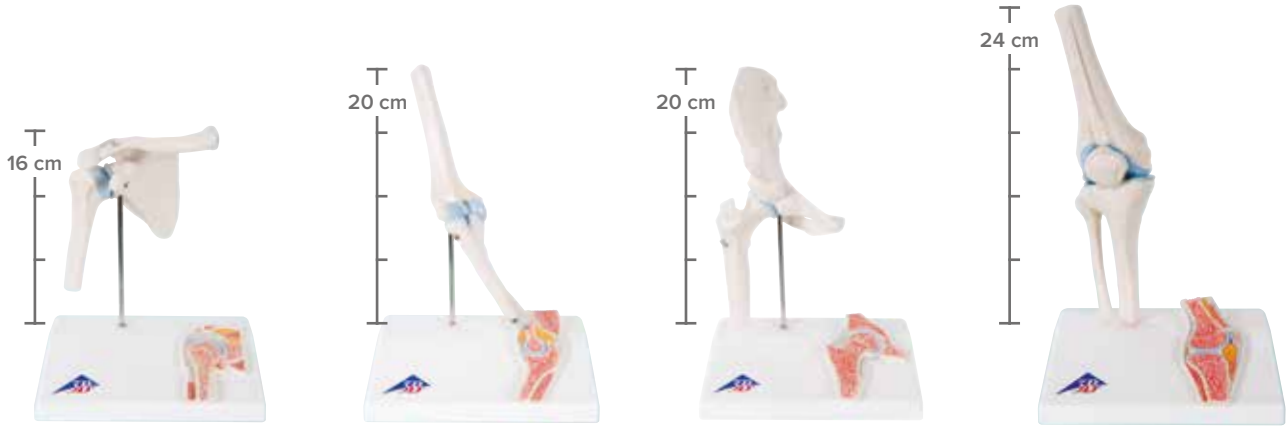
Mini Joint Series with Cross-Section
The mini joint series has been reduced to half the natural size while keeping all of the functionality. A joint cross-section has been added to the base to give an inside view.

Mini Shoulder
12x14x16 cm; 0.2 kg
B-1000172

Mini Elbow
16x12x20 cm; 0.2 kg
B-1000174

Mini Hip
16x12x20 cm; 0.2 kg
B-1000168

Mini Knee
10x14x24 cm; 0.35 kg
B-1000170



STRUCTURE OF BONES, SKULLS

All 3B Scientific® human skull models have been cast from real specimens, guaranteeing life-like detail and anatomical precision. You will see even the finest structures in these durable models made for everyday use!
+ Anatomical detail and precision
+ Realistically cast dentition
+ Durable, non-toxic material
+ Manufactured for everyday use

Classic Skulls

The classic skull provides extraordinary detail. It can be disassembled into skull cap, base of skull and mandible. As an option, a 5 part brain can be purchased separately (B-1000226) that fits into the skull. Model B-1020162 with 5 part brain. Model B-1020165 numbered with skull sutures drawn in color. Including description.
20x13,5x15.5 cm^3, 0.6 kg resp. 1.1 kg

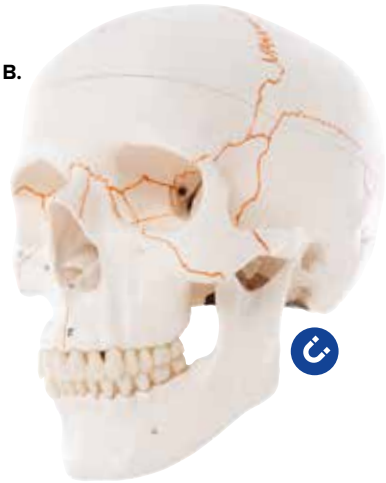
A. Classic Skull, 3-part
B-1020159
B. Classic Skull with Numbered Details, 3-part
B-1020165
C. Classic Skull with 5-part Brain
B-1020162

Other features of all skull models of the classic series include:
- Highly accurate representation of the fissures, foramina, processes, sutures etc.
- Mandible is mounted on a spring to easily demonstrate natural movement
- High quality original human skull cast
- Handmade from hard, unbreakable plastic

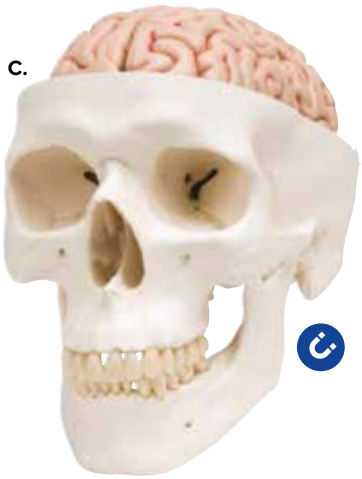
Magnetic connections for easy, hands-on demonstrations

A.

B.



C.



Beauchene Skull, 22-part

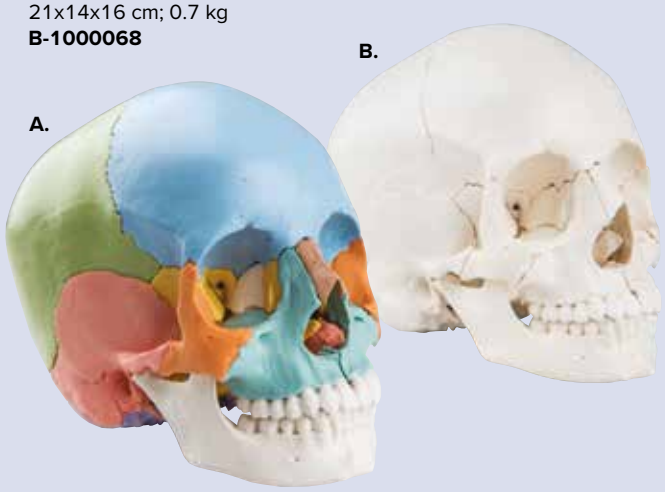
The best-selling 3B Scientific® Beauchene adult human skull is a natural cast of a human Beauchene skull of European origin.
It illustrates the complex structure of the human skull in particularly clear fashion. The 22 authentically detailed individual bones can easily be put together at the well-defined seams in a stable structure thanks to inconspicuous connectors. The skull is therefore safe and simple to use at all times, without it falling apart unintentionally. The well-meshed seams illustrate the degree of fusing of a real human skull very realistically.

A. Beauchene Adult Human Skull Model – Didactically Colored, 22-part
The 22 bones are depicted in 9 different didactic colors so that the individual skull bones are easy to distinguish.
21x14x16 cm; 0.7 kg
B-1000069

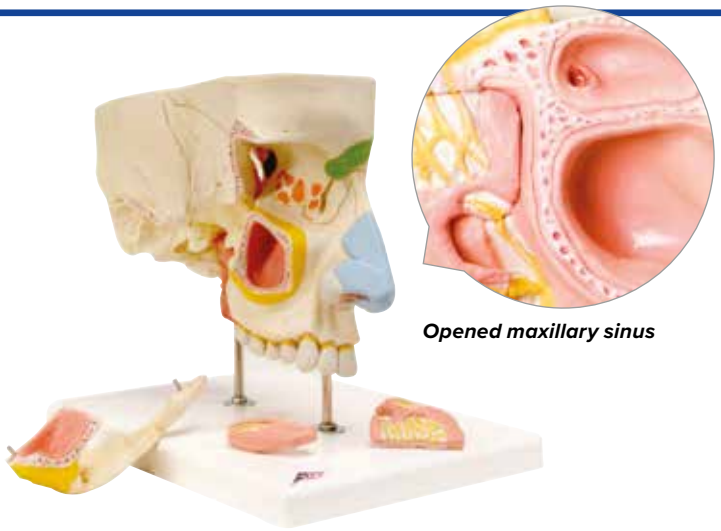
B. Beauchene Adult Human Skull Model – Bone Colored, 22-part
This version of the 22-part Beauchene skull has the same features as the didactic version, but is colored like natural bone.
21x14x16 cm; 0.7 kg
B-1000068

B.

A.



HUMAN SENSES

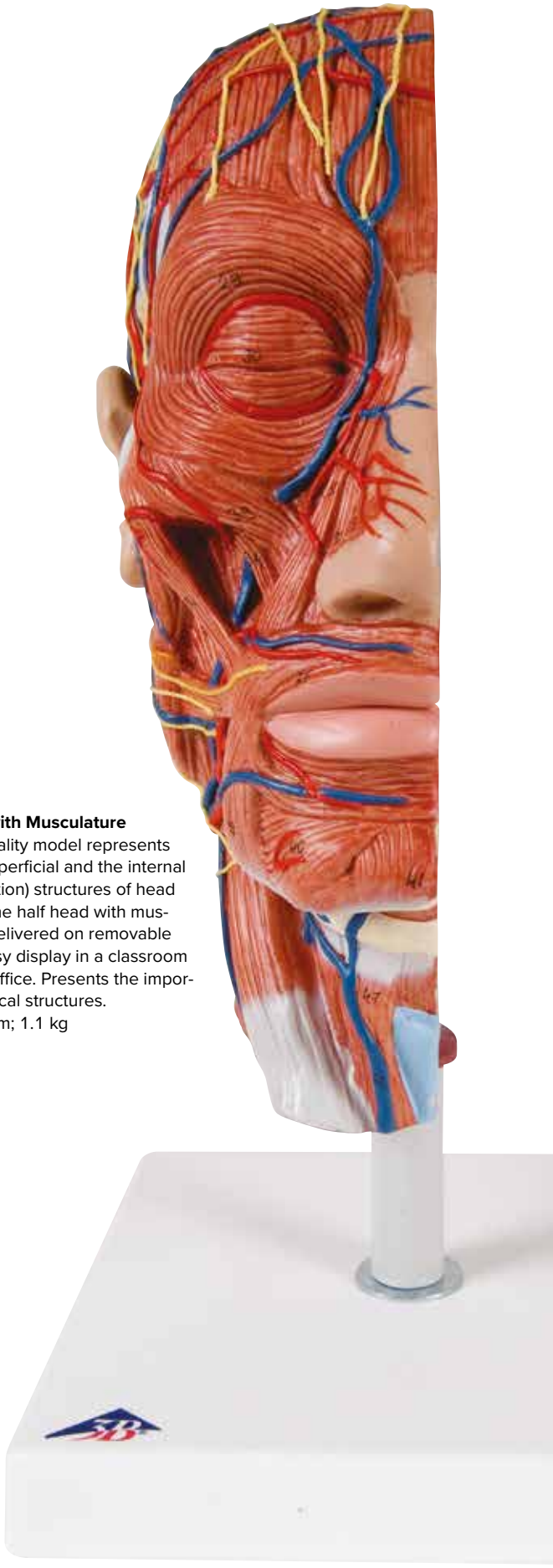


Opened maxillary sinus

Nose Model with Paranasal Sinuses, 5-part
The upper right half of the face is enlarged 1.5 times to illustrate the structure of the nose with paranasal sinuses.
The following structures are differentiated by color and visible through the transparent removable skin:
• Outer nasal cartilages
• Nasal, maxillary, frontal, and sphenoidal sinuses
• Opened maxillary sinus when the zygomatic arch is removed
The following structures are shown in median section:
• Nasal cavity, lined with mucosa, with the (removable) nasal conchae
• Arteries of the mucous membrane
• Olfactory nerves
• Innervation of the lateral wall of the nasal cavity, the nasal conchae and the palate
26x19x24 cm; 0.8 kg
B-1000254

Median Section of the Head
Relief median section of the head shows all relevant structures of the human head in great detail.
Delivered on a baseboard.
26x33x5 cm; 1 kg
B-1000219

Half Head with Musculature
This high quality model represents the outer, superficial and the internal (median section) structures of head and neck. The half head with musculature is delivered on removable stand for easy display in a classroom or doctor's office. Presents the important anatomical structures.
22x18x46 cm; 1.1 kg
B-1000221



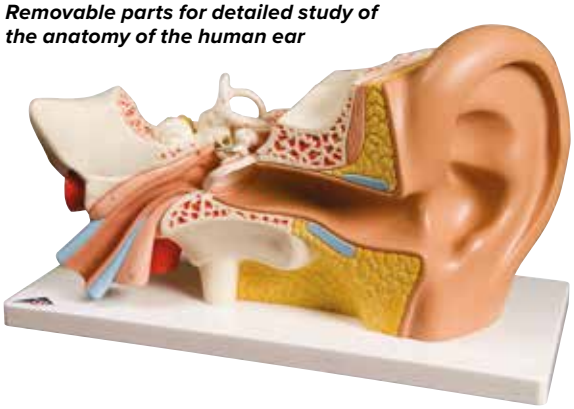
Series of Microscope Slides "Sensory Organs"
10 microscope slides with English text.
1. Tongue, rabbit, t.s., papillae with taste buds
2. Touch corpuscles in human skin, t.s.
3. Olfactory epithelium, dog, t.s.
4. External and internal ear, l.s.
5. Eye, retina, human, t.s.
6. Eye, optic nerve, human, t.s.
7. Eye, t.s. through cornea, iris and ciliary body
8. Eye, cornea of cow, t.s.
9. Eyelid, cat, t.s. showing Meibomian gland
10. Eye, entrance of optic nerve in the retina, t.s.

B-1004243

HUMAN SENSES, HEARING

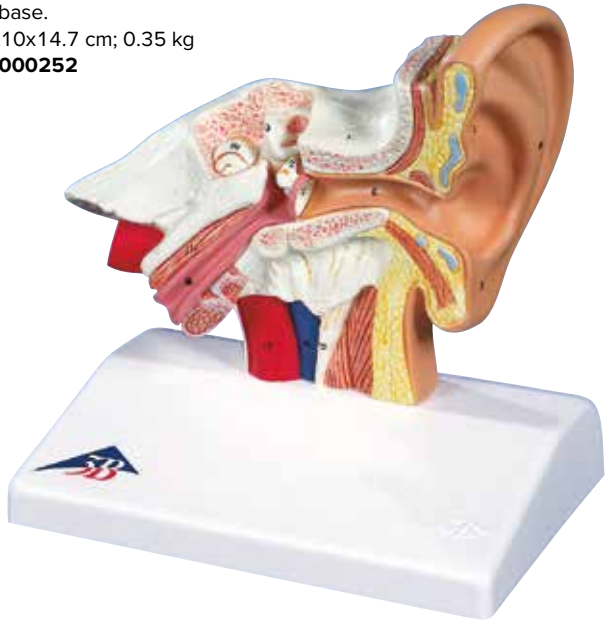
Ear Model, 5 times Life-Size, 3-part
This high quality human ear model represents outer, middle and inner ear.
• Removable eardrum with hammer, anvil and stirrup
• 2-part labyrinth with cochlea and auditory / balance nerve
Includes detail of two removable bone sections to close the middle and inner ear. On base.
25x41x25 cm; 3 kg
B-1008553

Removable parts for detailed study of the anatomy of the human ear



Ear Model, 3 times Life-Size, 4-part
At approximately 3 times life-size, the model represents the outer, middle, and inner ear. Removable eardrum with hammer, anvil, and stirrup, as well as 2-part labyrinth with cochlea, and auditory / balance nerve. On base.
34x16x19 cm; 1.25 kg
B-1000250

Desktop Ear Model, 1.5 times Life-Size
Specifically designed for those on a budget, the model shows the outer, middle, and inner ear with no compromise in quality.
On base.
14x10x14.7 cm; 0.35 kg
B-1000252

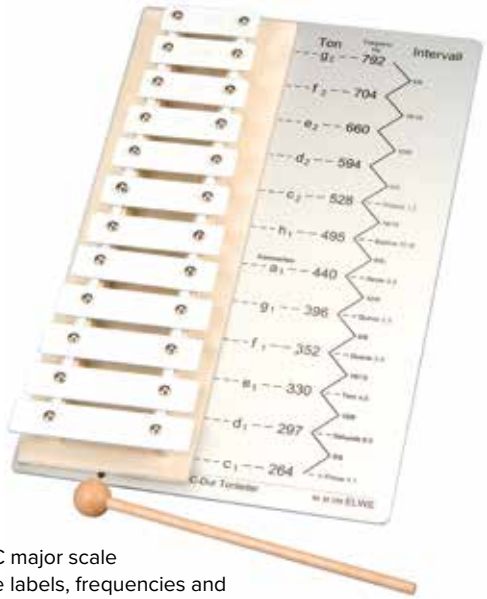


› LIFE-SIZE

Ossicle Model – Life-Size
Cast from natural specimen, these human auditory ossicles are presented in their natural position and embedded in transparent acrylic.
0.05 kg
B-1000253

Functional Ear Model
This highly detailed model shows how the tympanic membrane, ossicles, the complex internal ear with the cochlea, and the oscillations of the Basilar hearing membrane operate and interact. The enclosed mirror enables operation of the model while studying various ear-functions from different angles. Includes a color explanatory chart.
30x20x15 cm; 1 kg
B-1005052

Lip Whistle
Lip whistle for experiments on pitch as a function of resonance space. Closed wooden whistle with a round cross-section and movable piston, chromatic range from g_1 (392 Hz) to g_2 (794 Hz).
Frequency range: approx. 400 Hz –800 Hz
Resonance space: approx. 170 mm x 20 mm dia.
Length: approx. 250 mm
B-1009924



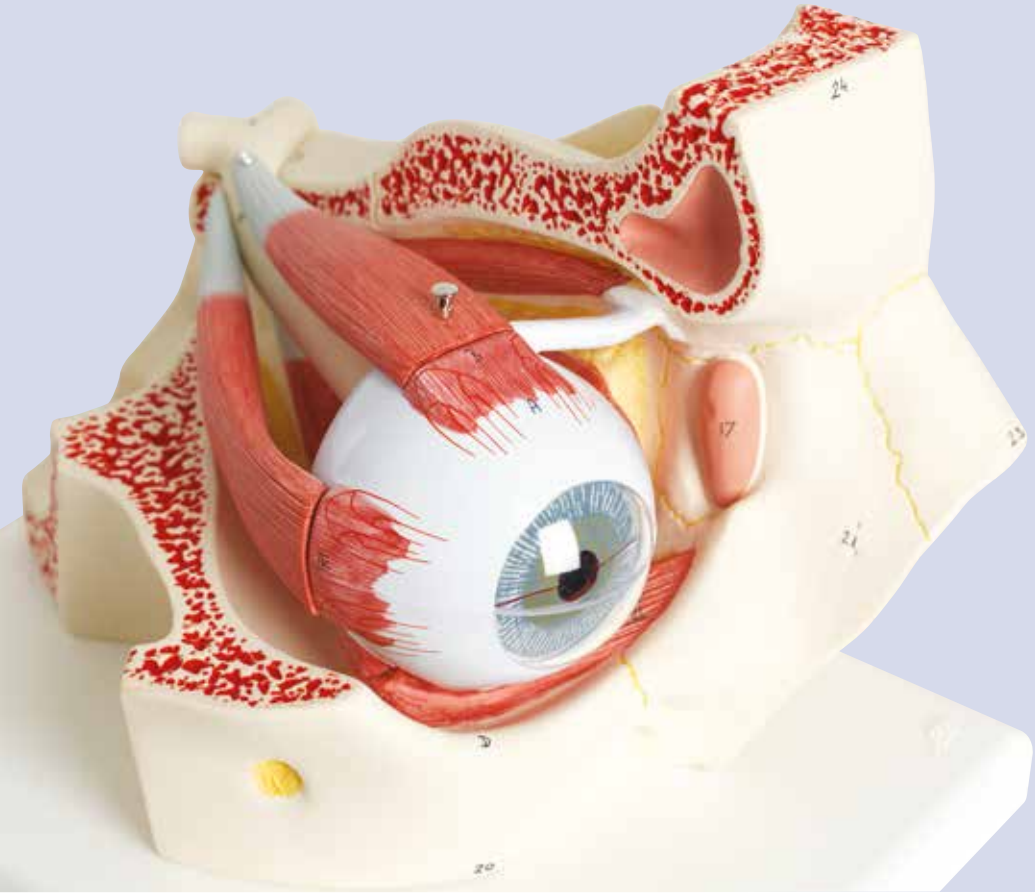
Metallophone
Metallophone for demonstrating a C major scale from c_1 to g_2. Note labels, frequencies and frequency ratios are printed on the instrument.
With striking hammer.
Dimensions: approx. 320x210 mm^2
Weight: approx. 510 g
B-1000804

Experiment Topics:
- **Directions of sound**
- **Determining differences in time for sound to propagate to left and right ears**
- **Effect of linear distortions on cavity resonance**

Equipment Set “Stereophonic Hearing”
Equipment set for investigation of directionality of sound and determining differences in time for sound to propagate to left and right ears by generation of knocking sounds in a closed tube. The effect of linear distortions on the directionality of cavity resonance can also be investigated by dipping two ends of a tube, at the same time or in alternation, into a beaker which is either empty or half-filled with water. The set consists of a stethoscope with various tubes and a plastic beaker in a rugged plastic case with foam inlays in the shape of the apparatus and a transparent lid.
Contents:
1 Stethoscope
2 Spare earpieces
1 Tube 1 m
2 Tubes 0.5 m
2 Toothpicks
1 Plastic beaker
1 Storage case
B-1018551

Determining differences in time for sound to travel to right and left ears

HUMAN SENSES, SIGHT



Eye in Orbit, 3 times Life-Size, 7-part
This large anatomical human eye model shows the optic nerve in its natural position in the bony orbit of the eye (floor and medial wall). For closer study, it can be disassembled into:
- Includes the extraocular muscles
- Both halves of the choroid with iris and retina
- Eye lens
- Vitreous humour
- Bony orbit

18x26x19 cm; 1.1 kg
B-1000258

Eye with Eyelid, 5 times Life-Size, 8-part
Features:
- Upper half of the sclera with cornea and eye muscle attachments
- Both halves of choroid with iris and retina
- Eye lens
- Vitreous humour
- Eyelid
- Lachrymal system
- Anatomical features around the eyeball

20x18x21 cm; 1.2 kg
B-1000257

Eye, 5 times Life-Size, 6-part
This advanced eye model comes on a base, the following parts are removable:
- Upper half of the sclera with cornea and eye muscle attachments
- Both halves of the choroid with iris and retina
- Lens
- Vitreous humour

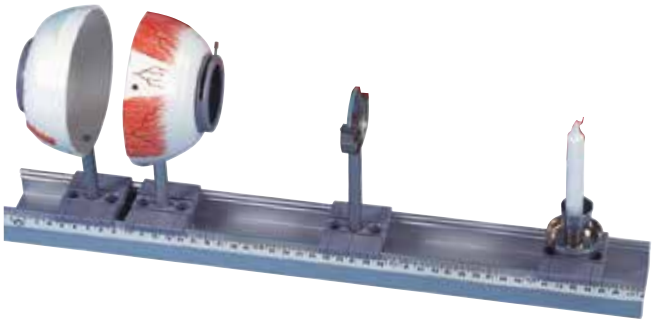
13x14x21 cm; 0.6 kg
B-1000255

Eye, 3 times Life-Size, 6-part
Can be disassembled into the following parts:
- Both halves of the sclera with cornea and eye muscle attachments
- Both halves of the choroid with iris and retina
- Eye lens
- Vitreous humour

9x9x15 cm; 0.1 kg
B-1000259

3B MICRO*anatomy*™ Eye
The model illustrates the microscopic structure of the retina with choroid and sclera:
- Left block: 850-times enlarged view of retina including supplying vascular layer and parts of the sclera
- Right block: 3800-times enlarged view of photoreceptors and cells of the pigmented layer

25x23x18.5 cm; 1.2 kg
B-1000260



Physical Eye Model
Use to demonstrate the optical functions of the eye, e.g. representation of an object on the retina, accommodation, short-sightedness and far-sightedness.
- Half eyeball with adjustable iris diaphragm, lens holder and 2 convex lenses (f = 65 mm and 80 mm), on a rod
- Half eyeball with retina (transparent screen), on a rod
- Lens holder with one concave and one convex corrective lens, on a rod
- Candle holder with 2 candles, on a rod
- Aluminium rail, 50 cm long, with 4 clamp slides
- Includes case

49x5.5x18 cm; 2 kg
B-1003806

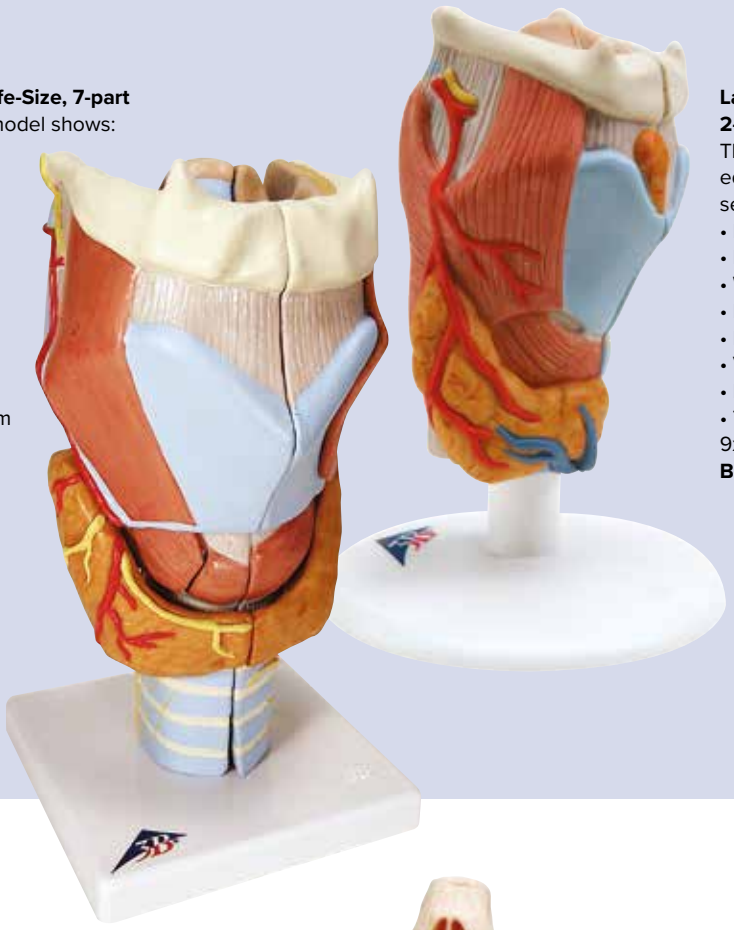
Inverting Spectacles
Spectacles with two fully rotatable inverting prisms in a shielded spectacle frame. The inverting prisms reverse incoming light rays, turning the world upside down, so to speak, and making it unexpectedly difficult for the wearer to perform even the simplest of daily tasks such as reaching for objects, drawing, moving about in a room etc.
B-1000895

Experiment Topics:
- **Sense of touch (tactile sense)**
- **Perception of distances between tactile spots**
- **Heat and cold perception of the skin**
- **Blind spot**
- **Optical and haptic illusions**
- **Color vision**
- **Flicker colors and motion after-effect**
- **Inversion of the image in the brain using inverting goggles**
- **Directional hearing**
- **Hearing own body noises**

Equipment Set “Sensory Physiology”
This sensory physiology kit allows students to conduct various experiments in the fields of hearing, seeing and feeling. All instruments of the kit come in a practical carrying case. The experiments and the underlying principles are described in detail in the supplied instruction manual.
Contents: Carrying case with foam inserts, instrument for directional hearing, resonance tube, calipers, tactile hair, cold/hot probe, 4 transparent plastic cards for geometrical-optical illusions, “blind spot” test card, light-proof goggles with 8 attachments, 2 inversion prisms for the goggles, controllable motor with wall plug transformer, 3 pattern discs, experiment instructions on CD-ROM (pdf file) in German or English.
B-1005071

LARYNX AND TEETH

Larynx Model, 2 times Life-Size, 7-part
This medially sectioned model shows:
• Larynx
• Hyoid bone
• Windpipe
• Ligaments
• Muscles
• Vessels
• Nerves
• Thyroid gland
Thyroid cartilage, 2 muscles and 2 thyroid gland halves are removable from larynx. On stand.
12x12x23 cm; 0.87 kg
B-1000272



Larynx Model, 2 times Life-Size, 2-part
This detailed larynx model is divided into two halves. It is medially sectioned and shows:
• Larynx
• Hyoid bone
• Windpipe
• Ligaments
• Muscles
• Vessels
• Nerves
• Thyroid gland
9x9x14 cm; 0.29 kg
B-1000273

Milk Dentures
Upper and lower jaw are opened to show the arrangement of the remaining teeth. On base.
13x12x13 cm; 0.6 kg
B-1001248

Half Lower Jaw, 3 times Life-Size, 6-part
The model represents half of the left lower jaw of a young person. One section of bone is removable from the half lower jaw to expose the tooth roots, spongiosa, vessels and nerves. The canine and first molar are removable from the half lower jaw and are longitudinally sectioned.
35x18x36 cm; 1.2 kg
B-1000249

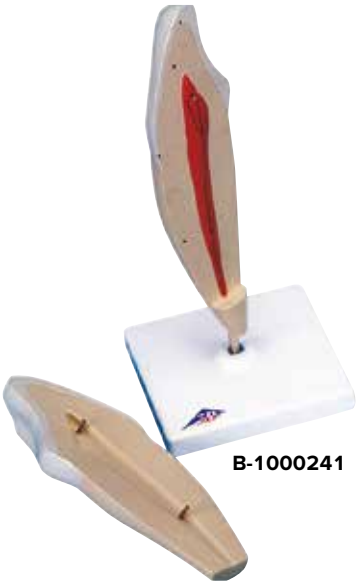
Lower jaw is movable

Adult Dentures
Tooth roots, spongiosa, vessels, and nerves are exposed for detailed study. The lower jaw is movable. On base.
16x12x13 cm; 0.9 kg
B-1001247

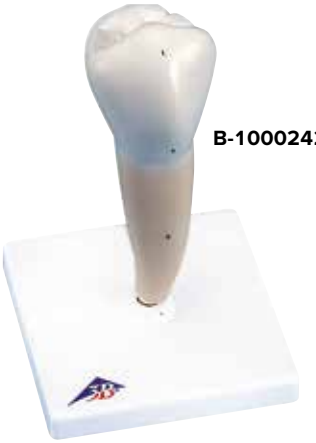
Classic Tooth Models
This classic tooth series shows 5 representative types of adult dentition individually mounted on removable stands:
- 2-part lower incisor with longitudinal section
- 2-part lower canine with longitudinal section
- Lower single-root pre-molar
- 2-part lower twin-root molar with longitudinal section showing caries attack
- 3-part upper triple-root molar with longitudinal section and caries insert

The series ranges from 23 – 29 cm high.
Each tooth delivered on a base.
B-1017588

B-1000240



B-1000241



B-1000242

B-1000243

B-1017580

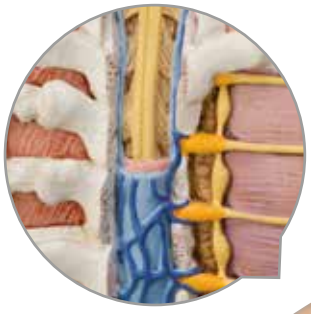
› Each tooth model in this set is also available individually

Lower Incisor, 2-part
B-1000240
Lower Canine, 2-part
B-1000241
Lower Single-Root Pre-Molar
B-1000242
Lower Twin-Root Molar showing cavities, 2-part
B-1000243
Upper Triple-Root Molar, 3-part
B-1017580

Dentition Development
Cast from natural specimens, these four upper and lower jaw halves show four different stages of development:
- Newborn
- Approx. 5-year old child
- Approx. 9-year old child
- Young adult

33x10x20 cm; 0.5 kg
B-1000248

SYSTEM OF ORGANS, INTERNAL ORGANS

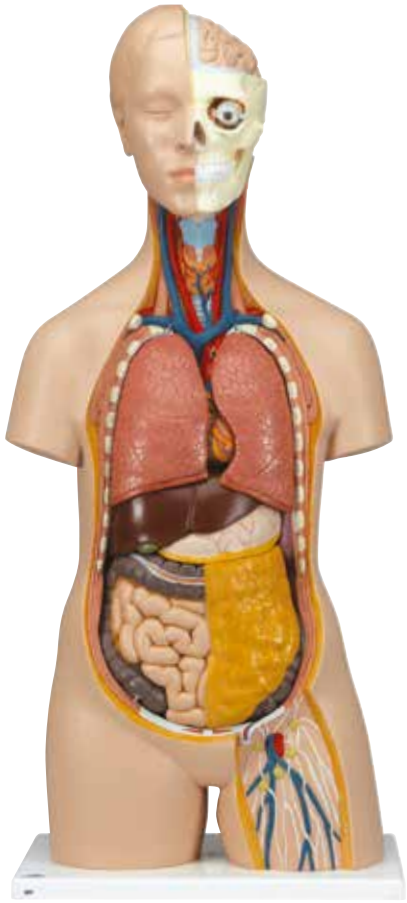


Opened back reveals the anatomy of the spine from cerebellum to coccyx

Classic Gender Neutral Torso with Opened Neck and Back, 18-part
This human gender neutral torso model has the unique feature of an open neck and back section going from the cerebellum to the coccyx. Vertebrae, intervertebral discs, spinal cord, spinal nerves, vertebral arteries, and many other features are represented in detail in this hand-painted and highly detailed model. Includes the following removable parts and organs:
- 7th thoracic vertebra removable
- 6-part head
- 2 lungs
- 2-part heart
- Stomach
- Liver with gallbladder
- 2-part intestinal tract
- Front half of kidney
- Front half of urinary bladder

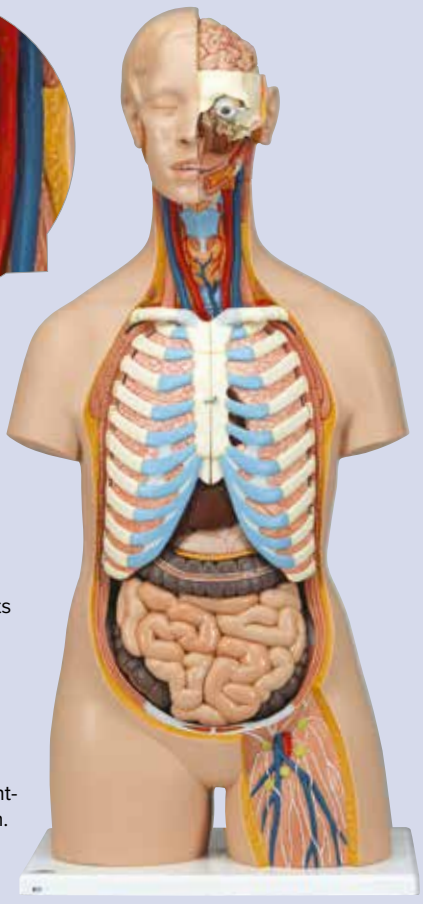
Includes 3B Scientific® Torso Guide. Mounted on sturdy base for hands-on education. Light skin.
87x38x25 cm; 5.8 kg
B-1000193

Parts can be removed easily for detailed study



Classic Gender Neutral Torso, 12-part
This gender neutral, life-size torso is hand-painted, true to detail, and made of high-quality plastic.
The following components are removable and reveal the inner anatomy:
- 2-part head
- 2-part removable heart
- 2 lungs
- Stomach
- Liver with gallbladder
- 2-part intestinal tract
- Front half of kidney

Includes 3B Scientific® Torso Guide, mounted on sturdy base. Light skin.
87x38x25 cm; 4.6 kg
B-1000186



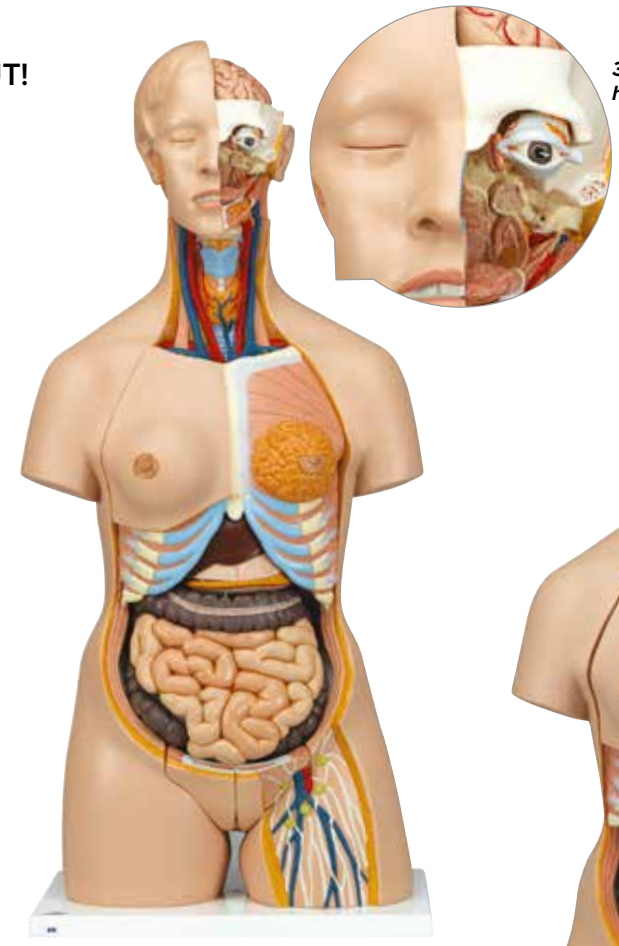
Classic Gender Neutral Torso, 16-part
This life-size human torso model comes with 16 removable parts, each hand-painted for amazingly realistic details.
- Hand-painted for realistic colors and amazing detail
- Made of durable, high quality plastic
- 16 removable parts for closer study

The torso model contains the following removable parts:
- 3-part head
- 2 lungs with sternum and rib attachments
- 2-part heart
- Stomach
- Liver with gallbladder
- 4-part intestinal tract
- Front half of kidney
- Front half of urinary bladder

Includes 3B Scientific® Torso Guide. Mounted on sturdy base for hands-on education. Light skin.
87x38x25 cm; 6.8 kg
B-1000188

› DETAILED, INSIDE AND OUT!

Dual Sex Torso, 24-part
This life-size human torso model offers impressive detail with 24 removable parts. Use it to answer all questions regarding internal human anatomy. Manufactured for everyday use, extremely durable material for a long lasting demonstration model.
For close-up study the following parts and organs can be removed:
• 3-part head
• 2-part stomach
• 4-part intestinal tract
• Female chest wall
• 2 lungs
• 2-part heart
• Liver with gall gallbladder
• Front half of kidney
• 4-part male genital insert
• 3-part female genital insert with foetus
Hand painted in realistic colors, delivered complete with the 3B Scientific® Torso Guide and mounted on sturdy base. Light skin.
87x38x25 cm; 7.5 kg
B-1000196



3-part head with removable brain half and eye

Opened back for detailed study

Heavy Duty Protective Cover for Torsos
Protect your investment with this heavy duty protective cover for your torso models. Suitable for all full-size torsos. Zippered with reinforced easy-carry handle.
Black.
B-1020762

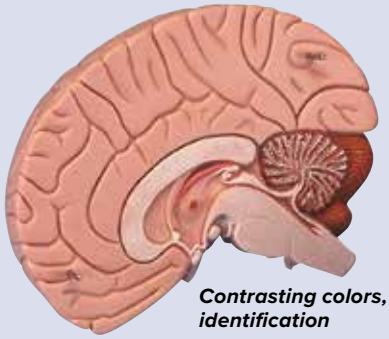
Dual Sex Torso with Opened Back, 28-part
This life-size human torso model comes complete with removable male and female genital inserts, opened neck and back section to study vertebrae, intervertebral discs, spinal cord, spinal nerves, vertebral arteries, and a deluxe head with a 4-part brain. The following parts and organs can be removed for detailed study:
• 7th thoracic vertebra
• Female chest wall
• 6-part head (incl. 4-part brain)
• Female breast covering
• 2 lungs
• 2-part heart
• 2-part stomach
• Liver with gallbladder
• 4-part intestinal tract
• Front half of kidney
• 4-part male genital insert
• 3-part female genital insert with foetus
Comes complete with the 3B Scientific® Torso Guide, delivered on sturdy base. Light skin.
87x38x25 cm; 7.6 kg
B-1000200

SYSTEM OF ORGANS, NERVOUS SYSTEM

3B Scientific® brain models have been cast from real specimens and accurately represent even the finest structural details.
+ Magnetic connections for easy demonstrations
+ Highest quality material for long lasting models
+ Hand-painted and manufactured to precise anatomical detail

With magnets for easy demonstrations and hands-on learning!

Classic Brain, 5-part
This midsagittally sectioned model is an original anatomical cast of a real human brain.
The components of the brain's left half are:
• Frontal and parietal lobe
• Temporal and occipital lobe
• Encephalic trunk
• Cerebellum
Delivered on removable stand.
13x14x17.5 cm; 0.9 kg
B-1000226



Contrasting colors, for easy identification

Brain Model, 2-part
Contrasting colors are used to indicate various anatomic structures in this medially divided human brain, making this high quality model perfect for beginning anatomy studies of the human brain. On removable base.
15x14x17.5 cm; 0.7 kg
B-1000222

Neuro-Anatomical Brain, 8-part
This deluxe brain is medially divided. On the right half of this brain, you will find a systematically colored grouping and representation of the cerebral lobe.
The left half of the brain shows:
• Pre- and post-central region
• Broca and Wernicke areas
• Heschl's gyrus
• Brain nerves
• Ventricles
Both halves of this brain can easily be disassembled into:
• Frontal with parietal lobes
• Temporal with occipital lobes
• Half of brain stem
• Half of cerebellum
Delivered on a removable base.
14x14x17.5 cm; 0.95 kg
B-1000228

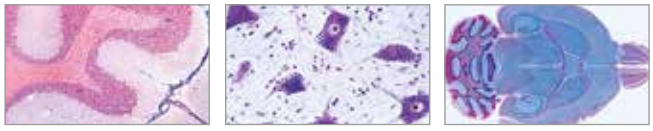
Rat Brain Comparative Anatomy
Enlarged roughly six times, and medially sectioned, the rat brain model can be disassembled into two halves. The right half of the color-coded model shows the structures of the cerebrum, cerebellum, and brainstem. The left half is mostly transparent to reveal the left lateral ventricle and hippocampus in the median section. For comparison, a natural cast of a rat brain and a didactic, small-scale illustration of a human brain in median section are shown on the base. Each has the same color coding used for the various regions.
14x10x16 cm; 0.24 kg
B-1000230

Magnetic components

Physiology of Nerves Series
Unique five model series for education about the human nervous system. Interchangeable sections can be assembled to illustrate the features of typical neurons found in vertebrates. All sections depict the neural components in vivid colors and attach magnetically to the illustrated metal base. The set contains the following sections, which are also available individually:
• Neuron Cell Body
• Myelin Sheaths of the CNS
• Schwann Cells of the PNS
• Motor End Plate
• Synapse
68x51x3 cm; 4.2 kg
B-1000232

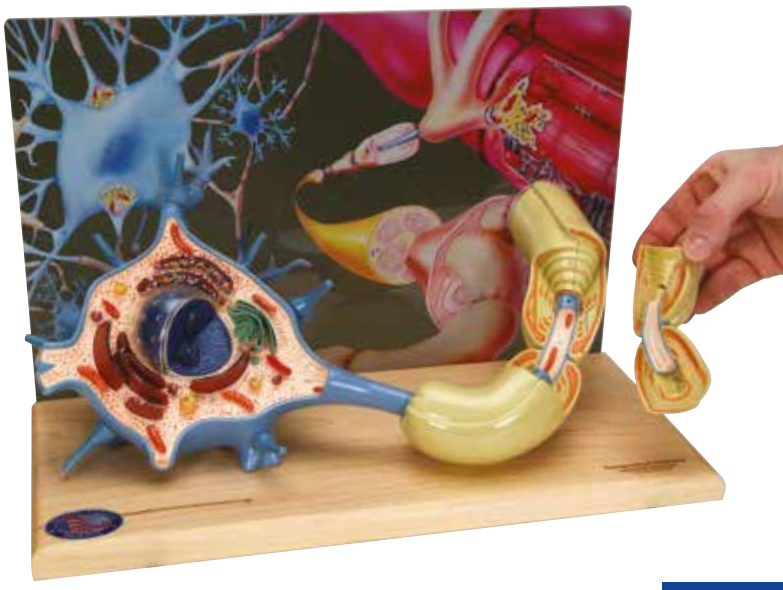
Nervous System, 1/2 Life-Size
An excellent model to study the structure of the human nervous system. This 3D relief model shows schematic representation of the central and peripheral nervous system, numbered and identified in the accompanying manual. Delivered on base-board.
80x33x6 cm; 3.5 kg
B-1000231

Motor Neuron Diorama
Motor neuron diorama magnified more than 2,500 times, this motor neuron model represents a fully three-dimensional reproduction of a motor nerve cell situated within a milieu of interacting neurons and a skeletal muscle fibre. The membranous envelope has been cut away from the neuron on the motor neuron model to expose the cytological ultra structure, organelles and inclusions within the cell body. Branching dendrites, communicating synapses and a myelin-wrapped axon with node of Ranvier, project from the neuronal surface of the motor neuron model. A section of the axon lifts off of the motor neuron model to let you view the tightly-wound layers of the enveloping myelin sheath and neurolemma, as well as the Schwann cell which formed them. Mounted on a wooden base.
Dimensions: approx. 43x20x28 cm^3
Weight: approx. 3 kg
B-1005553



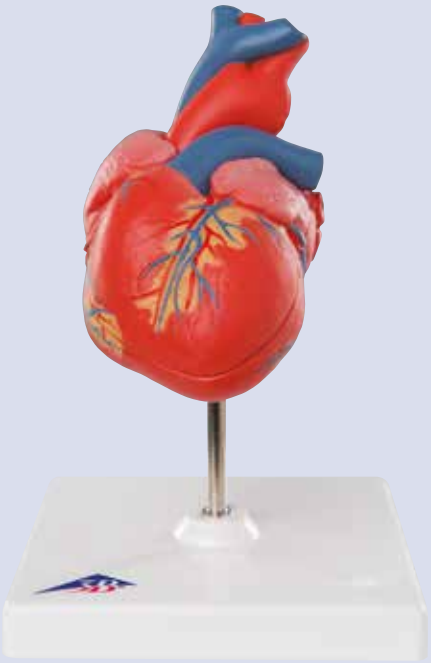
Series of Microscope Slides "Nervous System"
11 microscope slides with English text.
1. Cerebrum, human, cortex, t.s.
2. Cerebellum, human, t.s.
3. Cerebellum, human, t.s., Weigert stained
4. Spinal cord, human, t.s. for general structure
5. Nerve, human, l.s.
6. Nerve, human, t.s.
7. Spinal cord, cat, t.s., Klüver-Barrera stained
8. Spinal cord, cow, t.s., Nissl stained
9. Cerebrum, cat, t.s., Golgi stained
10. Brain, rat, median l.s.
11. Vertebra with spinal cord, rat, t.s.

B-1004244



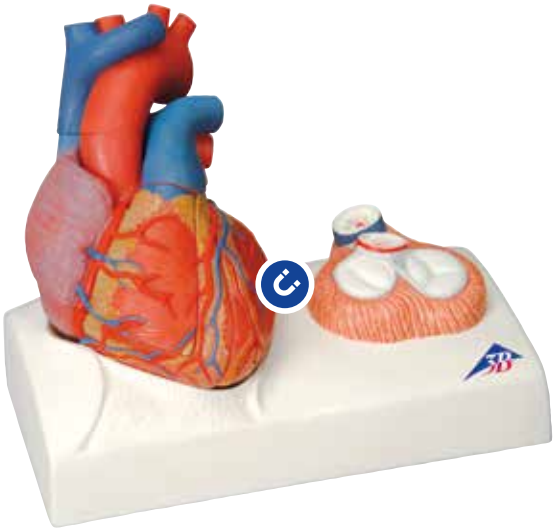
SYSTEM OF ORGANS, CARDIO-VASCULAR

Classic Heart Model Series
+ Removable parts for closer study
+ Ideal for school and university education
+ Durable and virtually unbreakable material



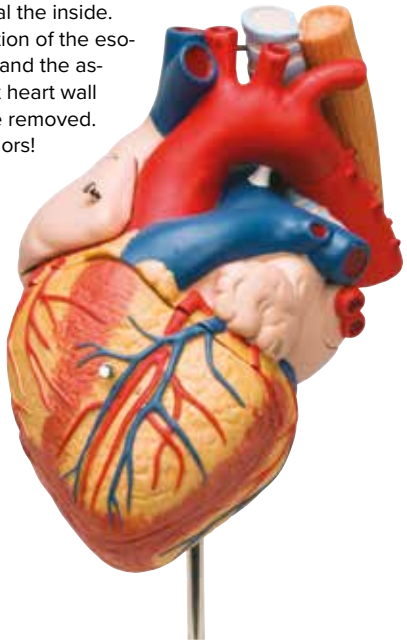
Classic Heart, 2-part
The 2-part classic heart is highly detailed and at a price you will love. Just slightly smaller than life-size with exquisite detail throughout including ventricles, atria, valves, veins, and the aorta. The front heart wall is detachable to reveal the chambers and valves inside. On removable stand.
19x12x12 cm; 0.3 kg
B-1017800

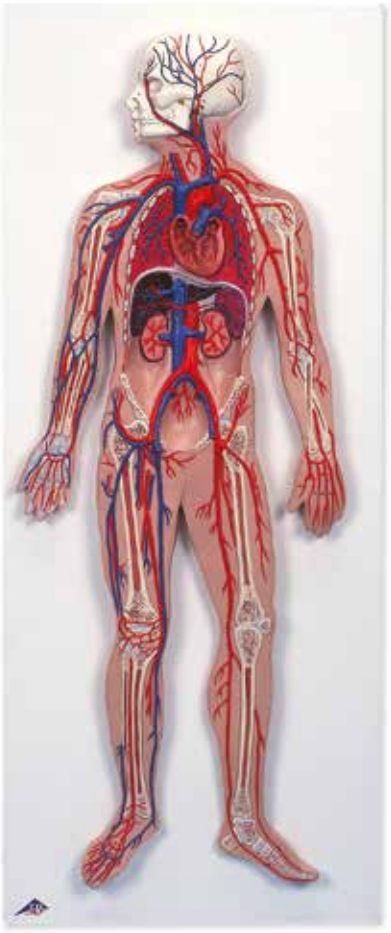
Didactically Painted Heart Model, Magnetic, Life-Size, 5-part
Invest in quality with this uniquely sectioned 5-part heart model by 3B Scientific. Cast from a real human heart and didactically prepared to facilitate a better understanding of the anatomy and blood flow of the heart. A dissection through the median plane makes an easy demonstration possible. Color scheme and disassembly of the heart model in a didactical manner. The chambers of the heart and vessels (including coronary vessels) in which oxygen-rich blood is transported have been displayed in red. Heart chambers and vessels which contain blood low in oxygen have been reproduced in blue.
13x19 cm; 0.6 kg
B-1010007



Magnetic Heart Model, Life-Size, 5-part with Diastole and Systole
Now, in one detailed model, the study of diastole and systole is finally made straightforward and convenient. This unique dissection makes the viewing of the cardiac valves during diastole with closed pulmonary aortic valves and opened mitral tricuspid valves easier than ever before. In addition to this the closed mitral tricuspid valves and opened pulmonary aortic valves during systole are represented in a second model located on the base.
• Easy to open, magnetic connections
• Extremely detailed, life-size model
• Cast from real specimen
• Shows both diastolic and systolic state
25x21x13 cm; 1.52 kg
B-1010006

Heart with Esophagus and Trachea, 2-times Life-Size, 5-part
This 2-times life-size heart model allows a very easy identification of all structures in the human heart. The atrium walls and the front heart wall are removable to reveal the inside. Additionally, the upper section of the esophagus, the upper bronchi and the ascending aorta and the front heart wall and the atrium walls can be removed. Hand-painted in life-like colors!
On removable stand.
32x18x18 cm; 1.3 kg
B-1000269





Circulatory System
This 1/2 Life-Size relief model of the human circulatory system details the following anatomical structures: arterial/venous system, heart, lung, liver, spleen, kidneys, partial skeleton. Delivered on baseboard.
80 x 30 x 6 cm; 3.41 kg
B-1000276

Blood Pressure Meter
Excellent for realistic biology lessons. This robust sphygmomanometer consists of an easy-care arm cuff made of cotton, an uncomplicated rubber ball pump and a display scale for readings up to 300 mmHg. Supplied in a case.
B-1005075

Circulatory System Model Activity Set
Study the human circulatory system with this model. A cutaway view of the interior of the heart can be seen and studied. The circulation process is reinforced with a colorful three-overlay transparency of the heart. Trace vessels throughout the body while viewing an enlarged cutaway section of a vein and an artery. Description of circulatory system in English.
61x45 cm
B-1005475

Stethoscope
Ideal for introducing your students to “Blood and Circulation” or for reinforcement of the topic. This good-value-for-money stethoscope comes with a flat chestpiece and black tube.
B-1005074

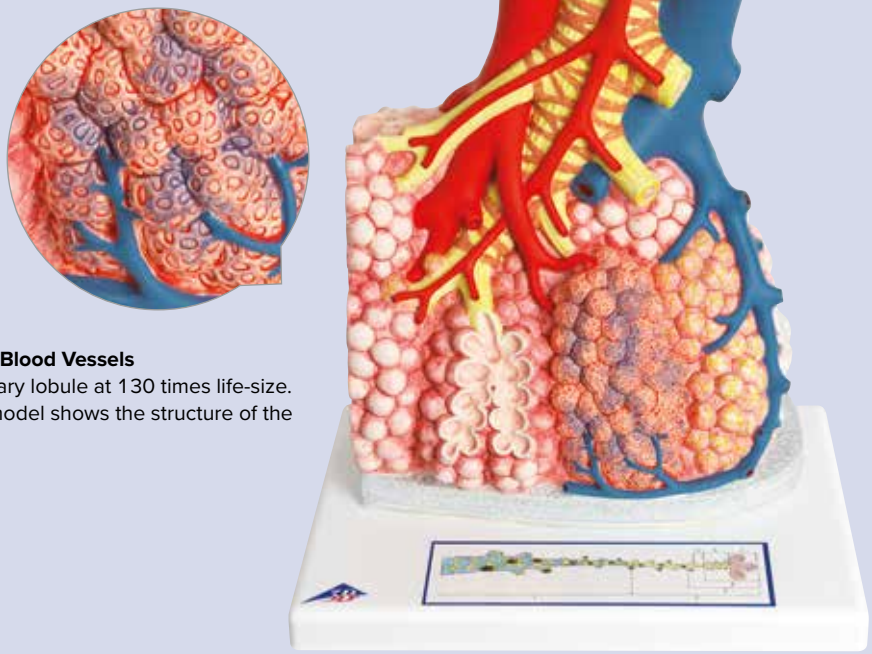
Blood Typing with Rhesus Factor – Student Experiment
This long-life experimental kit allows your students to determine blood groups with Rhesus factor without any risk of infection. They can examine the artificial “blood” of 4 fictitious persons and determine their blood group and Rhesus factor. Distinct agglutinations can be seen. The size of red and white “blood corpuscles” and the number of corpuscles per mm^3 can be determined using a microscope.
Supplied with:
4 dropper bottles of artificial blood (A, B, AB and 0), 1 dropper bottle each of artificial anti-A, anti-B and anti-Rh serum, 48 washable permanent test trays with 3 wells, 50 mixing sticks, detailed teacher’s information with agglutination diagram. The supplied materials suffice for approx. 45 to 50 samples.

English Version
B-1008916

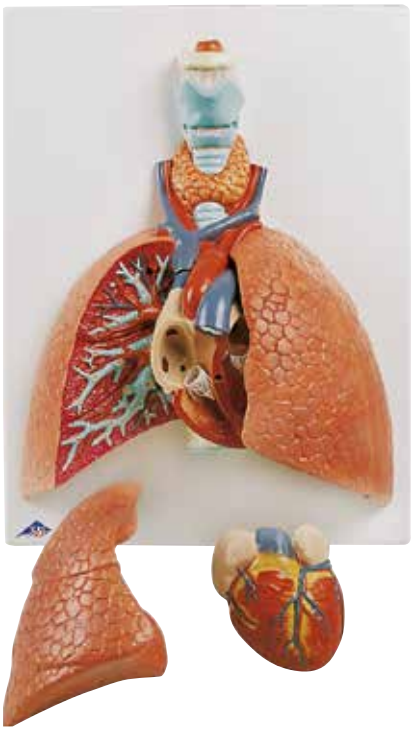
German Version
B-1005072

Artifical Blood with Rhesus Factor
Refill pack of Artifical Blood with Rhesus Factor
B-1005073

SYSTEM OF ORGANS, CARDIO-VASCULAR

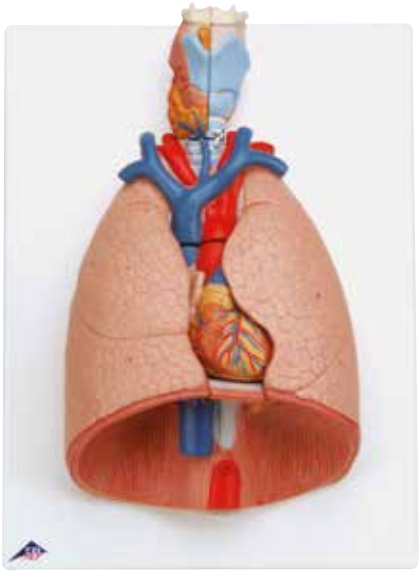


Pulmonary Lobule with Surrounding Blood Vessels
The model shows an external pulmonary lobule at 130 times life-size. A graphic image on the stand of the model shows the structure of the airway in the lungs up to the alveolus.
26x33x19 cm; 1.35 kg
B-1008493



Lung Model with Larynx, 5-part
This high quality lung model comes on a baseboard and can be disassembled into 5 parts, lung and heart are removable.
12x28x37 cm; 1.25 kg
B-1001243

Lung Model with Larynx, 7-part
The lung model with larynx comes on a baseboard for easy display. It is of highest quality, and contains removable parts.
31x41x12 cm; 2.2 kg
B-1000270

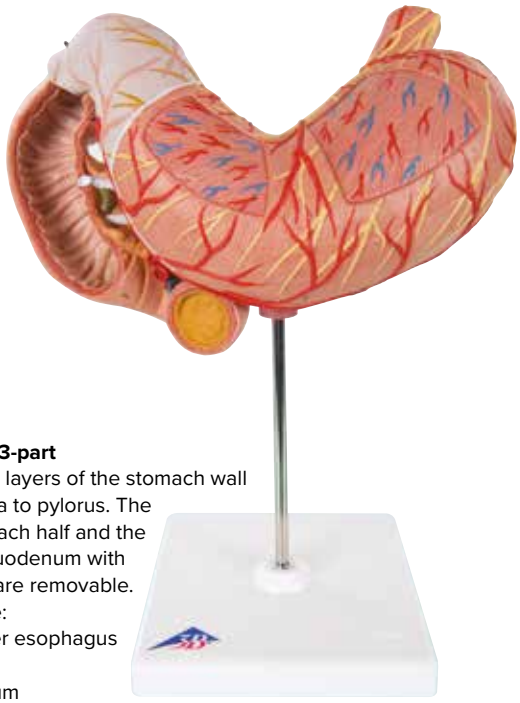


Respiratory System Model Activity Set
This respiratory system model facilitates learning about breathing and the anatomical complexities of the human respiratory system. Illustrated by the respiratory system activity set is a cutaway section of the upper human torso and head, enlarged image of a bronchial tree and a greatly magnified alveoli partially sectioned. Description of the respiratory system in English.
61x45 cm
B-1005471

Series of Microscope Slides "Respiratory and Circulatory System"
10 microscope slides with English text.
1. Trachea, cat, t.s.
2. Lung, human t.s.
3. Blood, human, Wright stained smear
4. Artery, human, t.s., elastica stained
5. Vein, human, t.s., elastica stained
6. Artery and vein, human, t.s., elastica stained
7. Aorta, human, t.s.
8. Heart muscle, human t.s. and l.s. intercalated discs
9. Lymph gland, human, t.s.
10. Red bone marrow, human rib, t.s. Giemsa stained.

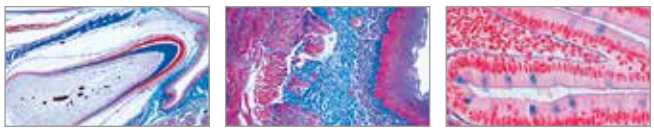
B-1004238

SYSTEM OF ORGANS, DIGESTIVE TRACT



Stomach, 3-part
Shows the layers of the stomach wall from cardia to pylorus. The front stomach half and the opened duodenum with pancreas are removable. Shown are:
• The lower esophagus
• Vessels
• Duodenum
• Pancreas
• Nerves
Delivered on removable stand.
25x22x12 cm; 0.8 kg
B-1000303

Stomach, 2-part (not shown)
Like the one above but the duodenum and pancreas are not present. The front half of the stomach is removable for detailed study. It shows the lower esophagus, vessels, and nerves. Delivered on stand.
25x22x12 cm; 0.6 kg
B-1000302



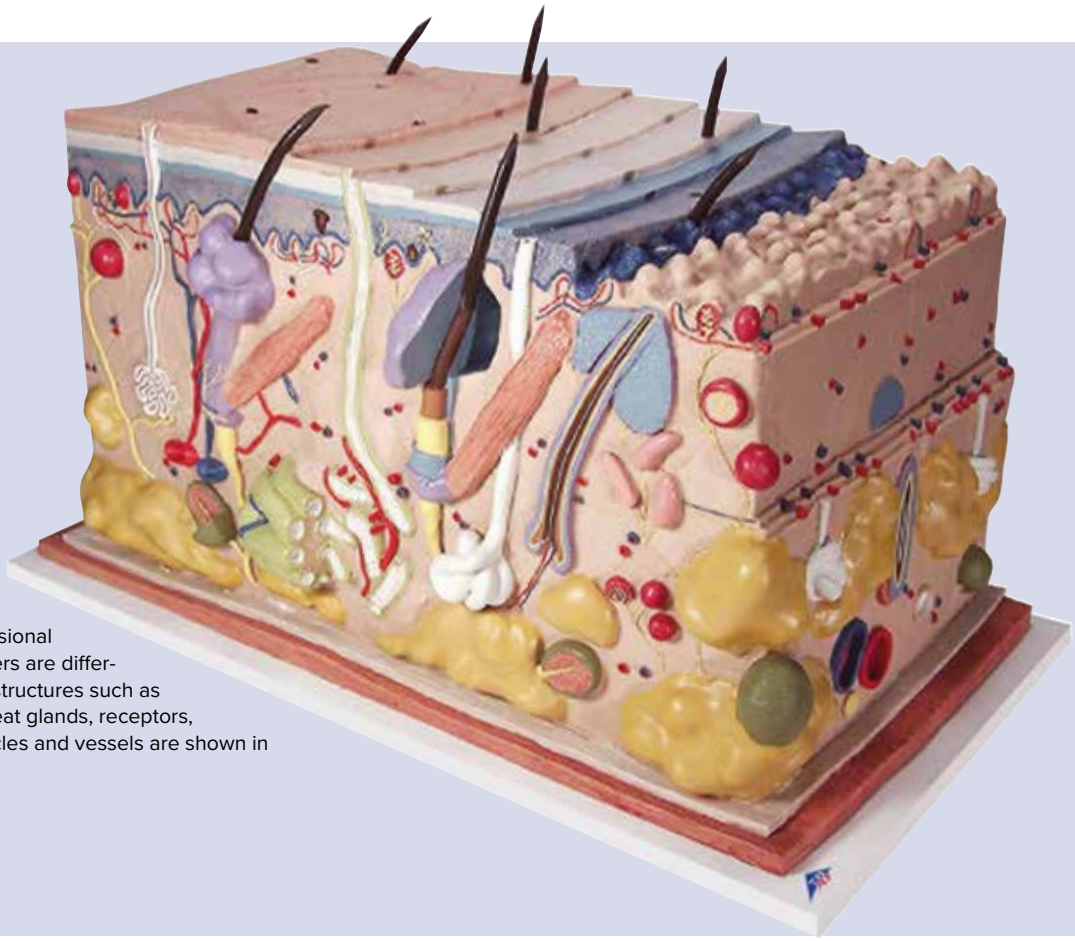
Series of Microscope Slides "Digestive System"
11 microscope slides with English text.
1. Lip, human foetus, t.s.
2. Tooth, developing, human foetus, l.s.
3. Tongue, cat, t.s.
4. Sublingual gland, human, t.s.
5. Esophagus of rabbit, t.s.
6. Stomach, human, pyloric region, t.s.
7. Small intestine of cat, t.s. stained for goblet cells (PAS-HE)
8. Appendix, human, t.s.
9. Colon (large intestine), human, t.s.
10. Pancreas, human, t.s. with islets of Langerhans
11. Liver, human, t.s.

B-1004239

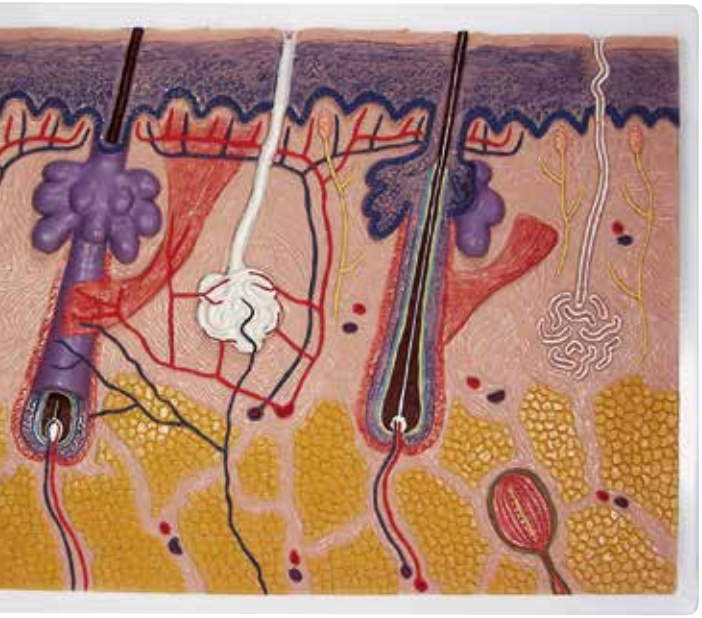
Digestive System, 3-part
This life-size model demonstrates the entire digestive system in graphic relief.
The following parts are shown, painted in realistic colors:
• Nose
• Mouth cavity and Pharynx
• Esophagus
• GI tract
• Liver with gallbladder
• Pancreas
• Spleen
The duodenum, caecum and rectum of the digestive system are opened. The transverse colon and front stomach wall are removable from the digestive system for detailed study of the anatomy. The liver, stomach, and transverse colon are removable. Mounted on baseboard.
81x33x10 cm; 4.4 kg
B-1000307

Digestive System, 2-part (not shown)
Same features as the 3-part model, but without the removable stomach half.
B-1000306

SYSTEM OF ORGANS, SKIN



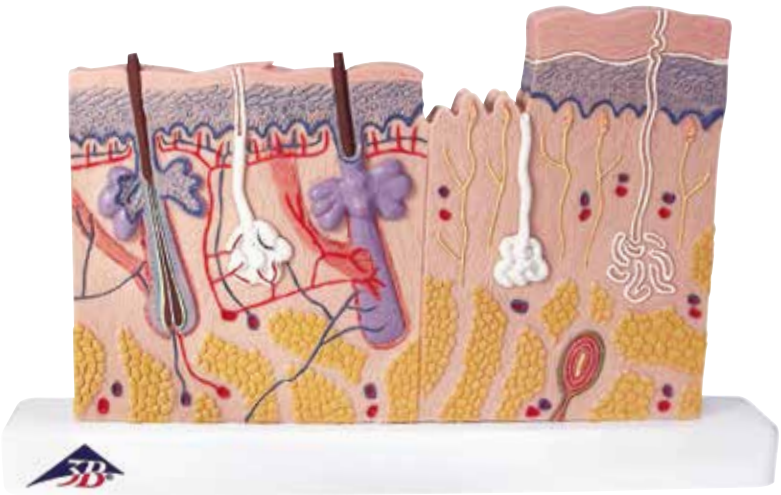
Skin Model, 70 times Full-Size
This distinctive model shows a section of human skin in three dimensional form. Individual skin layers are differentiated and important structures such as hair, sebaceous and sweat glands, receptors, nerves, erector pili muscles and vessels are shown in great detail.
Mounted on baseboard.
44x24x23 cm; 3.6 kg
B-1000291



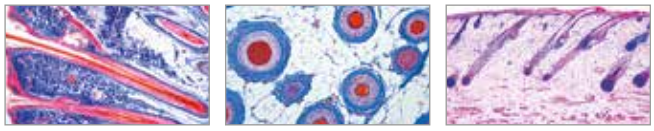
Skin Section, 70 times Life-Size
This relief model shows a section through the three layers of the hair-covered skin of the head:
- Sweat glands
- Vessels
- Receptors
- Nerves
- Representation of hair follicles with sebaceous glands

26x33x5 cm; 1 kg
B-1000289

Skin Section, 40 times Full-Size
The two halves of this relief model show the three layers of hairy and hairless skin in order to make the differences clear. Detailed with hair follicles, sebaceous glands, sweat glands, receptor, nerves, erector pili muscles and vessels. Mounted on a base.
24x15x3.5 cm; 0.2 kg
B-1000290

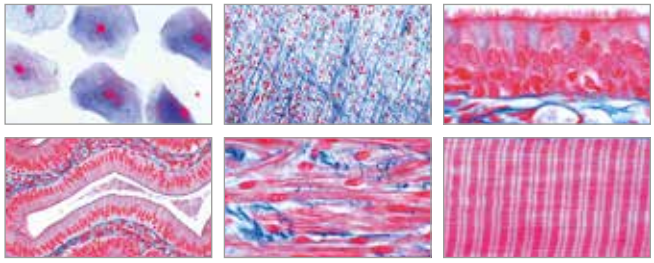


TISSUE AND CELLS, HISTOLOGY



Series of Microscope Slides “Human Scalp and Hair”
12 microscope slides with English text.
1. Human scalp, vertical sec. shows l.s. of hair follicles
2. Human scalp, horizontal sec. shows t.s. of hair follicles
3. Natural blonde and black hair
4. Grey hair 5. Eyelash 6. Hair of beard
7. Hair from infant 8. Artificially bleached hair
9. Split hair tips
10. Singed hair
11. Eggs of louse attached to the hair, w.m.
12. Human head louse (Pediculus capitis), w.m.

B-1004268



Series of Microscope Slides “Normal Human Histology I”
50 microscope slides with English text. Uses AZAN staining colors.
1. Isolated squamous epithelium, human 2. Connective tissue, human, sec. 3. Columnar epithelium, human gall bladder, t.s. 4. Ciliated epithelium, human trachea, t.s. 5. Smooth muscles, human, l.s. and t.s. 6. Striated muscles, human, l.s. 7. Heart muscles, human, l.s. and t.s. 8. Hyaline cartilage, human, sec. 9. Elastic cartilage of epiglottis, human, t.s. 10. Bone, compact substance, human, t.s. 11. White fibrous tissue (tendon), human, l.s. 12. Red bone marrow, human, t.s. 13. Scalp, human, l.s. of hair follicles 14. Artery, human, t.s. 15. Vein, human, t.s. 16. Blood smear, human, Giemsa stain 17. Lung, human, t.s. 18. Larynx of human foetus, t.s. 19. Lymph gland, human, t.s. 20. Thyroid gland, human, t.s. 21. Pituitary gland, human, t.s. 22. Spleen, human, t.s. 23. Tongue, human, t.s. 24. Esophagus, human, t.s. 25. Sublingual gland, human, t.s. 26. Stomach, pyloric region, human, t.s. 27. Pancreas, human, t.s. 28. Small intestine, human, t.s. 29. Large intestine, human, t.s. 30. Liver, human, t.s. 31. Kidney, human, t.s. 32. Adrenal gland, human, t.s. 33. Ureter, human, t.s. 34. Urinary bladder, human, t.s. 35. Ovary, human, t.s. 36. Uterus, human, t.s. 37. Uterine tube, human, t.s. 38. Placenta, human, t.s. 39. Umbilical cord, human, t.s. 40. Mammary gland, human, sec. 41. Testis, human, t.s. 42. Epididymis, human, t.s. 43. Olfactory epithelium, human, t.s. 44. Retina, human, t.s. 45. Internal ear, human foetal, t.s. 46. Touch corpuscles in human skin, t.s. 47. Nerve, human, l.s. 48. Spinal cord, human, t.s. 49. Cerebellum, human, t.s. 50. Cerebrum, cortex, human, t.s.

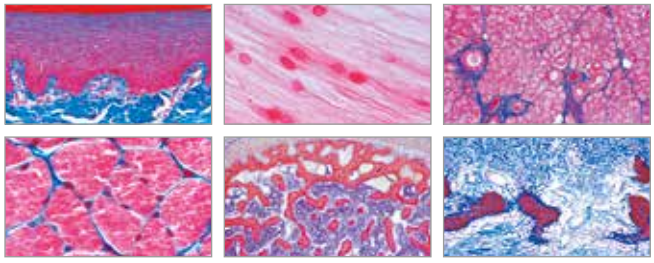
B-1004234

Series of Microscope Slides “Normal Human Histology I” (HE) (not shown)
HE staining (haematoxylin-eosin).

B-1008716

Series of Microscope Slides “Normal Human Histology II” (HE) (not shown)
HE staining (haematoxylin-eosin).

B-1008717



Series of Microscope Slides “Normal Human Histology II”
50 microscope slides with English text. Uses AZAN staining colors.
1. Soft palate, human t.s. 2. Adipose tissue, human, sec. stained for fat 3. White fibrous cartilage, human intervertebral disc, sec. 4. Striated (skeletal) muscle, human t.s. 5. Spongy (cancellous) bone, human t.s. 6. Bone development, vertical l.s. of foetal skull-cap 7. Bone development, l.s. of foetal finger 8. Joint of human foetus, l.s. 9. Tooth, human, t.s. of crown 10. Tooth, human, complete l.s. 11. Tooth development from human foetus, l.s. 12. Aorta, human, t.s. routine stained 13. Trachea from human fetus t.s. 14. Thymus from human child, t.s. 15. Parathyroid gland (Gl. parathyreoidea), human t.s. 16. Tonsil (Tonsilla palatina), human t.s. 17. Parotid gland (Gl. parotis), human t.s. 18. Submaxillary gland (Gl. submandibularis), human t.s. 19. Stomach, fundic region, human t.s. 20. Stomach, cardiac region, human t.s. 21. Jejunum, human t.s. 22. Small intestine (Duodenum) t.s. coloring of goblet cells, PAS-HE 23. Vermiform appendix, human t.s. 24. Rectum, human t.s. 25. Gall bladder, human t.s. 26. Liver of human foetus sec., developing blood cells 27. Urethra, human, t.s. 28. Seminal vesicle (Gl. vesiculosa), human t.s. 29. Spermatic cord (Ductus deferens), human t.s. 30. Prostate, human, t.s. 31. Sperm smear, human 32. Corpus luteum in t.s. of human ovary 33. Vagina, human t.s. 34. Cerebral cortex, human, t.s. silvered (Golgi or Palmgren) 35. Cerebral cortex, human, t.s. stained for neuroglial cells after Held 36. Cerebellum, human, t.s. silvered (Golgi or Palmgren) 37. Thalamus, human, stained after Klüver-Barrera 38. Medulla oblongata, human, t.s. routine stained 39. Spinal cord, human, t.s. silvered (Golgi or Palmgren) 40. Sympathetic ganglion, human t.s. routine stained 41. Peripheral nerve, human t.s. 42. Optic nerve, human t.s. 43. Cornea from eye, human t.s. 44. Eyelid, human, t.s. 45. Skin from finger tip, human, vertical l.s. 46. Scalp, human, horizontal l.s. shows t.s. of hair follicles, 47. Nail development, sagittal l.s. finger tip of human foetus 48. Human chromosomes in smear from culture of blood, male 49. Human chromosomes in smear from culture of blood, female 50. Barr bodies (human sex chromatin) in smear from female squamous epithelium.

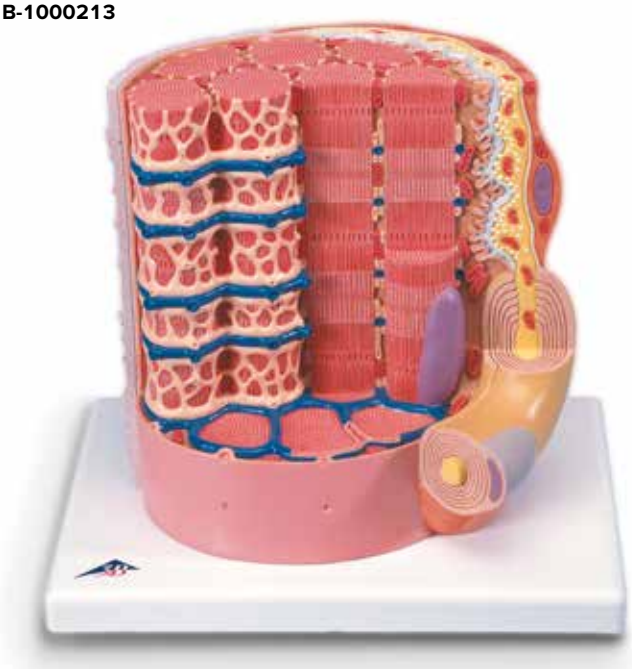
B-1004235

MUSCLE TISSUE

1/3 Life-Size Muscle Figure, 2-part
The ⅓ life-size mini muscle figure shows the superficial musculature. It is accurately reproduced and detailed in life-like. The chest plate is removable from the muscular figure to reveal the internal organs and the right side contains a female mammary gland. 125 numbered and identified structures of the human anatomy, on base.
57x25x18 cm; 2.1 kg
B-1000212

Skull with Facial Muscles
Easily demonstrate causes of temporo-mandibular disorders and other dysfunctional disturbances of the masticatory muscles with this high quality skull model. The right half features the face and mastication muscles. They can easily be differentiated by color. Cranium and m. masseter are easily detachable to reveal the structures underneath. The left side shows hand-painted muscle origins and insertions to further clarify the structural interaction of muscles and skull bones. The jaw is movable and due to the flexible musculature the rudimentary chewing motion can be demonstrated. Made in Germany and cast from an original human skull, using our highest quality material.
18x18x25 cm; 1.08 kg
B-1020181

3B MICRO*anatomy*™ Muscle Fiber 10,000 times magnified
Illustrates a section of a skeletal muscle fiber and its neuromuscular end plate. The muscle fiber is the basic element of the diagonally striped skeletal muscle. This high quality muscle fiber replica brings a hands-on understanding of the human muscle to any classroom.
23.5x26x18.5 cm; 1.2 kg
B-1000213



+ Muscles can be taken off to study origins and insertions
+ Muscle positioning can be trained
+ Highly realistic coloring of bone and muscles
+ Muscular origins and insertions are raised and color-coded
+ Removable parts for the study of the deeper anatomy
+ High quality, non-hazardous material for long lasting models

Elbow Joint, 8-part
Right elbow of a male with individual muscles plus muscular origins and insertions on the humerus, radius, and ulna. The muscles can easily be attached to and removed from the corresponding areas of origin and insertion.
25x41x25 cm; 1.74 kg
B-1000179

Hip Joint, 7-part
The model shows the right hip joint of an adult male with the individual muscles as well as the muscle origins and insertions on the femur and the hip bone. The hip muscles have been mounted on their corresponding regions of origin and insertion and are removable. The relationship of the muscular system and skeletal system are represented clearly with this human hip joint model.
18x32x18 cm; 1.9 kg
B-1000177

Shoulder Joint with Rotator Cuff, 5-part
This model comprises the upper half of the humerus, the clavicle and the shoulder blade. The muscles of the rotator cuff (subscapularis muscle, supraspinatus muscle, infraspinatus muscle, teres minor muscle) are displayed. By removing the four individual muscles, all movements of the shoulder joint can be performed:
• Abduction
• Inward rotation
• Adduction
• Outward rotation
18x18x24 cm; 0.85 kg
B-1000176

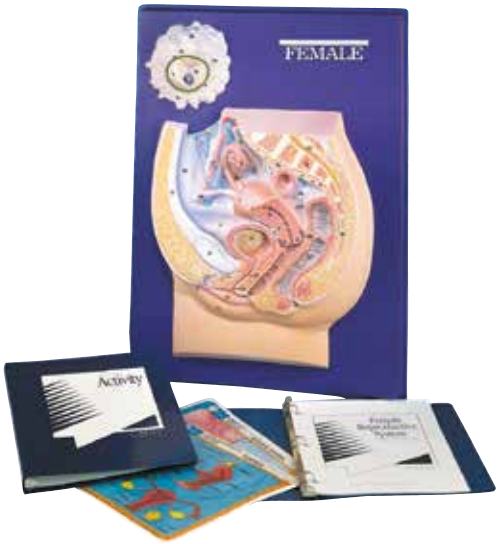
11 removable parts. Realistic details!

Knee Joint, 12-part
The 12 parts can quickly be removed for easy demonstrations both in medical training and patient education. The muscles and muscle portions can be taken off for detailed study of the deeper anatomical layers. Color-coded and raised areas indicate the muscle origin and insertion points on the femur, tibia, and fibula. Additionally, the model shows parts of the fibular and tibial collateral ligaments.
33x17x17 cm; 0.9 kg
B-1000178

DEVELOPMENTAL BIOLOGY

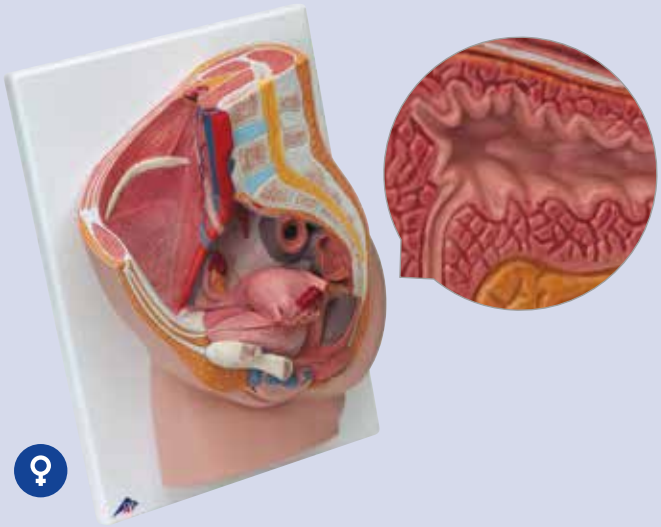
Female Pelvis Skeleton with Genital Organs, 3-part
This model is especially suitable for studying the position of female genital organs in the pelvis. It consists of a natural cast female pelvis with a movable symphysis, hip bone, sacrum, coccyx, 4th and 5th lumbar vertebrae, and a female genital insert with rectum. The bladder and a portion of the uterus with one fallopian tube and ovary can be removed. The soft tissues are moulded from durable, soft vinyl. Delivered on base.
33x26x18 cm; 2 kg
B-1000335

Female Reproductive System Model Activity Set
Aids in discussions of women's health issues and pregnancy. Detailed lateral section of the lower female torso shows partially sectioned organs and a magnified, cross-section of the ovum. The model illustrates the internal body structure and is useful as a graphic aid in discussion women's health issues and pregnancy. Description in English.
61x45 cm
B-1005483

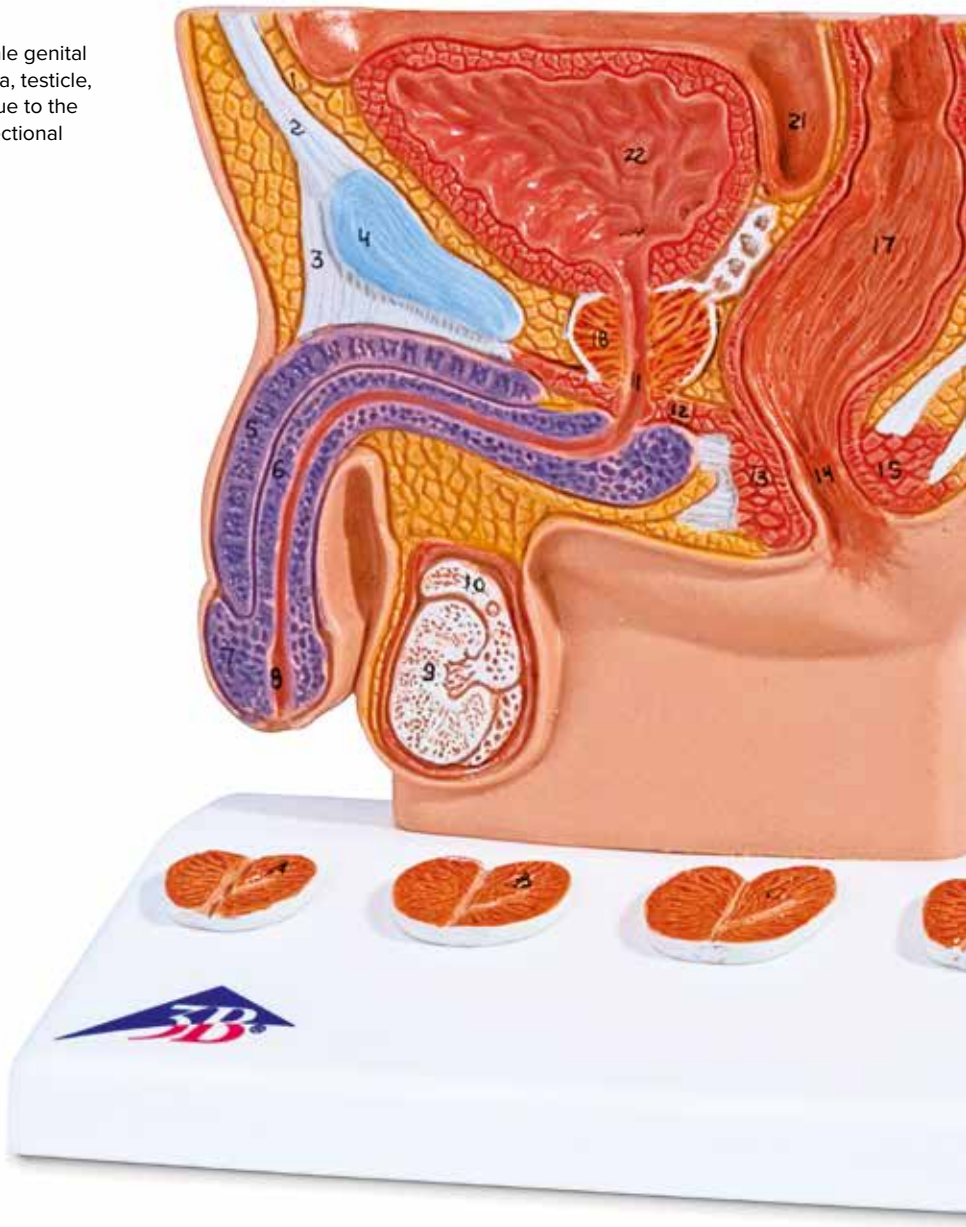


› IDEAL FOR THE CLASSROOM!

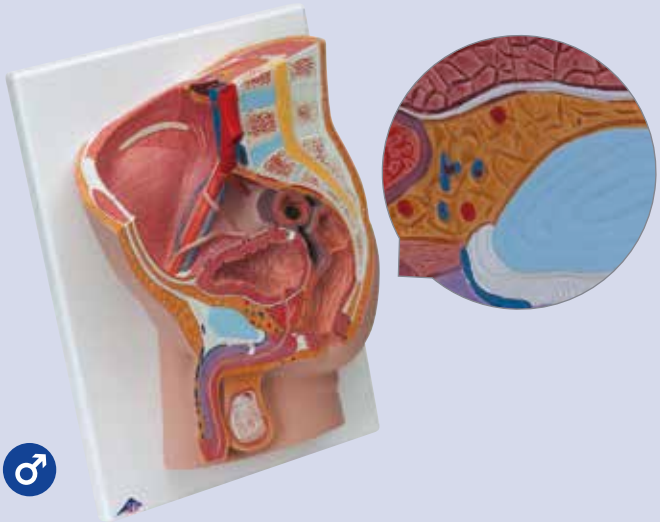
Life-Size Female Pelvis, 2-part
This female pelvis is in median section. It shows one half of the female genital organs with bladder and removable rectum. The female pelvis is delivered on baseboard offering the possibility to be mounted to the wall for easy display.
41x31x20 cm; 2.2 kg
B-1000281



Prostate Model, 1/2 Life-Size
This prostate model provides a cross section of the male genital organs showing a healthy prostate with bladder, urethra, testicle, symphysis and rectum. The narrowing of the urethra due to the change of the prostate is made clear via the 4 cross sectional views on the base of the prostate model.
13.5x10x14 cm; 0.24 kg
B-1000319



Male Reproductive System Model Activity Set
Helps learners discuss topics such as prostate cancer, vasectomies and sterility. Model depicts all male reproductive organs in relationship to one another, as well as a greatly magnified section of the sperm. Description in English.
61x45 cm
B-1005482



Life-Size Male Pelvis, 2-part
The male pelvis anatomy model is shown in median section. One half of male genital organs with bladder, shown at the normal position in the male pelvis. The rectum is removable for a more detailed study of the male pelvic anatomy. Delivered on baseboard offering the possibility to be mounted to the wall.
41x31x17 cm; 2.5 kg
B-1000282

PREGNANCY AND BIRTH

› REALISTIC AND HIGH QUALITY

Pregnancy Pelvis, 3-part
This anatomy model is a representation of a median section through the female pelvis at 40 weeks pregnant with a removable foetus. Study or demonstrate the normal position of baby before birth with this model plus the human reproductive and urinary systems. A uterus with embryo in 3rd month of pregnancy is mounted on base for added detail and comparison. The realistic and high quality female pelvis includes the female genital organs and other important anatomical details.
38x25x40 cm; 3.8 kg
B-1000333

Embryonic Development Model in 12 Stages
Represents development of the human germ cells from fertilisation until the end of the 2nd month of pregnancy in 12 stages. Each stage can be removed from the base individually:

1. Ovum at time of fertilisation (conception) with male gamete (sperm)
2. Zygote at 2-cell stage, approx. 30 hours after fertilisation
3. Zygote at 4-cell stage, after around 40 – 50 hours
4. Zygote at 8-cell stage, after around 55 hours
5. Morula
6. Blastocyst after around 4 days
7. Blastocyst after around 5 days
8. Blastocyst after around 8 – 9 days
9. Germ cells at approx. 11th day
10. Germ cells at approx. 20th day
11. Embryo at around the end of the 1st month of pregnancy
12. Embryo at around the end of the 2nd month of pregnancy

65x34.5x6 cm; 1.55 kg
B-1001257

Basic Pregnancy Series – 5 Models
This series consists of five models mounted on one base to show the most important stages of development: 1st month, 2nd month, 3rd month, 5th month, 7th month. The 5th and 7th month stages have detachable fetuses.
13x41x31 cm; 2.1 kg
B-1018633

Stages of Fertilization of the Embryo – 2 times Life-Size
This model illustrates schematically how the ovum matures, how ovulation and fertilization occur and how the fertilised ovum develops to the stage where it embeds itself in the womb wall to begin the growth into an embryo. The various stages are shown in larger-than-life model form in an ovary, fallopian tube and womb. An even more enlarged illustration of each is also printed on the base.
35x21x20 cm; 1.20 kg
B-1000320

Labour Stages Model
These models are an anatomically detailed representation of human birth. The birth models are supplied on one baseboard, included stages:
- Fetus in womb, cervix closed
- Fetus in womb, cervix open
- Fetus in womb, start of headpassage
- Fetus in womb and pelvis, finish of head passage
- Placenta in the womb

40x31x13 cm; 1.36 kg
B-1001259

Deluxe Pregnancy Series, 8 Models
Study human development from the 4th week through the 7th month. Our most popular series includes eight models to show the complete stages of development. All embryo or foetus models are shown in different typical positions in the uterus and each is mounted separately on an individual stand. The five later stages of development allow the foetus to be removed.
B-1018627

Deluxe Pregnancy Series, 9 Models
Includes all models above plus the model of an embryo of approx. 4 weeks old, at 25 times life-size.
B-1018628

Human Embryo Model – 25 times Life-Size
This human embryo model shows the anatomy of an embryo at approximately 4 weeks old and includes numbered details.
12x12x23 cm; 0.30 kg
B-1014207

CONTRACEPTION

› CONTRACEPTIVES FOR DEMONSTRATION PURPOSES

Training Model for a Female Condom
This model shows the labia and vagina up to the cervix in a simplified representation for didactic reasons, and is used for demonstrating and learning the insertion of a female condom. Supplied with three Femidom condoms.

Training Model for a Female Condom (dark skin tone)
B-1000338

Training Model for a Female Condom (white skin tone)
B-1000339

Intra-Uterine Device
Intra-uterine device with flexible side arm to provide especially firm hold inside the womb. Suitable for demonstration purposes. Such devices should only ever be inserted by qualified gynaecologists.
B-1008817

Female Pelvis Contraceptive Model
This female contraceptive model, made from soft BIO*like*™ material, provides a cross-section of a female pelvis for demonstrating proper contraceptive insertion. The side cutout lets viewers see and understand contraceptive placement and removal from the female genitals. Contraceptives not included).
B-1017935

I.U.D Trainer
This anatomically accurate model represents a section of the uterus, ovaries and fimbrae. The uterus is covered by a clear plastic window to allows easy visualization of insertion and placement of I.U.D. (I.U.D. not included).
B-1005825

Intra-Uterine Device – Demonstration Model
Demonstration and practice model to demonstrate correct positioning of an intra-uterine device inside the uterus. Made of durable plastic, the model features a transparent cover which allows easy visualization of insertion and placement of an I.U.D. (I.U.D. not included).
Dimensions: approx. 6x40x45 cm^3
B-1005766

Additionally required:
B-1008817 Intra-Uterine Device

Teaching Case "10 Contraceptives"
Graphic teaching material for sex education in schools, out of school youth employment and adult education. The contraceptive case was designed and developed from practical experience. It is suitable for educating about current contraceptives and contains the following items:
1 Polystyrene penis
24 Condoms
5 Female condoms
2 Sample packages of pills
1 Intra-uterine device
1 Cervical cap
1 Diaphragm spermicide gel
1 Applicator for diaphragm spermicide gel
1 Diaphragm
1 Period calendar
B-1020590

Additionally recommended:
B-1019307 Set of 12 Condoms

HI Virus, Model
This model of the human immunodeficiency virus (HIV), enlarged millions of times, shows the outer lipid membrane with protein structures, and the internal nucleus which contains the viral hereditary matter (RNA). The nucleus is removable. Mounted on base.
Dimensions: approx. 18x13x13 cm^3
Weight: approx. 0.7 kg
B-1000336

Condom Demonstration Model
Demonstrate the proper use of condoms by using this realistic model. Consists of an erect penis mounted on a stand, 12 condoms, syringe and artificial semen (UV-fluorescent fluid) to simulate ejaculation. Delivered with carrying bag.
Dimensions:
approx. 35.5x15x16.5 cm^3
Weight: approx. 2.3 kg
B-1005560

Consumables:
B-1019307 Set of 12 Condoms
B-1005561 Artificial Semen (fluid which fluoresces under UV light)

Condom Training Models
This economic set consists of 20 polystyrene penis models, and provides a means of practising the correct use of condoms, even in large groups. The reusable models can be fixed to the desktop with adhesive tape, so that both hands are free for rolling the condom into position. Delivered without condoms.
Length: approx. 14.5 cm
B-1005115

Additionally required:
B-1019307 Set of 12 Condoms

Set of 12 Condoms
12 dry condoms with fine powder coating.
B-1019307

Artificial Semen (not shown)
UV-fluorescent fluid, 250 ml.
B-1005561

Condom Training Model
This model of an erect penis with testicles is used to learn how to use a condom safely. The anatomical structures and its firmness are absolutely realistic, so that your students can train putting on and removing a condom in a realistic way. Supplied with 12 dry training condoms and a carrying bag.

Condom Training Model (dark skin tone)
B-1000341

Condom Training Model (white skin tone)
B-1000340

BABY CARE MODELS

The original manikin that simulates a baby's varying needs!

Ready-or-Not Tot® – Dolls
Take the glamour out of teen pregnancy and demonstrate the realities of the real world to your students. Characteristics of Standard Ready-or-Not Tot®:

- Offers three different tending programs typical of most babies, to simulate normal baby-tending needs along with fussy periods in each program.
- Provides programmed tending events that are unpredictable to the student, but easy for the teacher to monitor, unlike other simulators.
- Cries, coos, and burps in response to appropriate care. Programs are 48 hours in length and run continuously.
- Includes a "demo" option.
- Demands student's attention for periods of 5 minutes to 30 minutes for each tending occurrence.
- There are 25 – 27 tending occurrences within each 48-hour time frame (for total of 7 hours of care).
- Provides teacher with complete control of the child care experience.
- Includes a "panic" key for quieting difficulties without discontinuing the entire simulation.
- Alerts teacher to a student's abuse, panic, or tampering with the control box.
- Newborn-size doll represents a baby of a teen mom – 2.7 Kilo, 52 cm long.
- Anatomically correct.

Comes complete with one set of student keys, one set of teacher keys, reproducible parental consent form/permission slip, reproducible student response sheet, teacher correction template, diaper, 9V battery, and instructions.

Standard Ready-or-Not Tot® – White Male
B-1017931

Standard Ready-or-Not Tot® – White Female
B-1017932

Standard Ready-or-Not Tot® – Black Male
B-1018137

Standard Ready-or-Not Tot® – Black, Female
B-1018138

Baby Care Models
This cute baby-doll is ideal for training the main principals of baby care at school and in preparation courses for young parents. This basic doll allows dressing, undressing, washing and changing diapers. Due to the realistic size of a newborn infant you can use ordinary baby clothes. The doll has movable joints and its eyes are slightly opened.

Baby Care Model, Male
B-1005088
Baby Care Model, Female
B-1005089

Asian Baby Care Model, Male
B-1005090
Asian Baby Care Model, Female
B-1005091

African-American Baby Care Model, Male
B-1005092
African-American Baby Care Model, Female
B-1005093

Baby Bottle Tooth Decay Model
Cast from a child's mouth, this hinged model shows that the sugars that coat a baby's mouth while sleeping with a bottle can cause dental disease. Comes with a coordinating tear pad. The 21.6x27.9 cm^2 tear pad is English on one side and Spanish on the other and has 100 sheets per pad.
Dimensions: approx. 6x4x5 cm^3
B-1018302

Progression of Baby Bottle Tooth Decay Display
This model serves as a graphic reminder to parents of the damaging tooth decay that can occur if a baby or young child is put to bed with a bottle of juice, breastmilk, formula, or any other liquid containing sugar. Mounted on plastic base.
Dimensions: approx. 27x8x8 cm^3
B-1018298

DENTAL AND ORAL HYGIENE

Dental Disease, Magnified 2x, 21-part
The dental disease model is based on a lifelike illustration of a lower jaw with 16 removable teeth of an adult magnified two times. One half of the dental disease model shows eight healthy teeth and healthy gums. The other half of the model shows the following dental diseases: Dental plaque, dental calculus (tartar), periodontitis, inflammation of the root, fissure, approximal and smooth surface caries.
One part of the front bone section can be removed from the dental disease model to view the roots, vessels and nerves. Two molars are sectioned along the length to show the inside of the tooth. Delivered on a base.
Dimensions: approx. 25.5x18.5x18cm^3
B-1000016

Lower Twin-Root Molar Showing Cavities, 2-part
This set is a demonstration of an adult molar with a double root showing advanced decay along its lengthways cross-section. Mounted on a stand from which it can be removed.
Dimensions: approx. 23x17x17 cm^3
Weight: approx. 0.6 kg
B-1000243

Giant Molar with Dental Cavities, 15 times Life-Size, 5-part
This giant molar model depicts an upper triple-root molar and separates into 5 parts. The molar features a longitudinal section through the crown, two roots and the pulp cavity. The giant molar contains removable pulp and three tooth inserts with different stages of advanced cavities. On stand.
Dimensions: approx. 24x12x13 cm^3
Weight: approx. 1.5 kg
B-1013215

Giant Dental Care Model, 3 times Life-Size
This giant dental care model, large enough to be seen from the back of a classroom, shows the upper and lower half of an adult's dentition. A flexible joint between the jaws allows easy movement of the dental care model. Teach kids the proper teeth cleaning techniques using the giant toothbrush included with this dental care model.
Dimensions: approx. 18x23x12 cm^3
Weight: approx. 1.5 kg
B-1000246

Replacement Toothbrush for Giant Dental Care Model
Replacement part for B-1000246.
Length: approx. 36.5 cm
B-1020738

FIRST AID

With cardiac failure as one of the leading causes of death, let Basic*Billy*™ show that it is not difficult to provide help and save lives through correct cardiac massage and ventilation technique.

Scientific basis:
Basic*Billy*™ provides students with results regarding force and depth of compression during cardio-pulmonary resuscitation. The optimum values for force and compression have been statistically determined for adults and children and worked into the product design.
Basic*Billy*™ meets the latest guideline regulations of the European Resuscitation Council (ERC) and the American Heart Association (AHA) regarding heart-lung resuscitation

Basic*Billy*™
The basic life-support simulator Basic*Billy*™ is suitable both for broad education in schools, clubs and first-aid courses and for medical training. You benefit from the following features:
- Torso with shoulders and essential anatomical features for finding the ideal pressure point for heart compression massage
- Head with breathing tract for mouth-to-mouth and mouth-to-nose resuscitation
- The head can be stretched out to free the respiratory tract
- Resuscitation via masks is also possible
- Realistic force of reaction from the chest of an adult or child thanks to two easily replaceable springs
- Realistic compression depth of 5 – 6 cm (adult) and 4 – 4.5 cm (child) prepare those performing the exercises for authentic human responses
- Audible signal when the correct compression depth is reached
- Inexpensive disposable respiratory tracts ensuring hygienic usage and easy cleaning and maintenance of the simulator
- The high quality of the materials and product ensure functionality and durability even under major stress
- Developed and manufactured in Germany

Contents:
1 Basic body with removable chest
2 Springs (red = adult; green = child)
2 Telescopic guides (red = adult; green = child)
2 Face masks
1 Torso skin
2 Face skin pieces and holder for lung bags
10 Lung bags (5 x adult; 5 x child)
1 Disinfectant solution
1 Carrying bag
Dimensions: approx. 60.5x35.5x19 cm^3
Weight: approx. 2.36 kg

Basic Life Support Simulator Basic*Billy*™, Light Skin
B-1012793

Basic Life Support Simulator Basic*Billy*™, Dark Skin
B-1017679

CPR*Lilly*™ – Reliable to use in any CPR training course.

For training in cardio-pulmonary resuscitation. CPR*Lilly*™ is designed in accordance with current guidelines from the American Heart Association (AHA) and the European Resuscitation Council (ERC).

› CPR*Lilly*PRO™ – YOUR IDEAL CHOICE FOR PROFESSIONAL CPR TRAINING

CPR*Lilly*PRO™
CPR*Lilly*PRO™ including the training tablet is the best choice for your professional CPR training courses. Using the software, you can guide the exercises and control the simulator, creating highly realistic training scenarios. All the relevant parameters can be monitored comfortably and easily via the tablet provided, and stored away for subsequent analysis. Trainers and trainees will very quickly attain the chosen training target via the direct feedback feature.
Displayed feedback parameters on the included training tablet:
- Compression depth
- Compression frequency
- Hand position
- Head tilt
- Respiration volume/speed (combined)
- Respiration pressure

Dimensions: approx. 78x39x26 cm^3
Weight: approx. 9 kg

CPR*Lilly*PRO™, with Tablet, Light Skin
B-1017773

CPR*Lilly*PRO™, with Tablet, Dark Skin
B-1017775

CPR*Lilly*™
CPR*Lilly*™ offers realistic requirements for first-aid training. The carotid pulse and eye movement can be controlled individually by hand. You benefit from the following features:
- The upper body, dressed in everyday clothing with a zip jacket, shows all the important anatomical reference points.
- Head with breathing tract for mouth-to-mouth and mouth-to-nose resuscitation
- Resuscitation via masks is also possible
- The head can be stretched out to free the respiratory tract
- Movable jaw for use of jaw thrust manoeuvre.
- Individual carotid pulse.
- CPR*Lilly*™ can react to the trainee by opening her eyes when spoken to.
- Realistic force of reaction from the chest of an adult
- Realistic compression depth of 5 – 6 cm (adult) prepare those performing the exercises for authentic human responses. A tone (which can be deactivated) will sound, when the correct compression depth is reached.
- Use of disposable air bags and an isolated air chamber system makes using CPR*Lilly*™ hygienic and highly economical over a long period. The face masks can be cleaned and exchanged easily
- All material used throughout the production process complies with the highest standards in terms of quality and durability, and is non-hazardous.
- Developed and manufactured in Germany.

Dimensions: approx. 78x39x26 cm^3
Weight: approx. 8 kg

CPR*Lilly*™, Light Skin
B-1017772

CPR*Lilly*™, Dark Skin
B-1017774

PREVENTING ADDICTION

Smokey Sue – "The Dangers of Smoking"
Smokey Sue dramatically demonstrates the quantity of tar collected in the lungs when a single cigarette is smoked. The tar, normally inhaled directly into the lungs, is collected in a transparent tube, and thus shows the quantity of tar which reaches the lungs with each cigarette very clearly. Delivered with stand, 3 collection tubes, and carrying bag.
Dimensions: approx. 15x35.5x16.5 cm^3
Weight: approx. 1.15 kg
B-1005565

Smokey Sue Smokes For Two
As Smokey Sue smokes a cigarette, tar collects around the lifelike model of a 7-month-old fetus, graphically showing the pollutants that can reach a developing baby. Jar and fetus are easy to clean.
Dimensions: approx. 15x35.5x16.5 cm^3
B-1020793

Tobacco Ingredients Display
The toxic chemicals found in tobacco smoke are more easily remembered by associating them with common – and grossly unappealing – substances. This eye-catching, plexiglas, 3D display resembles a cigarette yet allows viewers to see what is really inside tobacco smoke. Comes with a two-sided tent card that can be used with adults or children.
Dimensions: approx. 63x9 cm^2
B-1020791

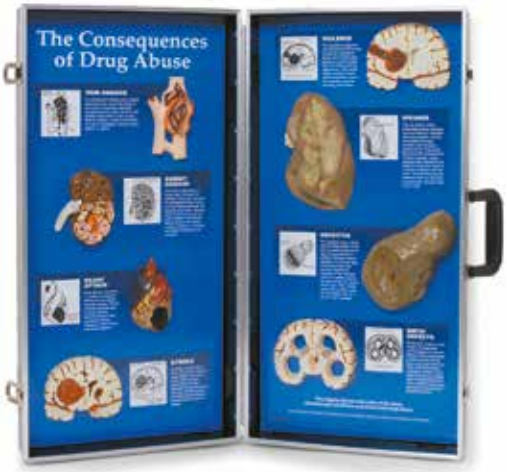
A Year's Worth of Tar
This graphic, sealed exhibit, containing a pack of cigarettes and cigarette butts submerged in gooey tar, represents the amount of carcinogenic liquid a one-pack-a-day smoker put into his/her lungs over the course of a year.
B-1005578

Effects of Smoking Activity Model
Graphically demonstrate the impact of smoking on the lungs. Give your students a firsthand view of how tar and other pollutants accumulate in the lungs during smoking. Simply place a lit cigarette that you provide in the mouth of the "Smoking Man" and draw smoke into his "lungs" using the syringe pump included. The results will amaze you as you watch his lungs start to darken after only a few short puffs! Includes detailed teacher and student guides that provide extensive background information on the dangers of smoking.
B-1005932

3D Information Boards
Detailed boards with hand-painted models clearly showing the consequences of drug, alcohol or tobacco abuse on our organs. The brief explanations in English are ideal for lessons. In carrying case. Dimensions: approx. 71x68 cm^2

Consequences of Smoking, 3D Info Board
B-1005580

Consequences of Alcoholism, 3D Info Board
B-1005582



Consequences of Drug Abuse, 3D Info Board
B-1005583

A New Dimension in Courses to Explain the Dangers of Drunk Driving

Goggles for Simulating Drunk Driving
The state of being drunk and how that affects vision and co-ordination can be extremely effectively, realistically and intensely simulated by wearing these goggles. Young people in particular will unavoidably become aware of the danger that comes from drinking and driving. Supplied with case.
B-1005576

Smoker Model
This small hand-held model actually smokes a cigarette and collects the tar and nicotine on a photo of a real chest X-ray of a lung cancer victim. Stained prints fit into plastic bags, keeping stains intact when they are passed around for closer inspection. Dimensions: approx. 13x29x6 cm^3
B-1005577

Replacement Tube for Smoker Model
B-1012433

Set of 100 Replacement Bags for Smoker Model
B-1015570

VERTEBRATES, MAMMALS

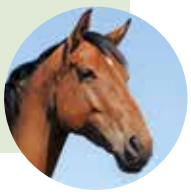
Advantages of 3B Scientific® Animal Specimens
+ Completely genuine animal specimens
+ No animals have been bred or killed solely for the purpose of making these specimens
+ Only adult animals with closed epiphyseal plates used
+ Origin and preparation of animals conform to legal stipulations
+ Expert European manufacture, professionally prepared
+ No risk of infection due to infectious zoonotic pathogens (certified)
+ Depiction of natural animal anatomy
+ All bones, no matter how tiny are mounted
+ No yellowing
+ Perfect for lessons on comparative anatomy, e.g. animals – humans

Note:
Shape, dimensions, weight and number of bones may vary

Horse (Equus ferus caballus)

Taxonomy:
Class: Mammals
Order: Odd-toed ungulates
Family: Horses
Diet: Herbivore
Size: approx. 50 – 200 cm
Weight: approx. 100 – 1200 kg
Age: approx. 20 – 50 years
Skeleton: approx. 252 individual bones

Dentition formula:
Number: 36 – 44
Incisors (I): 3/3
Canines (C): 0-1/0-1
Premolars (P): 3-4/3-4
Molars (M): 3/3



Horse Skeleton (Equus ferus caballus)
The real bone specimen of an adult horse is composed of approximately 252 individual bones. It represents a typical example of the order of odd-toed ungulates. There are only minimal differences in body plan between the different breeds of horses. You can choose between a female or a male item. The skeleton is mounted on a moveable base plate.
Length: approx. 250 – 300 cm
Width: approx. 60 – 70 cm
Height at withers: approx. 140 – 170 cm
Weight: approx. 170 – 200 kg

♀ **Horse Skeleton (Equus ferus caballus), Female, Specimen**
B-1021002

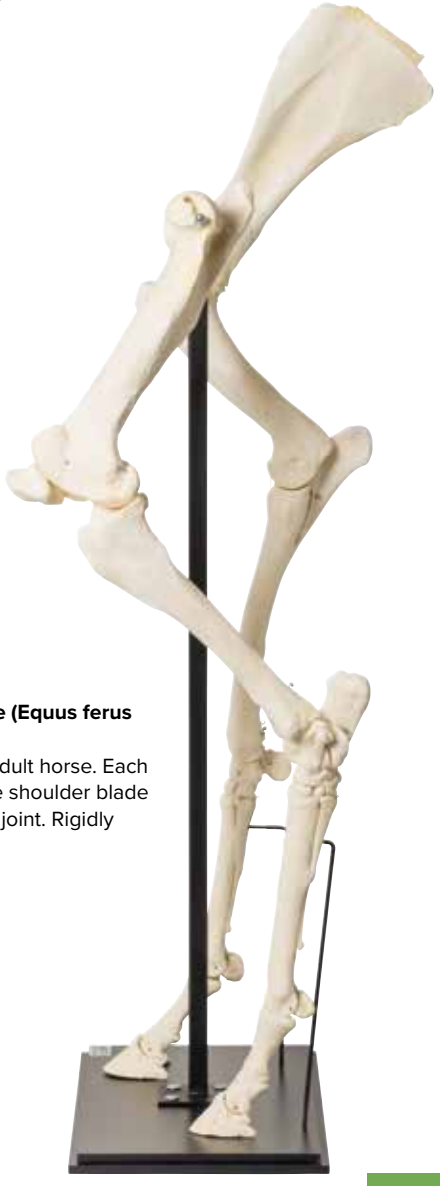
♂ **Horse Skeleton (Equus ferus caballus), Male, Specimen**
B-1021003

Horse Skull (Equus ferus caballus), Specimen
Bone specimen of a horse skull consisting of approximately 37 individual bones, which are rigidly connected to each other. All the teeth are firmly attached to the jaws.
Length: approx. 60 cm
B-1021006

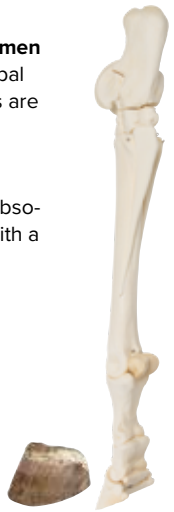
Half Horse Skull (Equus ferus caballus), Specimen
Longitudinal section through the real skull of an adult horse. Clearly visible are the size of the nasal bone, the nasal concha, the frontal sinus and cranial cavities as well as the maxillary sinus and nasal cavities.
Length: approx. 60 cm
B-1021008

› More genuine animal skeletons and skulls at 3bscientific.com

Horse Hoof (Equus ferus caballus), Plastinated Slice
Longitudinal section through a real horse hoof encapsulated in acrylic glass. The plastinate enables the observation of complex anatomical structures and thus opens up completely new insights into fundamental functional relationships.
Dimensions: approx. 20x16x2.3 cm^3
Weight: approx. 1 kg
B-1005381



Horse Foot and Hoof (Equus ferus caballus), Specimen
Prepared, real, front or hind horse foot up to the carpal joint or tarsal joint respectively. The individual bones are rigidly connected to each other. The hoof capsule is supplied separately with the foot.
Note:
In order to reduce “consumption of material” to an absolute minimum, your order will generally be fulfilled with a front or hind foot chosen at random.
B-1021051



Front and Hind Legs of a Horse (Equus ferus caballus), Specimen
Real bone specimens from an adult horse. Each front leg up to and including the shoulder blade and each hind leg up to the hip joint. Rigidly mounted on a base plate.
B-1021052

Domestic Pig (Sus scrofa domesticus)

Taxonomy:
Class: Mammals
Order: Even-toed ungulates
Family: Real pigs
Diet: Omnivore
Size: approx. 120 – 180 cm
Weight: approx. 50 – 150 kg
Age: 8 – 12 years
Skeleton: approx. 223 individual bones

Dentition formula:
Number: 44
Incisors (I): 3/3
Canines (C): 1/1
Premolars (P): 4/4
Molars (M): 3/3

Domestic Pig Skeleton (Sus scrofa domesticus)
Prepared, real skeleton of an adult domestic pig consisting of approximately 223 individual bones, which are rigidly connected to each other. It is a typical representative of the order of even-toed ungulates. The choice between a female or a male item is available. The skeleton is mounted on a moveable base plate.
Length: approx. 1.30 – 1.50 cm
Width: approx. 40 – 50 cm
Height: approx. 75 – 90 cm
Weight: approx. 75 – 120 kg

Domestic Pig Skull (Sus scrofa domesticus)
Bone specimen of a real domestic pig skull with all the typical characteristics of a pig's head. The choice between the skull of a female or a male domestic pig is available. The skull of the male pig is shorter but wider than that of the female animal.
Length: approx. 30 cm

Domestic Pig Skull (Sus scrofa domesticus), Female, Specimen
B-1021000

Domestic Pig Skull (Sus scrofa domesticus), Male, Specimen
B-1021001

Domestic Pig Skeleton (Sus scrofa domesticus), Female, Specimen
B-1020996

Domestic Pig Skeleton (Sus scrofa domesticus), Male, Specimen
B-1020998

Series of Microscope Slides "Pig Embryology (Sus scrofa)"
10 microscope slides. For details see page 64 or 86.
B-1003987

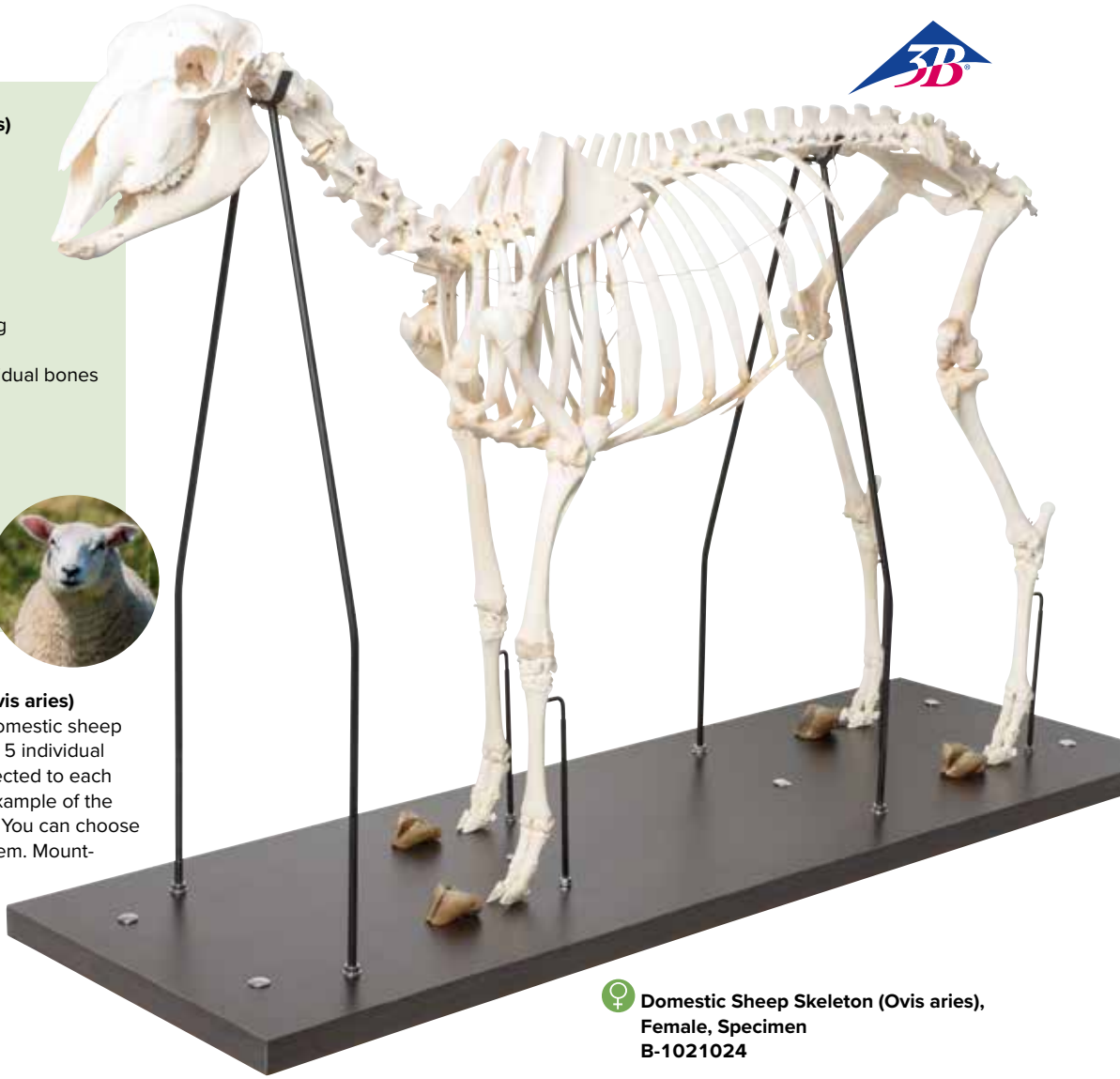
Domestic Pig Foot (Sus scrofa domesticus), Specimen
Real bone specimen of the foot of a domestic pig. All bones from the heel bone to the four toes are fully prepared and connected in an anatomically correct manner.
B-1021064

Domestic Pig Foot (Sus scrofa domesticus), Plastinated Slice
The plastinated slice shows a section through a real pig's foot encapsulated in acrylic glass. The internal structure of the bones, the tissue structure and the arrangement of the tendons are very easily identifiable.
Dimensions: approx. 20x10x2.3 cm^3
Weight: approx. 0.8 kg
B-1005382

Domestic Sheep (Ovis aries)

Taxonomy:
Class: Mammals
Order: Even-toed ungulates
Family: Bovids
Diet: Herbivore
Size: approx. 100 – 190 cm
Weight: approx. 50 – 100 kg
Age: 10 –18 years
Skeleton: approx. 215 individual bones

Dentition formula:
Number: 32
Incisors (I): 0/3
Canines (C): 0/1
Premolars (P): 3/3
Molars (M): 3/3



Domestic Sheep Skeleton (Ovis aries)
Prepared, real skeleton of a domestic sheep consisting of approximately 215 individual bones, which are rigidly connected to each other. It represents a typical example of the order of even-toed ungulates. You can choose between a male or a female item. Mounted on a base plate.
Length: approx.
100 – 120 cm
Width: approx. 30 – 40 cm
Height at withers: approx.
60 – 70 cm
Weight: approx. 54 – 60 kg

♀ **Domestic Sheep Skeleton (Ovis aries), Female, Specimen**
B-1021024

♂ **Domestic Sheep Skeleton (Ovis aries), Male, Specimen**
B-1021025

Sheep Skull (Ovis aries), Replica
Fully developed sheep skull, cast from nature, with removable lower jaw.
Made of unbreakable plastic.
Length: approx. 25 cm
B-1005105

Domestic Sheep Skull (Ovis aries)
Skull specimen of a domestic sheep made of real bones. Typical for a ruminant is the absence of the upper incisor and canine teeth and their replacement with a palatal plate. You have the choice of a male or a female skull.
Length: approx. 30 cm

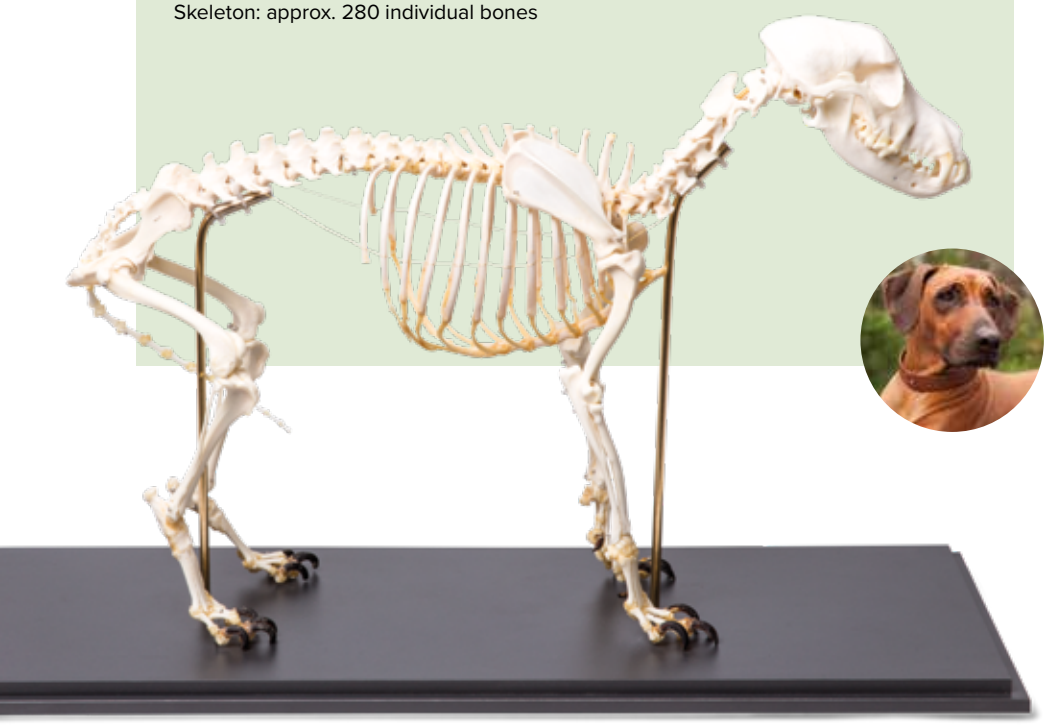
♀ **Domestic Sheep Skull (Ovis aries), Female, Specimen**
B-1021028

♂ **Domestic Sheep Skull (Ovis aries), Male, Specimen**
B-1021029

Domestic Dog (Canis lupus familiaris)

Taxonomy:
Class: Mammals
Order: Predators
Family: Dogs
Diet: Carnivore
Size: approx. 20 – 85 cm
Weight: approx. 1 – 70 kg
Age: 7 –18 years
Skeleton: approx. 280 individual bones

Dentition formula:
Number: 42
Incisors (I): 3/3
Canines (C): 1/1
Premolars (P): 4/4
Molars (M): 3/3



Dog Skeleton (Canis lupus familiaris)
The skeletons of domestic dogs are prepared from real bones and consist of approximately 280 individual bones that have been reassembled and mounted on a wooden base. You can choose between two variants. The bones of the rigidly mounted skeleton are firmly attached to each other for better stability. The flexibly mounted skeleton is particularly suitable for learning and understanding the locomotory system of a dog. The legs of the dog are movably attached to its torso. The dog skeleton is supplied in two sizes: M and L. The delivery time for size L may vary considerably from the average, depending on availability.
Size M:
Length: approx. 40 – 55 cm
Weight: approx. 4 – 4.5 kg
Size L:
Length: approx. 55 – 75 cm
Weight: approx. 4.5 – 5.5 kg

Dog Skeleton (Canis lupus familiaris), Size M, Specimen
B-1020988

Dog Skeleton (Canis lupus familiaris), Size L, Specimen
B-1020989

Dog Skeleton (Canis lupus familiaris), Size M, Flexibly Mounted, Specimen
B-1020990

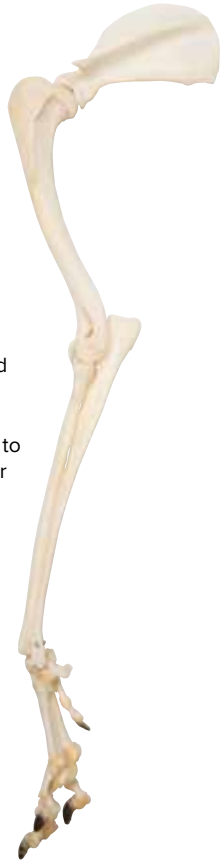
Dog Skeleton (Canis lupus familiaris), Size L, Flexibly Mounted, Specimen
B-1020991

Dog Skull (Canis lupus familiaris)
Real skull of an adult domestic dog with movable jaw. You can choose between sizes M and L.
Skull length:
Size M: approx. 17.5 cm
Size L: approx. 22.5 cm

Dog Skull (Canis lupus familiaris), Size M, Specimen
B-1020994

Dog Skull (Canis lupus familiaris), Size L, Specimen
B-1020995

Dog Skull (Canis lupus familiaris), Replica
Medium-sized dog skull, cast from nature, with removable lower jaw. Made of unbreakable plastic.
Length: approx. 19 cm
Weight: approx. 0,3 kg
B-1005104

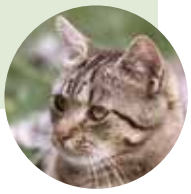


Dog Leg (Canis lupus familiaris), Specimen
Prepared, real front or hind leg of a dog.
Note: In order to reduce “consumption of material” to an absolute minimum, your order will generally be fulfilled with a front or hind leg chosen at random.
B-1021059

Domestic Cat (Felis catus)

Taxonomy:
Class: Mammals
Order: Predators
Family: Cats
Diet: Carnivore
Size: approx. 50 – 60 cm
Weight: approx. 2 – 8 kg
Age: 10 – 18 years
Skeleton: Up to approx. 240 individual bones

Dentition formula:
Number: 30
Incisors (I): 3/3
Canines (C): 1/1
Premolars (P): 3/2
Molars (M): 1/1



Cat Skull (Felis catus), Specimen
Real skull of an adult domestic cat with movable jaw. The shape of the skull may vary depending on the breed.
Length: approx. 10 cm
B-1020972

Cat Skeleton (Felis catus)
Prepared skeleton of a real domestic cat consisting of more than 230 bones (depending on the length of tail tail) mounted on a wooden base. You can choose between two variants. The bones of the rigidly mounted skeleton are firmly attached to each other for better stability. The flexibly mounted skeleton is particularly suitable for learning and understanding the locomotory system of a cat.
Length: approx. 50 – 70 cm
Width: approx. 27 – 35 cm
Height: approx. 40 – 60 cm
Weight: approx. 3.6 – 4.5 kg

Cat Skeleton (Felis catus), Specimen
B-1020969

Cat Skeleton (Felis catus), Flexibly Mounted, Specimen
B-1020970

Great Apes

Taxonomy:
Class: Mammals
Order: Primates
Family: Great apes
Diet:
Western gorilla (Gorilla gorilla): Omnivore
Common chimpanzee (Pan troglodytes): Omnivore
Bornean orangutan (Pongo pygmaeus): Herbivore

Dentition formula:
Number: 32
Incisors (I): 2/2
Canines (C): 1/1
Premolars (P): 2/2
Molars (M): 3/3

Primate Skulls, Replicas
Primate skulls particular suitable for comparative studies. With detailed description of distinctive features. The templates for the castings were original skulls belonging to the collections of the Johann Wolfgang Goethe University of Frankfurt am Main (chimpanzee) and the Senckenberg Research Institute and Natural History Museum in Frankfurt am Main (orangutan, gorilla). Natural cast made from unbreakable plastic.

♂ **Gorilla Skull (Gorilla gorilla), Male, Replica**
Dimensions: approx. 26x16.5x19.5 cm^3
Weight: approx. 0.8 kg
B-1001301

♀ **Chimpanzee Skull (Pan troglodytes), Female. Replica**
Dimensions: approx. 17x11.5x14 cm^3
Weight: approx. 0.5 kg
B-1001299

♂ **Orangutan Skull (Pongo pygmaeus), Male, Replica**
Dimensions: approx. 22x16x18 cm^3
Weight: approx. 0.6 kg
B-1001300

Domestic Rabbit (Oryctolagus cuniculus var. domestica)

Taxonomy:
Class: Mammals
Order: Lagomorphs
Family: Leporids
Diet: Herbivore (browser)
Size: approx. 20 – 45 cm
Weight: approx. 1 – 4 kg
Age: approx. 10 years
Skeleton: approx. 210 individual bones

Dentition formula:
Number: 28
Incisors (I): 2/1
Canines (C): 0/0
Premolars (P): 3/2
Molars (M): 3/3

Rabbit Skull (Oryctolagus cuniculus var. domestica), Specimen
Bone specimen of the skull of an adult domestic rabbit with movable jaw. The typical features of a rabbit skull, fine bone lamellae, are clearly visible.
Length: approx. 10 cm
B-1020987

Rabbit Skeleton (Oryctolagus cuniculus var. domestica), Specimen
Prepared, real skeleton of an adult domestic rabbit consisting of about 210 individual bones, which are rigidly connected to each other. It represents a typical example of the order of lagomorphs. Mounted on a base plate.
Dimensions: approx. 48x11x27 cm^3
Weight: approx. 3 kg
B-1020985

Mouse and Mouse Skeleton (Mus musculus) in Display Case, Specimens
High-quality, lifelike and anatomically correct specimens of a house mouse and of a mouse skeleton, which have been prepared by technicians who have been trained at the highest level. Only in this way is it possible to ensure the durability of the specimens. In display case.
Dimensions: approx. 16x11x10 cm^3
Weight: approx. 1 kg
B-1021039

Mouse (Mus musculus)

Taxonomy:
Class: Mammals
Order: Rodents
Family: Murids
Diet: Omnivore
Size: approx. 5 – 10 cm
Weight: approx. 20 – 30 g
Age: approx. 1 – 3 years
Skeleton: approx. 145 individual bones

Dentition formula:
Number: 16
Incisors (I): 1/1
Canines (C): 0/0
Premolars (P): 0/0
Molars (M): 3/3

Rat (Rattus rattus)

Taxonomy:
Class: Mammals
Order: Rodents
Family: Murids
Diet: Herbivore
Size: approx. 10 – 28 cm
Weight: approx. 100 – 450 g
Age: approx. 1 – 3 years
Skeleton: approx. 145 individual bones

Dentition formula:
Number: 16
Incisors (I): 1/1
Canines (C): 0/0
Premolars (P): 0/0
Molars (M): 3/3

Rat (Rattus norvegicus), Plastinated Slice
Longitudinal section through a real brown rat encapsulated in acrylic glass. The plastinate enables the observation of real anatomy down to the finest detail as well as the interaction of the systems and the structure of the body.
Dimensions: approx. 20x16x2.3 cm^3
Weight: approx. 1.1 kg
B-1005385

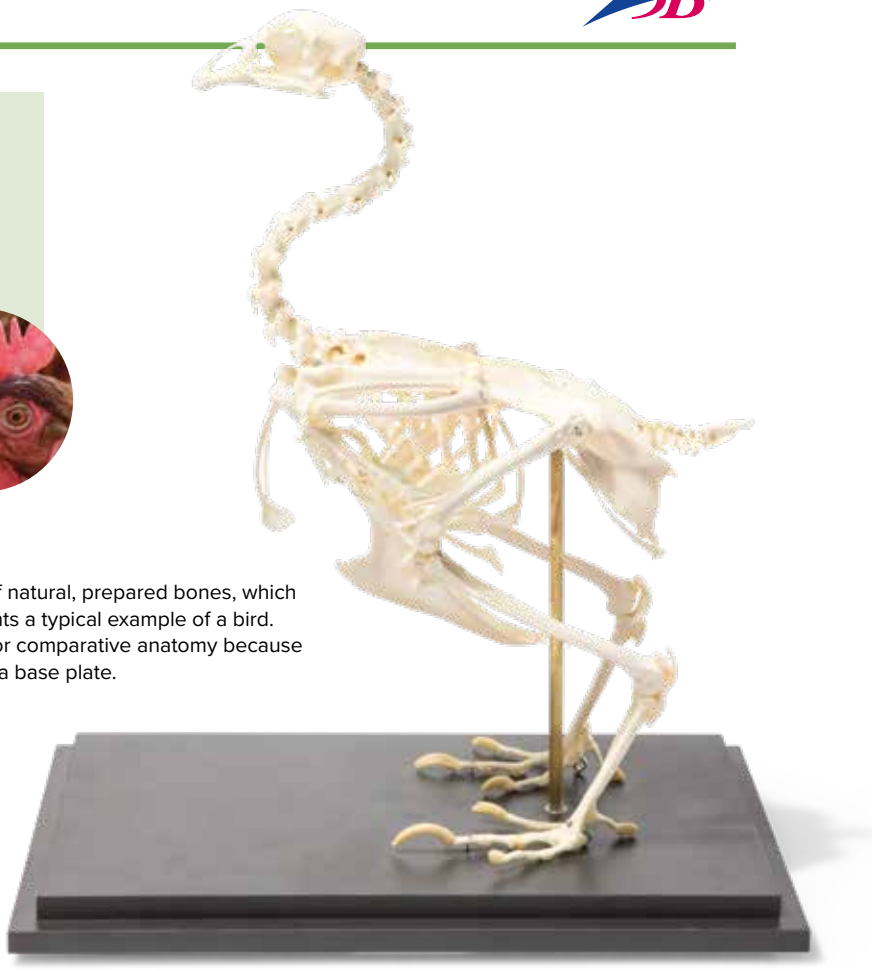
Rat Skeleton (Rattus rattus), Specimen
Bone specimen of a real rat skeleton consisting of approximately 145 individual bones, rigidly mounted on a base plate.
Length: approx. 30x12x10 cm^3
Weight: approx. 1.2 kg
B-1021036

Rat Skull (Rattus rattus), Specimen
Prepared real skull of an adult black rat.
Length: approx. 3.5 cm
B-1021038

BIRDS (AVES)

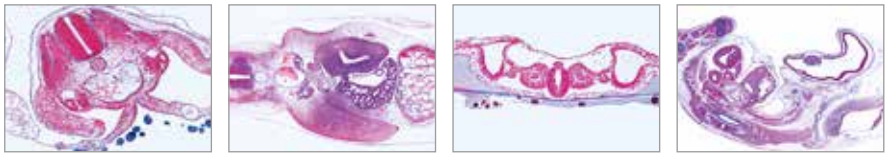
Chicken (Gallus gallus domesticus)

Taxonomy:
Class: Birds
Order: Landfowl
Family: Phasianids
Diet: Omnivore
Size: approx. 30 – 40 cm
Weight: approx. 2 – 5 kg
Age: approx. 4 – 8 years



Chicken Skeleton (Gallus gallus domesticus), Specimen
Our anatomical skeleton model of a domestic chicken consists of natural, prepared bones, which are rigidly connected to each other for better stability. It represents a typical example of a bird. The chicken skeleton is excellently suited to anatomical studies or comparative anatomy because even the smallest chicken bones are clearly visible. Mounted on a base plate.
Length: approx. 50 – 60 cm
Width: approx. 40 – 60 cm
Height: approx. 60 – 70 cm
Weight: approx. 3.5 – 4.5 kg
B-1020966

Chicken Skull (Gallus gallus domesticus), Specimen
Bone preparation of a real chicken skull. A particularly striking feature of the skull is its relatively large eye sockets.
Length: approx. 6 cm
B-1020968



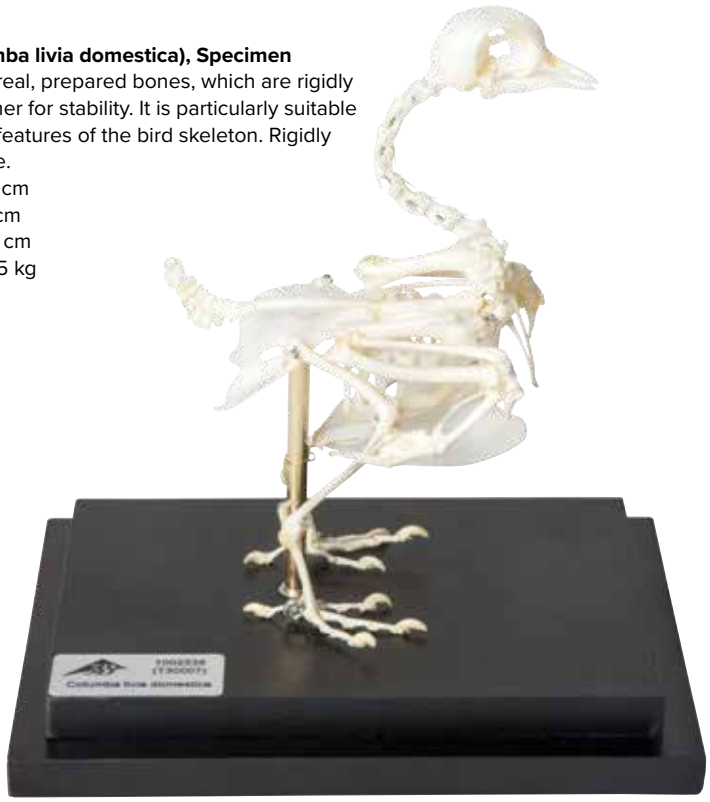
Series of Microscope Slides "Chicken Embryology (Gallus domesticus)"
10 microscope slides with English text.
1. Chicken, 24 hour, t.s. with neural groove, notochord, germ layers 2. Chicken, 36 hour, t.s. with neural tube 3. Chicken, 48 hour, l.s. with differentiation of mesoderm and ectoderm 4. Chicken, 3 day, t.s. through body showing amnion and serosa 5. Chicken, 3 day, t.s. of head with primordium of brain, eyes and heart 6. Chicken, 3 – 4 day, horizontal section of entire specimen shows primordia of organs 7. Chicken, 4 – 5 day, t.s. region of head with brain, gill arches 8. Chicken, 4 – 5 day, t.s. region of heart 9. Chicken, 8 day, sagittal l.s. through entire specimen showing embryonic organs 10. Chicken, feather development, sec. through wings.
B-1003986

Chick (Gallus gallus domesticus), Plastinated Slice
Longitudinal section through a real chick encapsulated in acrylic glass. The plastinates are created using high-quality plastics with specific refractive indices that are tailored to the suit the relevant tissue. These plastics permeate the tissue during the manufacturing process and make it transparent.
Dimensions: approx. 20x16x2.3 cm^3
Weight: approx. 1.7 kg
B-1005383

Pigeon (Columba livia domestica)

Taxonomy:
Class: Birds
Order: Columbiformes
Family: Columbids
Diet: Omnivore
Size: approx. 20 – 35 cm
Weight: approx. 180 – 350 g
Age: approx. 1 – 4 years

Pigeon Skeleton (Columba livia domestica), Specimen
Pigeons skeleton using real, prepared bones, which are rigidly connected with each other for stability. It is particularly suitable for studying the special features of the bird skeleton. Rigidly mounted on a base plate.
Height: approx. 60 – 70 cm
Width: approx. 40 – 60 cm
Length: approx. 50 – 60 cm
Weight: approx. 3.5 – 4.5 kg
B-1020982



Pigeon Wings and Feathers (Columba palumbus), Specimen
Prepared, real pigeon wing and feathers from a wood pigeon in a display case. Wing features and feathers are labelled in English. Wing divided to show primary and secondary flights.
Types of feather:
Down, flight feathers, tail feathers and coverts.
Dimensions: approx. 40x30x4 cm^3
Weight: approx. 1.4 kg
B-1021041

Pigeon Skull (Columba livia domestica), Specimen
Real, prepared pigeon skull. A striking feature of the skull is its relatively large eye sockets.
Length: approx. 5.5 cm
B-1020984

Pigeon and Pigeon Skeleton (Columba livia domestica), in Display Case, Specimens
Bone preparation of a pigeon skeleton and, for comparison, a pigeon that is prepared to be lifelike and covered with real feathers. The longevity of the specimen is assured thanks to the first-class preparation work. In display case.
Dimensions: approx. 35x25x25 cm^3
Weight: approx. 3 kg
B-1021040

Duck Skull (Anas platyrhynchos domestica), Specimen
Prepared, real skull of an adult domestic duck. Rigidly mounted.
Length: approx. 11 cm
B-1020981

Duck (Anas platyrhynchos domestica)

Taxonomy:
Class: Birds
Order: Anseriformes
Family: Anatids
Diet: Omnivore
Size: approx. 40 – 55 cm
Weight: approx. 1 – 1.5 kg
Age: 5 – 10 years

Duck Skeleton (Anas platyrhynchos domestica), Specimen
Prepared, real skeleton of an adult domestic duck. It is the largest and most commonly occurring swimming duck and represents a typical example of the order of anseriformes. The bones are rigidly connected with each other for stability. Rigidly mounted on a base plate.
Length: approx. 45 – 60 cm
Width: approx. 20 – 25 cm
Height: approx. 40 – 50 cm
Weight: approx. 3.5 – 4.5 kg
B-1020979

Goose (Anser anser domesticus)

Taxonomy:
Class: Birds
Order: Anseriformes
Family: Anatids
Diet: Omnivore
Size: approx. 80 – 90 cm
Weight: approx. 6 – 10 kg
Age: 10 – 20 years

Goose Skeleton (Anser anser domesticus), Specimen
Prepared, real skeleton of an adult domestic goose. Even the smallest bones are visible on this goose skeleton. Well suited to comparative anatomy. Rigidly mounted on a base plate.
Dimensions: approx. 40x22x45 cm^3
Weight: approx. 5 kg
B-1021033

Goose Skull (Anser anser domesticus), Specimen
Professionally prepared, real skull of an adult domestic goose with all the features typical of a goose's head. Rigidly mounted.
Length: approx. 13.5 cm
B-1021035

VERTEBRATES (VERTEBRATA), FISH (PISCIS)

Carp Skeleton (Cyprinus carpio), Specimen
Complete, real skeleton of a carp, carefully prepared, reassembled and mounted on a base plate. It represents a typical example of the order of cypriniformes. The specimen is particularly suitable for the study of the structure of bony fish. The following typical features of bony fish are mounted separately:
• Complete gill with gill arches, filaments and rakers
• Pharyngeal bone with teeth
• Typical cycloid scales of the cypriniformes with growth rings
• Thoracic vertebrae with neural and pleural arches
Length: approx. 40 – 50 cm
Width: approx. 10 – 15 cm
Height: approx. 10 – 20 cm
Weight: approx. 1.5 – 2.0 kg
B-1020962

Carp Head (Cyprinus carpio), Specimen (not shown)
B-1020963

Carp (Cyprinus carpio)

Taxonomy:
Class: Ray-finned fishes
Order: Cypriniformes
Family: Cyprinids
Diet: Primarily insectivore
Size: approx. 30 – 120 cm
Weight: approx. 5 – 25 kg
Age: approx. 10 – 40 years
Pharyngeal dentition formula:
1.1.3 – 3.1.1

European Catfish (Silurus glanis)

Taxonomy:
Class: Ray-finned fishes
Order: Catfishes
Family: Silurids
Diet: Mainly fish-eater
Size: Up to 300 cm
Weight: Up to 60 kg
Age: approx. 20 – 80 years

Skeleton of European Catfish (Silurus glanis), Specimen
The professionally prepared skeleton of a European catfish shows the typical features of a catfish: the elongated body with its large, wide head as well as the barbels around its mouth. The European catfish is the heaviest and largest freshwater fish that is native to Europe.
Length: approx. 65 – 75 cm
Width: approx. 30 – 40 cm
Height: approx. 25 – 35 cm
Weight: approx. 1.5 kg
B-1020964

Catfish Head (Silurus glanis), Specimen
This specimen of the head of a European catfish, consisting of real bones, shows the broad, strong and downturned mouth on a flattened head with barbels that is typical of catfishes. It is studded with many small teeth, which are located at the outer edge of the mouth.
B-1020965

Trout (Salmonidae)

Taxonomy:
Class: Ray-finned fishes
Order: Salmoniformes
Family: Salmonids
Diet: Insectivore / fish-eater
Size: 12 – 150 cm
Weight: Up to 40 kg
Age: approx. 6 – 17 years

Trout (Salmonidae), Plastinated Slice
Longitudinal section through a real salmonid, prepared and encapsulated in acrylic glass. The plastinated slice is particularly suitable for the study of the internal anatomical structures of fishes and their functional relationships.
Dimensions: approx. 20x16x2.3 cm^3
Weight: approx. 0.7 kg
B-1005384

COMPARATIVE ANATOMY

Limbs of Different Mammals (Mammalia)
The dissected real limbs enable scientific comparison of the anatomy of the front or rear legs of selected mammals and allow conclusions to be drawn about their walking and running behaviour. In order to be able to compare human with animal, an original plastic cast of a human hand or human foot is included in each case. This makes it possible to explain clearly e.g. the difference between plantigrades, digitigrades and unguligrades. The individual limbs are supplied as separate items and must be mounted on a wooden base. Assembly instructions are included.

Front Legs of Different Mammals (Mammalia)
Included are four real bone specimens: the front leg of a dog and the front foot of a horse, a cow and a pig respectively, as well as an original plastic cast of a human hand.
B-1021043

Hind Legs of Different Mammals (Mammalia)
Included are four real bone specimens: the hind leg of a dog and the hind foot of a horse, a cow and a pig respectively, as well as an original plastic cast of a human foot.
B-1021042

Structure of a Bird and a Mammal Bone, Specimen
Longitudinal and cross section of a prepared, real bird bone and mammal bone respectively, mounted on a base plate. The product illustrates the difference between the long bones of a bird and a mammal. Bird bones are hollow inside and have large air chambers. Mammal bones, in contrast, are filled with bone marrow and spongy tissue. Including display case for protection.
B-1021045

Tooth Types and Shapes of Different Mammals (Mammalia)
A comparison of the different tooth shapes and types allows conclusions to be drawn about the various sources of nutrition as well as the feeding and hunting behaviour of omnivores (pigs, dogs), carnivores (cats) and herbivores (cows, rabbits, rats).

Tooth Types of Different Mammals (Mammalia), Deluxe Version
The deluxe version of this article contains a half set of prepared, real teeth from the upper and lower jaw of a rabbit, a cat and a pig respectively. Mounted on a base plate.
B-1021046

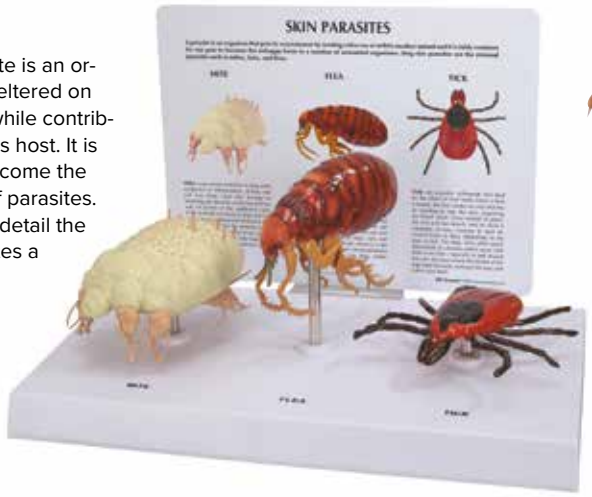
Tooth Types of Different Mammals (Mammalia)
The product includes one example of each of the tooth types, giving a total of 20 prepared, real teeth.
Pig, dog, cat: one incisor, one canine, one premolar and one molar tooth
Cow, rabbit: one incisor, one premolar and one molar tooth
Rat: one incisor and one molar tooth
B-1021044

INVERTEBRATES (INVERTEBRATA)

INSIGHT INTO THE LIFE OF A HONEY BEE

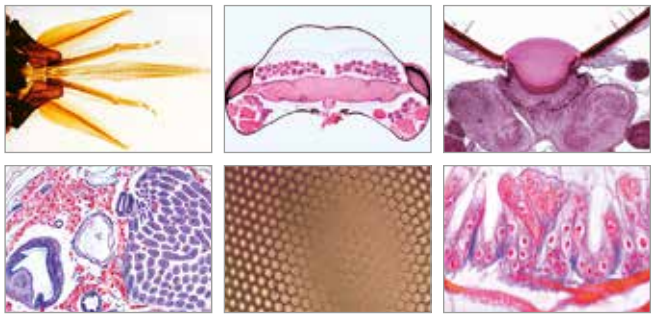
The Life of the Honey Bee (Apis cerana)
Numbered specimens in a high-quality acrylic block to give your students an outstanding insight into the life of a honey bee (Apis cerana). Descriptive text in English.
The set contains:
1. Egg 2. Larva 3. Pupa 4. Adult (Worker) 5. Adult (Drone) 6. Adult (Queen) 7. The base of nest 8. Worker comb 9. Queen comb 10. Bee pollen 11. Honey 12. Wax
Dimensions: approx. 21x12x4 cm^3
Weight: approx. 0.6 kg
B-1005971

Castor Bean Tick (Ixodes ricinus), Model
Accurately detailed replica of the castor bean tick; scale: 25:1.
B-1000525

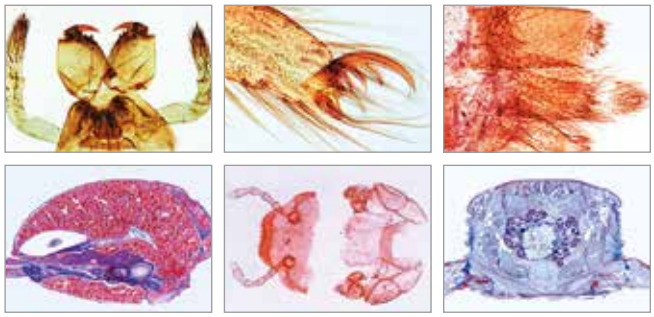


Canine Parasite Model
Canine Parasite Model. A parasite is an organ that grows, feeds, and is sheltered on or in another type of organism while contributing nothing to the survival of its host. It is fairly common for our pets to become the unknowing hosts to a number of parasites. This model here shows in great detail the 3 most common external parasites a mite, flea, and tick.
Base: : approx. 26x16 cm^2
B-1019583

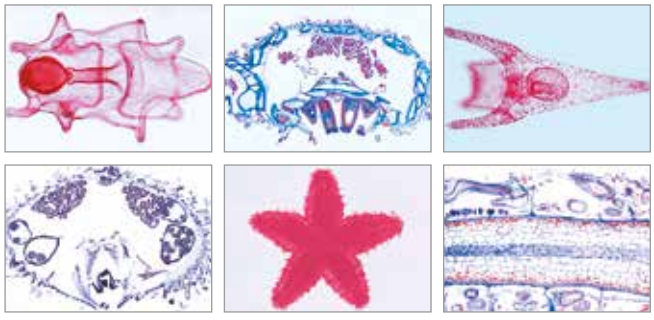
Teaching Case "27 Invertebrates (Invertebrata)"
Teaching case with 27 carefully prepared specimens, each enclosed in a fully transparent acrylic block to preserve the authentic color. The case contains examples of all surviving sub-species of arthropods (Arthropoda): 21 hexapods (Hexapoda), 2 chelicerata (Chelicerata), 2 crustaceans (Crustacea), a myriapod (Myriapoda) and an example of the echinoderm family (Echinodermata). The selected examples were not hunted or trapped in the wild but derive from sustainable sources such as breeding sources or pest control work. Origin and preparation of animals conform to legal stipulations.
Common names (Scientific names):
1. Chafer beetle (Anomala Cuprea Hope) 2. Lady bug (Synonycha grandis) 3. Mole cricket (Gryllotalpa orientalis) 4. Praying mantis (Hierodula petellifera) 5. Paper wasp (Polistes olivaceus) 6. Asiatic honey bee (Apis cerana) 7. Ant (Pheidologeton latinodus) 8. Dung beetle (Catharsius molossus [Linnaeus]) 9. Rhinoceros beetles (Xylotrupes Gideon) 10. Monarch (Danaus genutia) 11. Longhorned beetle (Anoplophora chinensis) 12. Cicada (Cryptotympana atrata) 13. Shield bug (Eusthennes cupreus) 14. Wespspin Spider (Argiope bruennichii) 15. Dragonfly (Brochythemis coutaminata) 16. Cricket (Teleogryllus emma) 17. Australian cockroach (Periplaneta australasiae) 18. Scorpion (Urodaus novaehollandiae) 19. Centipede (Scolopendra) 20. Walking stick (Diapheromera femorata) 21. Onion fly (Delia antqua) 22. Chinese white shrimp (Penaeus chinensis) 23. Silkworm (Bombyx mandarina) 24. Crab (Nectocarcinus intigrifrons) 25. Star fish (Asterias amurensis) 26. Grasshopper (Catantops splendens) 27. Stag beetle (Odontolabis cuvera fallaciosa)
Dimensions: approx. 42x33x8 cm^3
Weight: approx. 5 kg
B-1005970



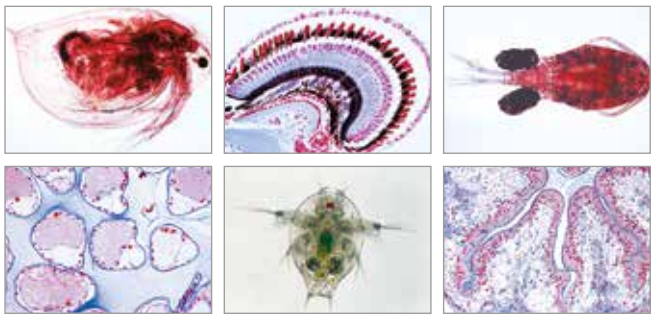
Series of Microscope Slides “Honey Bees (Apis mellifica)”
18 microscope slides with English text.
1. Mouth parts of worker, w.m. 2. Mouth parts of worker, t.s. 3. Head with compound eyes and brain, t.s. 4. Cornea from eye, isolated and w.m. 5. Ocelli, w.m. 6. Antenna with sensory organs, w.m. 7. Anterior and posterior wing, w.m. 8. Anterior leg with eye brush, w.m. 9. Posterior leg with pollen basket, w.m. 10. Sting and poison sac, w.m. 11. Wax plate of worker, w.m. 12. Abdomen of worker, t.s. with intestine, nephridia, wax glands 13. Abdomen of queen, t.s. showing ovaries 14. Abdomen of drone, t.s. showing testis 15. Thorax of worker, t.s. showing muscles 16. Larva, entire specimen, sagittal l.s. 17. Nosema apis, causing bee dysentery, t.s. of diseased intestine 18. Bacillus larvae, causing foul brood, smear.
B-1004265



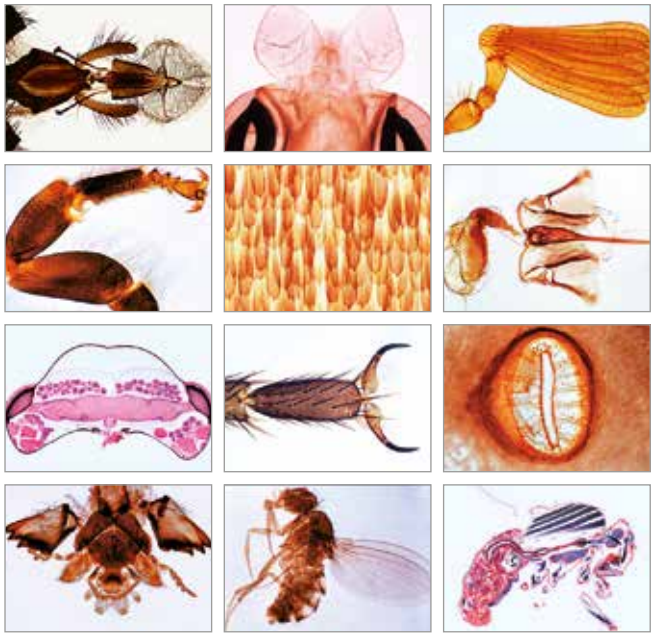
Series of Microscope Slides “Arachnoidea and Myriapoda”
12 microscope slides with English text.
1. Garden spider, chelicera and pedipalp, female, w.m. 2. Garden spider, w.m. of leg 3. Garden spider, w.m. of spinnerets 4. Garden spider, abdomen with book-lungs l.s. 5. Garden spider, l.s. of the cephalothorax and central nervous system 6. Varroa, parasitic mite of bees w.m. 7. Tyroglyphus farinae, mite from meal, w.m. 8. Dermanyssus gallinae, chicken mite, w.m. 9. Sarcoptes, infected skin, showing eggs and mites t.s. 10. Lithobius, centipede, w.m. of mouth parts 11. Lithobius, centipede, body, t.s. 12. Diplopoda sp, body, t.s.
B-1003964



Series of Microscope Slides “Echinodermata, Bryozoa and Brachiopoda”
10 microscope slides with English text.
1. Asterias, starfish, t.s. of ray 2. Young starfish, horizontal sec. 3. Asterias, starfish, bipinnaria larva, w.m. 4. Echinus, young sea urchin, radial section 5. Development of sea urchin, eggs in different stages 6. Echinus, sea urchin, pluteus larva 7. Holothuria, sea cucumber, t.s. 8. Holothuria, w.m. of limy bodies 9. Bryozoa, moss animals, colony, sec. 10. Lingula, brachiopod, t.s.
B-1003967

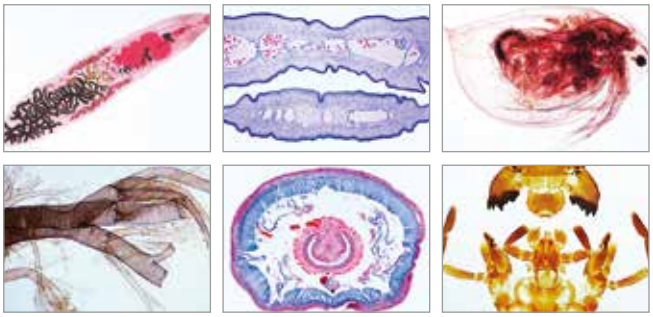


Series of Microscope Slides “Crustacea”
10 microscope slides with English text.
1. Daphnia sp., water flea, w.m. 2. Cyclops sp., copepod, w.m. 3. Gammarus, amphipod, w.m. 4. Lepas anatifera, barnacle, w.m. of catching leg 5. Artemia salina, brine shrimp, various developing stages w.m. 6. Nauplius larva, w.m. 7. Astacus, crayfish, eye, l.s. 8. Astacus, gills, t.s. 9. Astacus, stomach, t.s. 10. Astacus, intestine, t.s.
B-1003963

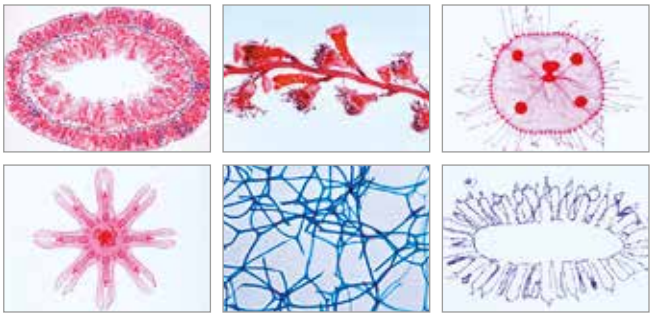


Series of Microscope Slides “Insects (Insecta)”
40 microscope slides with English text.
1. Musca domestica, housefly, leaking-sucking mouth parts w.m. 2. Pieris, butterfly, sucking mouth parts w.m. 3. Carabus, ground beetle, biting mouth parts (carnivore) w.m. 4. Melolontha, cockchafer, chewing mouth parts (herbivore) w.m. 5. Pyrrhocoris, bug, piercing sucking mouth parts w.m. 6. Bombyx mori, silkworm moth, chewing mouth parts 7. Apis mellifica, honey bee, leaking sucking mouth parts of worker w.m. 8. Vespa vulgaris, wasp, biting mouth parts of carnivore w.m. 9. Periplaneta or Blatta, cockroach, chewing biting mouth parts w.m. 10. Culex pipiens, mosquito, piercing sucking mouth parts w.m. 11. Melolontha, cockchafer, antenna with sense organs w.m. 12. Bombyx mori, silkworm moth, feathered antenna w.m. 13. Pieris, butterfly, clubbed antenna w.m. 14. Apis mellifica, anterior leg with eye brush w.m. 15. Apis mellifica, posterior leg with pollen basket w.m. 16. Musca domestica, house fly, leg with pulvilli w.m. 17. Apis

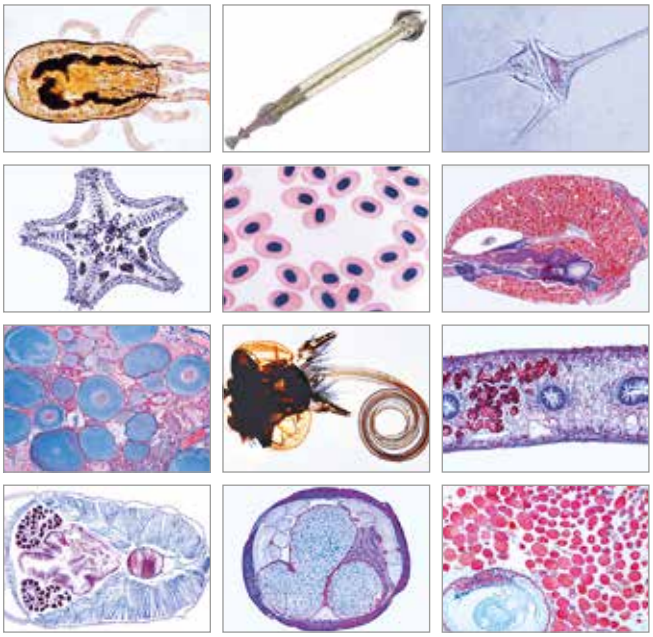
mellifica, wings w.m. 18. Pieris, butterfly, portion of wings with scales w.m. 19. Trachea from insect w.m. 20. Spiracle from insect w.m. 21. Cornea isolated from insect eye w.m. 22. Apis mellifica, honey bee, sting and poison sac w.m. 23. Apis mellifica, head with compound eyes and brain t.s. 24. Bombyx mori, silkworm, t.s. showing silk spinning glands 25. Carausius, walking stick, abdomen t.s. 26. Melolontha, cockchafer, ovaries of insect, sec. shows developing ova 27. Grasshopper, testis t.s. to show spermatogenesis and cell division 28. Drosophila, fruit fly, sagittal l.s. for general insect anatomy 29. Drosophila, fruit fly, w.m. of adult 30. Ctenocephalus canis, dog flea, w.m. of adult 31. Caenis, May fly, larva with tracheal gills w.m. 32. Pediculus humanus, human louse, adult w.m. 33. Thysanoptera, thrips, adult w.m. 34. Aphidae, plant lice adults and larvae w.m. 35. Cimex lectularius, bed bug, w.m. of adult 36. Culex pipiens, mosquito, w.m. of larva 37. Culex pipiens, mosquito, w.m. of pupa 38. Culex pipiens, mosquito, w.m. of adult female 39. Culex pipiens, mosquito, w.m. of adult male 40. Chironomus, gnat, w.m. of larva.
B-1003965



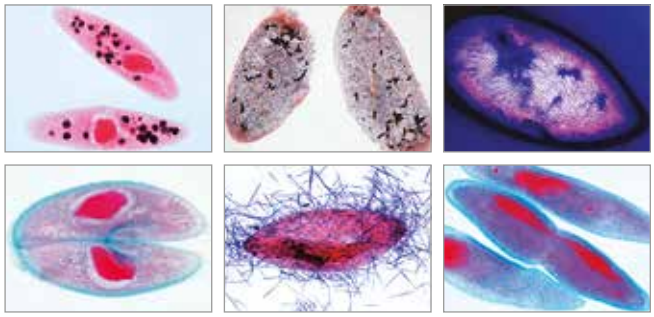
Series of Microscope Slides "Invertebrata, Elementary Set"
25 microscope slides with English text.
1. Amoeba proteus, w.m. 2. Euglena, a common flagellate with eye spot 3. Paramaecium, a common ciliate 4. Sycon, marine sponge, t.s. of body 5. Hydra, extended specimen w.m. 6. Dicrocoelium lanceolatum, sheep liver fluke, w.m. 7. Planaria, t.s. of body 8. Taenia saginata, tapeworm, proglottids in different stages t.s. 9. Trichinella spiralis, l.s. of muscle with encysted larvae 10. Lumbricus, earthworm, t.s. of body in region of typhlosole 11. Daphnia, water flea w.m. 12. Cyclops, copepod w.m. 13. Spider, leg with comb w.m. 14. Spider, spinneret w.m. 15. Musca domestica, house fly, head and mouth parts w.m. 16. Periplaneta, cockroach, biting mouth parts w.m. 17. Apis mellifica, honey bee, mouth parts of worker w.m. 18. Musca domestica, house fly, leg with pulvilli w.m. 19. Apis mellifica, wings w.m. 20. Trachea from insect w.m. 21. Spiracle from insect w.m. 22. Drosophila, fruit fly, sagittal l.s. of adult specimen 23. Snail, radula w.m. or section 24. Snail, t.s. through body 25. Asterias, starfish, t.s. of arm (ray).
B-1004245



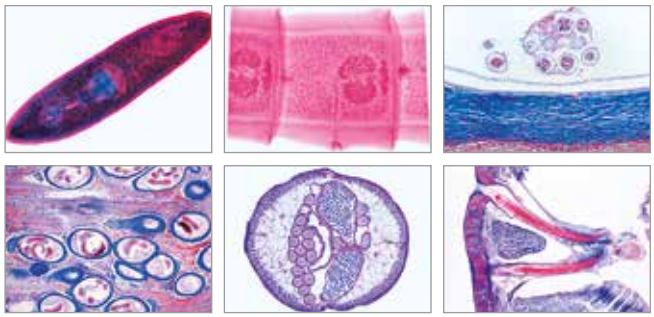
Series of Microscope Slides "Coelenterata and Porifera"
10 microscope slides with English text.
1. Sycon, a small marine sponge of the sycon type, l.s. and t.s. on one slide 2. Spongilla, fresh-water sponge, t.s. 3. Euspongia, commercial sponge, t.s. 4. Sponge spicules of different kinds, mixed w.m. 5. Hydra, fresh water polyp, extended and w.m. 6. Hydra, t.s. in different levels 7. Laomedea, w.m. of colony, vegetative and reproductive polyps 8. Obelia, w.m. of medusa 9. Aurelia, jellyfish, w.m. of ephyra 10. Actinia, sea anemone, l.s. and t.s.
B-1003961



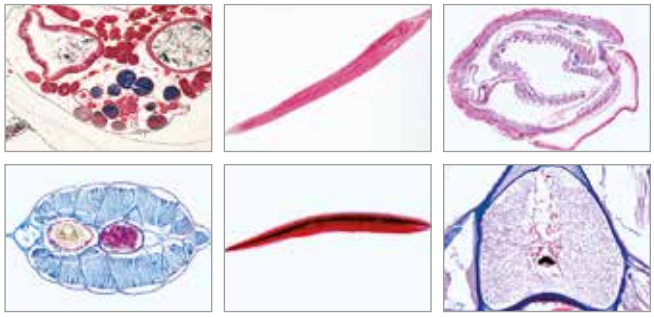
Series of Microscope Slides "Invertebrata, Supplementary Set"
50 microscope slides with English text.
1. Radiolaria, mixed species 2. Foraminifera, mixed species 3. Ceratium, dinoflagellates 4. Trypanosoma, causing sleeping disease, blood smear 5. Plasmodium, malaria parasite, blood smear 6. Eimeria stiedae, in t.s. of rabbit liver with parasites 7. Spongilla, fresh water sponge, gemmulae (winter bodies) 8. Hydra, t.s. of body 9. Obelia hydroid, w.m. of colony 10. Obelia medusa, jellyfish. w.m. 11. Actinia, sea anemone, t.s. young specimen 12. Fasciola hepatica, beef liver fluke, t.s. of body 13. Fasciola, ova w.m. 4. Ascaris, roundworm, t.s. of female in region of gonads 15. Ascaris, t.s. of male in region of gonads 16. Lumbricus, earthworm, l.s. of anterior region with gonads 17. Lumbricus, sperm smear 18. Hirudo medicinalis, leech, t.s. of body 19. Sagitta, arrow worm, entire specimen w.m. 20. Astacus, crayfish, gills t.s. 21. Astacus, liver t.s. 22. Astacus, testis t.s. showing spermatogenesis 23. Astacus, ovary t.s. showing developing ova 24. Astacus, intestine t.s. 25. Spider, abdomen with internal organs l.s. 26. Dermanyssus gallinae, chicken mite w.m. 27. Pieris, butterfly, head and mouth parts w.m. 28. Vespa, wasp, biting mouth parts w.m. 29. Carabus, ground beetle, biting mouth parts w.m. 30. Culex pipiens, mosquito, piercing-sucking mouth parts w.m. 31. Melolontha, cockchafer, antenna w.m. 32. Apis mellifica, honey bee, anterior leg with eye brush w.m. 33. Apis mellifica, posterior leg with pollen basket w.m. 34. Pieris, butterfly, portion of wing with scales w.m. 35. Apis mellifica, cornea from eye w.m. 36. Apis mellifica, sting with poison sac w.m. 37. Culex pipiens, mosquito, t.s. of abdomen 38. Apis mellifica, honey bee, head with compound eyes t.s. 39. Apis mellifica, abdomen of worker t.s. 40. Ctenocephalus, dog flea, w.m. of adult 41. Chironomus, gnat, larva w.m. 42. Bombyx mori, silkworm, t.s. of caterpillar, spinning glands 43. Helix, snail, hermaphrodite gland (ovotestis) t.s. 44. Helix, snail, liver t.s. 45. Helix, snail, eye l.s. 46. Mya arenaria, clam, gills t.s. and l.s. 47. Asterias, starfish, horizontal section of young specimen 48. Psammechinus, sea urchin, pluteus larva w.m. 49. Branchiostoma lanceolatum (Amphioxus), t.s. of body with testis 50. Branchiostoma , t.s. of body with ovaries.
B-1004246



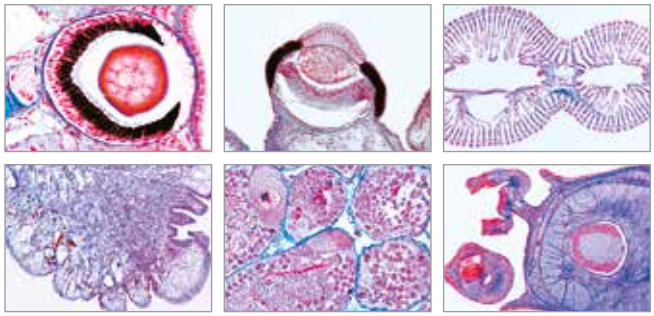
Series of Microscope Slides “The Paramaecium (Caudatum)”
8 microscope slides with English text.
1. Paramaecium, macro- and micronuclei stained 2. Paramaecium, food vacuoles and nuclei doubly stained 3. Paramaecium, pellicle stained after Bresslau 4. Paramaecium, silver stained to show the silver line system 5. Paramaecium, trichocysts shown by special preparation 6. Paramaecium, conjugation or after conjugation stages, nuclei stained 7. Paramaecium, fission stages, nuclei stained 8. Paramaecium, sections through many specimens.
B-1004247



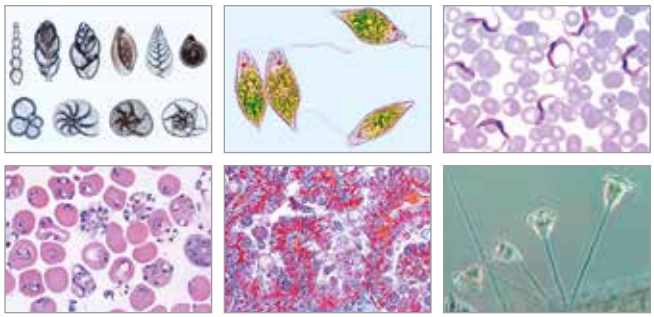
Series of Microscope Slides “Vermes (Helminthes)”
20 microscope slides with English text.
1. Planaria, (Turbellaria) w.m. 2. Planaria, t.s. for general structure 3. Fasciola hepatica, large liver fluke, w.m. 4. Fasciola, t.s. of middle region of body 5. Taenia sp., tapeworm, proglottids, w.m. 6. Taenia sp., mature proglottids, t.s. 7. Taenia or Moniezia, tapeworm, scolex and proglottides, w.m. 8. Echinococcus multilocularis, infected liver, sec. 9. Enterobius vermicularis, pinworm, w.m. 10. Trichinella spiralis, encysted larvae in muscles, l.s. 11. Ascaris, roundworm, adult male and female, t.s. 12. Nemertine, marine species, t.s. of body 13. Nereis, sea-worm, t.s. 14. Tubifex, oligochaete, w.m. 15. Hirudo medicinalis, leech, t.s. 16. Lumbricus, earthworm, anterior end, l.s. 17. Lumbricus, region of seminal vesicles, t.s. 18. Lumbricus, t.s. with stomach 19. Lumbricus, t.s. with intestine and nephridia 20. Lumbricus, t.s. with setae.
B-1003962



Series of Microscope Slides “Cephalochordata (Acrania)”
10 microscope slides with English text.
1. Botryllus schlosseri, tunicate colony, w.m. 2. Clavelina, tunicate, l.s. showing gill, intestine, gonads 3. Clavelina, t.s. region of gills and intestine 4. Balanoglossus, t.s. region of gonads 5. Sagitta, arrow worm, w.m. 6. Branchiostoma (Amphioxus), adult specimen, w.m. 7. Branchiostoma, larva, w.m. 8. Branchiostoma, t.s. region of gills and intestine 9. Branchiostoma, t.s. region of intestine and liver 10. Branchiostoma, head region, t.s. showing light sensitive pigment cells.
B-1003968

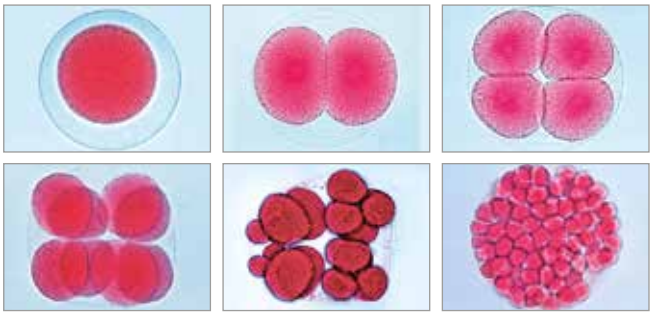


Series of Microscope Slides “Mollusca”
15 microscope slides with English text.
1. Chiton sp., t.s. of body 2. Anodonta, mussel, t.s. of body 3. Mya arenaria, clam, t.s. and l.s. of gills with ciliated epithelium 4. Mussel, t.s. of siphonal tube 5. Mya arenaria, clam, adductor muscle of shell, l.s. 6. Pecten, t.s. of mantle margin showing primitive eye 7. Anodonta, glochidia (larvae) w.m. 8. Snail, typical t.s. of small specimen for general study 9. Helix, snail, t.s. of lung cavity 10. Helix, snail, t.s. of digestive gland (liver) 11. Helix, snail, t.s. of kidney 12. Helix, snail, t.s. of hermaphrodite gland 13. Helix, snail, l.s. of tentacle showing lens eye 14. Alloteuthis, young cuttlefish, l.s. 15. Octopus, cuttlefish, section through sucking tube.
B-1003966

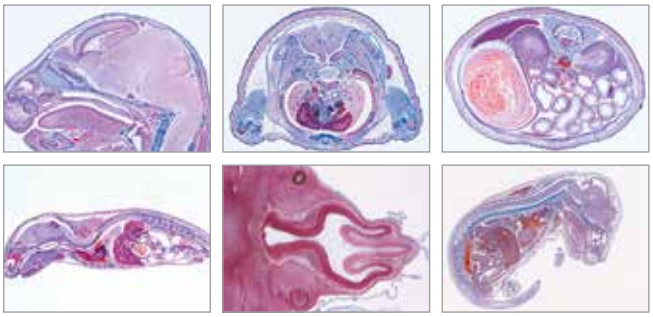


Series of Microscope Slides “Protozoa”
10 microscope slides with English text.
1. Amoeba proteus, Rhizopoda, w.m. 2. Radiolaria, mixed species, fossil 3. Foraminifera from Mediterranean sea, mixed species, recent 4. Euglena viridis, a green flagellate, w.m. 5. Ceratium hirundinella, fresh-water dinoflagellate w.m. 6. Trypanosoma gambiense, causes African sleeping sickness, blood smear 7. Plasmodium, causes human malaria, blood smear 8. Eimeria stiedae, causing coccidiosis, t.s. of infected liver 9. Paramecium, a common ciliate, nuclei stained 10. Vorticella, a coloniate ciliate.
B-1003960

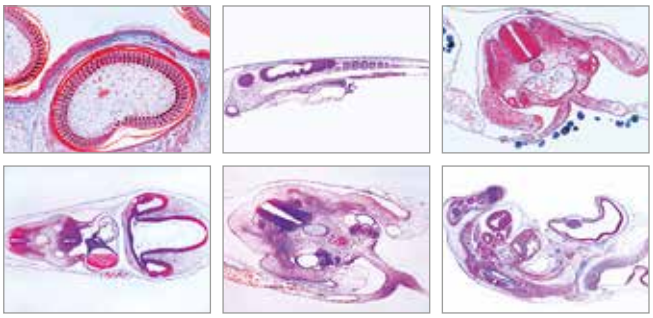
EMBRYOLOGY



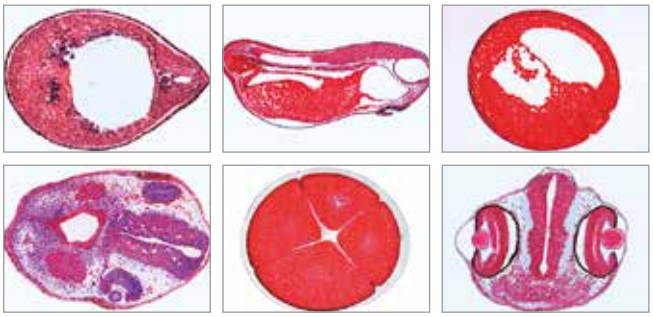
Series of Microscope Slides “Sea Urchin Embryology (Psammechinus miliaris)”
12 microscope slides with English text.
1. Sea urchin, unfertilized eggs 2. Sea urchin, fertilized eggs 3. Sea urchin, two cells 4. Sea urchin, four cells 5. Sea urchin, eight cells 6. Sea urchin, sixteen cells 7. Sea urchin, thirty-two cells 8. Sea urchin, morula 9. Sea urchin, blastula 10. Sea urchin, blastula, beginning gastrulation 11. Sea urchin, blastula, progressive gastrulation 12. Sea urchin, pluteus larva.
B-1003984



Series of Microscope Slides “Pig Embryology (Sus scrofa)”
10 microscope slides with English text.
1. Pig embryo 4 – 6 mm, t.s. 2. 7 – 9 mm, sagittal l.s. 3. 11 – 12 mm, t.s. through head 4. 11 – 12 mm, t.s. through abdomen 5. 15 mm, t.s. through head 6. 15 mm, t.s. through thorax 7. 15 mm, t.s. through abdomen 8. 15 mm, sagittal l.s. 9. 20 – 25 mm, sagittal l.s. 10. 20 – 25 mm, frontal l.s.
B-1003987



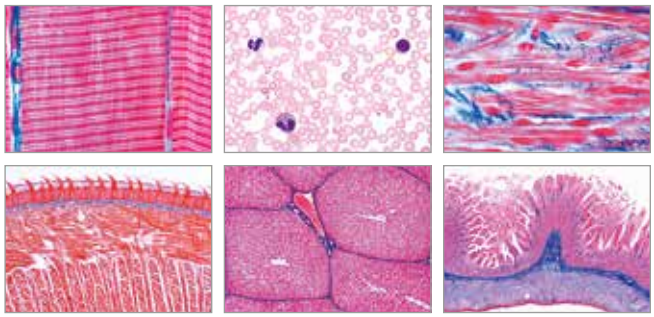
Series of Microscope Slides “Chicken Embryology (Gallus domesticus)”
10 microscope slides with English text.
1. Chicken, 24 hour, t.s. with neural groove, notochord, germ layers 2. Chicken, 36 hour, t.s. with neural tube 3. Chicken, 48 hour, l.s. with differentiation of mesoderm and ectoderm 4. Chicken, 3 day, t.s. through body showing amnion and serosa 5. Chicken, 3 day, t.s. of head with primordium of brain, eyes and heart 6. Chicken, 3 – 4 day, horizontal section of entire specimen shows primordia of organs 7. Chicken, 4 – 5 day, t.s. region of head with brain, gill arches 8. Chicken, 4 – 5 day, t.s. region of heart 9. Chicken, 8 day, sagittal l.s. through entire specimen showing embryonic organs 10. Chicken, feather development, sec. through wings.
B-1003986



Series of Microscope Slides “Frog Embryology (Rana)“
10 microscope slides with English text.
1. Frog, morula, l.s. 2. Frog, blastula. l.s. shows blastocoel with macro- and micromeres 3. Frog, gastrula, sagittal l.s. shows germ layers, dorsal lip, yolk plug 4. Frog, neurula, t.s. showing primordium of notochord 5. Frog, early tail bud stage, t.s. with neural tube, notochord 6. Frog, early tail bud stage, sagittal l.s. with primordium of brain, segmentation of mesoderm 7. Frog, hatching stage, t.s. region of head or gills 8. Frog, hatching stage, t.s. region of mid-body 9. Frog, young tadpole, t.s. head 10. Frog, young tadpole, t.s. thorax or abdomen.
B-1003985

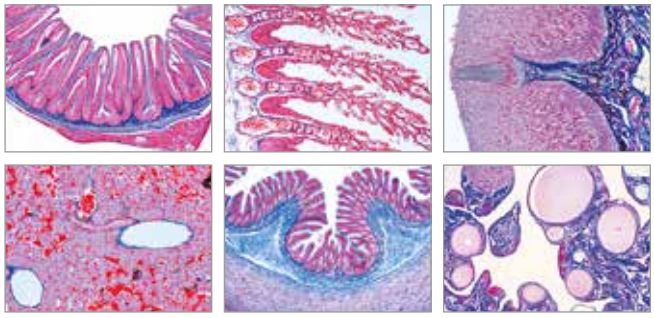
› Suitable microscopes can be found on the pages 135 to 151.

HISTOLOGY (STUDY OF TISSUES)



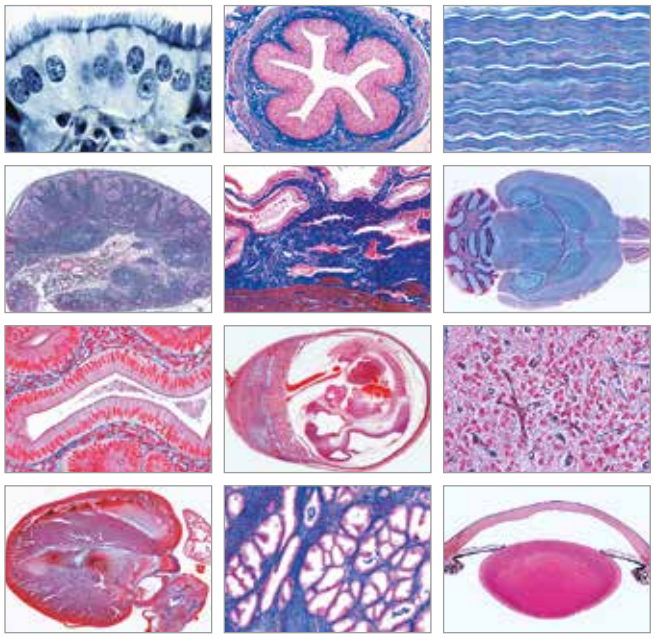
Series of Microscope Slides "Histology of Mammalia, Elementary Set"

25 microscope slides with English text.
1. Squamous epithelium, isolated cells 2. Fibrous connective tissue, w.m. from pig mesentery 3. Adipose tissue of mammal, fat stained 4. Hyaline cartilage of calf, t.s. 5. Compact bone of cow, t.s. 6. Striated muscles of cat, l.s. 7. Smooth muscles of cat, t.s. and l.s. 8. Blood smear, human 9. Artery of cat or rabbit, t.s. 10. Vein of cat or rabbit, t.s. 11. Lung of cat, t.s. 12. Pancreas of pig with islets of Langerhans t.s. 13. Tongue of cat, t.s. with cornified papillae 14. Stomach of cat, fundic region t.s. 15. Small intestine of cat or rabbit, t.s. 16. Liver of pig, t.s. 17. Kidney of cat, t.s. 18. Ovary of rabbit, t.s., developing follicles 19. Testis of mouse, t.s., spermatogenesis 20. Cerebrum of cat, t.s. 21. Cerebellum of cat, t.s. 22. Spinal cord of cat, t.s. 23. Nerve fibres isolated, Ranvier's nodes 24. Motor nerve cells, smear from spinal cord 25. Scalp, human, l.s. of hair follicles.
B-1004231



Series of Microscope Slides "Histology of Vertebrata excluding Mammalia"

25 microscope slides with English text.
1. Cyprinus, carp, liver t.s. 2. Cyprinus, testis t.s. showing spermatozoa 3. Cyprinus, small intestine t.s. 4. Cyprinus, kidney t.s. 5. Cyprinus, gills t.s. 6. Cyprinus, skin t.s. 7. Fish scales, cycloid, ctenoid, and placoid scales w.m. 8. Salamandra, skin with poison glands t.s. 9. Salamandra, t.s. through thorax and forelegs of larva 10. Rana, frog, lung t.s., a simple bag-like lung 11. Rana, blood smear, with nucleated corpuscles 12. Rana, stomach t.s. 13. Rana, large intestine t.s., with goblet cells 14. Rana, liver t.s. showing bile ducts 15. Rana, kidney t.s. 16. Rana, testis t.s. to show spermatogenesis 17. Rana, skin t.s. showing glands 18. Lacerta, lizard, skin with scales, sagittal l.s. 19. Gallus, chicken, blood smear, with nucleate red corpuscles 20. Gallus, lung t.s. 21. Gallus, glandular stomach t.s. 22. Gallus, ovary with developing eggs t.s. 23. Gallus, skin with developing feathers t.s. or l.s. 24. Gallus, unfeathered skin of foot t.s. 25. Gallus, wing and down feathers w.m.
B-1004230



Series of Microscope Slides "Histology of Mammalia, Supplementary Set"

50 microscope slides with English text.
1. Columnar epithelium of mammal 2. Ciliated epithelium of mammal 3. White fibrous tissue, l.s. of tendon of cow 4. Mucous tissue, t.s. of navel string 5. Elastic cartilage, sec. stained for elastic fibres 6. Bone development, l.s. of foetal finger 7. Striated muscle of cat, t.s. 8. Heart muscle of cat, l.s. and t.s. 9. Red bone marrow of cow, sec. or smear 10. Heart of mouse, sagittal l.s. 11. Trachea of rabbit, t.s. 12. Spleen of cat, t.s. 13. Lymph gland of cat or rabbit, t.s. 14. Adrenal (suprarenal) gland of rabbit, t.s. 15. Epiphysis (pineal body) of cow or pig, t.s. 16. Hypophysis (pituitary body) of cow or pig, l.s. 17. Thyroid gland of cow, t.s. 18. Thymus gland of cow, t.s. with Hassall bodies 19. Parotid gland of cat, t.s. 20. Tooth, t.s. through root or crown 21. Esophagus of rabbit, t.s. 22. Vermiform appendix of rabbit, t.s. 23. Large intestine (colon) of rabbit, t.s. 24. Gall bladder of rabbit, t.s. 25. Kidney t.s., vital stained with trypan blue showing storage 26. Ureter of rabbit, t.s. 27. Urinary bladder of rabbit, t.s. 28. Ovary with corpus luteum t.s. 29. Fallopian tube of pig, t.s. 30. Uterus of rabbit, t.s. 31. Placenta of rabbit, t.s. 32. Uterus of rat, containing embryo t.s. 33. Vagina of rabbit, t.s. 34. Epididymis of rabbit, t.s. 35. Sperm smear of bull 36. Penis of rabbit, t.s. 37. Prostate gland of pig, t.s. 38. Brain of mouse, entire organ l.s. 39. Cerebellum, t.s. silver stained for Purkinje cells 40. Sympathetic ganglion, t.s. multipolar nerve cells 41. Peripheral nerve of cat or rabbit, l.s. 42. Eye of cat, anterior part with cornea t.s. 43. Eye of cat, posterior part with retina t.s. 44. Cochlea (internal ear) of Guinea pig, l.s. shows organ of Corti 45. Olfactory region of dog or rabbit, t.s. 46. Taste buds in tongue of rabbit (Papilla foliata), t.s. 47. Skin of human palm, t.s. 48. Scalp, human, t.s. of hair follicles 49. Nail development of embryo, sagittal l.s. 50. Mammary gland of cow, t.s.
B-1004232

BOTANY

+ The flower can be taken apart
+ The lever mechanism can be demonstrated

Meadow Clary Blossom (Salvia pratensis), Model
At 15 times magnification, the model shows the detailed structure of a single flower with its pollination mechanism. For further illustration, the model separates into four components. The typical lever mechanism for picking up pollen which then sticks to the bodies of insects can also be demonstrated.
Dimensions: approx. 29x18x30.5 cm^3
Weight: approx. 0.6 kg
B-1000534

› OUR FLOWERS BLOOM AT ANY TIME OF YEAR!

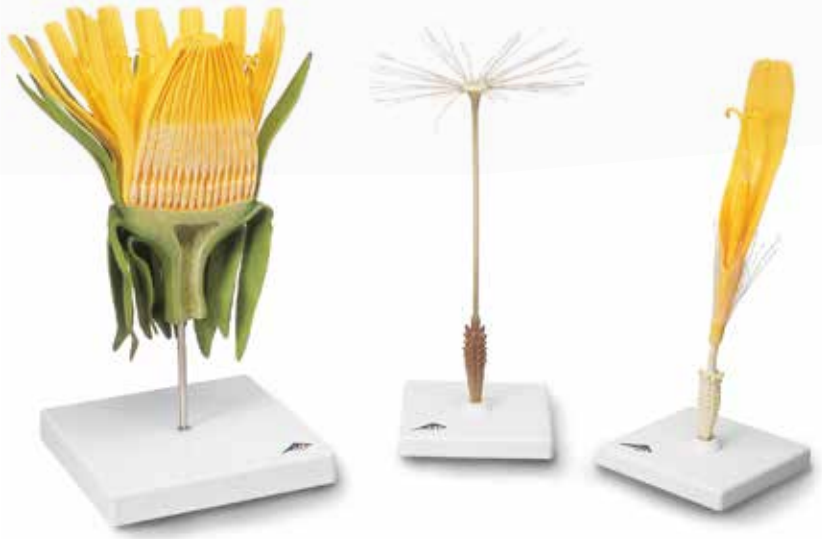
Cherry Blossom with Fruit (Prunus avium), Model
This model shows the blossom of a wild cherry tree (3-parts) enlarged 7 times as well as a cherry fruit enlarged 3 times. The cherry blossom can be split into two halves to reveal the removable ovary with style and stigma.
Dimensions: approx. 20x22x26.5 cm^3
Weight: approx. 0.6 kg
B-1020125

Apple Blossom (Malus pumila), Model
5-to-1-scale enlarged model of sepals, petals, carpels and stamina.
Dimensions: approx. 39.5x28.5x21 cm^3
Weight: approx. 0.4 kg
B-1017829

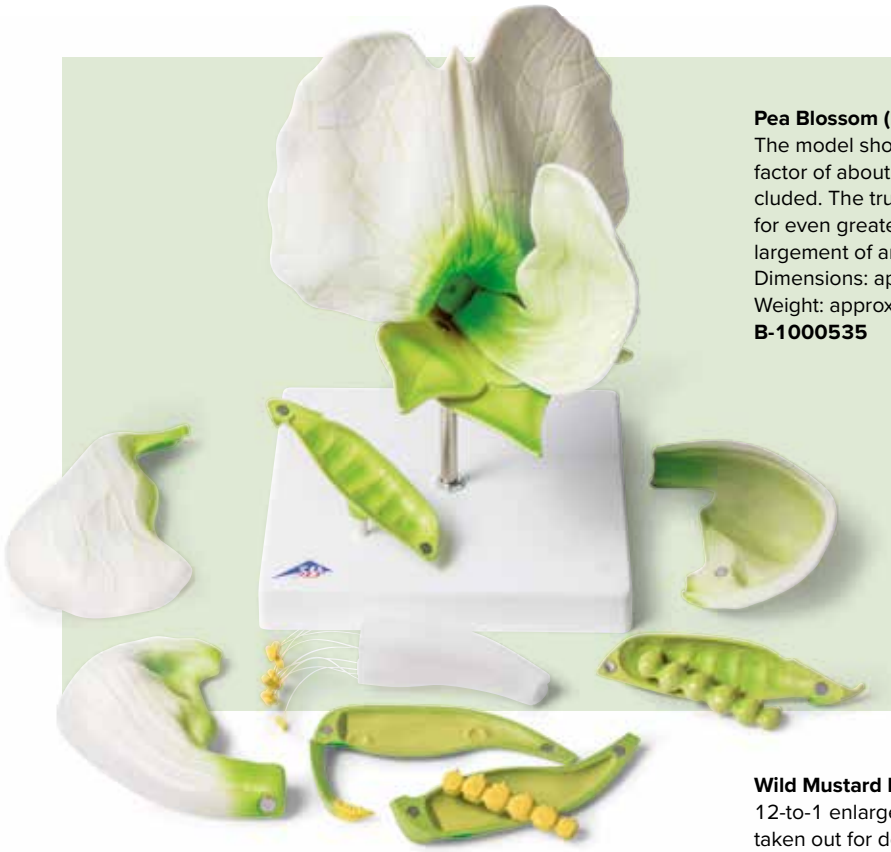
Tulip Flower (Tulipa gesneriana), Model
3-to-1-scale enlarged model in which the complex of stamina and pistil can be removed.
Dimensions: approx. 48.5x18x18 cm^3
Weight: approx. 0.5 kg
B-1017832

Canola Blossom (Brassica napus ssp. oleifera), Model
This is a 12-to-1 scale enlarged model of an individual rape flower which shows the typical structure of a member of the Brassicaceae (Cruciferae or cabbage) family in full detail. A cut-away model of a ripe rapeseed pod in 3-to-1 enlarged scale is also displayed on the base.
Dimensions: approx. 35x29x31 cm^3
Weight: approx. 0.7 kg
B-1000531

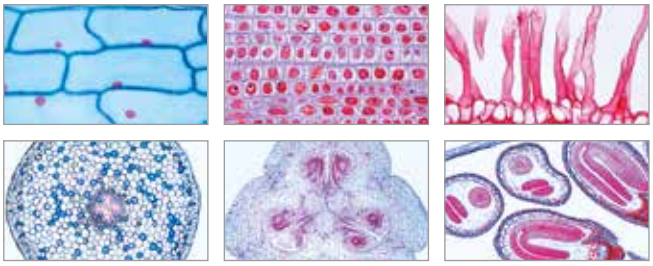
Chamomile Blossom (Matricaria chamomilla), Model
The chamomile plant belongs to the family popularly known as asters, composites, daisies or sunflowers (Asteroideae, formerly known as Compositae). In our models of the flower of a real chamomile, both inflorescences and individual flowers are depicted in a highly detailed and clear fashion. Inflorescences are enlarged by a factor of 10 to 1 with a cut-away along their length to display the internal and external structure. The flowers in full bloom are enlarged by 70 to 1, allowing for a detailed look at their interior. Inflorescences and flowers are mounted securely on a stand with its own base.
Dimensions: approx. 28x22.5x20.5 cm^3
Weight: approx. 0.7 kg
B-1000533



Dandelion Flower (Taraxum officinale), Model
A very descriptive depiction of a common dandelion (Taraxum officinale), a member of the Asteraceae family. A characteristic feature of this family is that multiple small flowers are combined (cf. alternate family name Compositae) in a head-like inflorescence surrounded by an array of pseudanthia called florets (or ray flowers). The scientific name Taraxacum comes from Arabic and means “bitter weed”. Dandelions were historically used in traditional medicine to cleanse blood or for stomach aches, as well as for treating gall bladder and liver disorders.
Our dandelion model includes models of the following individual components:
• Structure of inflorescence, 10-to-1 enlarged scale
• Structure of individual flower, 20-to-1 enlarged scale
• Structure of seed and pappus, 20-to-1 enlarged scale
All these individual models are made of sturdy plastic and are firmly attached to a base.
Dimensions: approx. 32.5x27x18 cm^3
Weight: approx. 1.1 kg
B-1000532



Pea Blossom (Pisum sativum), Model
The model shows the detail of an individual flower enlarged by a factor of about 8 to 1 and with a pollen scattering mechanism included. The true-to-life models can be dismantled into 12 parts for even greater clarity. On the base, there is also an 8-to-1 enlargement of an open ripe pea pod.
Dimensions: approx. 25x20x35 cm^3
Weight: approx. 0.7 kg
B-1000535



Series of Microscope Slides "Phanerogamae", Elementary Set
25 microscope slides with English text.
1. Simple plant cells, epidermis of Allium w.m. 2. Cell division (mitosis) all stages, in Allium root tips l.s. 3. Starch grains, t.s. of potato tuber 4. Cork cells, t.s. of bark of Quercus 5. Stone cells, t.s. of fruit of pear 6. Root hairs on root tip 7. Zea mays, corn, typical monocot root t.s. 8. Ranunculus, buttercup, typical dicot root t.s. 9. Zea mays, corn, monocot stem t.s. 10. Triticum, wheat, gramineous stem t.s. 11. Aristolochia, birthwort, one year stem t.s. 12. Aristolochia, older stem t.s. 13. Cucurbita, pumpkin, stem with bundles and sieve tubes l.s. 14. Sambucus, elderberry, stem with lenticels t.s. 15. Tulipa, tulip, leaf epidermis with stomata w.m. 16. Zea mays, corn, leaf t.s., monocot gramineous leaf 17. Syringa, lilac, leaf t.s., dicot leaf 18. Fagus, beech, leaf bud t.s. shows leaf origin 19. Lilium, lily, flower bud t.s. shows flower diagram 20. Lilium, anthers t.s. shows pollen chambers and pollen grains 21. Lilium, ovary t.s. with embryosac 22. Lilium, stigma with pollen and pollen tubes l.s. 23. Pinus, pine, leaf (needle) t.s. 24. Triticum, wheat, grain (semen) t.s. with embryo and endosperm 25. Capsella, shepherd's purse, l.s. of embryos in situ.
B-1004253

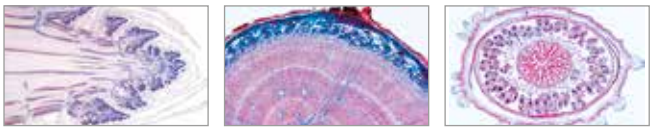
Wild Mustard Flower (Sinapis arvenis), Model
12-to-1 enlarged scale model. The two-part carpel region can be taken out for detailed study of the seed pod.
Dimensions: approx. 30x31x32 cm^3
Weight: approx. 0.3 kg
B-1017831

Lesser Celandine Flower (Ficaria verna), Model
The lesser celandine (Ranunculus ficaria), also known as pilewort since it was once used for treatment of haemorrhoids, belongs to the buttercup family (Ranunculaceae). The plant contains a lot of vitamin C but is toxic in large quantities.
Our model of Ranunculus ficaria is in 10-to-1 enlarged scale, allowing it to demonstrate the characteristic structure of flowers in the family Ranunculaceae in very clear fashion. This botanical model has a calyx in three parts and eight petals. There are multiple stamina and carpels which can be seen particularly clearly by viewing the model from above. The model has no removable parts and is firmly affixed to its base.
Dimensions: approx. 34.5x33x33 cm^3
Weight: approx. 0.4 kg
B-1017828

Releases realistic pollen

Potato Flower (Solanum tuberosum), Model
This model of a potato flower in 8-to-1 enlarged scale and is ideal for classroom lessons. Potatoes (Solanum tuberosum) grow vertically upwards and are mainly considered useful for their tubers, which are cultivated throughout the world for food. Their flowers are about 2.5 – 4 cm in diameter and consist of five white or blueish petals which are arranged in a wreath around the stamina. The sepals under the petals and a stem, which can measure between 5 and 15 cm, each have hairy bristles.
Details of the model:
- Complex of petals and stamina removable for detailed study of carpels
- Plant model which even releases realistic pollen
- 8-to-1 enlarged scale for classroom lessons

This 3B Scientific® model of a potato flower is a high-quality teaching resource for biology lessons which displays the flower and its attributes as realistically as possible.
Please note that the yellow “pollen” is not classed as hazardous and can be rinsed off or washed out easily with water.
Dimensions: approx. 34.5x22x22 cm^3
Weight: approx. 0.3 kg
B-1017830

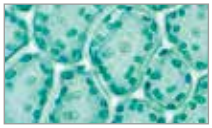


Series of Microscope Slides “Phanerogamae”, Supplementary Set
50 microscope slides with English text.
1. Stem apex and meristematic tissue 2. Aleurone grains 3. Fat in sec. 4. Lysigenous oil glands 5. Inulin crystals 6. Calcium oxalate crystals 7. Wood cells 8. Lactiferous vessels 9. Chloroplasts 10. Branched leaf hairs 11. Reserve cellulose 12. Rheum, rhubarb, root with crystals t.s. 13. Dendrobium, orchid, aerial root with velamen t.s. 14. Pinus, pine, older woody root t.s. 15. Smilax, root with thickened endodermis t.s. 16. Lupinus, lupin, root nodules with nitrogen fixing bacteria t.s. 17. Quercus, oak, older woody root t.s. 18. Daucus, carrot, storage root t.s. 19. Pinus, pine, older woody stem t.s. 20. Zea mays, corn, stem with bundles l.s. 21. Elodea, waterweed, aquatic stem with primitive bundle t.s. 22. Juncus, bulrush, stem with stellate cells t.s. 23. Pelargonium, geranium, young stem of an annual plant t.s. 24. Tilia, lime, older woody stem t.s. and l.s. 25. Acorus calamus, sweet flag, rhizome t.s. 26. Pinus, pine, three sections of wood 27. Fagus, beech, three sections of wood 28. Bryonia, stem with sieve plates t.s. 29. Ribes, currant, stem with phellogen t.s. 30. Helianthus, sunflower, typical dicot stem t.s. 31. Salvia, sage, square stem with collenchyma t.s. 32. Nymphaea, water lily, floating leaf t.s. 33. Dionaea, Venus fly trap, leaf with digestive glands t.s. 34. Fagus, beech, sun and shadow leaves on one slide t.s. 35. Pinguicula, butterwort, leaf with glandular hairs t.s. 36. Nerium, oleander, xeromorphe leaf with sunken stomata t.s. 37. Drosera, sundew, leaf with glandular hairs w.m. 38. Urtica, stinging nettle, leaf with stinging hairs 39. Utricularia, bladderwort, w.m. of bladders 40. Pinus, pine, male cone with pollen l.s. 41. Pinus, young female cone with ovules l.s. 42. Pinus, ovule with archegonia l.s. 43. Pinus, mature embryo with endosperm t.s. 44. Pinus, pollen grains with wings w.m. 45. Lilium, lily, young anthers showing meiosis of pollen mother cells 46. Tulipa, tulip, ovary t.s. showing arrangement of ovules 47. Taraxacum, dandelion, composite flower l.s. 48. Papaver, poppy, flower t.s. shows floral diagram 49. Phaseolus, bean, pod showing pericarp and seed t.s. 50. Lycopersicum, tomato, fruit t.s.
B-1004254

Wheat Flower (Triticum aestivum), Model
15-to-1 enlarged scale model of an ear of corn with an individual flower which can be removed and taken apart.
Dimensions: approx. 41x32x23 cm^3
Weight: approx. 0.8 kg
B-1017833

BOTANY





Series of Microscope Slides "Liverworts and Mosses (Bryophyta)"
15 microscope slides with English text.
Liverworts (Hepaticae):
1. Marchantia, thallus with gemma cup t.s.
2. Marchantia, antheridial branch l.s.
3. Marchantia, archegonial branch l.s.
4. Marchantia, mature sporogon l.s.
5. Ricciocarpus, thallus showing sexual organs t.s.
6. Ricciocarpus, thallus showing sporophytes t.s.

Mosses (Musci):
7. Polytrichum, stem t.s.
8. Polytrichum, leaves t.s.
9. Polytrichum, antheridial branch l.s.
10. Polytrichum, archegonial branch l.s.
11. Polytrichum, capsule (sporogon) t.s.
12. Polytrichum, w.m. of protonema
13. Mnium, w.m. of leaf showing chloroplasts
14. Sphagnum, branch with leaves t.s.
15. Sphagnum, capsule l.s.

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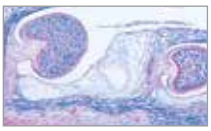
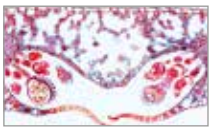
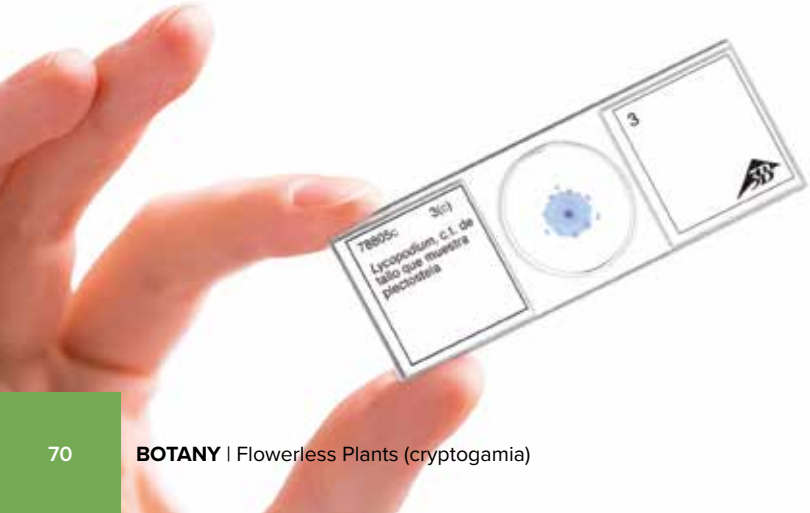



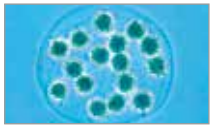
Series of Microscope Slides "Ferns and Fern Allies (Pteriodophytes)"
15 microscope slides with English text.
Primitive ferns (Psilophytatae):
1. Psilotum, rhizome showing protostele t.s. 2. Psilotum, stem showing squamous leaves, aktinostele t.s. Clubmosses (Lycopodiatae) 3. Lycopodium, of stem showing plectostele t.s. 4. Lycopodium, of strobilus showing isospores t.s. 5. Selaginella, stem showing siphonostele t.s.

Horse-tails (Equisetatae):
6. Equisetum, stem t.s. 7. Equisetum, strobilus showing spores t.s. 8. Equisetum, w.m. of spores with elaters Ferns (Filicatae) 9. Aspidium, root t.s. 10. Aspidium, stem t.s. 11. Aspidium, leaf showing sori t.s. 12. Aspidium, w.m. of prothallium showing antheridia and archegonia 13. Pteridium, rhizome t.s. 14. Osmunda, royal fern, rhizome with ectophloic siphonostele t.s. 15. Phyllitis scolopendrium, hart's tongue fern, leaf with sori and sporangia t.s.

B-1003973







Series of Microscope Slides "Algae"
30 microscope slides with English text.
Cyanophyceae: 1. Chroococcus, a single-cell alga, w.m. 2. Anabaena, w.m. of filaments with heterocysts 3. Nostoc sp., t.s. of colony with hormogonia 4. Aphanizomenon, w.m. showing heterocysts 5. Scytonema, unbranched filaments with false branching, w.m. 6. Stigonema, branching filaments, w.m.
Chromophyta: 7. Diatoms, fresh water, recent, mixed 8. Diatoms, showing protoplasmic structure
Conjugatae: 9. Spirogyra, vegetative filaments w.m. 10. Spirogyra, scalariform conjugation and zygotes following conjugation, w.m. 11. Zygnema, w.m. of vegetative filaments 12. Desmids, strewn slide showing several forms
Chlorophyceae: 13. Chlamydomonas, biflagellate cells, w.m. 14. Pandorina morum, biflagellate cells in a spherical colony, w.m. 15. Volvox, spherical colonies with daughter cells, w.m. 16. Pediastrum, stellate colonies, w.m. 17. Oedogonium, w.m. of filaments with sex organs, macrandrous 18. Cladophora, with multinucleate cells 19. Draparnaldia glomerata, filaments with clusters of branches 20. Ulva lactuca, green alga showing thallus of one celled layer 21. Vaucheria., w.m. of oogonia and antheridia
Charophyceae: 22. Chara vulgaris, thallus with sex organs
Phaeophyceae: 23. Fucus serratus, antheridia and oogonia t.s. on one slide 24. Fucus spiralis, monecious, t.s. of conceptacle with oogonia and antheridia 25. Ectocarpus, plurilocular, w.m. 26. Laminaria saccharina, thallus with sporangia t.s.
Rhodophyceae: 27. Polysiphonia, thallus with antheridia 28. Polysiphonia, thallus with cystocarps 29. Polysiphonia, thallus with tetraspores 30. Batrachospermum.

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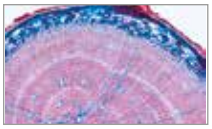
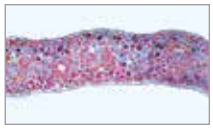
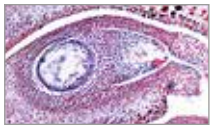

Series of Microscope Slides "Gymnospermae"
15 microscope slides with English text.
1. Ephedra, male cone l.s.
2. Ephedra, female cone at pollination time l.s.
3. Ginkgo, young sprout, t.s.
4. Ginkgo, leaf t.s.
5. Pinus, pine, young root
6. Pinus, pine, first year stem
7. Pinus, pine, bud showing vascular anatomy and origin of leaves l.s.
8. Pinus, pine, wood, transverse, radial and tangential sections
9. Pinus, pine, needles (leaves) t.s.
10. Pinus, pine, w.m. of mature pollen grains
11. Pinus, pine, male cone l.s.
12. Pinus, pine, young female cone l.s.
13. Larix, larch, t.s. of needles (leaves) t.s.
14. Larix, larch, male cone l.s.
15. Larix, larch, female cone with ovules l.s.

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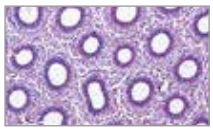
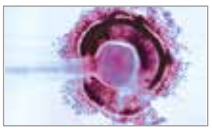
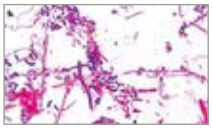
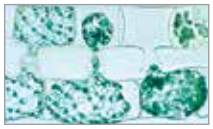
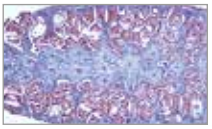
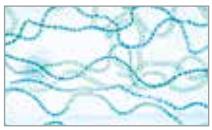



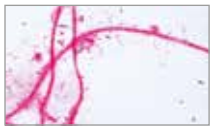
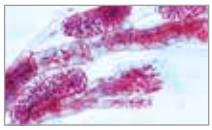
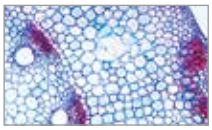
Series of Microscope Slides "Fungi and Lichen"
20 microscope slides with English text.
Phycomycetes:
1. Mucor mucedo, w.m. of hyphae showing sporangia 2. Rhizopus nigricans, w.m. of hyphae with developing zygotes . Synchytrium endobioticum, potato black wart, t.s. of infected tissue 4. Plasmodiophora, t.s. of cabbage rot
Ascomycetes:
5. Claviceps purpurea, t.s. of sclerotium 6. Tuber rufum, truffle, t.s. of fruiting body showing asci 7. Peziza sp., cup-fungus, t.s. of fruiting body with asci 8. Erysiphe sp., mildew, t.s. of leaf with perithecia 9. Penicillium sp., blue mold on orange-rind, t.s. of hyphae with conidiophores 10. Aspergillus glaucum, brown-mold, w.m. of hyphae with sporangia 11. Saccharomyces sp., yeast, budding, w.m. 12. Taphrina pruni (Exoascus pruni), plum pockets, t.s. with haustoria and asci
Basidiomycetes:
13. Puccinia graminis, t.s. of uredinia on wheat 14. Puccinia graminis, wheat rust, t.s. of aecidia on infected barberry leaf 15. Ustilago zeae, corn smut, infected tissue, t.s. 16. Psalliota sp., mushroom, l.s. through pileus and lamellae 17. Boletus edulis, pore fungus, l.s. through pores 18. Lycoperdon gemmatum, puff-ball, t.s. of fruiting body
Lichens:
19. Xanthoria, lichen, t.s. of thallus showing hyphae with symbiotic algae 20. Xanthoria, t.s. of apothecium.
B-1003971

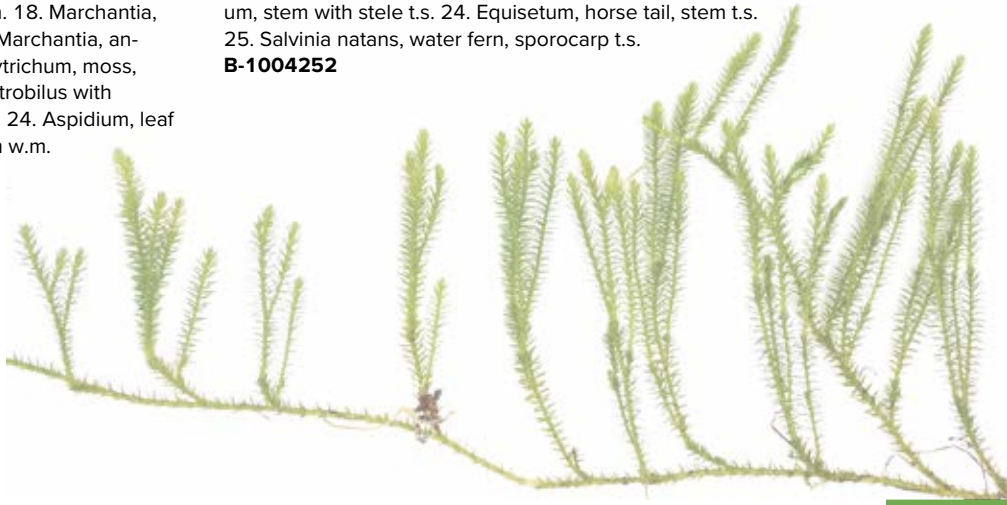
Series of Microscope Slides "Cryptogamae", Elementary Set
25 microscope slides with English text.
1. Bacteria type slide shows cocci, bacilli, spirilli 2. Oscillatoria, blue green alga 3. Pleurococcus, green alga 4. Eudorina, small colonies 5. Diatoms, mixed species 6. Spirogyra in conjugation with zygotes 7. Fucus, brown alga, female conceptacle with oogonia t.s. 8. Fucus, male conceptacle with antheridia t.s. 9. Mucor, black mold, mycelium and sporangia 10. Peziza, apothecium with asci t.s. 11. Claviceps purpurea, ergot, stroma with perithecia l.s. 12. Morchella, morel, fruiting body t.s. 13. Saccharomyces, yeast, budding 14. Psalliota, gill fungus, pileus with lamellae t.s. 15. Coprinus, mushroom, t.s. typical basidia and spores 16. Lobaria pulmonaria, foliose lichen, thallus with symbiotic algae t.s. 17. Moss stem with leaves w.m. 18. Marchantia, liverwort, thallus with cupule and gemmae l.s. 19. Marchantia, antheridia l.s. 20. Marchantia, archegonia l.s. 21. Polytrichum, moss, capsule with spores t.s. 22. Equisetum, horsetail, strobilus with spores l.s. 23. Aspidium (Dryopteris), fern, stem t.s. 24. Aspidium, leaf with sporangia and spores t.s. 25. Fern prothallium w.m.
B-1004250

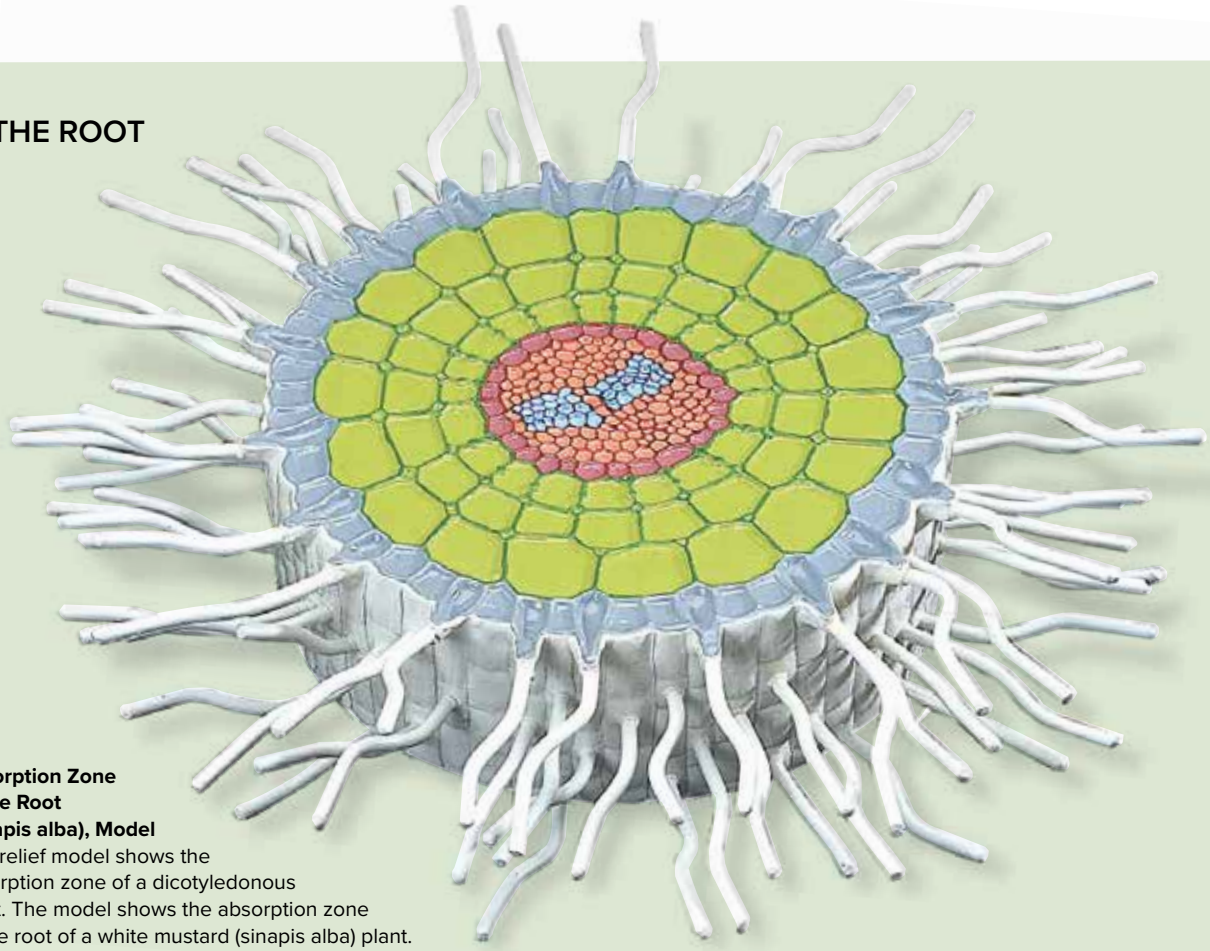

Series of Microscope Slides "Cryptogamae", Supplementary Set I
25 microscope slides with English text.
1. Streptococcus lactis, milk souring bacteria 2. Bacillus subtilis, hay bacillus, with spores 3. Nostoc, blue green alga with heterocysts 4. Volvox, with daughter colonies 5. Zygnema, vegetative and conjugation stages 6. Closterium, desmid 7. Chara, stonewort, thallus with reproductive organs 8. Ectocarpus, brown alga, plurilocular gametangia 9. Rhodomela, marine red alga, tetraspores 10. Plasmodiophora brassicae, club root, t.s. 11. Albugo candida, white rust of cruzifers, t.s. 12. Penicillium, blue mold, mycelium and conidiophores 13. Sclerotinia (Monilia), plum rot, t.s. 14. Boletus, pore fungus, pileus t.s. 15. Ustilago zeae, corn smut, pustule with spores t.s. 16. Puccinia graminis, wheat rust, uredinia on wheat t.s. 17. Puccinia graminis, aecidia and pycnidia on barberry leaf t.s. 18. Xanthoria, lichen, apothecium t.s. 19. Moss protonema w.m. 20. Sphagnum, peat moss, leaf w.m. 21. Polytrichum, moss, stem with leaves t.s. 22. Selaginella, strobilus with spores l.s. 23. Equisetum, horse tail, spores with elaters w.m. 24. Pteridium, braken fern, rhizome t.s. 25. Phyllitis, fern, leaf with sori t.s.
B-1004251

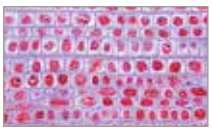
Series of Microscope Slides "Cryptogamae", Supplementary Set II
25 microscope slides with English text.
1. Sphaerotilus natans, bacteria from putrid water 2. Cosmarium, desmid 3. Chlamydomonas, biflagellate algae 4. Cladophora, green alga, branched filaments 5. Oedogonium, green alga, simple filaments 6. Enteromorpha, seaweed, inflated narrow frond w.m. 7. Laminaria saccharina, thallus with sporangia t.s. 8. Polysiphonia, marine red alga, antheridia 9. Polysiphonia, cystocarps 10. Polysiphonia, tetraspores 11. Batrachospermum, fresh water red alga 12. Exoascus pruni (Taphrina), plum pockets, infected tissue t.s. 13. Erysiphe pannosa, rose mildew, conidia t.s. 14. Tuber rufum, truffle, t.s. of fruiting body 15. Venturia pirinum (Fusicladium), pear scab, t.s. with conidia 16. Rhytisma acerinum, tar-spot of maple, leaf with sclerotia t.s. 17. Botrytis allii, grey mold of onions, infected tissue t.s. 18. Scleroderma vulgare, young fruiting body t.s. 19. Mnium, moss, antheridia l.s 20. Mnium, moss, archegonia l.s. 21. Psilotum, primitive fern, stem and leaflets t.s. 22. Lycopodium, clubmoss, sporophyll with spores l.s. 23. Lycopodium, stem with stele t.s. 24. Equisetum, horse tail, stem t.s. 25. Salvinia natans, water fern, sporocarp t.s.
B-1004252

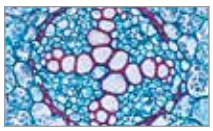


THE ROOT



Absorption Zone of the Root (Sinapis alba), Model
This relief model shows the absorption zone of a dicotyledonous plant. The model shows the absorption zone of the root of a white mustard (sinapis alba) plant.
Dimensions: approx. 43x43x80 cm^3
Weight: approx. 0.7 kg
B-1002505





Series of Microscope Slides "Angiospermae Roots Set"
15 microscope slides with English text.
1. Allium cepa, onion, root tips, l.s. showing all stages of mitosis
2. Zea mays, corn, t.s. of typical monocot root
3. Iris, t.s. of typical monocot root
4. Ranunculus, buttercup, t.s. of a typical dicot root
5. Sarothamnus, broom, t.s. through woody root
6. Taraxacum, dandelion, t.s. through tap root showing lactiferous ducts
7. Vicia faba, bean, root nodule t.s. nitrogen fixing bacteria
8. Ranunculus ficaria, tuber during fall season, t.s. showing starch
9. Alnus, alder, t.s. of tuber showing actinomycetes
10. Neottia, orchid, t.s. of root with endotrophic mycorrhiza
11. Cuscuta, dodder, on host, t.s. haustorium
12. Root hairs, w.m. of root tip, root cap and root hairs
13. Zea mays, root tip, median l.s. showing central pith, cap and starch
14. Monstera, aerial root t.s.
15. Elodea, Canadian waterweed, t.s. of an aquatic root.
B-1003976

Tissue Structure of the Buttercup Root (Ranunculus), Model
Tissue structure of a plant is detailed in longitudinal and lateral views.
400 times magnified
B-1005131

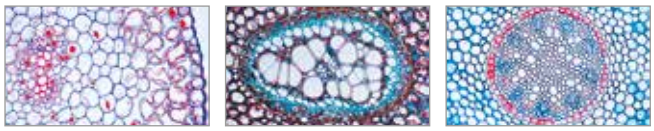
› THE STEM

Stem Cross Section of Creeping Buttercup (Ranunculus repens), Model
Cross section of a Creeping Buttercup stem with collateral open vascular bundles. The model shows the typical stem structure of a dicotyledon enlarged by a factor of 250.
Dimensions: approx. 28x7 cm^2
Weight: approx. 0.8 kg
B-1002506

Series of Microscope Slides "Angiospermae Stems"
20 microscope slides with English text.
1. Canna, t.s. of typical monocot stem with scattered bundles
2. Aristolochia, t.s. of one year, two years stem and older stem, all 3 in on slide
3. Dicot and monocot stem, t.s. of Helianthus and Canna
4. Dicot and monocot stem, t.s. of Ranunculus and Zea
5. Tilia, lime, two t.s. of stems, first year and two years
6. Fagus silvatica, beech, three sections of wood, t.s., r.l.s., t.l.s.
7. Fraxinus excelsior, ash, three sections of wood, t.s., r.l.s., t.l.s.
8. Quercus, oak, t.s. of stem showing cambium and bark
9. Sambucus, elder, t.s. of bark showing lenticells
10. Linum, flax, t.s. of stem showing husk fibres
11. Linum, flax, isolated husk fibres, w.m.
12. Ranunculus, l.s. of herbaceous stem
13. Cucurbita pepo, l.s. of stem with sieve tubes
14. Sieve plates in top view, t.s. of Cucurbita stem
15. Lamium, t.s. of square stem, collenchyma
16. Secale, rye, t.s. of typical grass stem
17. Nymphaea, water lily, t.s. of aquatic stem, spicular cells
18. Hippuris, t.s. of typical aquatic stem with large central pith
19. Urtica, nettle, stinging hairs with poison ducts
20. Solanum tuberosum, potato, t.s. of tuber with starch grains and cork.

B-1003977

Tissue Structure of the Sun Flower Stem (Helianthus annuus), Model
Tissue structure of a plant is detailed in longitudinal and lateral views.
200 times magnified
B-1005130



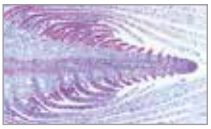
Series of Microscope Slides "Arrangement and Types of Vascular Bundles"
13 microscope slides with English text.
1. Protostele. Psilotum, stem t.s.
2. Actinostele. Lycopodium, stem t.s.
3. Polystele. Pteridium, rhizome t.s. concentric bundles with inner xylem
4. Ectophloic siphonostele. Osmunda, rhizome t.s.
5. Amphiphloic siphonostele. Adiantum, rhizome t.s.
6. Dictyostele. Polypodium, rhizome t.s.
7. Eustele. Ranunculus, stem t.s., open collateral bundles
8. Eustele. Lamium, stem t.s.
9. Eustele. Cucurbita pepo, stem t.s., bicollateral bundles
10. Atactostele. Zea mays, stem t.s., closed collateral bundles
11. Arrangement of bundles similar to atactostele in a dicot plant. Podophyllum, stem t.s.
12. Concentric vascular bundles with outer xylem. Convallaria, rhizome t.s.
13. Radial concentric vascular bundle. Ranunculus, root t.s.

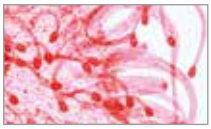
B-1004255

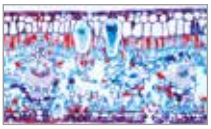
› THE LEAF

Leaf Cross Section of Beech (Fagus silvatica), Model
This plant model shows the histological structure of a beech leaf (fagus silvatica). The leaf structure is magnified 1500 times.
Dimensions: approx. 29x29x8.5 cm^3
Weight: approx. 1.4 kg
B-1002504

Leaf Structure (Ligustrum), Model
Representation of the histological structure of a Ligustrum leaf. Magnified 500 times. On baseboard.
B-1005129



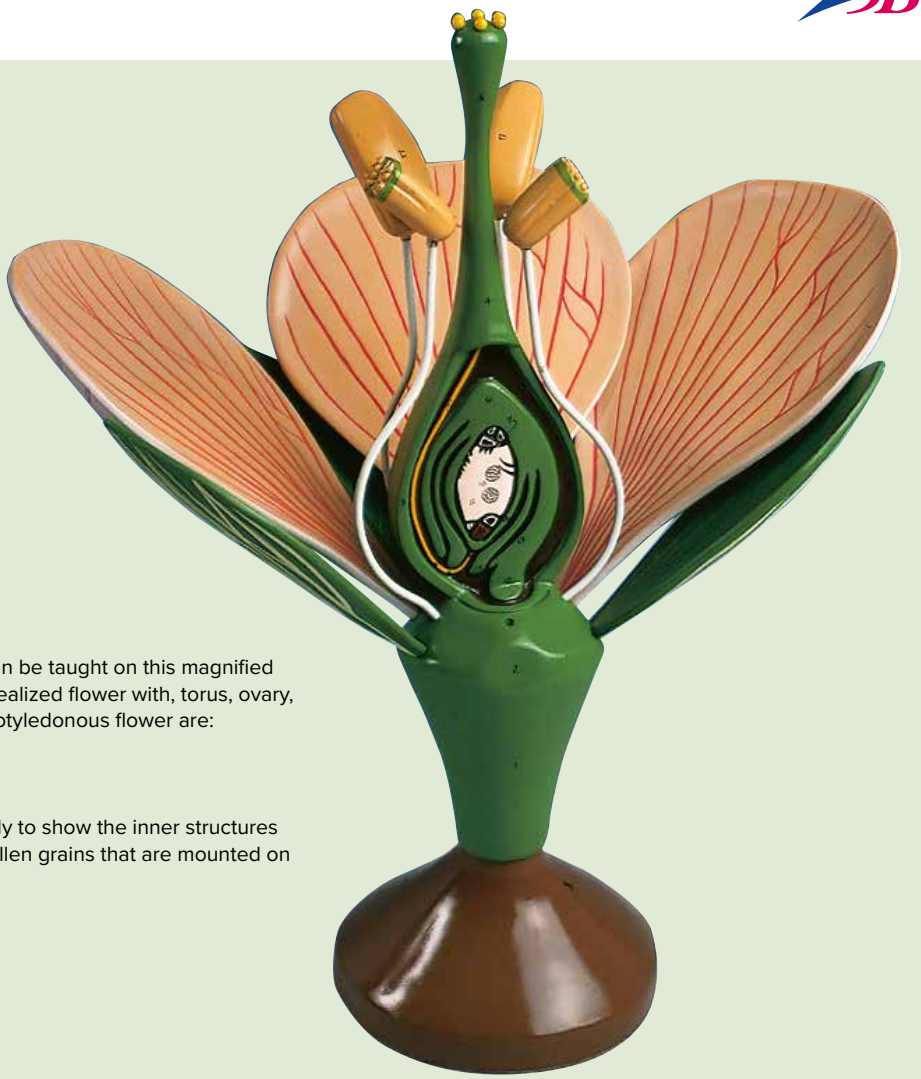




Series of Microscope Slides "Angiospermae Leafs"
15 microscope slides with English text.
1. Elodea, l.s. of stem tip showing apical meristem and origin of leaves
2. Leaves, monocot and dicot, Zea and Ranunculus, t.s.
3. Syringa, lilac, t.s. of typical dicot leaf
4. Iris, typical isobilateral leaf t.s.
5. Eucalyptus, a bifacial foliage leaf with schizogenous oil glands t.s.
6. Fagus, beech, t.s. of sun and shade leaves on one slide
7. Calluna, ling, t.s. of rolled leaf showing sunken stomata
8. Nerium oleander, t.s. of leaf showing sunken stomatal pits lined with protective hairs
9. Ficus elastica, rubber plant, t.s. of leaf showing cystoliths
10. Elodea, t.s. of leaf showing the simple structure of an aquatic leaf
11. Tulipa, tulip, epidermis w.m. showing stomata
12. Aesculus, t.s. of leaf bud with squama and embedded folded leaves
13. Drosera, sundew, w.m. of leaf with glandular hairs
14. Nepenthes, t.s. of pitcher with glands
15. Utricularia, bladderwort, w.m. of bladder

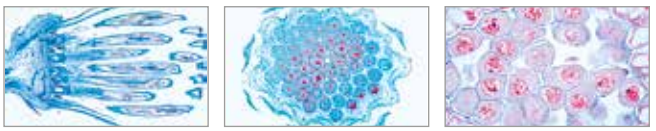
B-1003978

› THE FLOWER



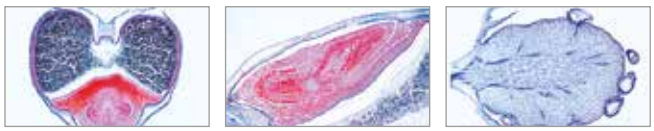
Dicotyledonous Flower, Model
The pollination of the angiosperms can be taught on this magnified dicotyledonous flower model of an idealized flower with, torus, ovary, and style. Removable parts of the dicotyledonous flower are:
- 3 petals
- 4 sepals
- 4 filaments
- 2 anthers and the ovary are cut partly to show the inner structures of the dicotyledonous flower. 6 pollen grains that are mounted on the style can be easily identified.

Dimensions: approx. 43x38x25 cm^3
Weight: approx. 1 kg
B-1005541



Series of Microscope Slides "Angiospermae Flowers"
15 microscope slides with English text.
1. Zea and Ranunculus, t.s. of monocot and dicot flowers
2. Bellis, l.s. of composite flower bud
3. Taraxacum, dandelion, t.s. of composite flower bud
4. Papaver, poppy, t.s. of flower bud with parietal placentation
5. Cheirantus, wallflower, t.s. of flower bud with marginal-parietal placentation
6. Solanum, potato, t.s. of ovary with marginal-central placentation
7. Prunus avium, cherry, flower bud with perigynous ovary l.s.
8. Pyrus malus, apple, flower bud with hypogynous ovary l.s.
9. Arum maculatum, flower bud, t.s. showing ovary
10. Lilium, ovary t.s., showing arrangement of ovules
11. Lilium, anther t.s. showing pollen chambers and pollen grains
12. Lilium, anther t.s., early prophase of meiosis
13. Stigma of Eschscholtzia, w.m. showing penetrating pollen
14. Pollen of Corylus, hazelnut, w.m.
15. Pollen types, w.m. of a great variety of mixed pollen.

B-1003979



Series of Microscope Slides "Angiospermae Fruits and Seeds"
15 microscope slides with English text.
1. Triticum, wheat, t.s. of kernel (grain), endosperm and starch grains
2. Triticum, wheat, l.s. of kernel showing origin of embryo
3. Zea mays, corn, young cob t.s.
4. Phaseolus, bean, t.s. of pod with seed
5. Solanum, potato, t.s. of ovary with developing embryos
6. Helleborus, l.s. of atrope ovary
7. Capsella, l.s. of ovary with developing embryos
8. Papaver, poppy, t.s. of ovary with developing embryos
9. Phoenix, date-palm, t.s. of seed
10. Prunus, plum, t.s. of young stony fruit
11. Juglans regia, walnut, young drupe t.s.
12. Ribes, gooseberry, l.s. of young fruit
13. Helianthus, sunflower, t.s. of achene fruit
14. Pyrus malus, apple, young pome t.s., a fleshy, many seeded fruit
15. Fragaria, strawberry, young aggregate fruit l.s.

B-1003980

PHOTOSYNTHESIS

Experiment Topics:
- **When do water plants produce oxygen?**
- **How much oxygen do water plants produce?**

Experiment Set “Photosynthesis”
With the help of this equipment set, it is possible to observe the process of photosynthesis using water plants as an example. The set can be used to investigate how photosynthesis depends on the light intensity, the wavelength of the light, the CO2 content of the water and various other parameters. It can be used for students to experiment with by themselves or by the teacher for demonstration purposes. The accompanying CD-ROM contains not only detailed information for teachers including theoretical background for each experiment but also a worksheet (report) which can be completed by the students.

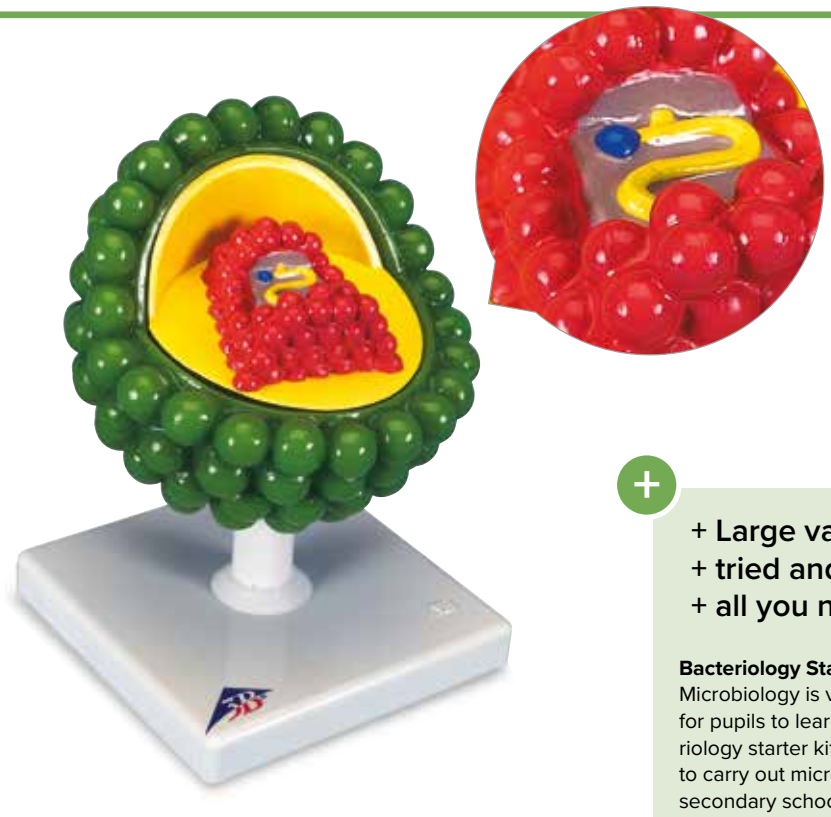
Contents:
1 Beaker (1 l)
1 Funnel
1 Universal bracket
4 Collection vessels
2 Rubber bungs
4 Colour filters (blue, yellow, red, green)
4 Neutral density filters
Instructions on CD-ROM in German and English
B-1012864

Additionally required:
B-1013528 Illumination Equipment “Photosynthesis”

Illumination Equipment “Photosynthesis”
The illumination equipment serves as a source of light and a stand for performing the experiments with the Experiment Set “Photosynthesis”.

Contents:
1 Tripod
1 Acrylic plate 150x150x3 mm^3
1 Bosshead
1 Halogen lamp, 12 V DC/20 W, GU4 socket with plug-in power supply, 12 V DC/2 A for 115 V / 230 V, 50/60 Hz
B-1013528

PARASITOLOGY / MICROBIOLOGY



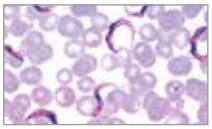
HI Virus, Model
This model of the human immunodeficiency virus (HIV), enlarged millions of times, shows the outer lipid membrane with protein structures, and the internal nucleus which contains the viral hereditary matter (RNA). The nucleus is removable. Mounted on base.
Dimensions: approx. 18x13x13 cm^3
Weight: approx. 0.7 kg
B-1000336

ELISA HIV/AIDS-Test
AIDS – an important topic already for middle school students! But how does an AIDS test work?
The students study the immunobiological phenomenon of the antigen-antibody reaction. They learn that the ELISA immunoassay is an important tool to detect the HI virus. They simulate ELISA screenings with artificial blood serum of 10 fictitious individuals to determine their HIV status. In this way, they gain insight into the field of immunobiology and the particular meanings of terms such as “positive” and “negative” and “false positive” and “false negative”. The students get to know basic concepts of immunobiology and understand how the ELISA HIV screening test works. They observe simulated ELISA antibody-antigen reactions and finally analyze the ELISA test result.
Supplied with:
3 comboplates, 8 micro-spatulas, 3 plastic pipets, 1 vial with glass beads coated with simulated HIV antigen, Simulated anti-human antibody enzyme linked conjugate (10 ml), 2 simulated chromagen (10 ml), 9 simulated patients sera (10 ml), 1 simulated negative control serum (10 ml), 1 simulated low positive control serum (10 ml), 1 simulated high positive control serum (10 ml), description in German and English language.
B-1005974

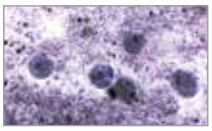
+ Large variety of subjects
+ tried and true instructions
+ all you need for 4 school groups

Bacteriology Starter Kit
Microbiology is very important in everyday life, so it is exciting for pupils to learn about it through experimentation. Our bacteriology starter kit contains the basic equipment you will need to carry out microbiology experiments with your pupils in upper secondary school. These user instructions describe general microbiology work methods, and explain how to carry out a range of microbiology experiments:
• Testing for bacteria and carrying out a bacterial count in soil
• Testing for bacteria and carrying out a bacterial count in water
• Testing for air-borne bacteria
• Microscopy of bacteria
• Determination of generation times at different temperatures
• Effectiveness of antibiotics
• Occurrence of natural mutations and their characterisation
The experiments are designed for 4 groups of pupils and can be easily incorporated into everyday school life.
Contents:
4 inoculation loops, 4 Drigalski spatulas, 20 Petri dishes, 20 reagent glasses with tops, 3x nutrient agar (175 ml each), 4 drop pipettes, 4 antibiotic test rings (each with 8 different antibiotics), 50 microscope slides, 50 cover glasses, 2 packs of filter paper, 1 methylene blue solution (10 ml)
B-1019628

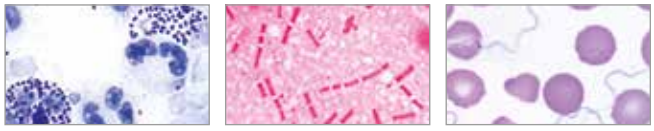
PARASITOLOGY / MICROBIOLOGY



Series of Microscope Slides "Parasitology", Short Set
25 microscope slides with English text. Domestic and tropical parasites of humans and animals.
1. Trypanosoma gambiense, Central African sleeping disease, blood smear 2. Plasmodium berghei, malaria in rodents, blood smear with vegetative forms and schizogony stages 3. Sarcocystis sp., section of muscle showing the parasites in Miescher's tubes 4. Nosema apis, honey bee dysentery, t.s. of diseased bee intestine 5. Eimeria stiedae, causes coocidiosis in rabbit liver, t.s. shows parasites in all stages 6. Fasciola hepatica, beef liver fluke, w.m. of adult flat mount and carefully stained 7. Fasciola hepatica, ova w.m. 8. Taenia or Moniezia, tapeworm, scolex w.m. 9. Taenia pisiformis, dog tapeworm, mature proglottids w.m. 10. Taenia saginata, tapeworm, proglottids in different stages t.s. 11. Hymenolepis nana, dwarf tapeworm, proglottids w.m. 12. Echinococcus granulosus, cyst wall and scolices sec.
13. Ascaris lumbricoides, roundworm of human, adult female t.s. in region of gonads 14. Ascaris lumbricoides, ova from faeces w.m.
15. Enterobius vermicularis (Oxyuris), pin worm, adult specimen w.m.
16. Trichinella spiralis, muscle with encysted larvae l.s. 17. Ixodes sp., tick, adult w.m. Carrier of relapsing fever and borreliosis 18. Dermanyssus gallinae, chicken mite w.m. 19. Acarapis woodi, varroa, parasitic mite of honey bee, w.m. 20. Sarcoptes scabiei (Acarus siro), section of diseased skin with parasites 21. Anopheles, malaria mosquito, head and mouth parts of female w.m. 22. Culex pipiens, common mosquito, head and mouth parts of female w.m. 23. Cimex lectularius, bed bug, w.m. 24. Pediculus humanus, human louse, w.m.
25. Ctenocephalus canis, dog flea, adult w.m.
B-1004266

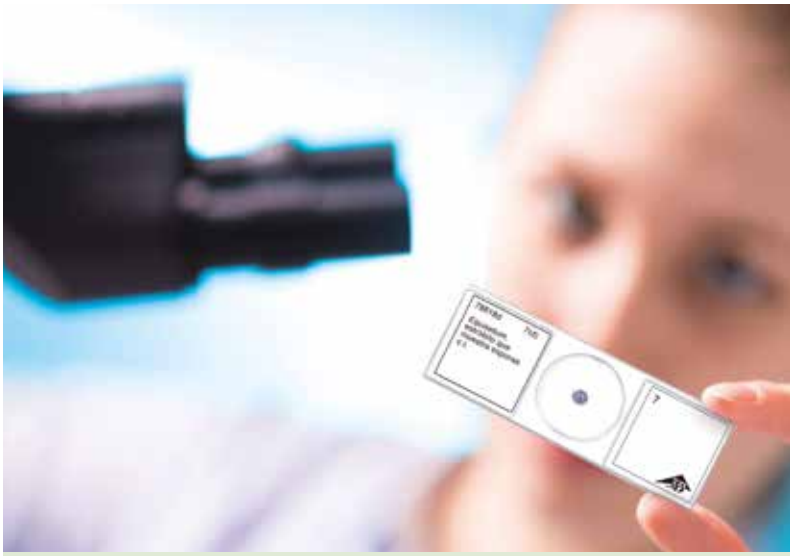


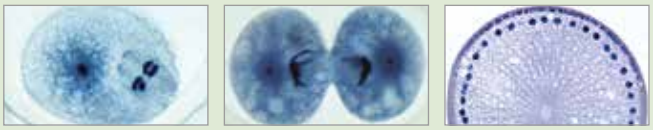
Series of Microscope Slides "Parasitology", Long Set
50 microscope slides with English text. Domestic and tropical parasites of humans and animals.
1. Entamoeba histolytica, amebic dysentery, smear or section
2. Leishmania donovani, causes Kala-Azar, smear or section 3. Trypanosoma gambiense, sleeping disease, blood smear 4. Trypanosoma cruzi, Chagas disease, blood smear 5. Plasmodium falciparum, human malaria, blood smear with ring stages 6. Plasmodium berghei, blood smear with vegetative forms and schizogony stages 7. Plasmodium sp., malaria melanemia in human spleen 8. Toxoplasma gondii, causing toxoplasmosis, smear or section of cyst 9. Babesia canis, blood smear 10. Sarcocystis sp., section of muscle showing the parasites in Miescher's tubes 11. Nosema apis, honey bee dysentery, t.s. of bee intestine 12. Monocystis agilis, from earthworm seminal vesicle 13. Eimeria stiedae, causes coccidiosis in rabbit liver, t.s. 14. Fasciola hepatica, beef liver fluke, w.m. of adult flat mount 15. Fasciola, typical t.s. of body in different regions 16. Fasciola, ova w.m. 17. Fasciola, miracidia w.m. * 18. Schistosoma mansoni, bilharziosis, adult male or female w.m. 19. Schistosoma, t.s. of snail liver with redia and cercaria * 20. Schistosoma mansoni, ova in faeces 21. Taenia or Moniezia, tapeworm, scolex w.m. 22. Taenia pisiformis, dwarf tapeworm, mature proglottids w.m. 23. Taenia saginata, tapeworm, proglottids in different stages t.s. 24. Taenia saginata, ova in faeces w.m. 25. Hymenolepis nana, proglottids w.m. 26. Echinococcus granulosus, dog tapeworm, scolices from cyst w.m. 27. Echinococcus, cyst wall and scolices t.s.. 28. Ascaris lumbricoides, roundworm of human, adult female t.s. in region of gonads 29. Ascaris lumbricoides, adult male t.s. in region of gonads 30. Ascaris lumbricoides, ova from faeces w.m.
31. Enterobius vermicularis (Oxyuris), pin worm, adult specimen w.m.
32. Trichinella spiralis, muscle with encysted larvae l.s. 33. Ancylostoma, hookworm, adult w.m. 34. Trichuris trichiura, whip worm, ova w.m.
35. Strongyloides, larvae w.m. 36. Heterakis spumosa, intestinal parasite of rat, adult 37. Ixodes sp., tick, adult w.m. Carrier of relapsing fever and borreliosis 38. Dermanyssus gallinae, chicken mite w.m.
39. Acarapis woodi, varroa, parasitic mite of honey bee, w.m. 40. Sarcoptes scabiei, section of diseased skin with parasites 41. Stomoxys calcitrans, stable fly, piercing sucking mouth parts w.m. 42. Anopheles, malaria mosquito, mouth parts of female w.m. 43. Culex pipiens, common mosquito, mouth parts of female w.m. 44. Anopheles, larva w.m. 45. Culex pipiens, larva w.m. 46. Culex pipiens, pupa w.m.
47. Cimex lectularius, bed bug, w.m. 48. Pediculus humanus, human louse, w.m. 49. Pediculus humanus, louse eggs attached to the hair, w.m. 50. Ctenocephalus canis, dog flea, adult w.m.
B-1004248



Series of Microscope Slides “Pathogenic Bacteria”
25 microscope slides with English text.
1. Diplococcus pneumoniae, croupous pneumonia 2. Neisseria gonorrhoeae, gonorrhoea 3. Neisseria meningitidis (intracellularis), epidemic meningitidis 4. Staphylococcus aureus, pus organism 5. Streptococcus pyogenes 6. Corynebacterium diphtheriae 7. Mycobacterium tuberculosis, smear from positive sputum stained after Ziehl-Neelsen 8. Bacterium erysipelatos 9. Brucella abortus, abortation in cattle (Bang disease) 10. Proteus vulgaris, inflammation of urinary system 11. Escherichia coli, colon bacteria, possibly pathogen 12. Eberthella typhi, typhoid fever 13. Salmonella paratyphi, paratyphoid fever 14. Hemophilus influenzae (Pfeiffer) 15. Klebsiella pneumoniae (Friedlander), pneumonia 16. Pasteurella (Yersinia) pestis, bubonic plague, smear 17. Salmonella enteritidis, meat poisoning 18. Shigella dysenteriae, bacillary dysentery 19. Bacillus anthracis, wool sorter’s disease 20. Clostridium botulinum, food poisoning 21. Clostridium septicum 22. Clostridium tetani, lockjaw 23. Clostridium perfringens, gas gangrene 24. Vibrio comma, Asiatic cholera, smear 25. Borrelia duttoni (Spirochaeta recurrentis), Central African relapsing fever, blood.
B-1004249

Series of Microscope Slides “Bacteria”
25 microscope slides with English text. The microscope slide collection includes the most important pathogenic and non-pathogenic bacteria.
1. Staphylococcus aureus, pus organism 2. Sarcina lutea, chromogenic rods 3. Streptococcus pyogenes, pus organism 4. Streptococcus lactis, milk souring organism 5. Bacillus subtilis, hay bacillus, smear with bacilli and spores 6. Bacillus mycoides, soil organis 7. Bacillus anthracis, wool sorters disease 8. Mycobacterium tuberculosis, tuberculosis 9. Corynebacterium diphtheriae, diphtheria 10. Bacterium erysipelatos, red murrain 11. Rhizobium radicicola, nitrogen fixing bacteria 12. Proteus vulgaris, putrefaction 13. Escherichia coli, colon bacteria 14. Eberthella typhi, typhoid fever 15. Salmonella paratyphi, paratyphoid fever 16. Vibrio comma, Asiatic cholera 17. Shigella dysenteriae, bacillary dysentery 18. Hemophilus influenzae, Pfeiffer bacillus 19. Spirillum volutans, from putrid water 20. Rhodospirillum rubrum, chromogenic spirilli 21. Clostridium botulinum (botulism), food poisoning 22. Spirochaeta duttoni (Borrelia recurrentis), in blood smear 23. Bacteria from mouth, with Gram positive and negative rods 24. Bacteria from bread 25. Bacteria from cheese.
B-1003969



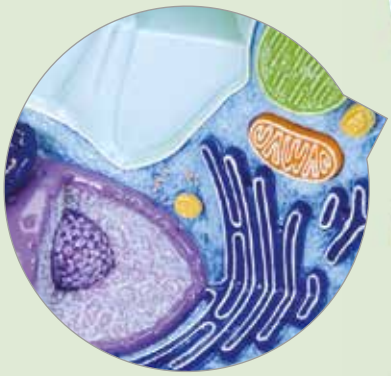


Series of Microscope Slides “The Ascaris megalocephala Embryology”
10 microscope slides with English text.
1. Cell division in l.s. of Allium root tips, showing all mitotic stages 2. Ascaris, primary germ cells in the growing zone of oviduct 3. Ascaris, entrance of sperm in the oocytes 4. Ascaris, first and second maturation divisions in oocytes I, 5. Ascaris, dito. in oocytes II 6. Ascaris, mature oocytes with male and female pronuclei 7. Ascaris, early cleavage stages 8. Ascaris, later cleavage stages 9. Ascaris, adult female, t.s. in region of gonads 10. Ascaris, adult male roundworm, t.s. in region of gonads.
B-1013479

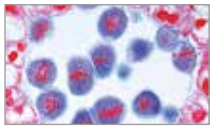
CELLS

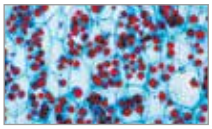
Plant Cell Model
The two piece plant cell model shows the structures of a typical plant cell as viewed by an electron microscope. The cytoplasm and all important organelles of the plant cell are in raised relief and displayed in color. Features included in the plant cell model:
- Cell wall
- Cell membrane
- Nucleus
- Smooth Endoplasmic Reticulum
- Rough Endoplasmic Reticulum
- Ribosomes
- Chloroplasts
- Mitochondria
- Dictyosomes/Golgi apparatus

Magnification: approx. 10,000:1
Dimensions: approx. 20x11.5x33 cm^3
Weight: approx. 2 kg
B-1000524



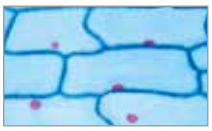
Model of a Plant Cell
Students can explore plant cell structure with this 20 cm diameter cell model. Students can explore plant and animal cell structure with these 20 cm diameter cell models in the plant and animal cell model activity set. Teacher's notebook of the plant and animal cell model activity set includes: background information, basic understandings, black line master, two full-color overhead transparencies, key structure and a glossary. Text in English.
B-1005487

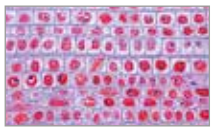




Series of Microscope Slides "Angiospermae Cells and Tissues"
20 microscope slides with English text.
1. Epidermal cells of Allium (onion), flat mount shows typical plant cells with nuclei, cytoplasm and cell walls
2. Mitosis, l.s. from Allium root tips showing all stages of plant mitosis
3. Meiosis, t.s. of Lilium anthers showing different stages of meiosis
4. Stem apex and meristematic tissue of Asparagus l.s.
5. Chloroplasts, w.m. of leaf of Elodea or Spinacea showing detail of large chloroplasts
6. Chromoplasts, t.s. of root of Daucus (carrot)
7. Aleurone grains, t.s. of Ricinus endosperm
8. Starch grains, different kinds mixed w.m.
9. Fat, t.s. of endosperm of Corylus (hazel) stained for fat
10. Inulin crystals, t.s. of tuber of Dahlia
11. Acid tannic, t.s. bark of Rosa 12. Calcium oxalate crystals in w.m. of dry Allium scale 13. Annular and spiral vessels, isolated and w.m.
14. Wood cells, macerated and w.m.
15. Lactiferous vessels, l.s. stem of Euphorbia (spurge)
16. Cork cells, t.s. bark of Quercus suber (oak)
17. Scale-like stellate hairs, isolated from Elaeagnus (olive tree)
18. Lysigenous oil glands, t.s. rind of Citrus fruit
19. Parenchyma cells, t.s. of marrow of Sambucus (elderberry)
20. Stone cells, t.s. fruit of Pyrus (pear).

B-1003975



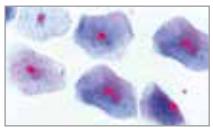


Series of Microscope Slides "The Plant Cell"
12 microscope slides with English text.
1. Epidermis of Allium (onion), w.m. showing simple plant cells with cell walls, nuclei and cytoplasm
2. Root tips of Allium cepa l.s. showing cell division (mitosis) in all stages
3. Pollen mother cells of Lilium. Prophase of first maturation division (meiosis)
4. Pollen mother cells of Lilium. Metaphase and anaphase of first maturation division 5. Wood of Tilia macerated and w.m.
6. Fruit of Pyrus (pear) t.s. showing stone cells
7. Tuber of Solanum (potato) t.s. shows cork and starch grains
8. Cucurbita pepo (pumpkin) l.s. of stem showing vascular bundles with sieve tubes, spiral and annular vessels
9. Ricinus endosperm t.s. showing aleurone grains
10. Anthers of Lilium (lily), t.s. pollen sacs and pollen grains
11. Ovary of Lilium (lily), t.s. arrangement of ovules and embryosac
12. Spirogyra showing conjugation stages and zygotes

B-1003982

Animal Cell Model
The two piece animal cell model shows the form and structure of a typical animal cell as viewed by an electron microscope. All important organelles are shown in raised relief and displayed in color, e.g.:
- Nucleus
- Mitochondrion
- Smooth Endoplasmic Reticulum
- Rough Endoplasmic Reticulum
- Basal membrane
- Collagen fibres
- Golgi apparatus
- Microvilli
- Lysosome

Magnification: approx. 10,000:1
Dimensions: approx. 21x11x31 cm^3
Weight: approx. 800 g
B-1000523



Series of Microscope Slides "The Animal Cell"
12 microscope slides with English text.
1. Squamous epithelium, isolated cells from human mouth
2. Striated muscle l.s. showing nuclei, striations
3. Compact bone and hyaline cartilage t.s., two sections for comparison
4. Nerve fibres isolated, fixed and stained by osmic acid to show myelin sheaths and Ranvier's nodes
5. Liver of Salamandra t.s., simple animal cells
6. Kidney of mouse, t.s. vital stained to demonstrate storage
7. Ovary of cat, t.s. showing primary, secondary, and Graafian follicles
8. Testis of frog, t.s. showing spermatogenesis
9. Salamandra larva, t.s. of skin and other organs selected to show cell division (mitosis)
10. Uteri of Ascaris megalocephala, t.s. stained to show meiosis with chromosomes and nuclear spindles
11. Salivary gland of Chironomus larva. Giant chromosomes showing large chromomeres Stained for DNA after Feulgen
12. Ova from Psammechinus (sea urchin). Unfertilised ova, fertilised ova, early cleavage stages.

B-1003981

Model of an Animal Cell
Students can explore animal cell structure with these 20 cm diameter cell models. Students can explore plant and animal cell structure with these 20 cm diameter cell models in the plant and animal cell model activity set. Teacher's notebook of the plant and animal cell model activity set includes: background information, basic understandings, black line master, two full-color overhead transparencies, key structure and a glossary. Text in English.
B-1005488

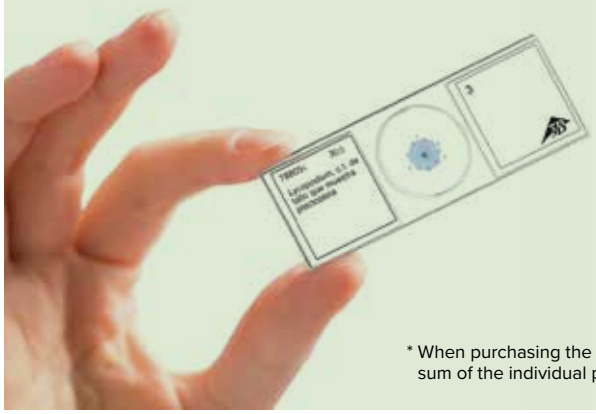
Human Cell Model, 40,000 times Life-Size
This one of a kind model represents an undifferentiated human cell at an enlargement of 40,000 times. It shows the structure of the smallest unit of any living creature capable of independent life, as seen through an electron microscope. The high quality human cell model shows the essential function-bearing cell organelles with stunning beauty and their arrangement in the model provides a momentary snapshot of the dynamic balance of a cell. The cell nucleus, a few mitochondria and the lysosomes are shown in section, so that their internal structure is visible. The glass cell is an eye-catcher in many exhibitions and has received several distinctions as “World Didac Gold Award”. Whether you are looking for a model for a display case, museum mount or to make a statement in a lobby – this glass cell model is of the finest quality and sure to please.
Dimensions: approx. 60x46x46 cm^3
Weight: approx. 13 kg
B-1008554

Comparison Models Animal and Plant Cell
These enlarged models of an animal cell and a plant cell enable visual teaching about their structures, as well as their similarities and differences. The plant and animal cell structures are numbered and identified, and the product manual also includes reproducible illustrations for use in testing. Furthermore, the plant cell and animal cell set contains 12 electron microscopic illustrations of different cell structures.
Plant cell and animal cell supplied with teacher's aid in English.
B-1005124

Plant and Animal Cell Model Activity Set
Students can explore plant and animal cell structure with these 20 cm diameter cell models in the plant and animal cell model activity set. Teacher's notebook of the plant and animal cell model activity set includes: background information, basic understandings, black line master, two full-color overhead transparencies, key structure and a glossary. Text in English.
B-1005486

5% PACKAGE DISCOUNT*

Cell Biology Set*
The cell biology set contains two model cells, one animal cell (B-1000523) and a plant cell (B-1000524), along with a corresponding set of microscope slides, animal cell (B-1003981) and plant cell (B-1003982).
B-8000808



* When purchasing the cell biology package, entry of the discount code BA71EN entitles you to 5% off the sum of the individual prices for the items.

CELL DIVISION

Advantages of Mitosis and Meiosis Models

+ Chromosomes colored according to modified AZAN staining colors
+ Cell components are color-coded in accordance with educational aspects
+ Attaching magnets on the rear
+ Storage system, free-standing or hanging up
+ Supplied with detailed description and copying templates
+ Enlarged 10,000 times

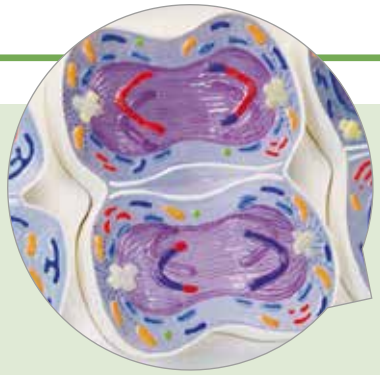
Mitosis Model
The three-dimensional relief model shows the following 9 phases of mitosis on the basis of a typical mammal cell:
1. Interphase
2. Prophase
3. Early prometaphase
4. Later prometaphase
5. Metaphase
6. Early anaphase
7. Later anaphase
8. Telophase
9. Cytokinesis

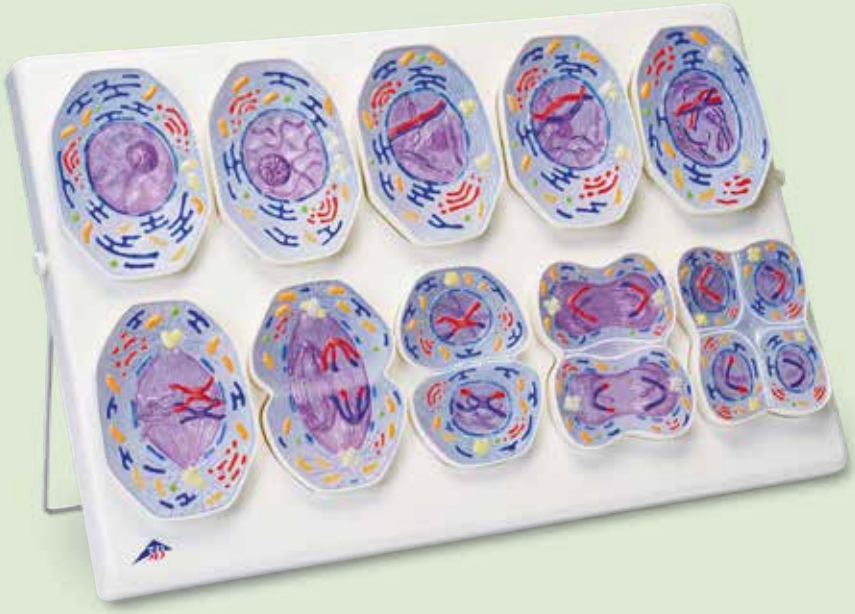
Dimensions: approx. 60x40x6 cm^3
Weight: approx. 1.7 kg
B-1013868

Mitosis Model Activity Set
Illustrate somatic cell division with this informative model. Enlarged views detail five phases of mitosis. Includes: cytoplasm nucleus, nucleolus, chromatic threads, centrioles, aser, spindle, chromosomes and centromere. Description in English.
B-1005484

Series of Microscope Slides "Mitosis and Meiosis Set I"
6 selected microscope slides with depictured accompanying brochure
1. Mitosis, l.s. from Allium root tips showing plant mitosis stained with iron-hematoxyline
2. Mitotic stages in sec. of red bone marrow
3. Meiotic and mitotic stages in sec. of Salamandra testis
4. Lilium, anther t.s., microspore mother cells showing telophase of first and prophase of second division
5. Giant chromosomes, smear from salivary gland of Chironomus
6. Ascaris megalocephala embryology. Sec. of uteri showing maturation stages.

B-1013468

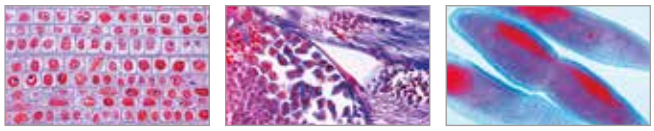




Meiosis Model
The three-dimensional relief model shows the 10 stages of meiosis on the basis of a typical mammal cell:
1. Interphase (stage of G1-phase)
2. Prophase I (leptotene)
3. Prophase I (zygotene and pachytene)
4. Prophase I (diplotene)
5. Prophase I (diakinesis)
6. Metaphase I
7. Anaphase I
8. Telophase I, cytokinesis I, interkinesis, prophase II and metaphase II
9. Anaphase II
10. Telophase II and cytokinesis II

Dimensions: approx. 60x40x6 cm^3
Weight: approx. 1.7 kg
B-1013869

Meiosis Model Activity Set
Help explain individual human characteristics and genetic differences. Visualization and understanding of meiotic cell division are promoted through enlarged views of chromosomes, cytoplasm and chromatic and polar bodies.
Description in English
B-1005485



Series of Microscope Slides "Mitosis and Meiosis Set II"
5 selected microscope slides with depictured accompanying brochure.
1. Mitosis, l.s. from Vicia faba (bean). root tips showing all mitotic stages. Iron hematoxyline
2. Lilium, anther t.s., microspore mother cells showing telophase of first and prophase of second division
3. Mitotic stages in sec. of whitefish blastula showing spindles
4. Spermatogenesis with meiotic and mitotic stages, sec. of testis of grasshopper
5. Paramaecium, in fission, nuclei stained

B-1013474

Series of Microscope Slides "Development of the Microspore Mother Cells of Lilium candidum"
12 microscope slides with English text.
1. Leptotene, the chromosomes appear as fine threads 2. Zygotene, the homologous chromosomes associate in pairs 3. Pachytene, complete pairing of the chromosomes 4. Diplotene, shortening of the chromosomes by contraction. Interchange of chromatin (crossing over) 5. Diakinesis, further contraction of the bivalents 6. Metaphase and anaphase of the first (heterotypic). division 7. Telophase of the first and prophase of the second division 8. Metaphase and anaphase of the second (homeotypic). division 9. Pollen tetrads after the second division, each bearing the haploid number of chromosomes 10. Uninucleate microspores 11. Mature two-nucleate pollen grains at the time of shedding 12. Mature pollen grains, w.m. to show structure of the cell walls.

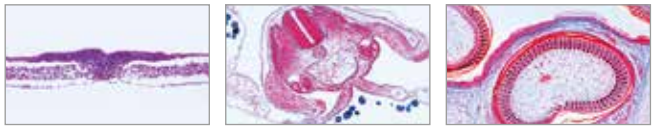
B-1013484

REPRODUCTION AND DEVELOPMENT

Embryo Development of Common Frog (Rana temporaria), 12 Stages
Using a common frog (Rana temporaria) as an example, the various stages of development of an embryo are shown: cleavage (morula and blastula), gastrulation (gastrula), neurula and organogenesis enlarged 30 times.
Dimensions: approx. 37x36x13 cm^3
Weight: approx. 1.5 kg
B-1002501

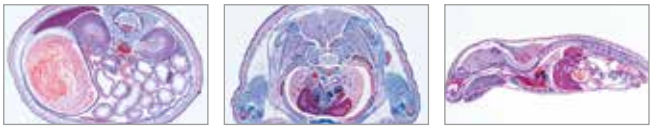
Series of Microscope Slides "Frog Embryology (Rana)"
10 microscope slides with English text.
1. Frog, morula, l.s.
2. Frog, blastula. l.s. shows blastocoel with macro- and micromeres
3. Frog, gastrula, sagittal l.s. shows germ layers, dorsal lip, yolk plug
4. Frog, neurula, t.s. showing primordium of notochord
5. Frog, early tail bud stage, t.s. with neural tube, notochord
6. Frog, early tail bud stage, sagittal l.s. with primordium of brain, segmentation of mesoderm
7. Frog, hatching stage, t.s. region of head or gills
8. Frog, hatching stage, t.s. region of mid-body
9. Frog, young tadpole, t.s. head
10. Frog, young tadpole, t.s. thorax or abdomen.

B-1003985



Series of Microscope Slides "Chicken Embryology (Gallus domesticus)"
10 microscope slides with English text.
1. Chicken, 24 hour, t.s. with neural groove, notochord, germ layers
2. Chicken, 36 hour, t.s. with neural tube
3. Chicken, 48 hour, l.s. with differentiation of mesoderm and ectoderm
4. Chicken, 3 day, t.s. through body showing amnion and serosa
5. Chicken, 3 day, t.s. of head with primordium of brain, eyes and heart
6. Chicken, 3 – 4 day, horizontal section of entire specimen shows primordia of organs
7. Chicken, 4 – 5 day, t.s. region of head with brain, gill arches
8. Chicken, 4 – 5 day, t.s. region of heart
9. Chicken, 8 day, sagittal l.s. through entire specimen showing embryonic organs
10. Chicken, feather development, sec. through wings.

B-1003986



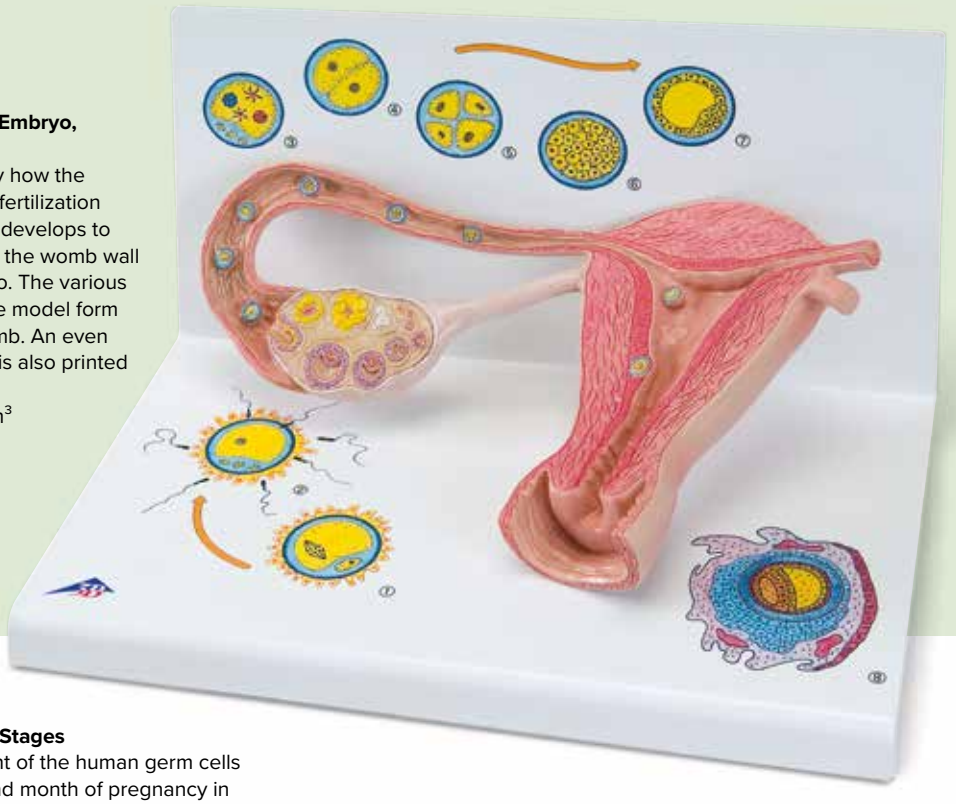
Series of Microscope Slides "Pig Embryology (Sus scrofa)"
10 microscope slides with English text.
1. Pig embryo 4 – 6 mm, t.s. 2. 7 – 9 mm, sagittal l.s. 3. 11 – 12 mm, t.s. through head 4. 11 – 12 mm, t.s. through abdomen 5. 15 mm, t.s. through head 6. 15 mm, t.s. through thorax 7. 15 mm, t.s. through abdomen 8. 15 mm, sagittal l.s. 9. 20 – 25 mm, sagittal l.s. 10. 20 – 25 mm, frontal l.s.

B-1003987

Series of Microscope Slides "Sea Urchin Embryology (Psammechinus miliaris)"
12 microscope slides with English text.
1. Sea urchin, unfertilized eggs 2. Sea urchin, fertilized eggs 3. Sea urchin, two cells 4. Sea urchin, four cells 5. Sea urchin, eight cells 6. Sea urchin, sixteen cells 7. Sea urchin, thirty-two cells 8. Sea urchin, morula 9. Sea urchin, blastula 10. Sea urchin, blastula, beginning gastrulation 11. Sea urchin, blastula, progressive gastrulation 12. Sea urchin, pluteus larva.

B-1003984

Stages of Fertilization and of the Embryo, 2 times Magnification
The model illustrates schematically how the ovum matures, how ovulation and fertilization occur and how the fertilized ovum develops to the stage where it embeds itself in the womb wall to begin the growth into an embryo. The various stages are shown in larger-than-life model form in an ovary, fallopian tube and womb. An even more enlarged illustration of each is also printed on the base. Supplied on a base.
Dimensions: approx. 35x21x20 cm^3
Weight: approx. 1.2 kg
B-1000320



Embryonic Development Model in 12 Stages
The model represents the development of the human germ cells from fertilization until the end of the 2nd month of pregnancy in 12 stages. Each stage can be removed from the common stand as an individual part and can be purposefully used for teaching and tests for the embryological specialist field.
- Ovum at time of fertilization (conception) with male gamete (sperm)
- Zygote at 2-cell stage, approx. 30 hours after fertilization
- Zygote at 4-cell stage, after around 40 – 50 hours
- Zygote at 8-cell stage, after around 55 hours
- Morula
- Blastocyst after around 4, 5 and 8 – 9 days
- Germ cells at approx. 11th day and 20th day
- Embryo at around the end of the 1st month and the 2nd month of pregnancy

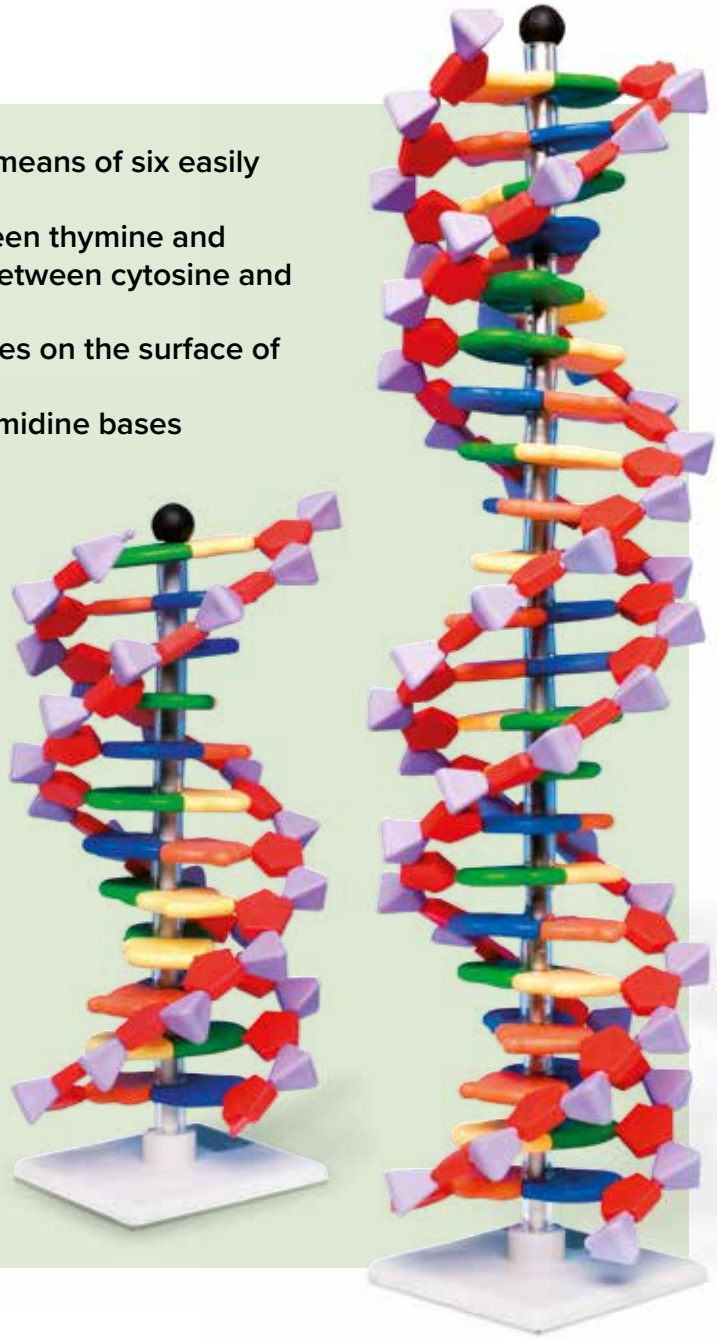
Dimensions: approx. 65x6x34.5 cm^3
Weight: approx. 1.55 kg
B-1001257

Embryology and Development of Animals, CD-ROM
Those seeking to understand the physical structure of an animal must necessarily become acquainted with the development from egg cell to finished animal first. This CD shows the different stages of ontogenesis through the classical examples of sea urchin, frog and chicken, documenting the development of these animals from the egg through cleavage to germ layers to the finished organism. Precise, clear text and illustrations enable the user to quickly gain an understanding of embryology processes. Containing 196 pictures and text.
System requirements:
Computer and processor: 500-megahertz x86 or x64 processor
Operating system: Windows 95 and above
RAM: 16 MB RAM
Display: 1024 x 768 pixels
CD-ROM drive
Can also run on PowerMac G4 and above with the help of emulation software.
B-1004300

HEREDITARY INFORMATION

› THE BUILDING BLOCKS OF LIFE!

+ Simple differentiation of components by means of six easily distinguishable colors
+ Representation of hydrogen bonds between thymine and adenine and the three hydrogen bonds between cytosine and guanine
+ Representation of major and minor grooves on the surface of the double helix
+ Purine bases (adenine, guanine) and pyrimidine bases (cytosine, thymine) differ in size



DNA Double Helix Model, miniDNA® Kit
Molecule model kit for a right-handed double helix with color-coded components for representing the bases containing nitrogen as well as pentoses and phosphate groups from which DNA is composed. Can be used to demonstrate DNA replication in model as well as complementary base pairing. Supplied with assembly instructions and stand.

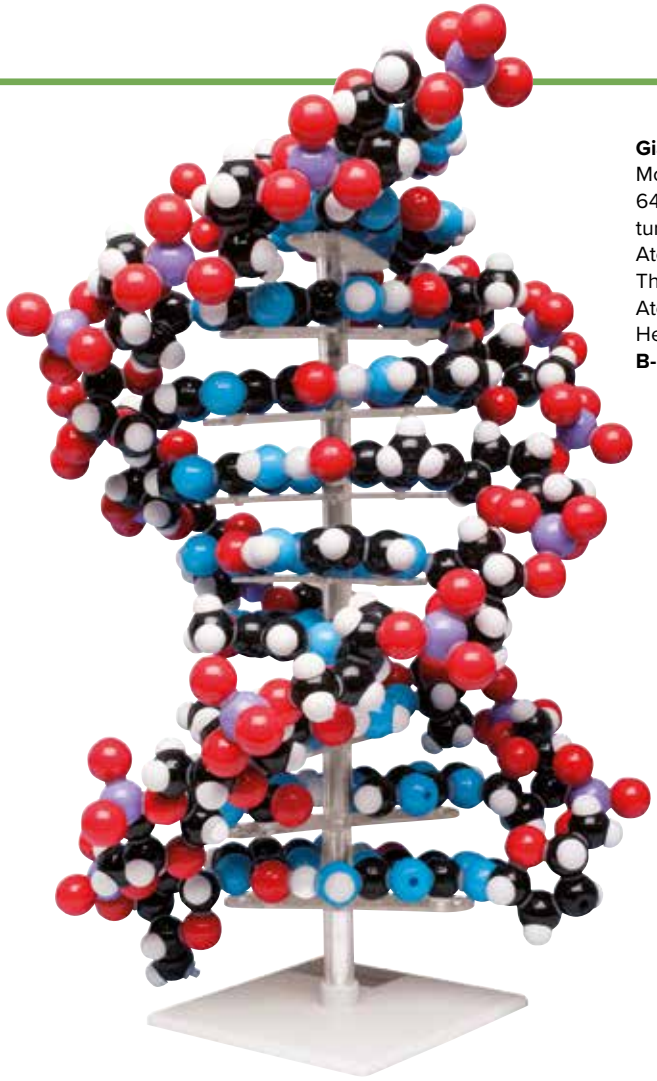
DNA Double Helix Model, 22 Segments, miniDNA® Kit
Dimensions: approx. 44x11x11 cm^3
Weight: approx. 500 g
B-1005297

DNA Double Helix Model, 12 Segments, miniDNA® Kit
Dimensions: approx. 24x11x11 cm^3
Weight: approx. 330 g
B-1005298

RNA Model, miniDNA® Kit
Easily assembled kit of single-strand molecule including the 4 different bases, one of which is uracil, instead of the thymine base which appears in DNA. The kit contains 12 or 24 bases, corresponding to 4 (8) codons in a single-strand messenger RNA model, plus 2 (4) “clover-leaf-shaped” transfer RNA molecules and 2 (4) amino acid molecules. Along with segments of the DNA double helix model (B-1005297/B-1005298), the kit can be used to demonstrate the formation of RNA by means of transcription. It can also offer clear insights into the process of protein synthesis by translation.

RNA Model, 12 Bases, miniDNA® Kit
B-1005299

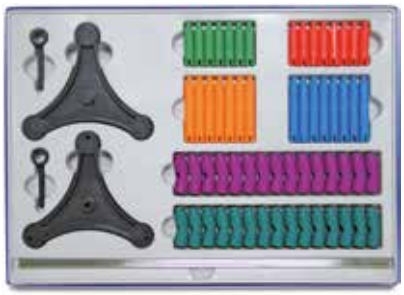
RNA Model, 24 Bases, miniDNA® Kit
B-1021258

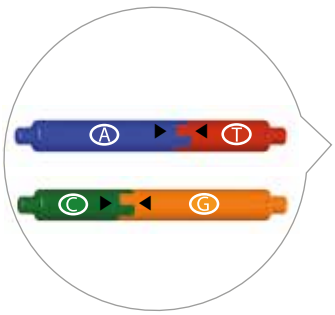


Giant DNA model
Model of a DNA double helix consisting of five two-layer models with a total of 640 atom spheres. The double-layered models represent the molecular structures of thymine-adenine and cytosine-guanine with ribose-phosphate chains. Atom spheres and linking rods are made of resilient plastic and are color coded. The model is 46 cm high but held firmly on a stand.
Atoms: 17 mm to 23 mm diam.
Height: approx. 46 cm
B-1020358

DNA Double Helix Model
The model exhibits three windings of the DNA double helix of nucleic acids in order to demonstrate how bases are paired. Attached to the top end there is also a strand of RNA to clarify the process of transcription. On base.
Dimensions: approx. 310x90x90 mm^3
Weight: approx. 0.4 kg
B-1005128

+ Simple differentiation of components by means of six easily distinguishable colors
+ Purine bases and pyrimidine bases differ in size
+ No possibility of confusion when assembling the adenine-thymine and guanine-cytosine base pairs





DNA Double Helix Model, Student Kit
Student kit with color-coded components allowing quick and easy assembly of spiral DNA double helix. Clear depiction of how the helix turns through a full 360° after every ten base pairs. It can also be used to explain replication and transcription in understandable fashion. The process of assembling the kit also helps students to learn the terminology.
Dimensions: approx. 12.5x35 cm^2
Weight: approx. 400 g
B-1005300

ELECTROPHORESIS

Experiment Set “DNA Fingerprint”
DNA fingerprinting is an important method used in molecular genetics. It is now inconceivable, for instance, for criminal forensics to do without it. Other examples of areas where it can be applied are paternity tests, the analysis of genetic diseases, and identifying victims after natural catastrophes or accidents. This method can be demonstrated in a game involving criminal investigations with the help of the “DNA Fingerprint” experiment set. During this procedure, DNA fragments are generated by way of a polymerase chain reaction (PCR), and then separated using gel electrophoresis. In our kit, however, the DNA fragments have already been separated so that the pupils only have to carry out electrophoresis. Using the DNA profiles thus obtained, your pupils can draw their conclusions about where they come from. While doing this, the pupils learn about the practicalities of using molecular genetics techniques, and will be able to discuss the DNA profiles in detail once they have completed the experiment. This topic is also a wonderful way of introducing a discussion about other potential applications for DNA finger printing, as well as about associated legal and ethical issues.
Enough for 10 experiments
Contents:
120 µl DNA from a victim
120 µl DNA from the scene of the crime
120 µl DNA from suspect n° 1
120 µl DNA from suspect n° 2
50 ml electrophoresis buffer, 50x conc.
6 g agarose
1.5 ml DNA staining solution, 200x conc.
Dimensions: approx. 40x40x15 cm^3
Weight: approx. 1 kg
B-1013458

Additonally required:
B-1012852 Electrophoresis Chamber S
B-1010263 DC Power Supply for Electrophoresis 0 – 300 V, 0 – 400 mA
B-1013416 Microlitre Pipette, 0.5 – 10 µl
B-1013424 Pipette Tips, Crystal, up to 10 µl

A. DC Power Supply 0 – 300 V, 0 – 400 mA
Stabilised power supply with two outputs for operating electrophoresis chambers. Timer (1 – 999 min.) with alarm function.
Mains voltage: 100 – 240 V, 50/60 Hz
Dimensions: approx. 12x15x18 cm^3
Weight: approx. 0.6 kg
B-1010263

B. Electrophoresis Chamber S
Transparent acrylic chamber for carrying out experiments using the “DNA Fingerprint” experiment set. The bottom is transparent to UV light, allowing observation of how electrophoresis progresses over time by means of fluorescent dyes. Safety cover with built-in electrical terminals and two different rack positions for simultaneous investigation of 2 x 12 samples.
Dimensions: approx. 21x11x3.4 cm^3
Weight: approx. 0.7 kg
B-1012852

C. Microlitre Pipette, 0.5 – 10 µl
Microlitre pipette with a volume display that can be set easily and accurately and an inbuilt pipette tip ejector system. Pipette tips are not included.
Dimensions: approx. 25x6.5x4 cm^3
Weight: approx. 150 g
B-1013416

D. Pipette Tips, Crystal, up to 10 µl
1000 tips for microlitre pipettes.
B-1013424

Complete Electrophoresis System S*
Set of equipment for carrying out experiments on electrophoresis containing the following: Electrophoresis chamber S (B-1012852), DC power supply for electrophoresis (B-1010263), microliter pipette (B-1013416) and pipette tips (B-1013424).
B-8000506

5% PACKAGE DISCOUNT*

* When purchasing the complete set, entry of the discount code BA72 entitles you to 5% off the sum of the individual prices for the items.

Polymerase Chain Reaction

This experiment for 6 lab groups introduces students to the principles, practice and applications of the Polymerase Chain Reaction (PCR) without the need for a PCR machine! Polymerase Chain Reaction (PCR) has had an extraordinary impact on various aspects of biotechnology. With PCR, DNA can be amplified and studied. Since the first application of PCR (using the Klenow fragment) to detect sickle cell anaemia, a large number of diagnostic tests have been developed. PCR has made amplification of DNA an alternate approach to cloning experiments. It is used in genome projects in DNA mapping and DNA sequencing. PCR amplification is also being applied to forensic and paternity determination, as well as determination of evolutionary relationships. This simulation experiment does not contain human DNA and does not require a thermal cycler. It is complete in 45 minutes.

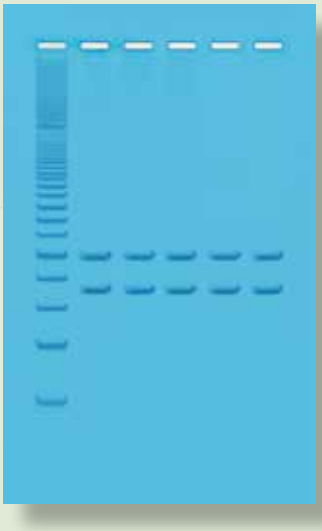
Contents:

Ready-to-Load™ DNA samples, Ultraspec™ agarose powder, practice gel loading solution, electrophoresis buffer, Instastain® Methylene Blue and Methylene Blue Plus™ stain, calibrated pipet, 100 ml graduated cylinder and microtipped transfer pipettes.

B-1005879

Additionally required:

B-1012852 Electrophoresis Chamber S
B-1010263 DC Power Supply for Electrophoresis 0 – 300 V, 0 – 400 mA
B-1020859 Balance Scout SKX 420 g
B-1002806/B-1002807 Magnetic Stirrer with Heater 115V / 230V



Mitochondrial DNA Analysis

In this experiment, your students will use the Nobel Prize winning technique polymerase chain reaction (PCR) to amplify two regions of DNA from their mitochondria. The mitochondria are thought to have evolved from a symbiotic relationship between prokaryotic and eukaryotic cells. Thus as mitochondria have their own DNA that is only inherited via the maternal line they are often used in studies of evolution. This kit shows how PCR is able to amplify DNA from just a few cells. This ability has made PCR very useful to study evolution and in forensics and genetic testing. Your students carry out a simple DNA extraction, followed by PCR, then analyse the results using DNA electrophoresis. For 25 students.

Contents:

Instructions, proteinase K, PCR beads, control DNA and primers, microtubes, chelating agent, agarose, DNA ladder, practice gel loading solution, gel loading dye, electrophoresis buffer, gel stain.

Additionally required:

Micropipettes to measure between 5 and 50 µl, tips, waterbath, thermalcycler (PCR machine), electrophoresis tank and power supply.

Time required:

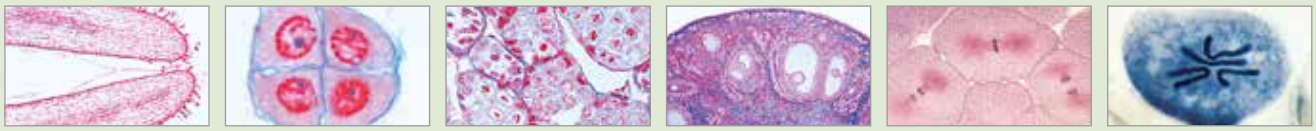
Set up 30 min.
PCR 2 hours or overnight
Electrophoresis 45 min.

B-1005883

EXPERIMENTS FOR GENETICS – DNA

› QUICK AND EFFECTIVE EXPERIMENT WITH A GREAT EFFECT.

Experiment Set "DNA Extraction from Onion"
With this easy test on the theme of cellular biology and genetics, you can isolate chromosomal DNA from an onion without a long preparation time, during a class. Your students will learn thanks to this experiment about the basic process of DNA extraction. Everything is included in the kit so that 5 groups can work at the same time. This effective classroom experiment with a high DNA yield will provide enjoyment for your students.
Contents for 15 experiments:
80 ml extraction buffer, 500 mg protease mix, 15 flat-bottomed tubes, 15 round paper filters, 5 funnels, 15 wooden picks, experiment instructions (multilingual).
B-1019597



Series of Microscope Slides "Genetics"
25 microscope slides with English text.

1. Allium, root tips, l.s. showing all stages of mitosis
2. Eschscholtzia, stigma, w.m. showing penetrating pollen
3. Lilium, microspore mother cells, first division, leptotene to zygotene
4. Lilium, first division, diakinesis to telophase
5. Lilium, second division, interkinesis to tetrad stage
6. Polytrichum, moss, archegonium, w.m.
7. Polytrichum, moss, archegonium, l.s.
8. Spirogyra scalariform conjugation showing zygotes following conjugation
9. Sea urchin, developing of eggs, w.m. of most stages up to pluteus
10. Giant chromosomes from salivary gland of Chironomus, squash preparation stained for chromomeres
11. Giant chromosomes, section
12. Ascaris, fertilisation of eggs, t.s.
13. Ascaris, male and female pronuclei, t.s.
14. Ascaris, meiosis and early cleavage, t.s.
15. Testis of crayfish, t.s. showing meiosis
16. Testis of mouse, t.s. showing spermatogenesis
17. Ovary of rabbit, l.s. showing follicles in various stages
18. Embryology of fish, l.s. of embryo showing animal mitosis
19. Chromosomes, human, female, of culture of peripheral blood
20. Chromosomes, human, male, of culture of peripheral blood
21. Drosophila genetics, adult wild type, w.m.
22. Drosophila genetics, barr eye mutant, w.m.
23. Drosophila genetics, brown eye mutant, w.m.
24. Drosophila genetics, vestigial wing mutant, w.m.
25. Drosophila genetics, white eye mutant, w.m.

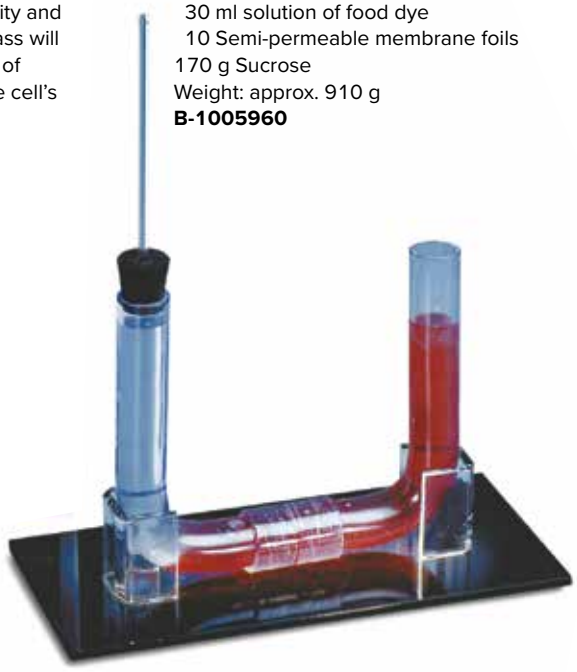
B-1003983

Learning Game “Alleles and their Expression”
Playfully introduce your students to the fundamental rules of genetics. Let them investigate inheritance pattern and genetic attributes in a way that is easy to see and with properties that are simple to test. The steps in the “game” demonstrate the following aspects:
• Gametogenesis and fertilization
• Monohybrid and dihybrid crosses
• Law of dominance
• Splitting and recombination
• Law of independent assortment
Includes:
40 Plastic coins, 20 beakers, 40 cubes (four-sided), 20 opaque cards in blue and red, 20 translucent cards in blue, green and yellow, 5 crayons, detailed description in German and English.
Suitable for lessons in secondary schools (level I).
B-1005930

› OSMOSIS AND DIFFUSION

Experiment Set “Osmosis and Diffusion”
Starting with a model cell and a mixture of special dye solutions, your students will observe how the cell’s membrane allows one dye to pass, while the other remains within the cell. The resulting color change provides a vivid demonstration of selective permeability and how the cell absorbs nutrients and discharges wastes. The class will also learn how osmosis and diffusion permit the maintenance of equilibrium through the passive transport of water through the cell’s semi permeable membrane.
Contents:
30 ml red dye solution
30 ml blue dye solution
20 transparent beakers
4 m dialysis tube
250 ml glucose solution
50 glucose test strips
60 medicine beakers
20 plastic pipettes
30 ml starch indicator solution (IKI)
250 ml starch solution
4 m cord
Detailed description in German and English.
Suitable for first and second stage secondary teaching.
Weight: approx. 850 g
B-1005961

Experiment Set “Osmosis Simulation”
Student experiment to visibly demonstrate osmosis and simulate an elementary process in our cells. The two sides of a U-tube are separated by a semi-permeable membrane. One side is filled with pure water and the other is filled with a concentrated sugar solution. After a length of time the liquid level on one side rises higher than the other because water can pass through the membrane into the solution with the higher concentration of sugar in order to make the concentrations even out. For comparison purposes, concentrated solutions of other substances can also be used. The volume of water which has passed through the membrane can be read off from a glass capillary tube.
Contents:
1 U-tube with stand
1 Glass capillary tube
30 ml solution of food dye
10 Semi-permeable membrane foils
170 g Sucrose
Weight: approx. 910 g
B-1005960



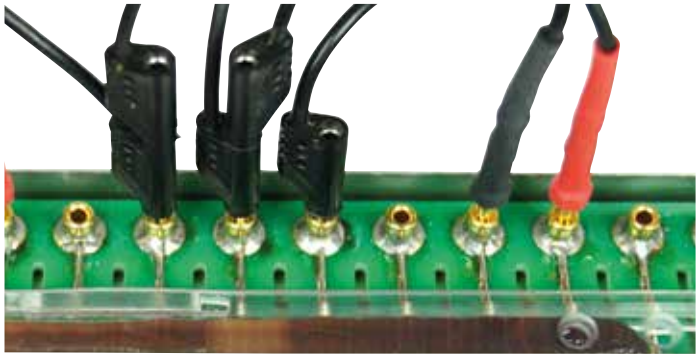
NEUROPHYSIOLOGY

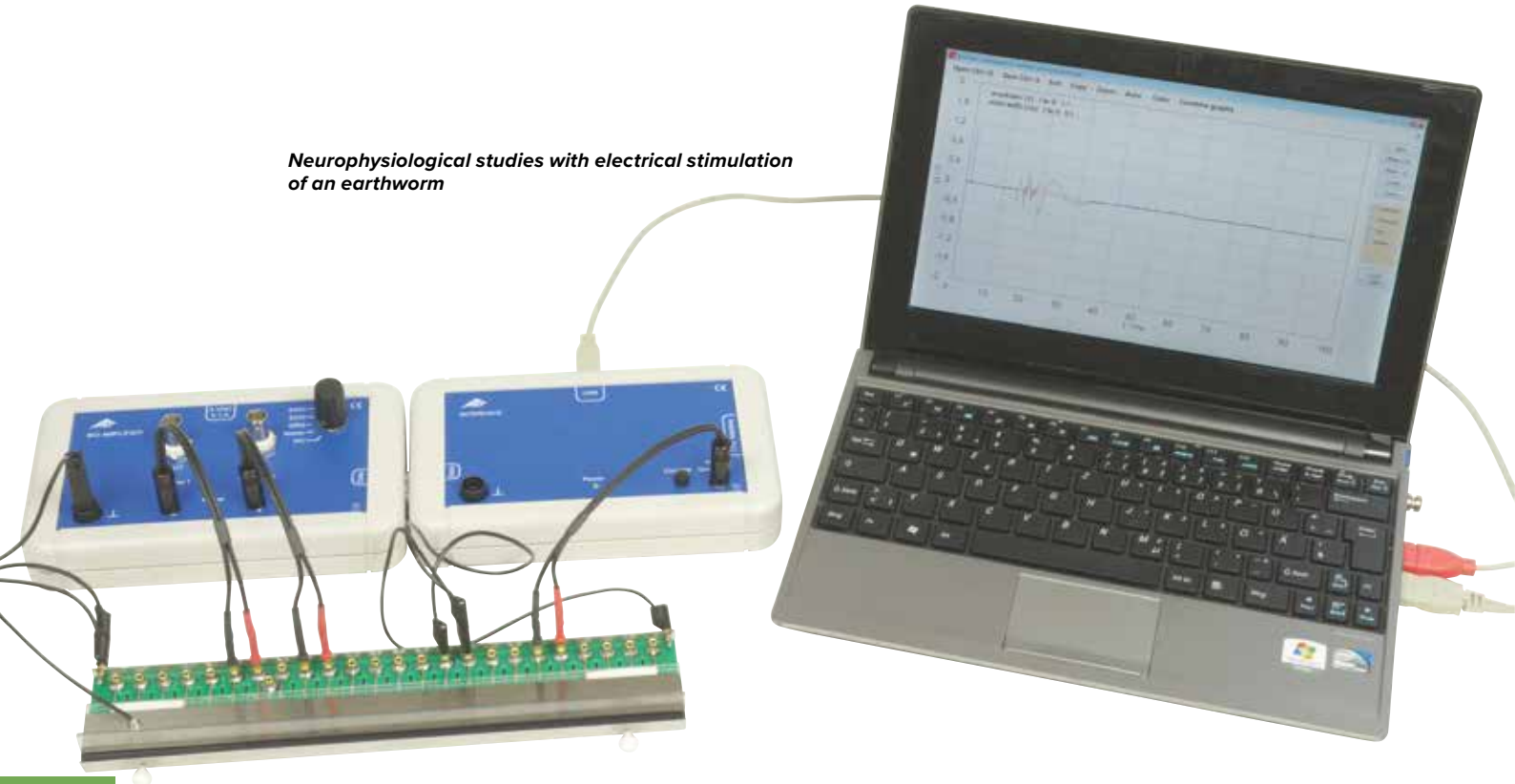
As early as 1790 the Bolognese researcher Luigi Galvani had demonstrated on the leg of a frog that electrical processes were involved in the functioning of nerves and muscles. Even today, similar specimens are used for research into nerve function and muscle contraction. One alternative to this is to carry out experiments on a live earthworm. In contrast to using conventional frog specimens, this offers a number of advantages:

+ It is not necessary to kill any animals. The worm remains unharmed.
+ Difficult and time-consuming preparation of a creature is not necessary.
+ The nerves of the earthworm have a simpler structure than those of the frog, thus allowing measurement of the nerve impulses in individual nerve fibres.
+ The function of nerve potentials for the reflexes exhibited by the intact worm can be demonstrated.
+ Cellular mechanisms for habituation can be measured.

Experiment Topics

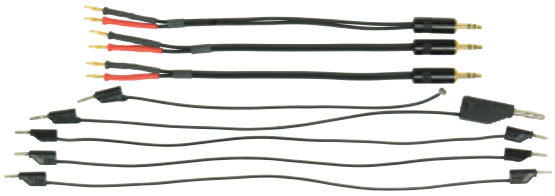
- Tactile stimulation of an earthworm
- Electrical stimulation of an earthworm
- Single-channel recording
- Two-channel recording
- Electrocardiogram



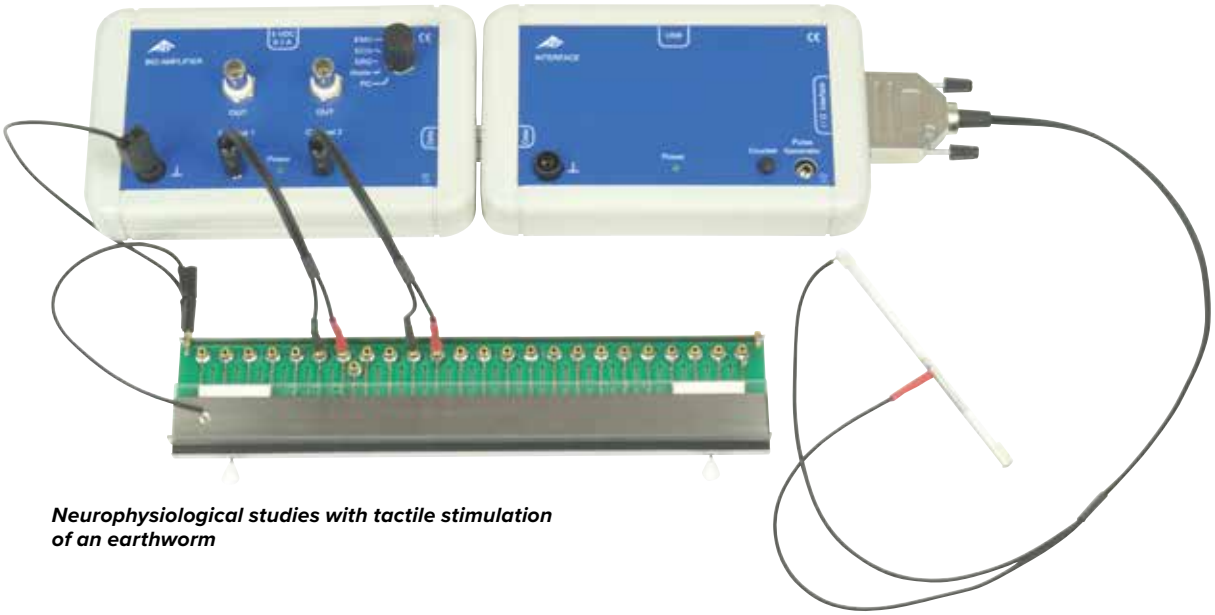


Neurophysiological studies with electrical stimulation of an earthworm

Measurement Chamber for Earthworm Experiments
The measurement chamber for earthworm experiments is used in neurophysiological experiments on intact worms. This involves stimulation of the worm by electrical or tactile means and measurement of its action potential. Worms remain uninjured and can be returned to their habitat after completion of the experiment. A cover with holes drilled in it allows worms to be secured transversely across the apparatus without difficulty and two replaceable longitudinal securing mechanisms prevent them moving along. Contact with the worms is via a long line of electrodes which can be connected to the bio-amplifier via 2-mm sockets and special cables or to the stimulus generator of the bio-measurement interface. Tactile stimuli can be provoked through the hole in the cover. The measurement chamber can be quickly and easily dismantled after completion of the experiments.
Connectors: 2-mm sockets
Dimensions: approx. 250x55x20 mm^3
Weight: approx. 192 g
Contents:
1 Measurement chamber
1 Adapter cable (2-mm / 4-mm plugs)
1 Magnet cable
3 Connecting leads (2-mm plugs)
3 Measuring leads (2-mm plugs/3.5-mm jack plugs)
B-1020601



Stimulation Equipment for Earthworm Experiments
The stimulation equipment is for tactile stimulation of earthworms in neurophysiological experiments. A pin falling from a specific height creates a stimulus such as that likely to occur to a worm in nature. This stimulates potential for action in the nerves of the worm. It is possible to detect a relationship between the twitching reflex and the relevant nerves as well as the potential in the muscles. The creature remains uninjured and can be returned to its habitat after completion of the experiment. The stimulation equipment is connected to the bio-measurement interface. Results of the experiment are communicated to a computer via the interface and displayed by means of the accompanying software. Recording of the resulting signal is also activated by the software.
Power supply: +5 V DC (via Sub-D plug connector)
Mass of falling pin: 1 g
Dimensions of pin (3 pins): 40 mm x 2 mm diam.
Scale intervals: 1 cm
Plug: Sub-D, 15-pin
Dimensions: approx. 125x15x15 mm^3
Weight: approx. 75 g
B-1020603



Neurophysiological studies with tactile stimulation of an earthworm

Bio-Amplifier
Two-channel amplifier for electro-physiological experiments. The amplified signals from both channels can be displayed on a storage oscilloscope or with the help of the Bio-measurement interface connected to a computer. Gain and frequency response are dependent on the selected experiment: action and muscle potentials in live earthworms (Worm), electro-retinograms (ERG), electrocardiograms (ECG), electromyograms (EMG).
Measuring ranges: max. ±1 mV (worm), max. ±10 mV (ECG, EMG, ERG)
Frequency ranges: 120 – 1800 Hz (worm) 0.5 – 1800 Hz (ERG, EMG)
0.5 – 30 Hz (ECG)
Power supply: 5 V DC / 100 mA via plug-in power supply or
bio-measurement interface (B-1020602)
Connector for bio-measurement interface: Sub-D socket, 15-pin
Connector for oscilloscope: BNC socket
Connector for measurement chamber: 3.5-mm jack socket
Dimensions: 175x105x30 mm^3 approx.
Weight: 335 g approx.

Bio-Amplifier (230 V, 50/60 Hz)
B-1020599

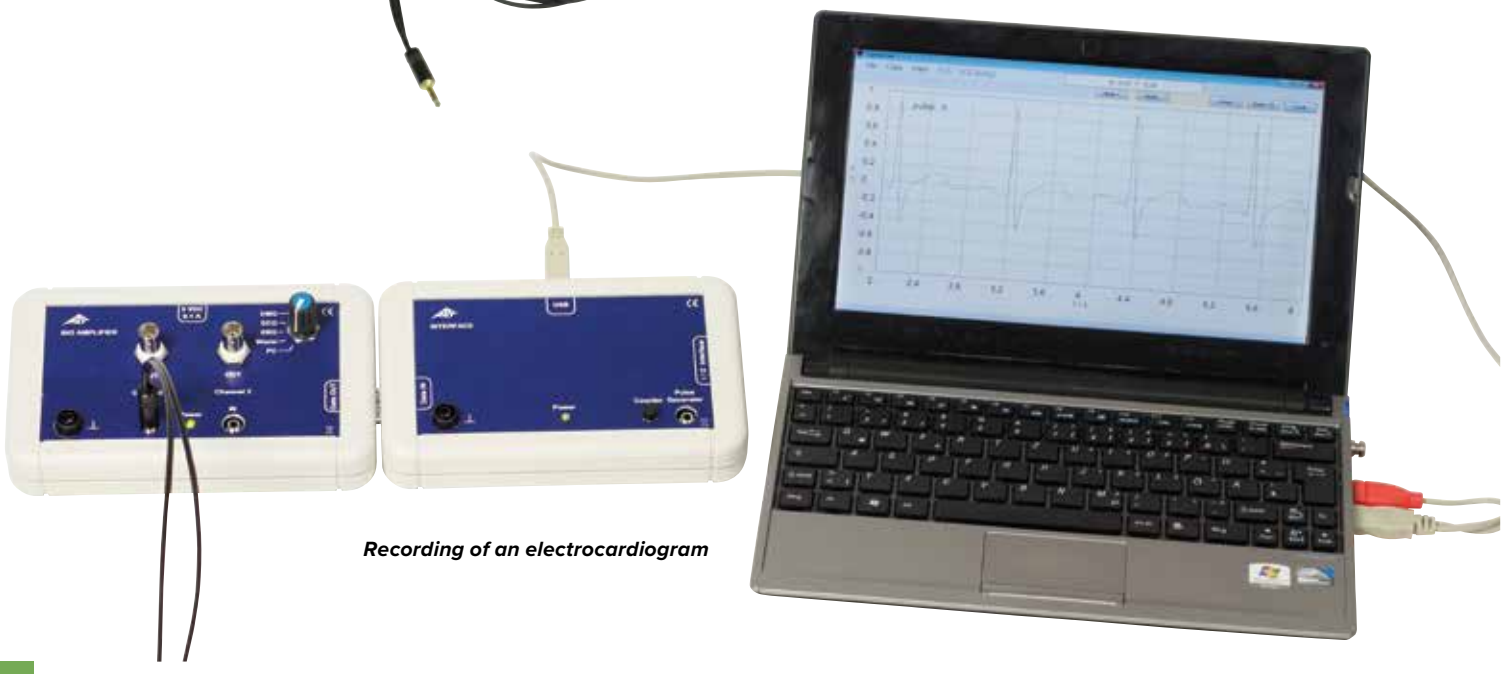
Bio-Amplifier (115 V, 50/60 Hz)
B-1020600

› ELECTRO CARDIOGRAM

Connecting Cable for Electro Cardiograms
Special cable for recording electrocardiograms and electromyograms.
Connectors: measurement electrodes/3.5-mm jack plugs
B-1020605

Additonally required:
B-5006578 Set of 30 Electrodes for ECG/EMG

Set of 30 Electrodes for ECG/EMG Measurements
Set of 30 electrodes for one-time use with connecting cable for electrocardiograms.
B-5006578



Recording of an electrocardiogram

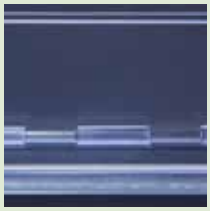
Bio-Measurement Interface
The bio-measurement interface is for measurement and control in electro-physiological experiments with the bio-amplifier. It operates in conjunction with a computer via a serial USB interface. Driver and measurement software are included with the equipment. There is also a built-in floating, software-controlled pulse generator, which acts as a stimulus generator in conjunction with the measurement chamber for experiments on earthworms (B-1020601). The measurement software outputs square pulses of variable amplitude and pulse width, which can be used as single pulses or double pulses with varying intervals.
Power supply: +5 V, max. 200 mA via USB port
USB port: Type B socket
Connector for bio-amplifier: Sub-D plug, 15-pin
Connector for measurement
modules and sensors: Sub-D socket, 15-pin
Output for stimulus generator: 3.5-mm jack socket
Dimensions: approx. 175x105x30 mm^3
Weight: approx. 335 g
B-1020602

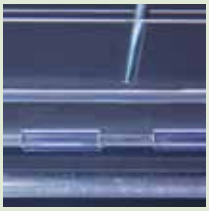
› Model for simulating the conduction of impulses along nerve fibres.

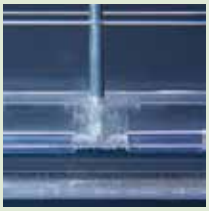
Experiment Topics

- Simulation of continuous conduction along non-myelinated axons
- Simulation of saltatory conduction by means of a model experiment
- Transmission of information by neurotransmitters

Experiment Set “Conduction of Impulses to Nerve Fibres”
according to Prof. Dr. Matthias Ducci / Prof. Dr. Marco Oetken
The model experiments are based on the property of iron to develop a protective oxide coating in acid solutions under specific conditions. This impressive analogical model is based on the reversibility of the process of passivation and the appearance of a reactivation along a long iron rod. The materials provided allow the students to use the model to demonstrate continuous and saltatory conduction as well as the principle of transmission of neurotransmitters. The required chemicals (hydrogen peroxide, sulphuric acid, sodium chloride solution) are not included.
Contents:
1 Acrylic trough
3 Iron rods
1 Zinc electrode
15 Jackets for isolation of sections of the iron rod
Sandpaper
Detailed experimental instructions
B-1000538





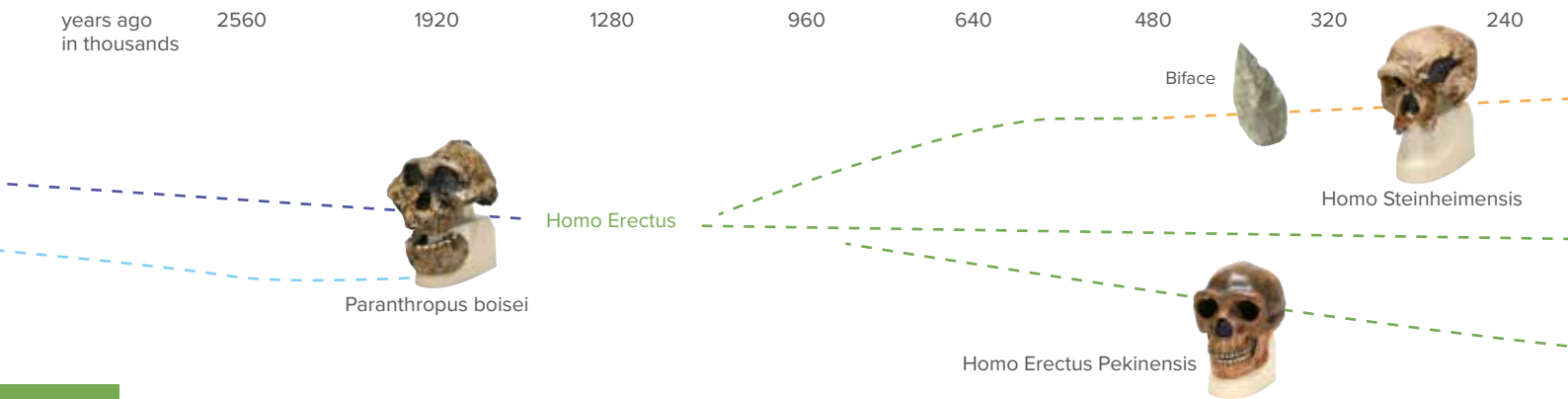


PALAEOANTHROPOLOGY

Replica Australopithecus Boisei Skull (KNM-ER 406 + Omo L7A-125)
This model is a high-quality casting of a reconstruction of the Kalvarium skull (KMN-ER 406) with a partial mandible (Omo L. 7a-125). The Kalvarium skull is approximately 1.7 million years old and was discovered at Lake Rudolf (now called Lake Turkana) in 1970. The partial mandible comes from a different dig but is clearly from the same species. The classification of the species has not yet been indisputably clarified. Discussions continue as to whether the specimen is an Australopithecus boisei or a Paranthropus boisei. Example of a pre-human hominid.
Discovered at: Lake Turkana, formerly Lake Rudolf
Discovery: 1970
Age: approx. 1.7 million years
Dimensions: approx. 18x18x22.5 cm^3
Weight: approx. 0.8 kg
B-1001298

Replica Homo Erectus Pekinensis Skull (Weidenreich, 1940)
This skull is an accurate casting of a Sinanthropus skull reconstructed by Weinert and modelled from drawings by Black and Weidenreich after all the original bone specimens had been lost. Sinanthropus belongs to the genus Homo erectus pekinensis (Sinanthropus pekinensis) and can be seen as a typical example of early man.
Discovered at: Zhoukoudian 40 km south west of Peking
Discovery: 1929 – 1936
Age: approx. 400,000 years
Dimensions: approx. 21x14.5x21.5 cm^3
Weight: approx. 0.9 kg
B-1001293

Replica Homo steinheimnensis Skull (Berkhemer, 1936)
This Steinheim skull model is a detailed casting from Berkhemer's reconstruction (1936, skull with no jawbone). The Steinheim replica was modeled after an original skull from a forerunner of Neanderthal man,speices Homo (sapiens) steinheimensis. The original skull from this ancestor of modern humans is aged between about 25 and 35 at time of death and was discovered in a gravel in Steinheim, southern Germany, in 1933. Forerunner of a Neanderthal man or an ancient Homo sapiens.
Discovered at: a gravel pit near Steinheim an der Mur, Germany
Discovery: 1933
Age: approx. 250,000 years
Dimensions: approx. 19x12.5x21.5 cm^3
Weight: approx. 0.7 kg
B-1001296

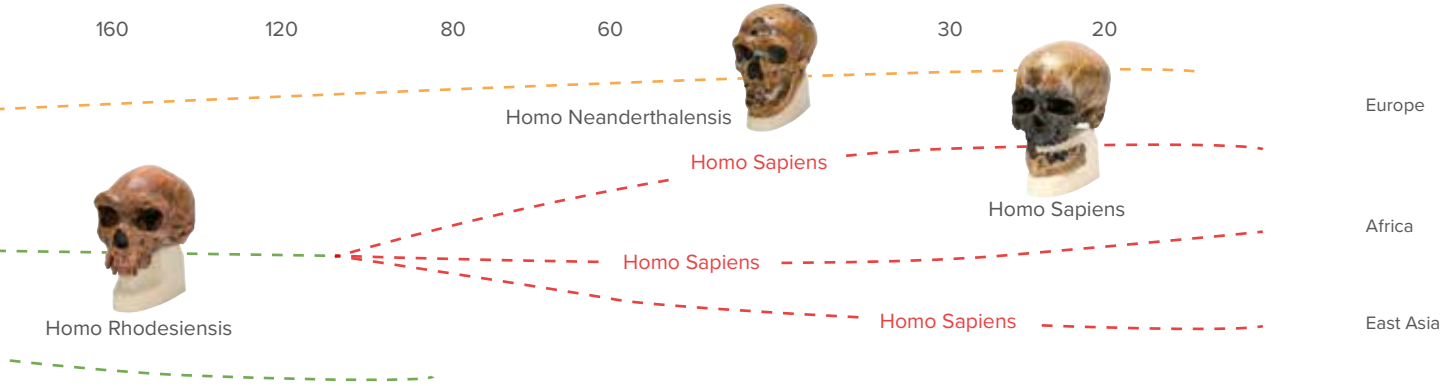


Replica Homo rhodesiensis Skull (Broken Hill; Woodward, 1921)
The Broken Hill human skull model is an accurate casting of a reconstruction from an original specimen that was discovered in a iron ore working at Broken Hill, in north west Rhodesia (modern-day Kabwe in Zambia). It is an example of the early human, of the species Homo sapiens rhodesiensis or a Homo erectus rhodesiensis, the skull having features that point to both these classifications. For this reason, there is debate in the estimates of the early human specimen's age, based on differing scientific assumptions. An early example of an ancient Homo sapiens (as classified by Henke and Rothe 1994) or a Homo erectus rhodesiensis.
Discovered at: a cave in an ore working at Broken Hill, modern-day Kabwe in Zambia
Discovery: 1921
Age: probably 150,000 to 300,000 years old. Previous estimates were of 40,000 to 60,000 years
Dimensions: approx. 21x15.5x23.5 cm^3
Weight: approx. 0.8 kg
B-1001297

Replica Homo Neanderthalensis Skull (La Chapelle-aux-Saints 1)
Cast from a reconstruction of the La Chapelle-aux-Saints skull, the model skull is an accurate replica of one belonging to a 50 – 55 year old male Neanderthal from ancient Europe of the species Homo (sapiens) neanderthalensis. Early man.
Discovered at: southern France
Discovery: 1908
Age: 35,000 to 45,000 years
Dimensions: approx. 22x16x22.5 cm^3
Weight: approx. 0.9 kg
B-1001294

Replica Homo Sapiens Skull (Crô-Magnon)
This wonderful casting is a reconstruction of an early hominid called Crô- Magnon man. The age of the original is dated to be 20,000 to 30,000 years old. The skull itself belonged to an early modern man of the species Homo sapiens sapiens from the ice age of the neo-Palaeolithic era.
Discovered at: a cave in Vézèretal / southern France
Discovery: 1868
Age: 20,000 to 30,000 years
Dimensions: approx. 21.5x15x24.5 cm^3
Weight: approx. 0.9 kg
B-1001295

Biface, Replica
Accurate reproduction of a biface made from quartzite. The original finding was probably used by an ancestor of the Neanderthals as a multi-purpose tool.
Material: Liquid wood
Age: 0.3 – 0.4 million years
Place found: Neandertal
Dimensions: approx. 19x9x5 cm^3
B-1018514



PALAEOZOOLOGY AND PALAEOBOTANY

Ammonite, Model
An exact and scientifically-based reproduction of what an ammonite may have looked like. The model shows all the important organs on the head such as the eyes, the tentacles, the funnel and the jaw that resembles the beak of a parrot.
Dimensions: approx. 15x9x8 cm^3
Weight: approx. 121 g
B-1018515

Ammonite (Cleoniceras), 2 Halves, Semi-Polished
Semi-polished shell of a fossilised ammonite from Madagascar, split into two halves, of quality level A.
Size: 8 – 12 cm
Period: Cretaceous (approx. 90 million years)
B-1021538

Ammonite (Cleoniceras), Semi-Polished
Semi-polished shell of a fossilised ammonite from Madagascar. The characteristic lobe lines are very easily recognisable.
Size: 5 – 9 cm
Period: Cretaceous (approx. 90 million years)
B-1018511

School Collection of 10 Fossils
Inexpensive collection of fossils ideal for an introduction to the “study of fossils”. A colorful A4 chart with an overview of the history of the earth complements the collection of 10 fossils. Supplied in plastic case.
B-1021243

Stratigraphic Collections
These collections contain carefully selected animal and plant fossils from all the important groups that are representativeof certain geological time periods. These examples, placed in chronological order, give an overview of the developmentof life from the Precambrian to the Quaternary period. Each item is stored individually in boxes placed in chronologicalorder, with a label, the date and details of where the item was found. The fossils come in a wooden box with a detailedaccompanying booklet in English and German. The collections were created especially to give an introductionto palaeontology. The items delivered may vary depending on availability. We will ensure that we provide at least one example from each period.

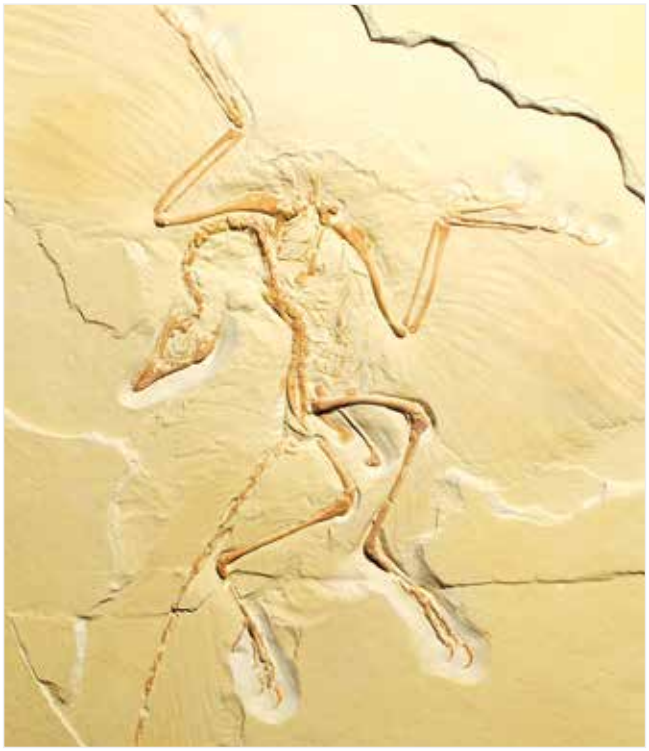
Stratigraphic Collection 40 Fossils
B-1018513

Stratigraphic Collection 20 Fossils
B-1018512

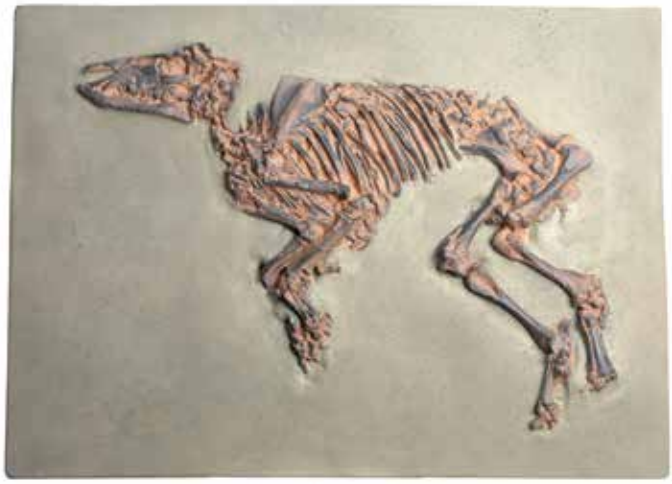
PALAEOZOOLOGY AND PALAEOBOTANY

Evolution of the Horse, Sequence of Equine Species, Replica
Phylogenetic development of equine species: Eohippus, Mesohippus, Miohippus and Meryhippus. Hand-painted life-size casts. The items themselves may differ in color from what is shown in the photograph.
Weight: approx. 3 kg
B-1021244

Additionally recommended:
B-1021052 Front and Hind Legs of a Horse (Equus ferus caballus), Specimen



Archaeopteryx lithographica, Replica
Liquid wood mold of the well-known archaeopteryx lithographica fossil from Bavaria. The clear avian characteristics, flight feathers and furcula, as well as reptilian characteristics, the bony tail and front claws, are recognisable. It is therefore considered a transitional form of both Gruppen. The fossil is considered one of the few complete findings of the archaeopteryx lithographica, which lived around 150 – 200 million years ago.
Dimensions: approx. 47.5x40x1.5 cm^3
Weight: approx. 1.8 kg
B-1018509



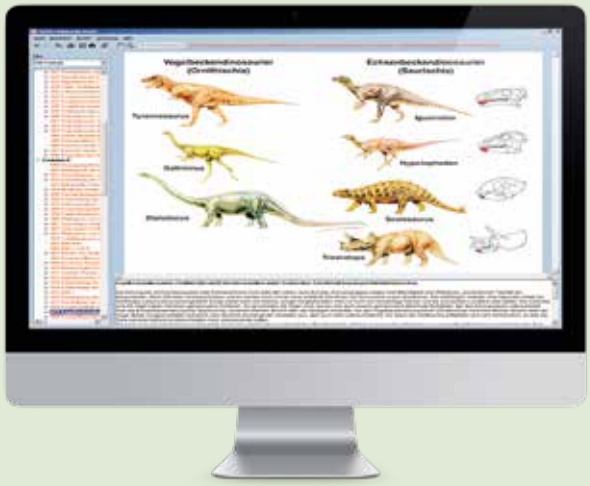
Proto-Horse Fossil, (Propalaeotherium messelense), Replica
Hand-painted cast of an adult early equid found at the Messel Pit fossil site in Hesse, Germany. The animal is approximately the size of a fox and has clearly apparent four-toed front feet and three-toed back feet. It has historically been seen as a forerunner of the modern horse and is often put at the start of the evolutionary chain which leads to the present-day equines.
The item itself may differ in color from that shown in the photograph.
Discovery site: Messel Pit, Germany
Age: approx. 47 million years (Middle Eocene)
Dimensions: approx. 51.5x37.5 cm^2
Weight: approx. 2.8 kg
B-1021242

EVOLUTION

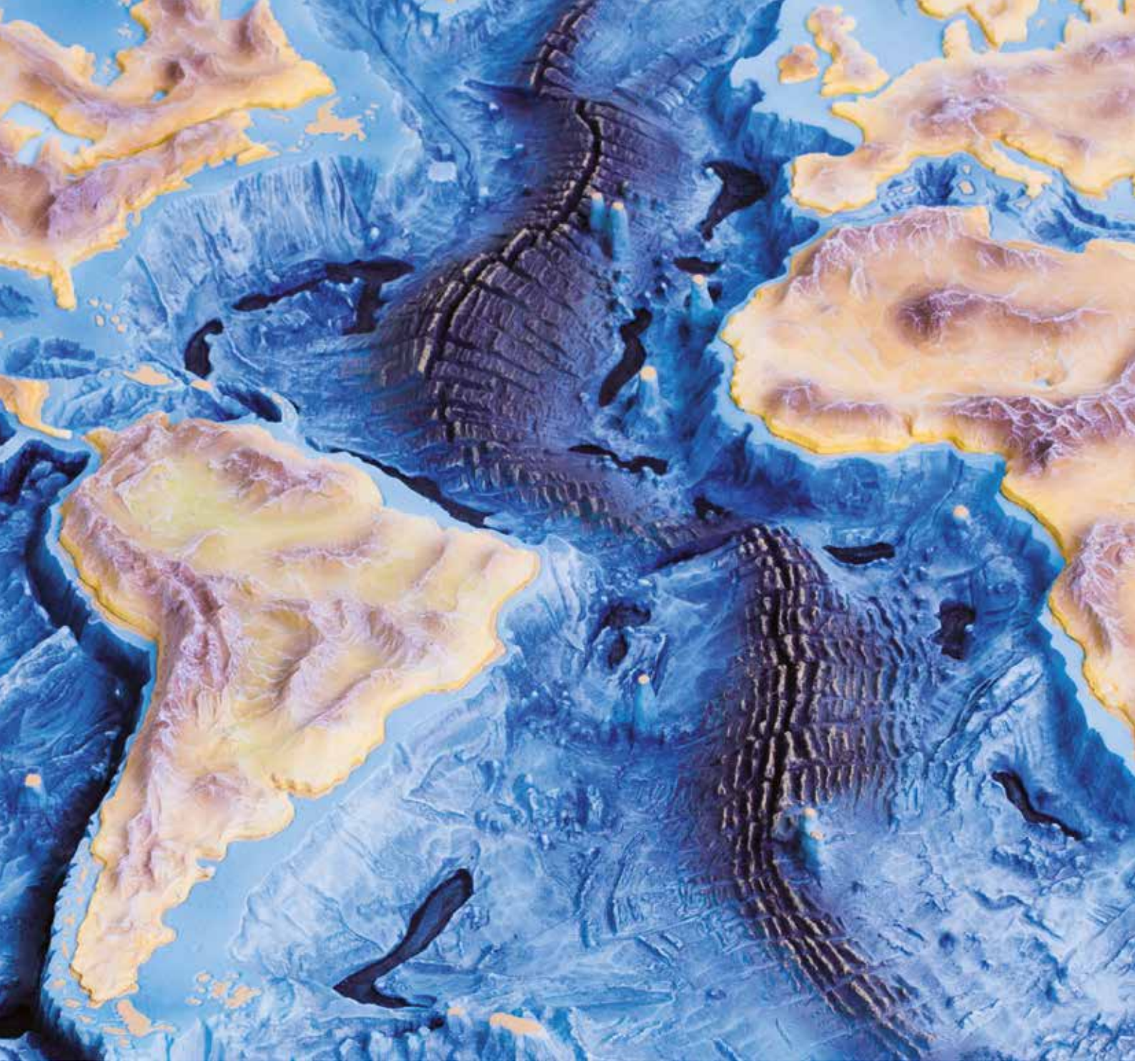
The Origin of Life and Evolution, CD-ROM
An unique CD of life-science. Evolution's road from "no-life" to life – stellar, chemical and organic evolution. Temporal course of evolution. Formation of celestial bodies and rise of chemical elements. Apparition of prokaryotes. Abiotic synthesis of amino acids, oligopeptids, polypeptides, purine and pyrimidine bases and nucleic acid sequences. Polynucleotid aggregates. Evolutionary stages of metabolism: fermenting, breathing, photosynthesizing prokaryotes. Primordial soup. Hypercycle according to EIGEN. Precambrian evidences of life. Evolution from prokaryotes to the plant and animal kingdoms. Spontaneous generation theories and findings. Phylogenetic schema for the five organic phyla. Endosymbiont hypothesis. Rise of multicellular organisms. Theory of gastraea, notoreunalia-gastroneuralia and coelom. Conquest of land. The saurians. Geological times. The "geologic clock". Foundations, mechanisms and course of the evolution of the plant and animal kingdoms. Evolutionary pointers. Morphological homologies. Bridging species. The Archaeopteryx. Evolution in terms of geography, ontogeny, biochemistry, and animal behavior. Parallel evolution. Biogenetic law according to HAECKEL. The theories of Lamarck and Darwin. Natural selection and selection induced by man. Isolation. Gene shift. Adaptive radiation. Continental drift. Principles of speciation. Ontogenic spirals. Genetic landscape. Cultural development of man, evolution of languages. Tables of geologic formations. Recreation of prehistoric landscapes. Containing 513 pictures and text.

System requirements:
Computer and processor: 500-megahertz x86 or x64 processor
Operating system: Windows 95 and above
RAM: 16 MB RAM
Display: 1024 x 768 pixels
CD-ROM drive
Can also run on PowerMac G4 and above with the help of emulation software.
B-1004299

Evolution in Examples, CD-ROM
This CD provides exceptionally instructive graphic material on morphologic and anatomical aspects shedding light on evolution and phylogenetics in the animal kingdom. Three fundamental physical manifestations are covered: stepwise increase in organizational complexity, commonality of basic physical structures and the existence of rudimentary organs. Starting with the work of Charles Darwin, studies of species formation on isolated volcanic archipelagos have become master examples of research in evolution. The fauna in isolated habitats, such as the Galapagos islands, plays a particularly important role as a source of indirect evidence on the workings of evolution. The combined effect of isolation, selection, occupation of niches, gene drift and mutation can be appreciated in a most graphic manner. Taking the unique flora of the Canary islands as an example, such evolutionary events are reviewed as promoter effects, preservation of paleoendemic plants, the effects of separation and isolation, generation of species through adaptive radiation, selection and nestling-down processes, analogy and homology. The Canary islands, together with the Galapagos islands and the Hawaii group, ranks as a "Museum of Evolution".



System requirements:
Computer and processor: 500-megahertz x86 or x64 processor
Operating system: Windows 95 and above
RAM: 16 MB RAM
Display: 1024 x 768 pixels
CD-ROM drive
Can also run on PowerMac G4 and above with the help of emulation software.
B-1004301



ENVIRONMENT AND CHEMISTRY

Here you can find reliable and cost-effective teaching resources on the following topics from the fields of the environment and chemistry:

- The Earth as a planet, volcanism, minerals and rocks, the Earth's magnetic field, geological exploration
- Soil, water, air, light, weather
- The periodic table, inorganic, organic and biochemical molecules, electrochemistry, chemical measurement and analysis methods

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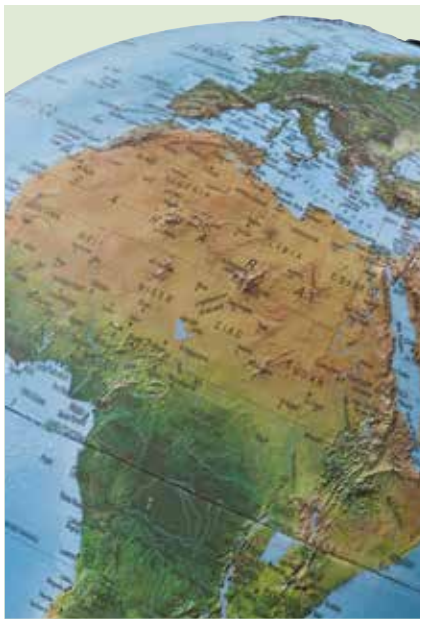
› EARTH SCIENCES

Here you can find everything for your teaching on the subject of Earth sciences: rocks and minerals, models depicting volcanic activity and the structure of the Earth, and instruments for measuring the magnetic field.



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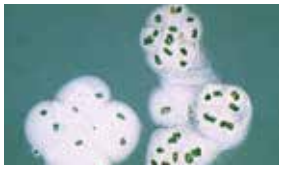
› ECOLOGY

Use our practical teaching cases and testing kits to analyse soil and water samples with your students, on excursions or in the class room. Supporting this are appropriately themed microscope slides for detailed examination and apparatus for investigating sunlight and climate.



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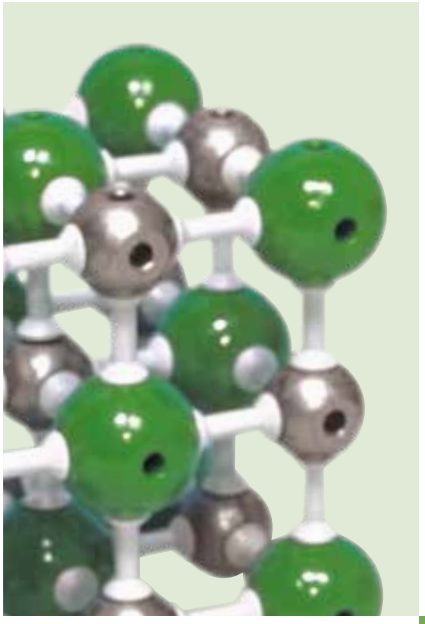
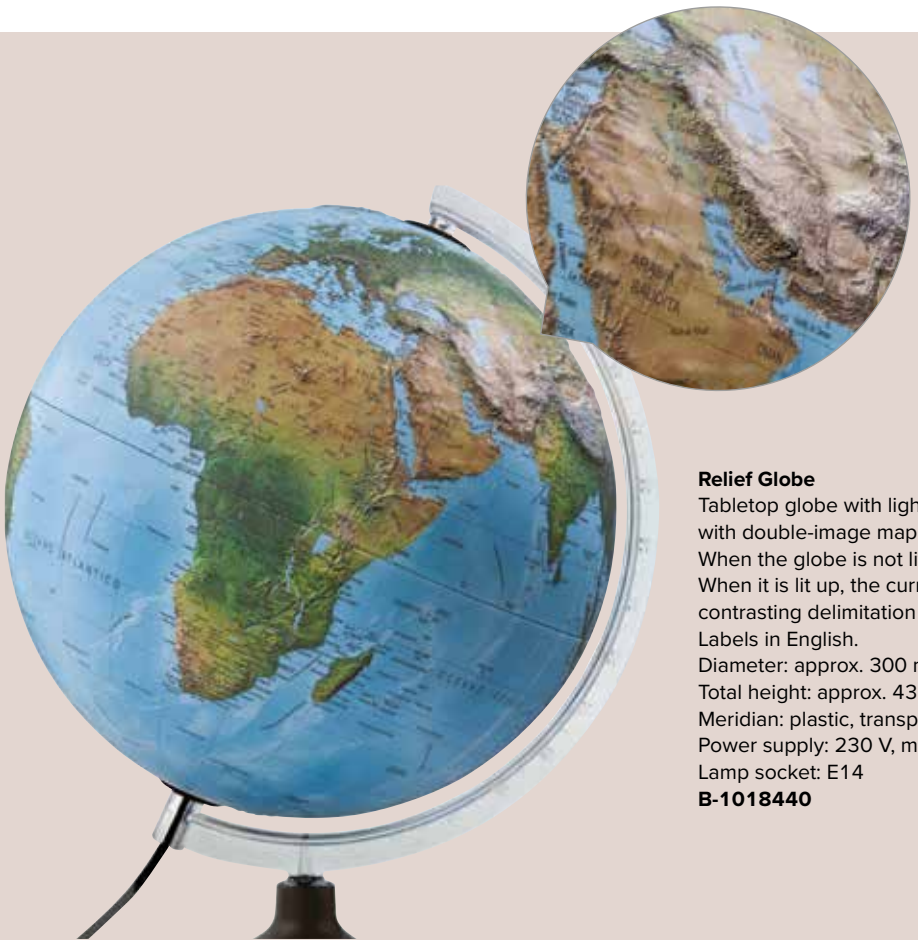
› CHEMISTRY

Our molecule construction kits and models help to make organic and inorganic chemistry easier to explain and to understand. Here you will also find reliable and cost-effective equipment sets for electrochemistry as well as instruments for chemical measurement and analysis methods.



EARTH AS A PLANET



› IN 3D!

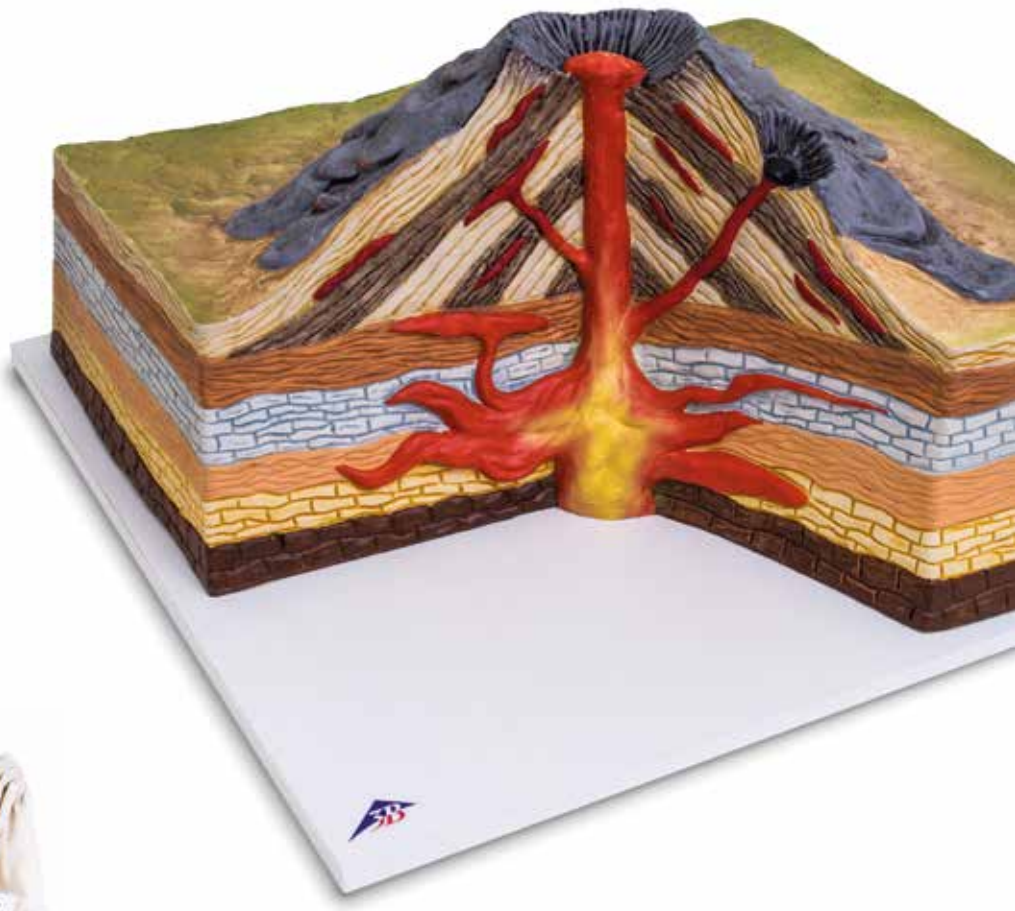
Relief Globe
Tabletop globe with lighting on a metal-reinforced plastic stand with double-image map and tactile 3D relief of mountain ranges. When the globe is not lit up, it shows a physical map of the earth. When it is lit up, the current political position is shown with a contrasting delimitation of the countries and their borders.
Labels in English.
Diameter: approx. 300 mm
Total height: approx. 430 mm
Meridian: plastic, transparent
Power supply: 230 V, max. 25 W
Lamp socket: E14
B-1018440

Experiment Topics:
- **Day and night**
- **Seasons**
- **Phases of the moon**
- **Solar and lunar eclipses and their cycles**

Orbit™ Tellurium
Attractive and easy-to-operate three-dimensional model of the sun, moon and earth, for comprehensive demonstration of their motions. Earth and moon in two different sizes in order to demonstrate day and night, motion of the sun across the sky, annual seasons, the changing amounts of daylight, phases of the moon, as well as solar and lunar eclipses and the cycles they exhibit.

Shadows have clear edges since the sun is represented by a bright lamp with a Sunbeam™ reflector. As an alternative to turning the whole system together, the rotation of the earth on its axis and the position of the moon in its orbit can be adjusted individually by hand.
Contents:
Tellurium with earth and moon in two sizes, display cards showing dates, solar eclipses, lunar eclipses and phases of the moon, small figure, sundial, detailed instructions in English.
Mains transformer, 100 – 240 V/6V
Dimensions: approx. 650x250x300 mm^3
B-1008661

Stratovolcano
This hand-painted model shows the inside of a stratovolcano with the path of liquid magma to earth's surface.
Material: PVC
Dimensions: approx. 470x350x190 mm³
Weight: approx. 2.4 kg
B-1017595



Set of Three Volcanic Rocks
Set of three vulcanite rocks consisting of three little bags, each containing ten pieces of either lava rock, obsidian orpumice stone.
B-1018462

Mid-Atlantic Ridge
This model shows the S-shaped course in 3D of the volcanic mountain range produced by tectonic shifts in the Atlantic Ocean.
Size at the equator: 1:320.000.000
Material: PVC
Dimensions: approx. 640x480x80 mm³
Weight: approx. 6.5 kg
B-1017594

MINERALS AND ROCKS

B-1018443 Collection of 24 Rocks

Minerals and rocks collections

The collections contain 24 frequently occurring examples of various stone and mineral groups. The examples are approx. 3x3x3 cm^3 to 5x5x5 cm^3 in size, and come in a robust box that includes numbering, labels and an information booklet.

Collection 24 Volcanic Rocks and Minerals
Collection of 24 volcanic rocks and minerals
The collection contains volcanic rocks and minerals.
The collection contains:
Volcanic rocks: basalt, phonolite, pitchstone, rhyolite
Lava: Lava from Vesuvius, basaltic lava and rhyoltic lava
Pyroclasts: lapilli, volcanic ash, pumice stone
Minerals: anorthite, anorthoclase, augite, cristobalite, hauyne, leucite, natrolite, nepheline, pickeringite, sanidine, sulphur, thaumasite, tridymite, obsidian.
B-1018442

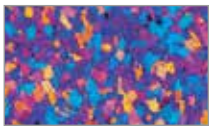
Collection of 24 Rocks
The collection contains frequently occurring examples of metamorphic, sedimentary and magmatic rocks as well as important examples of industrial rocks.
The collection contains:
Magmatic rocks, plutonites: foyaite, gabbro, granite, granodiorite, larvikite and monzonite
Magmatic rocks, vulcanites: basalt, pumice stone, phonolite, rhyolite
Sedimentary rocks: breccia, dolomite, gypsum, limestone, chalk, quartzite and sandstone
Metamorphic rocks: amphibolite, eclogite, mica schist, gneiss, marble, phyllite and serpentinite.
B-1018443

Collection of 24 Minerals
The collection contains examples of ten classes of minerals: elements, sulphides, halogenides, oxides, carbonates, borates, sulphates, silicates, phosphates and organic compounds.
The collection contains:
Elements: graphite and sulphur
Sulphides: bournonite, galenite and pyrite
Halogenides: fluorite and halite
Oxides: hematite, quartz and rutile
Carbonates: calcite and dolomite
Borates: ludwigite
Sulphates: barite, coelestine and gypsum
Phosphates, arsenates and vanadates: apatite and vanadite
Silicates and germanates: actinolite, amazonite, muscovite, sodalite and talk
Organic compound: copal
B-1018444

Thin slides of rock prepared for viewing under a microscope

Selected rocks and minerals are ground and polished to a thickness of 20 – 30 µm. The preparations are mounted with Canada balsam on slides of the size 45x30 mm^2 (32x24 cover glass). For the identification of forms, colours, refractions and fossil inclusions the slides can be viewed under any normal microscope in transmitting light. Additional information is given by using microscopes with polarized-light equipment.





Rocks and Minerals, Basic Set no. I
10 microscope slides size 45x30 mm^2. Inscription in English.
Contents:
Granite, syenite, gabbro, basalt, gneiss, micaschist, quartzite, marble, sandstone, limestone fossilized.
B-1012495



Rocks and Minerals, Basic Set no. II
10 microscope slides size 45x30 mm^2. Inscription in English.
Contents:
Andesite, trachyte, thyolite, diorite, microgranite, chalk, limestone oolithic, millstone, coal, schist.
B-1012498



Thin Sections, Igneous Rocks
31 microscope slides size 45x30 mm^2. Inscription in English.
Contents:
Altered granite, andesite, basalt, basalt with olivin, basalt with phenocryst and white feldspat, picrit basalt, tholeiitic basalt, granodiorite, pillow lava, dacite, diorite, diorite quartzique, dolerite, doreite, gabbro, granite, two-micas granite, porphyry granite, kimberlite, lamprophyre, microdiorite, microgranite, peridotite, phonolite, rhyolite, red rhyolite, syenite, tephrite, trachyandesite, trachyte, volcanic breccia.
B-1018490



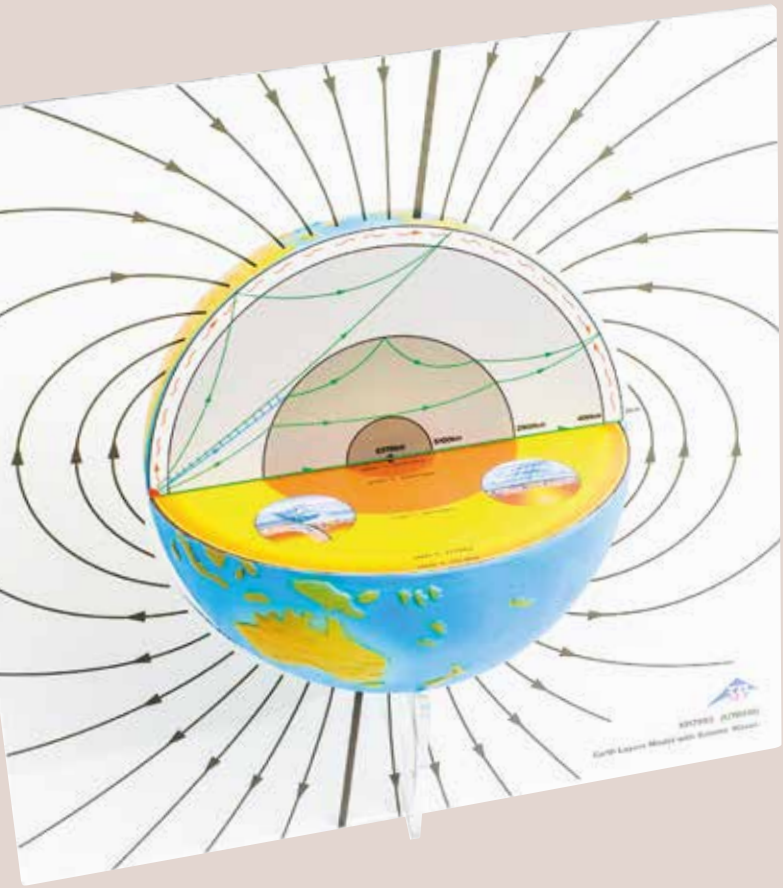
Thin Sections, Metamorphic Rocks
29 microscope slides size 45x30 mm^2. Inscription in English.
Contents:
Amphibolite, anatexis granite,eclogite with garnets, eclogite with coronitisation haloes, glaucophanite, gneiss, augen gneiss, gneiss with sillimanite, garnetite, granulite, hornstone, green hornstone, marble, metagabbro with hornblende, metagabbro with glaucophane, micaschist, micaschist with cordierite, micaschist with two-micas, micaschist with kyanite, micaschist with garnets, micaschist with glaucophane, micaschist with chloritoid, migmatite, quartzite, schist, schist with andalusite, serpentinsed peridotite, green schist, serpentinite.
B-1018495



Thin Sections, Sedimentary Rocks
22 microscope slides size 45x30 mm^2. Inscription in English.
Contents:
Arkose, chalk, coal, gypsum, limestone with alveolina, limestone with asphalt, fossilized limestone, limestone with crinoid stem, glauconitic limestone, limestone with globotruncana (maestrichtien), limestone with globigerinina (paleocene), limestone with miliolidae, limestone with nummulitidae, limestone with ooids, limestone with polyp, limestone with iron ooids, limestone with intraclasts, oil shale, sandstone, calcareous sandstone, slate, travertine.
B-1018500


Thin Sections, Fossils and Meteorites
4 microscope slides size 45x30 mm^2. Inscription in English.
Contents:
Chondrite (meteorite), suevite (impactite breccia), petrified wood, stromatolite.
B-1018505

THE EARTH'S MAGNETIC FIELD



Earth Layer Model with Seismic Waves
This unique model shows the connection between the inner layers of the Earth, the spreading of seismic waves in the interior of the Earth and the Earth's magnetic field. It was developed with the cooperation of renowned German geologists. The magnetic field printed on the sturdy acrylic stand shows the double polar axis, at the actual angle, and the magnetic field that was created in the bowels of the Earth. The upper hemisphere shows how the various earthquake waves deep inside the earth are reflected on layers of the Earth with different densities. The lower hemisphere demonstrates the layers that have been calculated by this, and portrays the temperature and the pressure inside the Earth using a respective range of colours. Plate tectonic scenarios are also depicted.
Diameter of the Earth: approx. 226 mm
Scale: 1 mm ≈ 56.41 km
Dimensions: approx. 387x350x240 mm^3
B-1017593

Inclination Instrument E
Instrument for measuring the inclination of the Earth's magnetic field and also for mapping the magnetic field of a current-carrying conductor. The agate bearings hold the magnetic needle is mounted in a frame with reference circle. The frame is equipped with an additional reference circle. There are two 4 mm sockets included for the power supply.
Length of magnet needle: approx. 100 mm
Dimensions: approx. 180x100x220 mm^3
Weight: approx. 620 g
B-1006799

Geological Compass
Surface areas and linear measurements in space can be measured in one step. The angle is measured laterally on a vertical circle, and the direction is measured with an integrated Pendel clinometer. Thanks to its robust construction, this structural compass is ideally suited to working in the field. The delivery includes a leather bag with a belt clip, and a special tool to adjust the compass rose and the lid hinge. The circular level, the mirror and the pelorus are also integrated.
Oscillation time of the magnetic needle: 30 – 60 seconds.
Pendel clinometer:
Calibration: 90° – 0° – 90°
Scale value: 1°
Horizontal circle:
Calibration: 0 – 360°
Scale value: 1°
Vertical circle:
Calibration: 90° – 0° – 90°
Scale value: 5°
Dimensions: approx. 80x65x20 mm^3
Weight: approx. 240 g
Including leather bag.
B-1018441

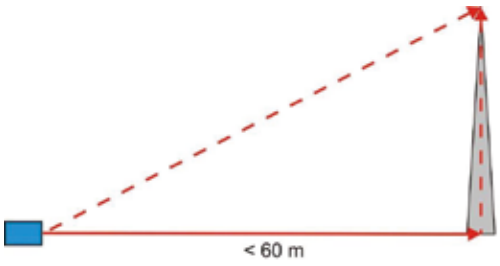
Globe with Bar Magnet
Globe of the World with bar magnet along the axis of the Poles on an acrylic base, this demonstrates the shape of the Earth's magnetic field. A compass or a magnetic field indicator can be seen to align at the surface of the globe in accordance with a magnetic field parallel to the lines of longitude. The inclination can also be determined using the magnetic field sensor.
Dimensions: approx. 220x160x200 mm^3
Diameter (globe): approx. 120 mm
Weight: approx. 340 g
B-1013123

Additionally recommended:
B-1003555 Magnetic Field Indicator
B-1003093 Compass

Compass
Compass in a stable housing, low friction needle bearing, including a compass card and angle scale.
Scale division: 2°
Diameter: approx. 45 mm
B-1003093

Magnetic Field Indicator
Bar magnet, with Poles identified by colour and free to turn in space, for three-dimensional mapping of magnetic fields. On agate gimbal bearings pivot allowing free rotation in space, small bar magnet with colour pole coding. The handle and cardanic suspension are made of plastic to alleviate any adverse effects on magnetic field.
Magnet: approx. 25x3x3 mm^3
Handle length: approx. 95 mm
B-1003555

Laser Range Finder
Professional laser range finding instrument with multi-lined LCD display and background illumination especially designed for distance measurements of extremely high precision and for locations difficult to access. Speed buttons for direct and indirect measurement (according to Pythagoras), area and volume calculation, addition and subtraction operations. With internal memory for 99 recorded measurement values, retractable 90° bracket for precise targeting of the measurement point, spirit level and tripod socket. Including case, batteries and instruction manual.
Measurement range: 0.05 – 60 m
Measurement units: m (meter), in (inch), ft (feet)
Accuracy: ± 2 mm
Internal memory: 99 values
Laser: 620 nm – 680 nm, <1 mW, class: 2
Voltage supply: 2 x 1.5 V AAA batteries
Display: Multi-lined multifunction display
Dimensions: approx. 118x54x28 mm^3
Weight: approx. 135 g
B-1020907



SOIL AND WATER

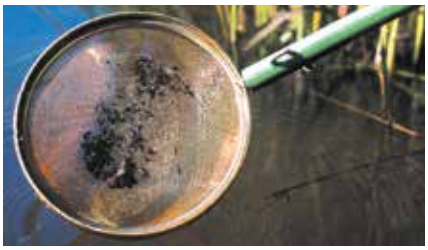
+ Easy to use
+ Reliable analysis
+ Maximum safety for users
+ Chemicals can be disposed of without difficulty

Teaching Case "Water Analysis" (*VISOCOLOR*® School)
Compact analysis set in carry-case for reliable determination of key parameters for water in scientific lessons which do not require detailed prior knowledge. The case contains all the necessary reagents and accessories. It can be used to determine the following parameters for natural water: ammonium-content, nitrate-content, nitrite-content, phosphate-content, pH value and overall hardness. There are enough resources for at least 50 investigations. Analysis can be carried out quickly and easily by comparing colors against a card template. Includes detailed instructions in German, English, French and Spanish.
Measuring ranges:
Ammonium: 0.05 – 10 mg/l NH_4^+
Nitrates: 10 – 80 mg/l NO_3^-
Nitrites: 0.02 – 1.0 mg/l NO_2^-
Phosphates: 0.5 – 6 mg/l PO_4^{3-}
pH: 3.0 – 9.0
Water hardness: 1 drop of reagent = 1°dH (German degree – degree of general hardness)
Dimensions: approx. 38x30x11 cm^3
B-1021115

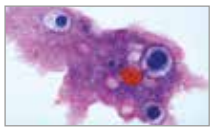
Consumables:
B-1021116 *VISOCOLOR*® School Refill
B-1021117 *VISOCOLOR*® School Color Card
B-1021118 *VISOCOLOR*® School Manual

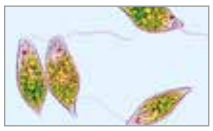
› OTHER TEST KITS ARE AVAILABLE ON REQUEST

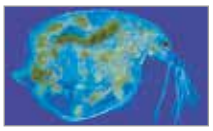
***VISOCOLOR*® ECO Test Kits**
Separate test kits for chemical analysis of water samples without the need for extra apparatus or previous chemical knowledge. The *VISOCOLOR*® card color templates are keyed to the original colors of freshly prepared standard solutions, thus ensuring fine resolution, precision and reproducibility of the measurement results.
Instructions in German, English, French, Italian, Spanish, Dutch, Hungarian and Polish.



Equipment Set “Environment Explorer”
Strong and versatile set of equipment for taking water and plankton samples, for catching flies, beetles, suspended particles, aquatic insects etc. or for collecting small creatures in soil from the beds of water-courses. The key component is a telescopic pole to which the various nets and collecting vessels can be attached.







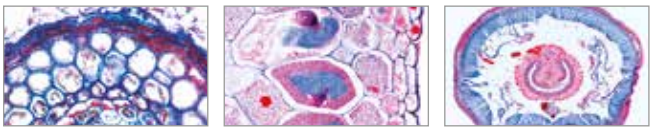
Series of Microscope Slides “The Microscopic Life in the Water, Part I”
25 microscope slides with English text.
1. Amoeba proteus, amoeba, 2. Ceratium hirundinella, dinoflagellates, 3. Euglena, green flagellate with eyespot, 4. Radiolaria, marine rhizopods, 5. Paramecium, nuclei stained, 6. Stylonychia, a common ciliate, 7. Spongilla, fresh water sponge, isolated spicules, 8. Hydra, w.m. or section, 9. Rotatoria, rotifers, mixed species, 10. Daphnia, water flea, a phyllopod, 11. Cyclops, a copepod, 12. Chironomus, gnat, larva w.m., 13. Putrefaction causing bacteria from hay infusions, 14. Oscillatoria, a filamentous blue green alga, 15. Diatomeae, diatoms, mixed species, 16. Desmidiaceae, desmids, mixed species, 17. Spirogyra, green alga with spiral chloroplasts, 18. Eudorina, small colonies within gelatinous sheaths, 19. Cladophora, green alga, branched filaments, 20. Draparnaldia, main filaments and branchings, 21. Microcystis, irregular colonies, 22. Ulothrix, green alga with girdle-shaped chloroplasts, 23. Oedogonium, vegetative filaments, 24. Volvox, with daughter colonies and sexual stages, 25. Mesothaenium, rod-shaped desmids.
B-1004260

Series of Microscope Slides “The Microscopic Life in the Water, Part II”
25 microscope slides with English text.
1. Arcella, shelled ameba, 2. Vorticella, a stalked ciliate, 3. Colpidium, a common holotrich ciliate, 4. Spongilla, fresh water sponge, t.s. showing channels, 5. Planaria, fresh water flat worm, t.s. of body, 6. Tubifex, a fresh water oligochaete, 7. Plumatella, moss animal, section of colony, 8. Cyclops, nauplius larva w.m., 9. Culex pipiens, common mosquito, larva w.m., 10. Sphaerotilus natans, bacteria from putrid water forming chains, 11. Nostoc, blue green alga with heterocysts, 12. Anabaena, filamentous blue green alga, 13. Gloeocapsa, small colonies within sheaths, 14. Rivularia, blue green alga with basal heterocysts, 15. Beggiatoa, a colourless alga showing lack of chlorophyll, 16. Zygnema, filamentous alga with stellate chloroplasts, 17. Cosmarium, desmid showing the typical isthmus, 18. Chlamydomonas, biflagellate alga, 19. Haematococcus, unicellular red algae, 20. Hydrodictyon, water-net, 21. Chlorella, unicellular green alga, 22. Dynobrion, a golden alga forming colonies, 23. Mixed plankton, strewn slide No. I, 24. Mixed plankton, strewn slide No. II, 25. Mixed plankton, strewn slide No. III.
B-1004267

+ Easy to use
+ Reliable analysis
+ Maximum safety for users
+ Chemicals can be disposed of without difficulty

Teaching Case "Soil Analysis" *VISOCOLOR*®
This analysis set can be used to reliably identify important soil parameters without prior knowledge of chemistry. The case contains all the necessary reagents, equipment and accessories. It can be used to identify the concentrations of the following substances in the soil: nitrate, nitrite, ammonium, phosphate and potassium. It is also possible to determine soil structure, acidity (pH value), density and humidity. Identification cards can be used to make colour comparisons to a high level of accuracy and can be used in the classroom. The set contains a thorough introduction in English, French, Spanish and German.
Contents:
Calcium chloride solution ($CaCl_2$) sufficient for 110 soil extracts, calcium acetate lactate solution (CAL) sufficient for 7 soil extracts, 1 set of scales, 1 soil sieve, 1 funnel, 1 double-ended spatula, 3 syringes, 1 spray bottle, 1 measuring cylinder, 1 can, 2 shakers, 1 plastic shovel, 100 folded filters, 1 set of instructions
Measuring range:
Ammonium: 7.8 – 312 mg N/kg
Nitrate: 2.3 – 115 mg N/kg
Nitrite: 0.3 – 24 mg N/kg
Phosphate: 10 – 200 mg P/kg
Potassium: 40 – 300 mg K/kg
pH: 4.0 – 10.0
Dimensions: approx. 43x51x17 cm^3
Weight: approx. 2.4 kg
B-1018516

Consumables:
B-1021149 Pyrophosphate Solution, 3 x 30ml
B-1021150 $CaCl_2$ Concentrate, 3 x 100 ml
B-1021151 Calibration Solution, 4 x 100 ml
B-1021152 Folding Filters, MN 616¼
B-1021126 *VISOCOLOR*® ECO Potassium
B-1021139 *VISOCOLOR*® HE Phosphates
B-1021141 *VISOCOLOR*® HE pH 4 – 9
B-1021143 QUANTOFIX® Nitrates/Nitrites
B-1021144 QUANTOFIX® Ammonium
B-1021153 pH-Indicator Test Sticks, pH 2,0 – 9,0



Series of Microscope Slides "Life in the Soil"
17 microscope slides with English text.
1. Acidophile soil bacteria, solution of heavy metals 2. Nitrite bacteria, forming harmful nitrogenous substances 3. Root of beech with ectotrophic mycorrhiza, t.s. 4. Root of birch with partly endotrophic mycorrhiza, t.s. 5. Root of lupin with symbiotic nitrogen fixing bacteria 6. Netted venation, portion of rotted deciduous leaf 7. Charlock (Sinapis), t.s. of stem. Green manure plant 8. Soil bacteria (Bacillus megaterium), smear 9. Hyphae of root fungi, t.s. 10. Lichen, indicator of clean air 11. Mushroom (Xerocomus), mycelium 12. Root of willow (Salix), planting protecting against erosion 13. Earthworm (Lumbricus) t.s., causing soil improvement 14. Springtails (Collembola), w.m. 15. Mite from forest soil, w.m. 16. Constituents of humus soil 17. Constituents of peaty soil.
B-1004258

+ Impact-resistant and waterproof
+ Light and robust
+ Intuitive menu operation
+ All key data at a glance
+ USB connection and free software
+ Update with new tests available for free at any time
+ Inexpensive reagent refills

Compact Photometers PF 3 Soil, PF 3 Fish and PF 12^{Plus}
The compact photometers provide an ideal supplement to the *VISOCOLOR*® teaching sets and *VISOCOLOR*® test kits. Together they make up a portable analysis platform for high-quality soil and water analysis in the lab or on-site. Their dustproof and waterproof cases give them a quality appearance. The deep cell holders allow measurements to be made without covering the shaft and under any lighting conditions. Reagents are included. The *VISOCOLOR*® ECO reagents are used as refills. Other reagents are available on request.
The PF 3 Soil compact photometer is a reliable, portable analysis system for soil analyses. The PF 3 Fish Photometer is for investigation of water courses. Both are supplied in a case and including batteries along with a detailed manual in German, English, French and Spanish.
The PF 12^{Plus} compact photometer is an analysis system which meets the ultimate demands for all applications requiring analysis of water courses and waste water drainage. In a rigid case including software DVD, batteries, 4 empty measuring cells, funnel, beaker, syringe, USB cable, calibrating cell, certificate and detailed manual in German, English, French and Spanish.

B-1021146 Compact Photometer PF 3 Fish
B-1021147 Compact Photometer PF 3 Soil
B-1021148 Compact Photometer PF 12^{Plus}

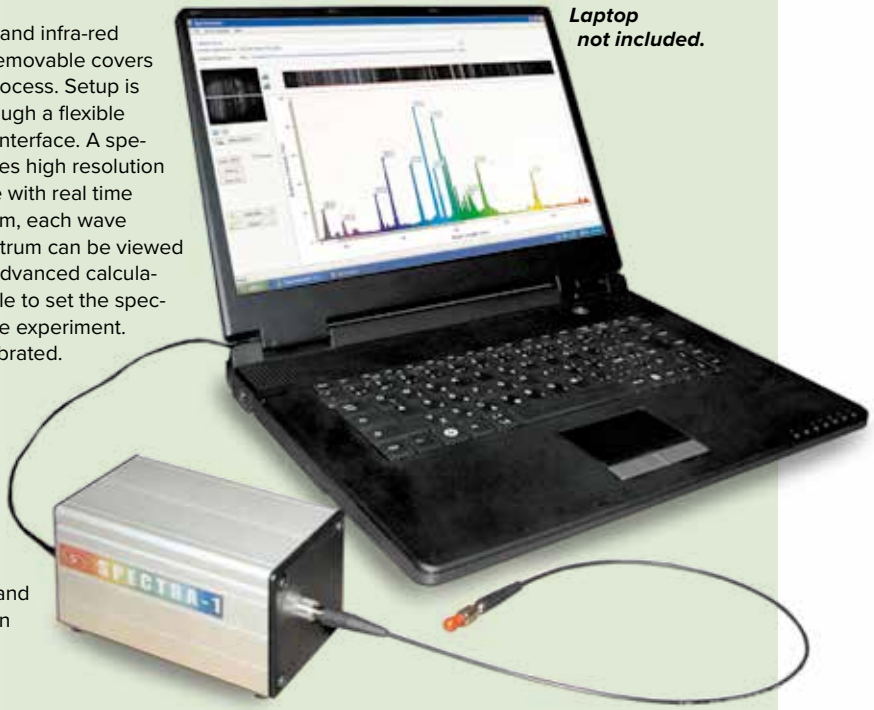
	PF 3 Soil, PF 3 Fish	PF 12^{Plus}
Light source	LED with interference filters	Xenon high-pressure lamp with 7 interference filters, LED 860 nm
Wavelengths	Soil: 365/450/660 nm Fish: 450/530/660 nm	345 / 436 / 470 / 540 / 585 / 620 / 690 / 860 nm
Measuring modes	Pre-programmed tests	More than 100 pre-programmed tests and special techniques, extinction, transmission, factoring, standard, nephelometry, turbidity measurement; 50 freely programmable methods
Data memory	50 measurements	1000 measurements
Power supply	3 AA batteries/rechargeable batteries, USB interface	4 AA batteries/rechargeable batteries, USB interface
Dimensions	approx. 170x95x68 mm^3	approx. 215x100x65 mm^3

***VISOCOLOR*® *ECO* Messbereiche:**

Art. No.	Test	Number of Tests	PF3 Fish	PF 3 Soil	PF 12^{Plus}
B-1021123	**Ammonium 3**	50	0.1 – 2.0 mg/l NH_4-N	0.2 – 4.0 mg/kg NH_4-N	0.1 – 2.0 mg/l NH_4-N 0.1 – 2.5 mg/l NH_4 0.1 – 2.0 mg/l NH_3
B-1021138	**Iron 2**	100	0.04 – 2.00 mg/l Fe	–	0.04 – 2.00 mg/l Fe
B-1021129	**Nitrates**	110	1.0 – 14.0 mg/l NO_3-N	2 – 28 mg/kg NO_3-N	1.0 – 14.0 mg/l NO_3-N 4 – 60 mg/l NO_3
B-1021131	**Nitrites**	120	0.01 – 0.15 mg/l NO_2-N	–	0.01 – 0.15 mg/l NO_2-N 0.02 – 0.50 mg/l NO_2
B-1021136	**Phosphates**	80	0.2 – 5.0 mg/l PO_4-P	20 – 500 mg/kg PO_4-P	0.2 – 5.0 mg/l PO_4-P 0.6 – 15.0 mg/l PO_4
B-1021120	**Oxygen**	50	1 – 8 mg/l O_2	–	1 – 8 mg/l O_2
B-1021127	**Potassium**	60	–	40 – 300 mg/kg K^+	2 – 25 mg/l K^+
B-1021134	**pH**	150	6.10 – 8.40		6.0 – 8.2

SUNLIGHT

Spectrophotometer S
Robust spectrometer for investigating the near infra-red and infra-red regions of the spectrum between 360 and 800 nm. Its removable covers allow students to see first hand the spectrum analysis process. Setup is quick and easy. The optical signal enters the device through a flexible fiber optic cable. Connection to a PC is via the USB 2.0 interface. A specially selected transmission grating and precision slit gives high resolution and excellent results. Data collection software is intuitive with real time graphical output. For easier interpretation of the spectrum, each wave band is shaded with the corresponding colour. The spectrum can be viewed either as a graph or in text form, which allows for more advanced calculations. The availability of several toolbars makes it possible to set the spectrometer parameters to exactly fit the requirements of the experiment.
Spectrometer S is supplied ready to use; tested and calibrated.
Spectral range: 360 – 800 nm
Spectrometer resolution: < 2.0 nm
Pixel resolution: < 0.5 nm
Operating system: Win XP, Vista, Win7
Interface: USB 2.0
Dimensions: approx. 60x60x120 mm³
Weight: approx. 600 g
Contents:
Spectrophotometer S with USB cable, fibre optic cable, and a CD containing experimental software and an instruction manual.
B-1003061



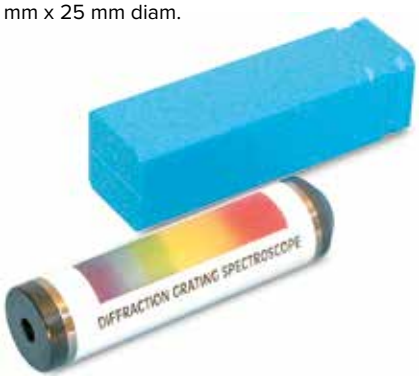
Laptop not included.

Spectroscope in Metal Case
Hand spectroscope in a flat metal case with printed wavelength scale for easy reading of spectral lines and spectra. With holder for mounting a probe in a plastic vessel.
Dimensions: approx. 180x115x25 mm³
B-1003184

Digital Luxmeter
Reasonably priced, easy to use pocket luxmeter for testing and measurement of light conditions. C.I.E. standard spectrum. Including light sensor, pouch and battery.
Measuring ranges: 200 – 50000 lux, 4 ranges, ±5%
Voltage supply: 12 V battery (A23)
Dimensions: approx. 65x115x25 mm³
Weight: approx. 160 g
B-1002779

Hand Spectroscope with an Amici Prism
Precise optical system with a visible spectrum that is linear in terms of wavelength around the centre point. In a metal housing with an adjustable slit and high-grade Amici prism. Delivery in hinged case for protective and dust-free storage.
Angular dispersion: 7° (C – F)
Linear dispersion: 60 mm
Slit width: 0 – 1 mm
Folding case: approx. 150x70x30 mm³
Weight: approx. 150 g
B-1003531

Pocket Spectroscope
High-quality optical system with centered visible spectrum, which is linear with respect to the wavelength. In metal sleeve. With fixed slit and prism system with grating
Slit width: 0.2 mm
Number of grating lines: 600 lines/mm
Dimensions: approx. 115 mm x 25 mm diam.
Weight: approx. 62 g
B-1003078



CLIMATE

Infrared Temperature and Humidity Gauge
Digital measuring device for contact-free temperature measurement from large distances, e.g. of hot or moving objects or inaccessible points of measurement, and for simultaneous humidity display. With laser diode as detection aid, integrated in the measuring probe, illuminated LCD display, max and data-hold function, switchable between °C and °F, automatic switch-off. Includes pouch and battery.
Measuring range, temperature: -50° C to +500° C; -58° F to +932° F
Divisions: 0.1° C/F
Accuracy: ± 2% of measured value ± 2° C / 4° F
Measuring range, humidity: 5% to 95%
Divisions: 0.1%
Accuracy: ± 3.5%
LCD dual-function display: 3½-digit, 21 mm with backllighting
Voltage supply: 9 V battery
Dimensions: approx. 90x170x45 mm³
Mass: approx. 360 g
B-1002795

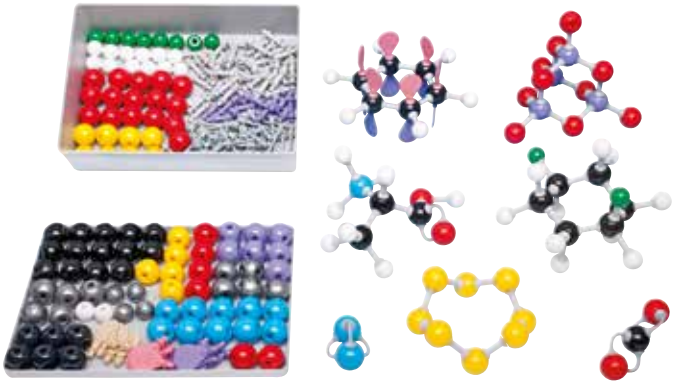
Wireless Weather Station
Weather station with wireless detection of external temperatures from up to three sensors situated at distances of up to 25 m. Display of internal temperature and humidity. Features switchable °C/°F display, min/max function, weather forecasting, trend displays for air pressure and radio-controlled clock with date function. Supplied with one external temperature sensor, two 1.5-V AA batteries and two 1.5-V AAA batteries. Silver/grey housing. Can be suspended or set up on a surface.
External temperatures: -30° C ... +70° C
Internal temperatures: 0° C ... +60° C
Humidity: 1 ... 99%
B-1010248

Digital Pocket Anemometer
Waterproof anemometer for measuring wind speed. Indication of wind chill temperature based on the combination of air temperature and wind speed. Indication of mean and maximum speeds. Wind curves on the Beaufort scale. Supplied with closeable cover.
Wind speed: 0.2 ... 30 m/s
Accuracy: ±5% of mean wind speed
Units: km/h, m/h, m/s or knots
Temperature: -30° to +59° C
Battery: 3.0 V (CR2032)
Dimensions: approx. 137x50x18 mm³
B-1010250

Digital Hygro-Thermometer
Digital measuring device for displaying exterior and interior temperature and humidity. With min/max function and acoustic signal if exterior temperature drops to or below zero, switchable between °C and °F, on/off button, eyelet for hanging up and fold-out stand.
Measuring range:
Temperature (interior): 0° C – 50° C/ 32° F – 122° F
Temperature (exterior): -50° C – 70° C/ -58° F – 158° F
Humidity: 20% – 99%
Divisions: 0.1° C/F, 1%
Accuracy (temp.): ± 1° C / ± 2° F
Accuracy (humidity): ± 3%
Exterior temperature sensor: Cable length 3 m
B-1003011

Precision Hair Hygrometer
Hygrometer for measuring the relative air humidity, consisting of a round plastic housing with a synthetic hair as the measuring element. The specially treated hair exhibits an almost inertia-free response to changes in humidity. Wall-mountable.
Measuring range: 0% – 100% relative humidity
Temperature range: – 35° C – + 65° C
Reading accuracy: ± 5%
Diameter: 100 mm
B-1002877

MOLECULE BUILDING SETS



Organic/Inorganic Molecule Set D, molymod®
Molecule building set for assembling three-dimensional models of organic and inorganic molecules and for clarification of their spatial configurations. Many chemical compounds can be represented clearly. These include simple molecules such as hydrogen, oxygen and water, organic compounds such as ethane, ethene, ethyne, benzene, alanine, glucose, and cyclohexane and also more complex structures such as the tetrammino zinc ion or tetraphosphorous decoxide.
B-1005279

Contents B-1005279:			
Atoms:			
14	C	black	tetrahedral
6	C	dark blue	tribipyramidal
12	H	white	one sided
2	H	white	linear
16	O	red	angular
6	O	red	tetrahedral
6	N	blue	tetrahedral
4	N	blue	pyramidal
4	S	yellow	tetrahedral
1	S	yellow	octahedral
8	S	yellow	angular
8	Cl, (F)	greens	one sided
4	P	purple	tetrahedral
1	P	purple	tribipyramidal
2	P	purple	pyramidal
4	Na	grey	one sided
3	Ca, Mg	grey	angular
2	Al	grey	trigonal
4	Si, Cu	grey	tetrahedral
1	metal atom	grey	octahedral
Electron clouds:			
6	lone pair	light beige	
12	unhybridised p-lobe	purple/pink	
Links:			
38	medium	light grey	
12	medium	purple	
36	long, flexible	grey	

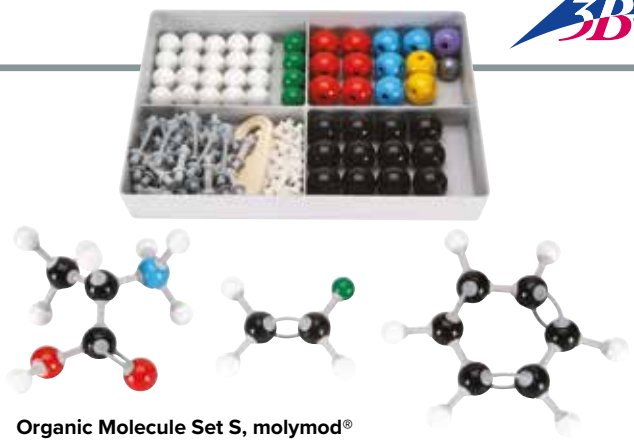
Organic/Inorganic Molecule Set S, molymod®
Molecule building set for assembling three-dimensional models of organic and inorganic molecules and for clarification of their spatial configurations. Many chemical compounds can be represented clearly. These include inorganic molecules such as hydrogen, oxygen, water, acids, salts, metal oxides, and non metal oxides and also organic compounds such as ethane, ethene, ethyne, benzene, alanine, glucose, and cyclohexane.
B-1005291

Contents B-1005291:			
Atoms:			
6	C	black	tetrahedral
14	H	white	one sided
6	O	red	angular
1	O	red	tetrahedral
2	N	blue	tetrahedral
1	N	blue	pyramidal
1	S	yellow	tetrahedral
1	S	yellow	octahedral
6	Cl, (F)	greens	one sided
1	P	purple	tribipyramidal
1	P	purple	pyramidal
2	Na	greys	one sided
2	Ca, Mg	grey	angular
1	Be	grey	linear
1	Al	grey	trigonal
1	Si, Cu	grey	tetrahedral
1	metal atom	grey	octahedral
1	B	light beige	trigonal
1	atom	beige	tetrahedral
1	atom	beige	tribipyramidal
1	atom	beige	octahedral
Electron clouds:			
3	lone pair	light beige	
Links:			
20	medium	light grey	
5	medium	purple	
12	lang flexibel	grey	

Organic Molecule Set D, molymod®
Molecule building set for assembling three-dimensional models of organic molecules and for clarification of their spatial configurations. Many chemical compounds can be represented clearly and phenomena such as structural isomerism, optical isomerism and geometric isomerism can be illustrated. The spectrum ranges from simple molecules such as alkanes, alkenes and alkynes, alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, halogenated compounds, amines, amides, cycloalkanes to biochemical molecules, amino acids, aromatic molecules and polymers.
B-1005278

Contents B-1005278:			
Atoms:			
24	C	black	tetrahedral
6	C	dark grey	trigonal
2	C	dark grey	linear
6	C	dark blue	tribipyramidal
40	H	white	one sided
12	O	red	angular
4	N	blue	tetrahedral
1	S	yellow	tetrahedral
1	S	yellow	angular
8	Cl, (F)	green	one sided
4	P	purple	tetrahedral
2	Na	grey	one sided
1	Ca, Mg	grey	angular
Electron clouds:			
6	lone pair	light beige	
12	unhybridised p-lobe	purple/pink	
Links:			
60	short	white	
55	medium	light grey	
25	long, flexible	grey	

Biochemistry Set, molymod®
257 atom-parts. A set for making compact/semi space filling models featuring the “mushroom style” hydrogen atom link part. Covering a wide range of Biochemical structures. Examples: Structures include, amino-acids, monosaccharides, fatty acids, glycerol, steroids, purines, and pyrimidines, peptides, disaccharides, nucleosides, nucleotides, coenzymes, proteins, polysaccharides, and nucleic acids.
B-1005280



Organic Molecule Set S, molymod®
Molecule building set for assembling three-dimensional models of organic molecules and for clarification of their spatial configurations. Many chemical compounds can be represented clearly and phenomena such as structural isomerism, optical isomerism and geometric isomerism can be illustrated. The spectrum ranges from simple molecules such as alkanes, alkenes and alkynes, alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, halogenated compounds, amines, amides, cycloalkanes to biochemical molecules, amino acids, aromatic molecules and polymers.
B-1005290

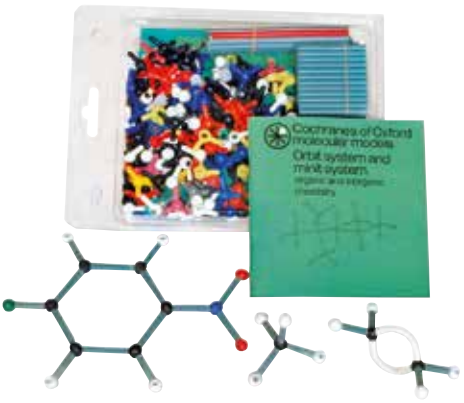
Contents B-1005290:			
Atoms:			
12	C	black	tetrahedral
20	H	white	one sided
6	O	red	angular
2	N	blue	tetrahedral
2	N	blue	pyramidal
1	S	yellow	tetrahedral
1	S	yellow	octahedral
4	Cl, (F)	green	one sided
1	P	purple	tetrahedral
1	Na	grey	one sided
Links:			
26	short	white	
6	medium	light grey	
12	long, flexible	grey	

Contents B-1005280:			
Atoms:			
42	C	black	tetrahedral
24	C	black	trigonal
2	C	black	linear
12	N	blue	tetrahedral
12	N	blue	trigonal
10	N	blue,	angular
20	O	red	angular
10	O	red	linear
10	O	red	
10	H	white	linear
2	S	yellow	angular
6	P	purple	tetrahedral
1	Metal	grey	tetrahedral
1	Metal	grey	octahedral
100	H	white	atom-link
Links:			
150	NV-links		
10	V-links	grey	

MOLECULE BUILDING SETS

Sets Inorganic/Organic Chemistry, Orbit™
The atoms consist of plastic centers having prongs set at the correct bond angles. The centers are color coded according to the element, and the bond angles are engraved on the centers and marked by bars. The items consist of: Molecular shape, methane, butane and alkanes, isomerism, carbon compounds with multiple bonds, ring structures, molecules with nitrogen, phosphorous and sulphur, benzene, optical isomerism, sugars, carbohydrates, polymers and complex ions.

Class-Set – Inorganic/Organic Chemistry, Orbit™
500 atom centers, scale 3 cm = 100 pm.
B-1005306



Student-Set – Inorganic/Organic Chemistry, Orbit™
240 atom centers, scale 3 cm = 100 pm.
B-1005307

The Orbit Molecular System Basic Set
This molecular system is a set of 65 atom centers, scale 3 cm = 100 pm. Capable of building simple organic models, including sugar. The colors of the centers represent the elements. The centers are joined by bonds which fit over the prongs. For simple model building, bonds of 2 or 3 lengths are sufficient.
B-1005308

Biochemistry, Orbit™
The centers are color coded according to the element and the bond angles are marked. Bonds between atoms are made from plastic straws, which can be cut to any required length. The items consist of: Amino acids, monosaccharides, glycerol, fatty acids, steroids, purines and pyrimidines, peptides, disaccharides, lipids, nucleosides, nucleotides, proteins, polysaccharides, nucleic acids.

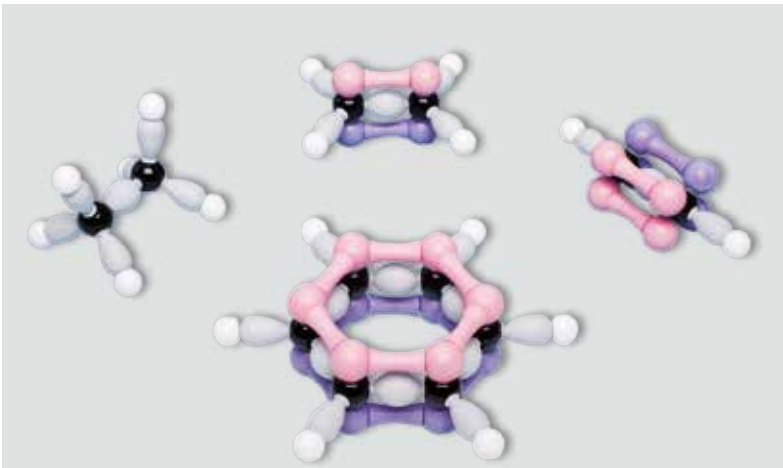
Class-Set – Biochemistry, Orbit™
390 atom centers, scale 3 cm = 100 pm.
B-1005303

Student-Set 260 – Biochemistry, Orbit™
260 atom centers, scale 2 cm = 100 pm.
B-1005304

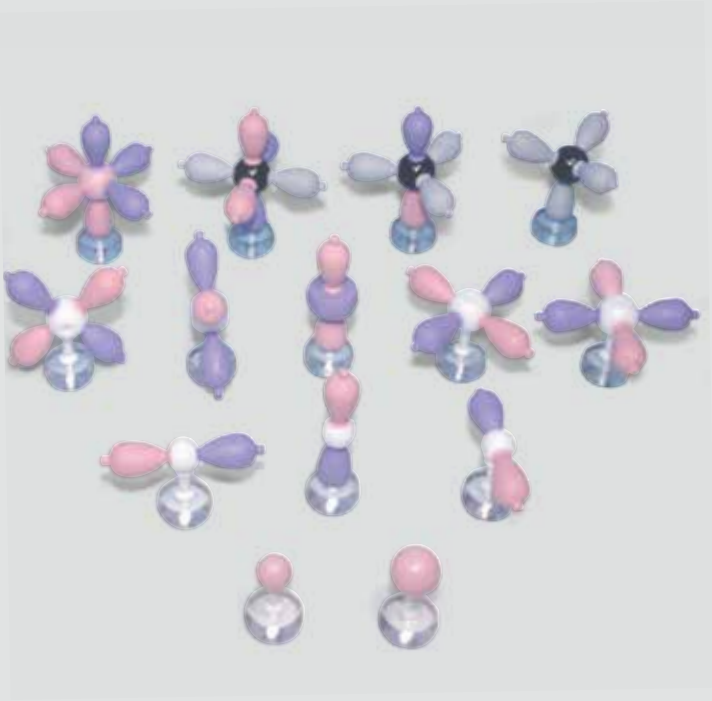
Student-Set 255 – Biochemistry, Orbit™
255 atom centers, scale 3 cm = 100 pm.
B-1005305

MOLECULAR ORBITALS

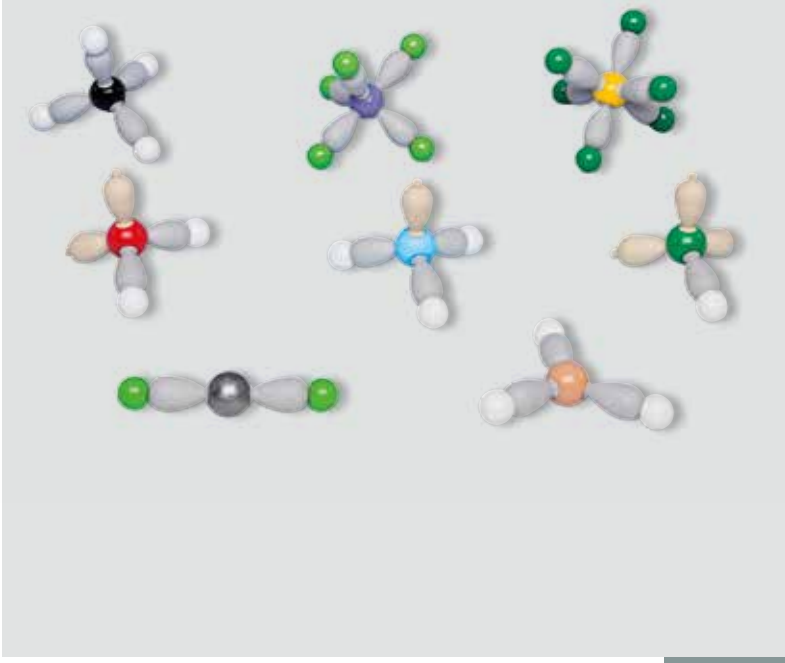
Molecular Organic Structures Set Molyorbital™, 4 Models
This molecular orbital organic structure set contains sufficient parts to make the four organic molecular orbital models: Benzene, Ethane, Ethene, and Ethyne.
The molecular model kit includes:
12 Carbon
18 Hydrogen
9 Carbon-carbon (oval shaped)
18 Carbon-hydrogen (pear shaped) sigma bonds
9 pi-bonds (21 pink and 21 purple pieces)
B-1005292



Atomic Orbital Set Molyorbital™, 14 Models
This atomic orbital molecular set contains sufficient parts to make 14 easy to self-assemble atomic orbital. Pink and purple colored pear shaped lobes represent the two wave phases, positive and negative of the p and d atomic orbitals. The atomic nuclei are represented by opaque white spheres. Each atomic orbital molecular model comes with its own individual colorless, transparent base for display purposes. Approximate atomic orbital model heights including base are: s-orbital 5 cm, p-orbital 9 cm, d-orbital 8 cm.
The atomic orbital molecular set includes:
1s Unhybridised 1x
2s Unhybridised 1x
2p Unhybridised 3x
3d Unhybridised 5x
2s plus three 2p orbitals Unhybridised 1x
sp, sp2, sp3 Hybridised 3x
B-1005293



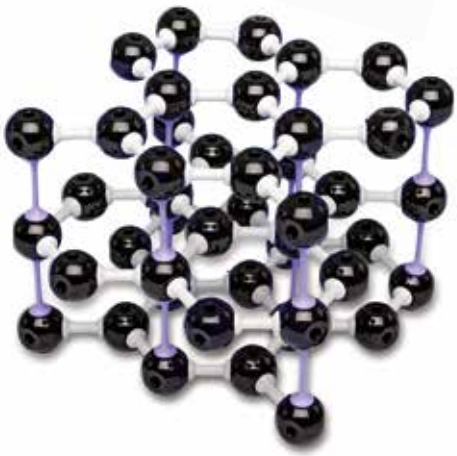
Molecular Shapes, Molyorbital™, 8 Models
This molecular model set contains sufficient parts to make eight atomic models. The different shapes are examples of the orientations of the bonds and cover coordination numbers 1 to 6 of atomic structures. Lone electron pairs are represented by brown spheres or brown pear shaped parts. The two extra pear shaped parts are included in the set to enable protonated models to be made, e.g. Acid/Base theory, the formation of H_3O^+ as a result of the migration of H^+ from hydrogen chloride.
The molecular model set includes:
13 Hydrogen (white)
7 Chlorine (green)
9 Fluorine (light green)
1 Metal (Beryllium) (grey)
1 Boron (beige)
1 Chlorine (light green)
1 Oxygen (red)
1 Nitrogen (blue)
1 Carbon (black)
1 Phosphorus (purple)
1 Sulphur (yellow)
26 Sigma bonds (grey)
6 Lone pair orbital (beige)
6 Protonated lone pair orbital (beige)
6 Short Link (white)
B-1005294



MOLECULAR MODELS

Set of 3 Carbon Configurations
Set of 3 easy-to-use models of various carbon crystal structures: diamond, graphite and fullerene, for demonstrating the fundamental differences between the structures.
Ball diameter: approx. 25 mm
Lengths of sides: approx. 150 mm
B-1012836

Ice (H_2O), molymod®-Kit
Contents:
26 Oxygen, red
52 Hydrogen, white
52 Covalent bonds, white
40 Hydrogen, purple
B-1005285



Graphite, molymod®-Kit
This kit is designed to make a three layer model of graphite having 15 carbon atoms in each layer.
Contents:
45 Carbon, black, diameter 23 mm
51 links, grey
16 links, purple
B-1005283

Buckminsterfullerene C_{60}, molymod®-Kit
Contents:
60 Carbon, black, diameter 23 mm
100 links
B-1005284

Diamond, molymod®-Kit
Contents:
30 Carbon, black, diameter 23 mm
40 links, grey
B-1005282

Mohs' Hardness Scale
Ordinal Mohs' hardness scale with minerals in boxes with a hardness of 1 – 10. The mineral in level 10, diamond, isincluded as a diamond tool.
The set includes:
1. Talc
2. Gypsum
3. Calcite
4. Fluorite
5. Apatite
6. Orthoclase
7. Quartz
8. Topaz
9. Corundum
10. Diamond tool

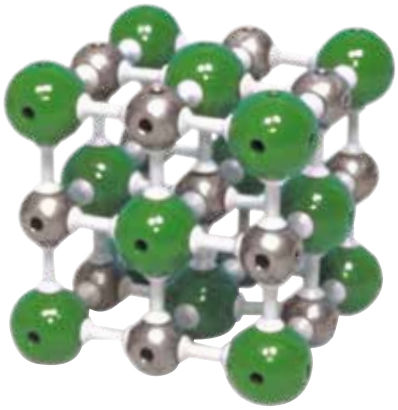
B-1018488

Amino Acid Kit, 8 Models, molymod®
The following amino acids can be assembled. Group 1 Valine, Group 2 Threonine, Group 3 Phenylalanine, Group 4 Methionine, Group 5 Histidine, Group 6 Aspartic acid, Group 7 Glutamine and Proline. Extra parts are included to form peptide bonds and hydrogen bonds to make a polypeptide chain and part of a beta-pleated sheet.
Contents:
24 Carbon black, 4-hole
19 Carbon black, 3-hole
77 Hydrogen white
10 Oxygen red -angular
10 Oxygen red – linear
1 Sulphur yellow
1 Nitrogen blue
9 Nitrogen blue trigonal
1 Nitrogen blue angular
8 Hydogen
90 NV-links
2 Short link remover tools

B-1005288

Fat (Glyceryl tristearate) ($C_{57}H_{110}O_6$), molymod®-Kit
Contents:
54 Carbon black, 4-hole
3 Carbon black, 3-hole
3 Oxygen red, 1-hole
3 Oxygen red, 2-hole
110 Hydrogen white
65 Links short
1 Short Link remover tool

B-1005287



Sodium Chloride, molymod®-Kit
Contents:
13 Sodium, grey, diameter 23 mm
14 Chlorine, green, diameter 32 mm
54 links, grey

B-1005281

Glucose ($C_6H_{12}O_6$), molymod®-Kit
Contents:
12 Carbon black
12 Oxygen red
24 Hydrogen white
48 short link NV
1 short link extractor tool

B-1005286

BOHR'S ATOMIC MODEL

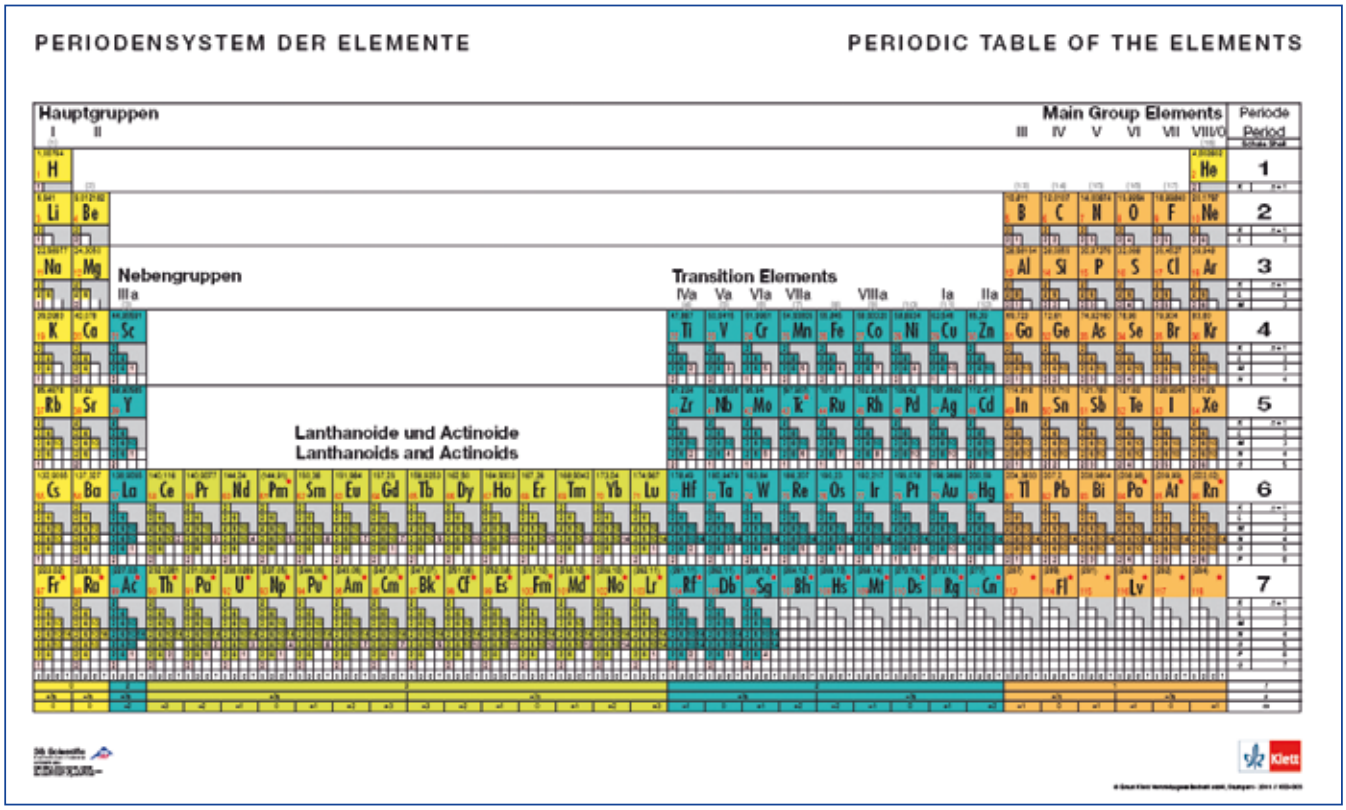
+ Inter-disciplinary learning game
+ Suitable for individual, partner and group work
+ Playful learning of natural science subjects
+ Easy understanding of processes and structures at the atomic level
+ Simple and lots of fun to use
+ Appealing 3D design
+ Convenient storage

Learning content:
- **Atoms, isotopes, ions, noble gas configurations**
- **Structure of the elements, covalent bonds, ionic bonds**
- **Elements, atomic mass, atomic number and the periodic table**

Interactive Atomic Model According to Bohr, Class-Set
With this completely magnetic demonstration atom you will be able to clearly and quite easily explain Bohr's atomic model to your students on the blackboard. Using the training atom your students will be able to construct their own atoms, isotopes, and even ions.
Contents:
2 completely magnetic demonstration models for the teacher (1 black background sheet to be hung up, 2 white atomic nuclei, each with 8 white orbits, 20 protons, electrons and neutrons) 8 student training models (each with 2 atoms, 30 protons, 30 neutrons and 30 electrons), instructions.
B-1005319

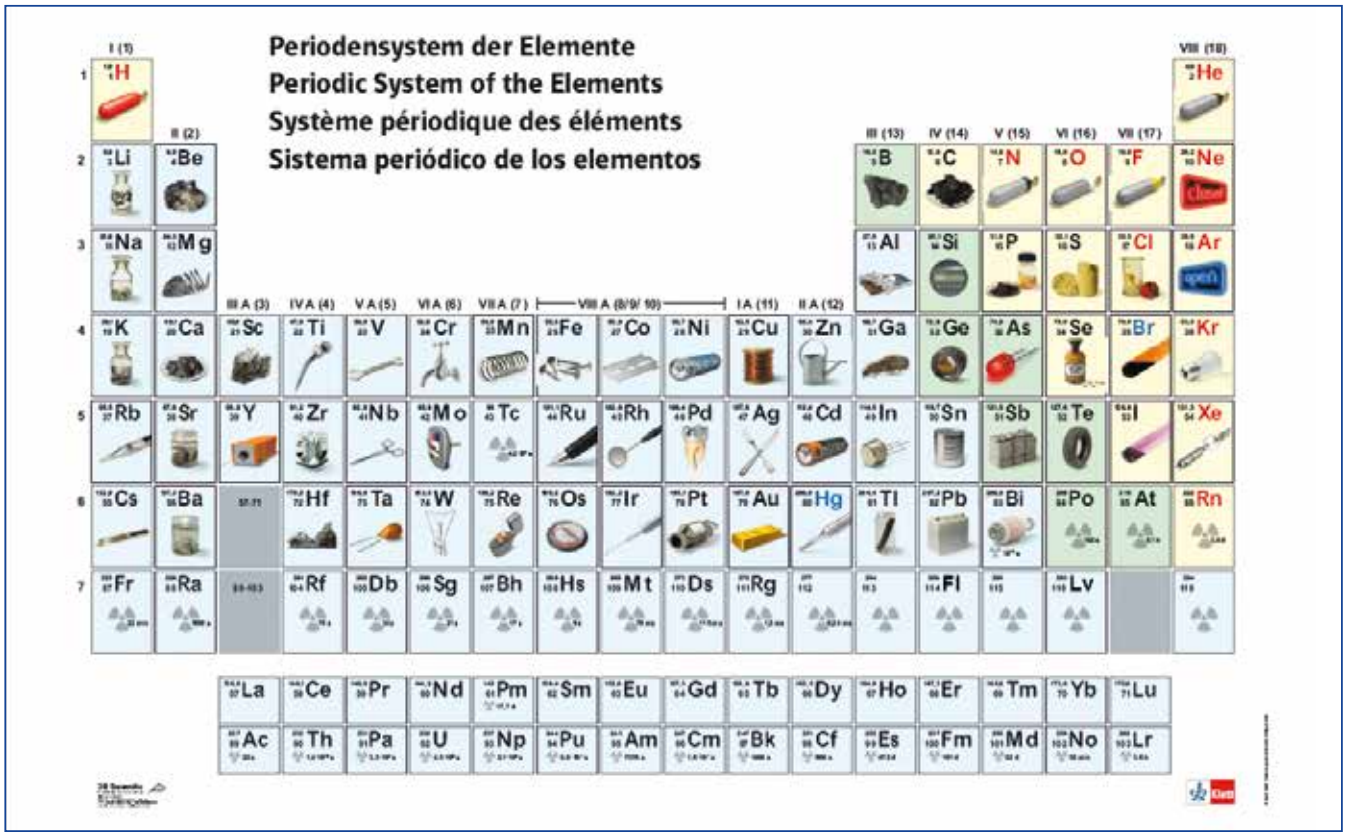
Interactive Atomic Model According to Bohr, Student-Set
Student training model with 2 atoms, 30 protons, 30 neutrons and 30 electrons.
B-1005320

PERIODIC TABLE OF THE ELEMENTS



Periodic Table of the Elements, With Electron Configurations
Chart of the periodic table of the elements showing the configurations of electron shells. On strong laminated material with rods and hanging cord. Bilingual.
Dimensions: approx. 1950x1380 mm²
Languages: English and German
B-1017655

Periodic Table of the Elements, With Pictures
Chart of the periodic table of the elements with pictures of the elements. On strong laminated material with rods and hanging cord. In four languages.
Dimensions: approx. 1950x1380 mm²
Languages: English, German, French, Spanish
B-1013907



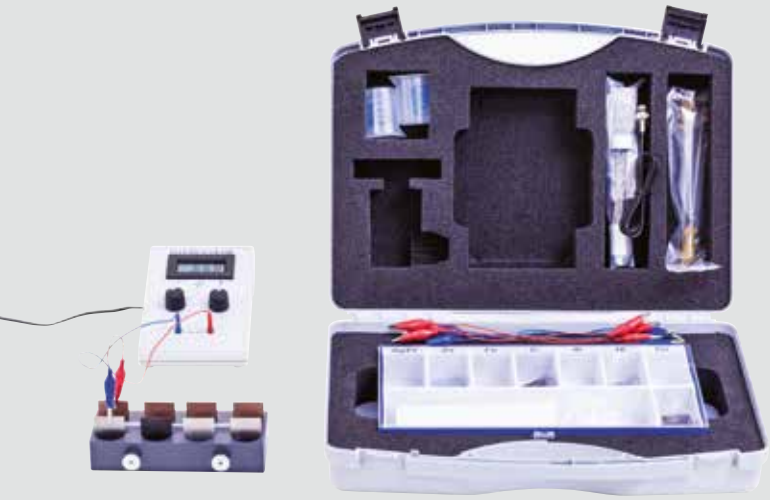
ELECTRO-CHEMISTRY

Experiment Topics:

- Measurement at galvanic voltage sources
- Daniell cell, series and parallel circuits
- Electrochemical potentials (voltage sequence)
- Determination of the standard potentials of different metals and non metals
- How potentials depend on concentration
- How potentials depend on temperature
- Charge and discharge of a steel accumulator
- Leclanché cell
- Measurement of pH values

Electrochemistry Case
A complete equipment set in a case for basic experiments on electrochemistry.
A cell block made of tough plastic, which can be unscrewed into two halves for ease of cleaning, allows four galvanic cells to be connected in parallel. A piece of filter paper stretched between the two halves of the cell acts as a diaphragm. Includes a handy, high-resistance meter for measuring potential differences with very little current and measuring pH values with the help of the supplied pH measuring probe.

Measurement device:
7 segment display: 3 digit
Height: 13 mm
Voltage ranges: 2 V DC and 20 V DC
Resolution: 1 mV
Input resistance: 200 MΩ
pH measuring range: 0.0 ... 14.0 pH
Power supply: Plug-in power supply, 12 V/0.5 A (as supplied) or 9-V block battery
Dimensions: approx. 175x105x55 mm^3



Contents:
1 foam lined case
1 measurement device
1 pH combined electrode with BNC plug
1 plug-in power unit 12 V DC / 500 mA for 115/230 V AC mains voltage
1 cell block, fitted with filter paper
2 Ag-electrodes, 42x28 mm^2
1 Pt-electrode, 42x28 mm^2
4 Zn-electrodes, 42x28 mm^2
2 Fe-electrodes, 42x28 mm^2
2 C-electrodes, 42x28 mm^2
2 Al-electrodes, 42x28 mm^2
2 Ni-electrodes, 42x28 mm^2
4 Cu-electrodes, 42x28 mm^2
1 Mg-electrode, 42x28 mm^2
1 set of filter papers (50 units)
1 sanding block for cleaning electrodes
3 experiment cables with crocodile clips, 20 cm, red
3 experiment cables with crocodile clips, 20 cm, blue
1 experiment cable with crocodile clip and 2 mm plug, 30 cm, red
1 experiment cable with crocodile clip and 2 mm plug, 30 cm, blue
2 graduated plastic beakers, 25 ml
2 drip pipettes with suction bulbs
1 storage box with loose insert
1 operating instructions on CD-ROM
B-1002719

Additionally required:
Chemicals

Equipment Set for Electrochemistry
Intended for students. Inclusive digital multimeter.
Trough: approx. 85x70x45 mm^3
Electrodes: approx. 76x40 mm^2
Contents:
1 flat trough
1 copper plate
1 zinc plate
1 iron plate
2 nickel plates
1 aluminium plate
2 electrolyte-carbon plates
1 digital multimeter with 2 cables with crocodile clamps
B-1002711

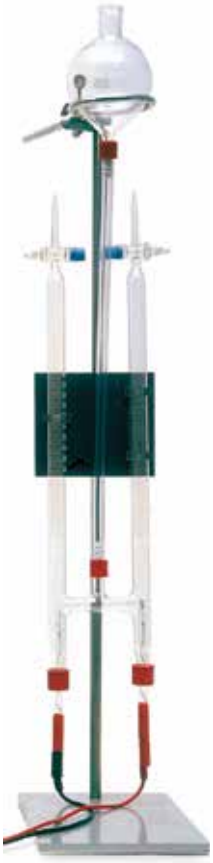
Daniell Cell
Galvanic cell (Daniell cell) named after John Frederic Daniell for studying the properties of an electrochemical cell. The Daniell cell consists of a cylindric zinc and copper electrode, a clay vessel and a battery glass. Filled with cell electrolyte the Daniell cell supplies a voltage of approx. 1.1 volts. The cell is delivered empty.
Connections: 4 mm jacks
Dimensions: approx. 105 mm x 65 mm dia.
Suitable filling: Copper sulphate solution ($CuSO_4$), 10% concentration, Zinc sulphate solution ($ZnSO_4$), 10% concentration
B-1002898

Leclanché Cell
This model of a dry battery was invented by the French chemist Georges Leclanché in the 1860s. It consists of a cylindric zinc electrode, a rod shaped carbon electrode, a clay vessel and a batterie glass. Filled with cell electrolyte, the Leclanché cell supplies a voltage of approximately 1.5 volts. The cell is delivered empty.
Connections: 4 mm jacks
Dimensions: approx. 175 mm x 65 mm dia.
Suitable filling: Ammonium chloride solution (NH_4Cl), approx. 20% concentration
B-1002897

Hofmann's Voltameter S
Hofmann's voltameter is used for determining the chemical composition of water by volume.The apparatus consists of three vertical glass tubes connected to each other at the bottom. Taps at the top ends of the outside tubes are closed whilst the inner cylinder is open at the top to allow the addition of water via a reservoir. Gold sheet electrodes are fitted to the lower ends of the outside tubes and connected to a low-voltage power supply. The proportion of hydrogen and oxygen produced by electrolysis from the water can be read from the graduations on the side tubes. By opening the taps at the top of the tubes, gases can be collected for analysis. Carbon electrodes are also available for analysis of solutions where gold is unsuitable.
Dimensions: approx. 580x150 mm^2
Stand base, A-shaped: 115 mm leg length
Operating voltage: 4-12 V DC
B-1003507

Additionally required:
B-1003312 DC Power Supply 0 – 20 V, 0 – 5 A (230 V, 50/60 Hz)
or
B-1003311 DC Power Supply 0 – 20 V, 0 – 5 A (115 V, 50/60 Hz)

Additionally recommended:
B-1003508 Carbon Electrodes



Hofmann's Voltameter
Apparatus for electrolysis of water, the quantitative determination of the gases formed and establishing Faraday's laws. Consists of two scaled gas collection tubes connected by flexible plastic hose with levelling bulb for pressure compensation and hence for the exact measurement of gas volumes, on stand with retaining plate. GL threads provide secure mounting for electrodes.
Dimensions: approx. 800x150 mm^2
Base plate area: approx. 250x160 mm^2
Rod: approx. 750 mm x 12 mm dia.
Retaining plate: approx. 120x110 mm^2
Contents:
1 gas collection tubes
2 platinum electrodes with 4 mm sockets
1 plastic hose with leveling bulb
1 stand ring for holding leveling bulb
1 universal bosshead
1 stand baseplate with rod and retaining plate
B-1002899

Additionally required:
B-1003312 DC Power Supply 0 – 20 V, 0 – 5 A (230 V, 50/60 Hz)
or
B-1003311 DC Power Supply 0 – 20 V, 0 – 5 A (115 V, 50/60 Hz)

Carbon Electrodes
B-1003508

Conductivity Tester
Easy to use meter for determining conductivity of electrolytes (in water courses) and distinguishing between distilled water, rain water, tap water, brine and sea water, as well as between acids and alkalis. The display indicates the levels “very low”, “low”, “medium”, “high” and “very high” and has LED backlighting. Even the very low conductivity of distilled water is displayed. The device is protected against spray and can therefore be used without difficulty in the open air. It can be powered either by a 9-V block battery (not included) or by the supplied 12-V/500-mA plug-in power supply.
Measuring ranges: 2 ... 20 µS/cm (very low), 20 ... 100 µS/cm (low), 100 ... 500 µS/cm (medium), 500 ... 3000 µS/cm (high), > 3000 µS/cm (very high)
Dimensions: approx. 85x35x170 mm^3
Battery capacity: approx. 10 hours
B-1012890

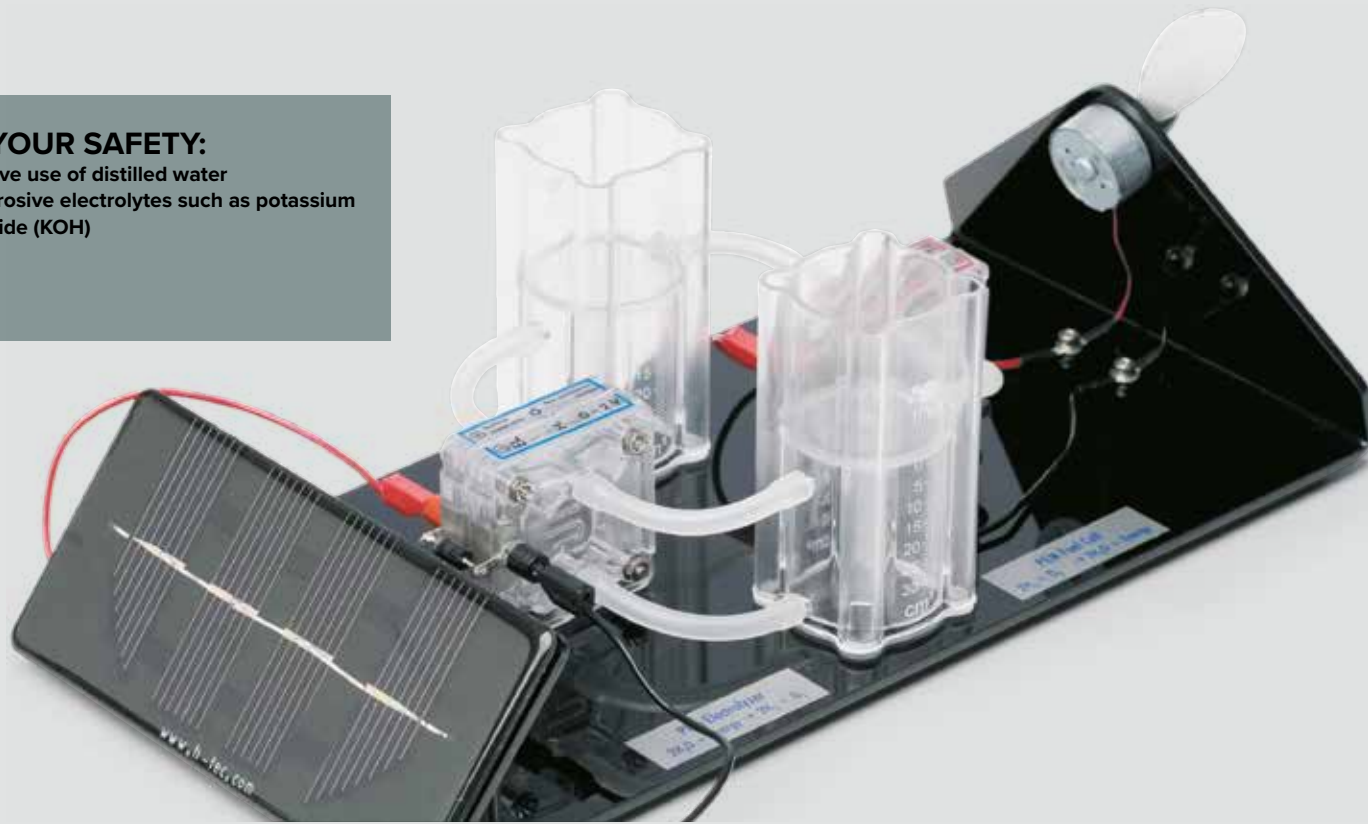
Conductivity Electrode
Conductivity electrode for use with conductivity tester (B-1012890). With platinum wires and 0.8 m of cable tipped by two 4-mm plugs.
Cell constant: 1/cm approx.
Dimensions: approx. 130 mm x 15 mm diam.
B-1012889

Tomorrow’s Energy Carriers

Fuel cells, electrolysers, solar hydrogen technology – significant contributors to a sustainable energy supply in the future: Preservation of the environment and resources while maintaining today’s standard of living. Now you can demonstrate the mode of operation of this fascinating technology to your students. Pure water is broken down by means of electrolysis into hydrogen and oxygen for the purpose of energy storage with the help of regenerative energy. During reconversion of the gases in a fuel cell, electricity, heat and water are formed. The resolute use of membrane technology in the training and demonstration systems does away with the use of corrosive liquids and only distilled water is required.

Fuel Cell Demonstration System
Model showing the function of a hydrogen solar cell consisting of solar module, PEM electrolyser, hydrogen and oxygen accumulators, PEM fuel cell and fan. Conveniently arranged on a baseplate.
Solar module: 2.0 V / 350 mA
Electrolyser: 1 W
Fan output: 10 mW
Dimensions: approx. 100x300x150 mm^3
Weight: approx. 600 g
B-1002689

FOR YOUR SAFETY:
+ Exclusive use of distilled water
+ No corrosive electrolytes such as potassium hydroxide (KOH)



MEASURING INSTRUMENTS

- Handy housing design with replaceable probe
- Simultaneous display of pH value and temperature
- Practical single-handed operation for all measurement functions

pH Meter (2 in 1)
Digital pH meter for the simultaneous measurement of the pH value of aequous fluids and their temperatures. The measurement of the pH value is performed by determining the electrical potential difference between acidic, neutral and base fluids.
Robust, water-proof housing, large LCD display with permanent background illumination and simple to operate. Including calibrating solution, batteries and instruction manual.
pH range: 0 – 14 pH
Resolution: 0.01 pH
Accuracy: ± 0.05 pH
Temperature compensation: 0 – 50°C
Temperature measurement: 0 – 50°C
Resolution: 0.1°C
Accuracy: ± 1°C
Operating voltage: 4x 1.5 V (AG-13) batteries
Protection class: IP 65 water-proof
Display: 3½-digit LCD display, 11 mm, max. 1999
Dimensions: approx. 190x35x35 mm^3
Weight: approx. 100 g
B-1020914

pH – Indicator Test Sticks
For fast pH – value determination . The indicator area on the plastic stick will not fade out (will not bleed). Well distinguishable scaling. Package with 100 sticks. Description in English and German.

pH – Indicator Test Sticks, pH 0 – 14
B-1003794
pH – Indicator Test Sticks, pH 7 – 14
B-1003797
pH – Indicator Test Sticks, pH 2.0 –9.0
B-1021153
pH – Indicator Test Sticks, pH 0 – 6
B-1003795
pH – Indicator Test Sticks, pH 4.5 – 10
B-1003796
pH – Indicator Test Sticks, pH 5.1 – 7.2
B-1017231

›Other test kits see page 112

+ Handy design, robust construction
+ Fast and precise measurements
+ Large, 3-1/2 number LCD screen

pH Meter
Digital pH measuring instrument for the measurement of the pH value of aqueous liquids using the immersion probe tips to determine the electrical potential difference between acidic, neutral and basic liquids. The device has a robust housing with compact dimensions and is easy to operate. It is equipped with a large LCD display with continuous background illumination, 2 adjustment potentiometers for calibrating to pH = 4 or to pH = 7 using the matching screwdriver. Including calibration solution, screwdriver, battery and instruction manual.
pH range: 0 – 14 pH
Resolution: 0.01 pH
Accuracy: ± 0.05 pH
Temperature compensation: 0 – 50°C
Operating voltage: 9 V battery (NEDA 1604)
Display: 3½-digit LCD display, 18 mm, max. 1999
Dimensions: approx. 150x70x25 mm^3
Weight: approx. 230 g
B-1020915

Test kits for determining pH
Test kits for colorimetric determination of pH value. A special mixture of color indicators changes to a specific and unique color for each pH value. Reliable pH determination even in solutions with poor buffering qualities. Instructions in German, English, French, Italian, Spanish, Dutch, Hungarian and Polish.

***VISOCOLOR*® ECO Test pH 4.0 – 9.0**
Measuring range: pH 4.0 – 9.0
Sufficient for 450 measurements.
B-1021132

***VISOCOLOR*® ECO Test pH 6.0 – 8.2**
Measuring range: pH 6.0 – 8.2 (can be analysed using PF12, see page 115)
Sufficient for 150 measurements.
B-1021134

***VISOCOLOR*® HE Test pH 4.0 – 10.0**
Measuring range: pH 4.0 – 10.0
Sufficient for 500 measurements.
B-1021141

Chromatography Paper
High-quality filter paper for paper chromatography, optimized for neat distinction of measurement results.
B-1021152

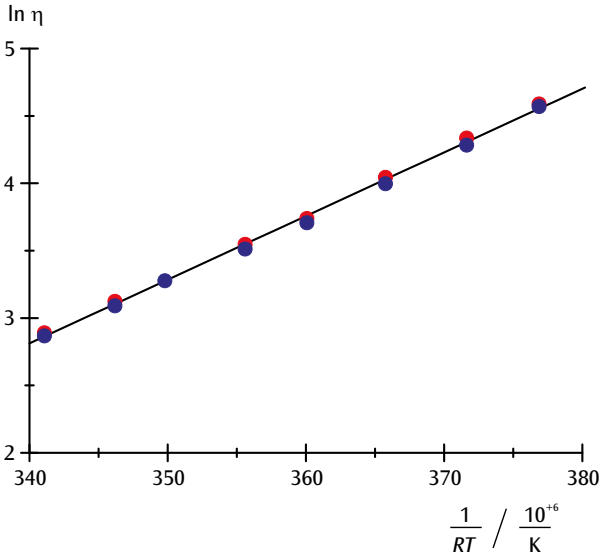
Viscosity Measurements Using the Following Substances:
- **Light oils, machine oils, petroleum, petroleum ether, diesel (mineral oils and fuels)**
- **Plastic solutions, resin solutions, adhesive solutions, latex dispersions (polymer chemicals)**
- **Printers' ink, varnish, water-based paints, inks (inks and paints)**
- **Emulsions, suspensions, solutions, extracts (cosmetics/pharmaceuticals)**
- **Emulsions, dispersions (paper industry)**
- **Liquid detergents, washing-up liquid, surfactant solutions (detergents)**
- **Honey, fruit juice, beer, milk (food industry)**
- **Gases and mixtures of gases**

Falling Sphere Viscometer
Höppler-type falling sphere viscometer for simple but accurate measurement of dynamic viscosity of transparent Newtonian fluids. The sphere rolls and slides inside an inclined cylindrical tube filled with the fluid to be tested. The viscosity is measured in mPa s and is derived directly from the time the sphere takes to fall a specified distance through the fluid in the measuring tube. The tube can then be turned upside-down so that time the sphere takes to fall back can also be measured.
The tube is situated inside a water bath, which can be filled with water at a specific temperature in order to measure how viscosity depends on temperature.

Includes:
Falling sphere viscometer with 6 spheres and 1 ball gauge
Thermometer 0 – 100° C
Cleaning set
Test certificate with accurate values for sphere constant K and density ρ for converting duration of fall to actual viscosity.

Technical data:
Measuring range: 0.5 mPa s to $7*10^4$ mPa s (as per DIN 53015)
>$7*10^4$ mPa s (for sphere fall times > 300 s)
Measurement precision: 0.5 to 2% (depending on spheres used)
Spheres: #1, #2: Borosilicate glass
#3, #4: Ni-iron
#5, #6: Steel
Diameter of spheres: 11.00 to 15.81 mm
Diameter of measuring tube: 15.95 mm
Fall times for spheres: 30 to 450 s
Length of measured distance: 100 mm in both directions
Operating angle: 10° to vertical
Additional working angles: 70°, 60°, 50° to horizontal
Volume when full: 40 ml
Permissible temperature range: -60°C to +150°C
Dimensions: approx. 180x220x330 mm^3
Weight: approx. 3.1 kg
B-1012827

Additionally required:
B-1002811 Digital Stopwatch



Graph verifying the Andrade equation and allowing determination of activation energy (EA = 47 kJ/mol)

Glycerine
250 ml of glycerine in aqueous solution for experiments on viscosity. In glass bottle.
Concentration: 85%
B-1007027

For further details see experiment B-UE1080350 at 3bscientific.com

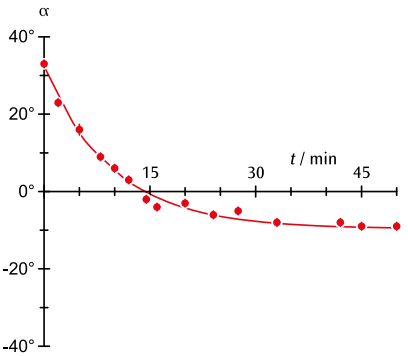
Polarimeter
Polarimeter with a sodium lamp as the light source for the measurement of the rotation and the rotation direction of the polarization plane of polarized light through optically active substances as well as for the determination of the concentration of liquids.
Robust metal stand with slightly tilted shaft for tubes with lengths up to 220 mm. With swivel cover, analyser and polariser. Includes polarimeter tubes 100 mm, 200 mm and spare sodium lamp.
Measurement range: 2 semi-circles (0 – 180°)
Glass tubes: 100 and 200 mm, 15 mm diam.
Scale division: 1°
Readability: 0.05° (with Vernier scale)
Dimensions: approx. 200x360x450 mm³
Weight: approx. 10 kg
Light source: Sodium lamp (589 nm)
Mains voltage: 115 V ... 230 V, 50/60 Hz
B-1008696

Polarimeter Tubes
Spare glass tube for polarimeter (B-1008696).

Polarimeter Tube 100 mm
(not illustrated)
B-1012883

Polarimeter Tube 200 mm
(not illustrated)
B-1012884

Polarimeter with 4 LEDs
Polarimeter with a lighting unit comprising four monochromatic LEDs for determining the angle and direction of rotation of polarized light as a function of wavelength as well as sample thickness and concentration with the help of an optically active substance.
The light emerging from those LEDs that are lit is polarized linearly and transmitted through a fitted sample cylinder filled with the optically active substance. The analyser in the cover is used to identify the direction of polarization which can be read on the cover's angle scale.
Wavelength of LEDs: 468 nm (blue), 525 nm (green), 580 nm (yellow), 630 nm (red)
Dimensions: approx. 110x190x320 mm³
Weight: approx. 1 kg
B-1001057



Angle of rotation of a saccharose solution (c = 0.3 g/cm³, d = 190 mm) during the inversion process as a function of time.

For further details see experiment B-UE4040300 at 3bscientific.com

Set of 3 Areometers
Set of areometers for determining the density of liquids in g/ml at a reference temperature of 20°C / 68°F. Without thermometer, in storage container.
Measuring range: 0.650 – 1.000 g/ml, 1.000 – 1.500 g/ml, 1.500 – 2.000 g/ml
Scale division: 0.005 g/ml, 0.005 g/ml, 0.005 g/ml
Length: approx. 315 mm, 235 mm, 235 mm
B-1003012

Universal Areometer
Areometer for determining the density of liquids in g/ml at a reference temperature of 20°C. Without thermometer, in storage container.
Measuring range: 0.7 – 2 g/ml
Scale division: 0.02 g/ml
Length: approx. 310 mm
B-1002876

+ Plug & play: no software installation or drivers required.
+ Connect up your spectrometer and the spectrum is obtained immediately.
+ Measurement and evaluation in real-time.
+ Simple and practical software with built-in wizards and powerful evaluation functions.
+ Internal memory for measured data.
+ Spectra of high quality and signal stability
+ Highly stable metal casing with built-in entry slit.
+ Internal beam paths and the principle of operation can be viewed by opening the lid of the casing.

Digital Spectrometer LD with Absorption Chamber
Digital spectrometer for quantitative analysis of emission and absorption spectra, for recording transmission curves and performing measurements in calorimetry and kinetics. Incident light from a fibre-optic cable is dispersed into a spectrum by a Czerny-Turner monochromator and projected from there onto a CCD detector. The entry slit is built into the casing. User-friendly measurement and evaluation software enable simultaneous recording and analysis in real-time. The built-in software for Windows 2000/XP/Vista/7/8 32- and 64-bit versions starts running as soon as the sensor is connected to the computer via a USB cable. Includes plug-in power supply and holder for fibre-optic cable. The absorption chamber is a multi-functional module for recording transmission or absorption measurements using 4-ml cells (10x10x40 mm^3), objects in slide format (50x50 mm^2) or objects in coin format (40 mm diam.). Up to two slide-format objects and one coin-format object can be analysed simultaneously and compared. With built-in light source for the spectral region from 350 – 1000 nm. In metal casing resistant to chemicals. For direct connection to digital spectrometers LD or via fibre-optic cable.

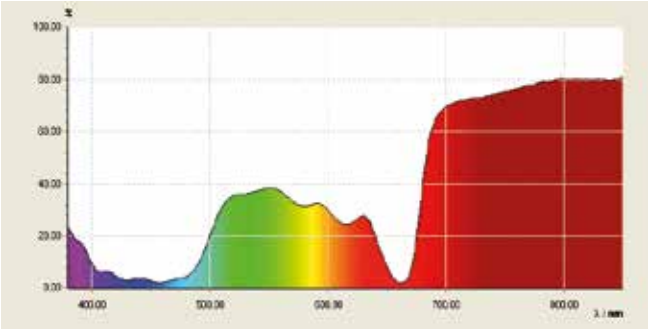
Spectrometer:
CCD detector: 3600 pixels
Resolution: 16 bit
Integration time: 0.1 to 60 s
Entry slit: 40 µm metal
Grating: 600 lines/mm
Spectral range: 350 – 900 nm
Spectral resolution: 1 nm (for resolution of mercury doublet)
Accuracy: 1 pixel per 0.15 nm
Interface: USB 2.0
Connectors: SMA 905
Fibre-optic cable: 2 m
Mains voltage: 100 – 240 V
Dimensions: approx. 133x120x60 mm^3
Weight: approx. 950 g

Absorption chamber:
Light source: 350 – 1000 nm
Power supply: 12 V (via adaptor cable from plug-in power supply for digital spectrometer)
Dimensions: approx. 65x100x55 mm^3
Weight: approx. 250 g

B-1019196

Additionally recommended:
B-1018106 Set of 100 Cuvette Cells, 4 ml

Set of 100 Cuvette Cells, 4 ml
Set of 100 disposable cuvette cells for use in absorption chamber for digital spectrometers LD (B-1019196).
Dimensions: 10x10x40 mm^3
B-1018106



Transmission spectrum of a chlorophyll solution.

For further details see experiment B-UE4020400 at 3bscientific.com

Experiment Topics:

- Determination of the refractive index of solid or liquid substances
- Determination of the relative density of liquids (degrees Brix)
- Determination of the sugar content
- Measurement using transmitted light, grazing incidence or total internal reflection
- Abbe refractometer

Analog Abbe Refractometer ORT 1RS
Easy-to-operate universal analog refractometer for efficient and extremely reliable usage. Liquid, solid or paste-like substances can all be analysed. Built-in scale allows for use in many applications and offers optimum safety for reading measurement results with precision. Includes thermometer.
Also included:
Calibration solution, calibration block, pipette, screwdriver and cleaning cloth.
Scales: Brix, refractive index
Measuring range: 0 – 95%, 1.3000 – 1.7000 nD
Accuracy: ±0.1%, ± 0.0002 nD
Divisions: 0.25%, 0.0005 nD
Dimensions: approx. 180x90x240 mm^3
Weight: approx. 1.95 kg
B-1021250

Hand-Held Refractometer HRT32
Handy refractometer for determining the sugar content of fruit, must, juice, vegetables and other foods and in the analysis of coolant lubricants. Automatic temperature compensation increases the accuracy of measurements carried out at temperatures between 10° and 40°C.
Measuring range: 0 – 32% Brix
Accuracy: 0.2% Brix
Scale divisions: 0.2% Brix
Temperature compensation: automatic
B-1021440

Hand-Held Refractometer HRT62
Hand-held refractometer which is particularly easy to use for the analysis of chemicals and technical fluids, e.g. oils, grease, coolant fluids and lubricants. With automatic temperature compensation for precise measurements.
Measuring range: 28 – 62% Brix
Accuracy: 0.2% Brix
Scale divisions: 0.2% Brix
Temperature compensation: automatic
B-1021441

Hand-Held Refractometer HR901
Sturdy, user-friendly universal hand-held refractometer with selector switch for all measuring ranges. Movable prism fitting for sharply defined contour lines, direct and indirect light inlets for determination with both transparent and opaque substances. Includes thermometer.
Measuring range: 1.333 – 1.517 nD
Accuracy: 0.0005 nD
Scale divisions: 0.0005 nD
Thermometer: 6 – 36°C
B-1021249

MICROSCOPY

Here you can find everything on the subject of microscopy:
- From affordable student microscopes to high-quality laboratory microscopes
- Matching digital cameras
- High-quality slides for microscopy
- Accessories for your own slides

COURSE MICROSCOPES

› CORDLESS

Monocular Course Microscope M100 LED
B-1005406

Binocular Course Microscope B100 LED
B-1021071

The course microscopes M100/B100 are distinguished by their robust construction and ease of operation. They are equipped with three or four achromatic objectives as used in common practice and have a simple object stage with two clips for holding slides. They can be supplemented by means of a variety of spare parts and accessories. The LED lighting makes for uniform illumination of the object and avoids the problem of heat affecting the slide when viewed for extended periods. In addition, it lasts for a long time and eliminates the need to change bulbs. The microscopes are equipped with rechargeable batteries and can be used without a mains connection.
The M100 LED monocular microscope is also available equipped with a 20 W tungsten bulb instead of LED lighting. It operates from a 230 V, 50/60 Hz power supply and its order number is B-1005402.

Art. No.	**B-1005406**	**B-1021071**
Stand	All-metal stand, arm firmly connected with base, pinion knobs attached on both sides of the stand for coarse and fine focusing	
Tube	Monocular inclined 45°, head rotation 360°	Binocular inclined 45°, head rotation 360°, eye spacing between 55 and 75 mm
Eyepieces	Wide field eyepiece WF 10x 18 mm with pointer and eyepiece lock	Wide field eyepiece pair WF 10x 18 mm with diopter compensation
Objectives	Revolving nosepiece with 3 achromatic objectives 4x / 0.10, 10x / 0.25, 40x / 0.65	Revolving nosepiece with 4 achromatic objectives 4x / 0.10, 10x / 0.25, 40x / 0.65, 100x / 1.25 oil immersion (with specimen protection)
Enlargement	40x, 100x, 400x	40x, 100x, 400x, 1000x
Object Stage	110 mm x 120 mm with 2 specimen clips	
Illumination	Adjustable LED lighting integrated in base, power supplied by rechargeable battery, 100 to 240 V, 50/60 Hz charger	
Condenser	Bright-field condenser N.A. 0.65, iris diaphragm, filter holder and blue filter	Abbe condenser N.A.1.25, iris diaphragm, filter holder and blue filter
Dimensions	175x135x370 mm^3 approx.	
Weight	2.9 kg approx.	3.5 kg approx
Supplied	Complete with dust cover	

COURSE MICROSCOPES

Monocular Microscope ME5
B-1020249

Binocular Microscope BE5
B-1020250

Trinocular Microscope TE5
B-1020251

The microscope E5 stands out thanks to its
- Ergonomic design with 30° angled eyepiece
- Compact and robust construction
- Excellent mechanical and optical quality
- Ease of operation

LED fibre optic illumination integrated into the base
- Ensures even illumination of the field of vision
- Prevents thermal effects from affecting the sample during prolonged examination
- Features a long operating life and makes lamp replacement superfluous

Besides the binocular eyepiece, the microscope model TE5 also offers the option of connecting a camera for photographic and/or video documentation.

Art. No.	B-1020249	B-1020250	B-1020251
Stand	Robust, all metal stand with arm permanently connected to the base. Focussing by means of separate knobs for coarse and fine adjustment located on either side of the stand and operated by rack and pinion drive with ball bearings and retaining lever, adjustable stopper for protecting the object slides and objective. Resolution of fine focussing adjustment: 0.002 mm		
Tube	Monocular inclined 30°, head rotation 360°	Binocular head, 30° viewing angle, 360° rotatable head, viewing distance adjustable between 50 and 75 mm, ±5 dioptric compensation	Trinocular head, 360° rotatable, binocular tubus with 30° viewing angle, viewing distance adjustable between 50 and 75 mm, ±5 dioptric compensation, one tube with vertical viewing angle
Eyepieces	Wide field plan eyepiece PL 10x 18 mm	Pair of wide field plan eyepieces PL 10x 18 mm	
Objectives	Inverted objective revolver with 4 achromatic objectives 4x / 0.10, 10x / 0.25, 40x / 0.65, 100x / 1.25 (oil)		
Enlargement	40x, 100x, 400x, 1000x		
Object Stage	x-y mechanical stage, 132 mm x 140 mm, with object guide and coaxial adjustment knobs perpendicular to the object stage, adjustment range 76 mm x 50 mm, accuracy 0.1 mm		
Illumination	Adjustable LED lighting integrated in base, universal 100 to 240 V, 50/60 Hz power supply		
Condenser	Abbe condenser N.A.1.25 with iris diaphragm , filter holder and blue filter		
Dimensions	350x213x366 mm^3 approx.		
Weight	8 kg approx.		
Supplied	Complete with dust cover		

LABORATORY MICROSCOPE

Laboratory Microscope BS200
The microscope BS200 is intended for exacting analysis using bright-field transmitted light. Its ergonomic design allows for lengthy periods of use without tiring. The high-quality infinite optical system guarantees excellent image quality. It is equipped with planar achromatic objectives, allowing observation of tiny features in excellent detail, while making it possible to maintain evenness of focus from the centre to the edges of the field of vision.
B-1005455

Art. No.	**B-1005455**
Stand	Robust and stable all metal stand, pinion knobs attached on both sides of the stand for coarse and fine focusing with friction coupling
Tube	Binocular at 45° angle, rotatable through 360°
Eyepieces	Pair of eyepieces PL10x 20 mm with infinite optics
Objectives	Inverted objective revolver with plan achromatic infinite objectives 4x, 10x, 40xS und 100xS Oil
Enlargement	40x, 100x, 400x, 1000x
Object Stage	x-y mechanical stage, 150 mm x 140 mm, adjustment range 76 mm x 50 mm
Illumination	Adjustable 6 V, 20 W halogen lamp, built-in transformer for 90 to 240 V mains voltage
Condenser	Condenser NA1.25, iris diaphragm, filter holder and blue filter
Dimensions	320x200x400 mm^3 approx.
Weight	6.7 kg approx.
Accessories	Complete with dust cover

TRINOCULAR MICROSCOPES

Trinocular Microscope N180
B-1013150

Trinocular Microscope N110
B-1013151

The trinocular microscopes models N110 and N180 are characterised by their robust design and their excellent optical and mechanical qualities. Their vertical tubes allow cameras to be attached for documenting work in the form of photographs and videos and make it possible for specimens to be viewed through the ocular and on a computer screen at the same time. Low temperature LED lighting ensures even illumination of the field of vision, prevents heat affecting specimens that are viewed for long periods as well as being long lasting and eliminating the need for changing bulbs.
Model N180 is equipped with extra wide-field oculars with “high eye point”, making it especially suitable for those who wear spectacles and providing a broad field of vision. It is equipped with semi-planar achromatic objectives, allowing observation of tiny features in excellent detail, while making it possible to maintain evenness of focus from the centre to the edges of the field of vision.

Art. No.	**B-1013150**	**B-1013151**
Stand	Robust, all metal stand with arm permanently connected to the base. Focussing by means of separate knobs for coarse and fine adjustment located on either side of the stand	
Tube	Trinocular Siedentopf head, 360° rotatable, binocular tubus with 30° viewing angle, viewing distance adjustable between 55 and 75 mm, ±5 dioptric compensation, one tube with vertical viewing angle to attach a camera	
Eyepieces	Pair of wide field eyepieces WF 10x 18 mm	Pair of extra wide field eyepieces EW 10x 20 mm
Objectives	Revolving nosepiece with 4 achromatic objectives 4x / 0.10, 10x / 0.25, 40x / 0.65, 100x / 1.25 (oil)	Inverted objective revolver with 4 semi plan achromatic objectives 4x / 0.10, 10x / 0.25, 40x / 0.65, 100x / 1.25 (oil)
Enlargement	40x, 100x, 400x, 1000x	
Object Stage	x-y mechanical stage, 132 mm x 145 mm, with object guide and coaxial adjustment knobs perpendicular to the object stage, adjustment range 78 mm x 54 mm	x-y mechanical stage, 140 mm x 140 mm, with object guide and coaxial adjustment knobs perpendicular to the object stage, adjustment range 75 mm x 50 mm
Illumination	Adjustable LED lighting integrated in base, universal 100 to 240 V, 50/60 Hz power supply	
Condenser	Abbe condenser N.A.1.25 with iris diaphragm, filter holder and filter	
Dimensions	291x214x415 mm^3 approx.	
Weight	8 kg approx.	7.2 kg approx.
Supplied	Complete with dust cover	

DIGITAL MICROSCOPES W/CAMERA

Digital Monocular Microscope with Built-in Camera
B-1013152

Digital Binocular Microscope with Built-in Camera
B-1013153

Digital microscopes B-1013152 and B-1013153 are characterised by their robust design, their fine optical and mechanical properties and their ease of operation. The built-in 1.3-megapixel camera allows specimens to be viewed through the ocular and on a computer screen at the same time and provides well-focused images with authentic color. There is a choice of two models: a monocular microscope with low temperature LED illumination and a binocular microscope using a halogen lamp. Professional “ScopeImage” software allows both static images and videos to be recorded as well as featuring image editing plus measurement and evaluation capabilities.

Art. No.	**B-1013152**	**B-1013153**
Stand	All metal stand, arm firmly connected with base, pinion knobs attached on both sides of the stand for coarse and fine focusing	
Tube	Monocular inclined 45°, head rotation 360°	Binocular inclined 45°, head rotation 360°
Eyepieces	Wide field eyepiece WF 10x 18 mm	Pair of wide field eyepieces WF 10x 18 mm
Objectives	Revolving nosepiece with 4 achromatic objectives 4x / 0.10, 10x / 0.25, 40x / 0.65, 100x / 1.25 (oil)	
Enlargement	40x, 100x, 400x, 1000x	
Object Stage	x-y mechanical stage, 125 mm x 115 mm, with object guide, adjustment range 70 mm x 20 mm	x-y mechanical stage, 140 mm x 140 mm, with object guide, adjustment range 75 mm x 50 mm
Illumination	Adjustable LED lighting integrated in base. Universal 100 V to 240 V, 50/60 Hz power supply	Adjustable 6 V, 20 W halogen lamp integrated in base. Universal 100 V to 240 V, 50/60 Hz power supply
Condenser	Abbe condenser N.A.1.25 with iris diaphragm , filter holder and filter	
Camera Sensor	1/3” CMOS, 1.3 Mpixel, color image	
Power Supply	Via USB 2.0	
System Requirements	WIN7, 8, 10	
Dimensions	130x180x390 mm^3 approx.	220x180x390 mm^3 approx.
Weight	2.5 kg approx.	8.5 kg approx.
Supplied	Complete with dust cover	

STEREO MICROSCOPES

Stereo Microscope SM20x LED
B-1005443

Stereo Microscope SM40x LED
B-1013128

Stereo Microscope SM40x LED, Rotatable Head
B-1013147

The stereo microscopes SM20x/SM40x are robust microscopes that are distinguished by their ease of operation and excellent mechanical and optical quality. They can be used in numerous applications within the fields of biology and geology. The low-temperature LED illumination allows samples to be viewed for longer without heat affecting the prepared specimen. It also has the advantage of being brighter, as well as being longer lasting and eliminating the need to change bulbs. Power is supplied via rechargeable batteries, so that the microscope can also be used without a mains connection.

Model SM20x:
The stereo microscopes SM20x are equipped with a quick-change fitting that allows for rapid replacement of the objective. With the aid of accessories, a magnification of up to 120x can be achieved.

Model SM40x:
The stereo microscopes SM40x are equipped with a revolving nosepiece. Simply by rotating the objective from the 2x setting to 4x, the overall magnification can be set to 20x or 40x. With the aid of accessories, a magnification of up to 80x can be achieved.
The rotating head of the B-1013147 model makes it more flexible in application.
The stereo microscopes SM40x LED B-1013128 is also available equipped with a 10 W tungsten bulb instead of LED lighting. It operates from a 230 V, 50/60 Hz power supply and its order number is B-1005439.

Art. No.	B-1005443	B-1013128	B-1013147
Stand	Metal stand, column firmly connected with base, pinion knobs attached on both sides of the stand for coarse and fine focusing		
Tube	Binocular inclined 45°, interocular distance adjustable between 55 and 75 mm		Binocular inclined 45°, interocular distance adjustable between 55 and 75 mm, head rotatable by 360°
Eyepieces	Pair of wide field eyepieces WF 10x 20 mm with eyepiece lock and rubber eyepiece cups, diopter compensation ±5 on the left eyepiece	Pair of wide field eyepieces WF 10x 20 mm with eyepiece lock and rubber eyepiece cups, diopter compensation ±5 on the left eyepiece, one eyepiece with pointer	Pair of wide field eyepieces WF 10x 20 mm with eyepiece lock and rubber eyepiece cups, diopter compensation ±5 on the left eyepiece
Objectives	Objective 2x with slide and quick-change device	Revolving nosepiece with objective 2x / 4x	
Enlargement	20x	20x/40x	
Object Plate	Base with detachable object plates (plastic, black/white and glass) 95 mm dia. and 2 specimen clips		
Illumination	LED, top, transmitted and mixed-light illumination, power supplied by rechargeable battery, 100 to 240 V, 50/60 Hz charger		
Dimensions	190x300x115 mm^3 approx.		
Weight	2.9 kg approx.		
Supplied	Complete with dust cover		

STEREO-ZOOM-MICROSCOPES

Stereo-Zoom Microscope ZSM45x
B-1013376

Stereo-Zoom Microscope ZSM45x, Trinocular
B-1013378

The rugged stereo-zoom microscope ZSM45x are characterised by their ease of operation and their fine optical and mechanical qualities. They are equipped with a 0.7x to 4.5x zoom objective allowing magnifications from 7 to 45 times the original size. The ocular features a “high eye point”, making them highly suitable for those who wear spectacles. Two halogen lights for reflected and transmitted illumination which can be activated independently ensure that the object is evenly lit with uniformly bright light. Thanks to the fine optical equipment the stereo-zoom microscopes provide a very bright, distortion free image with excellent resolution. The vertical orientation of the ZSM45x trinocular model makes it possible to fit a camera in order to document results in the form of static photographs or videos.

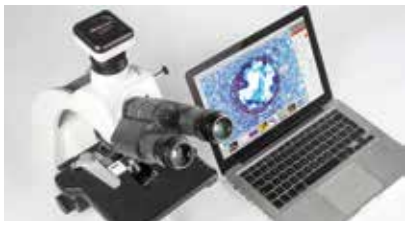
Art. No.	**B-1013376**	**B-1013378**
Stand	Metal stand, column firmly connected with base, pinion knobs attached on both sides for coarse and fine focusing	
Tube	Binocular inclined 45°, interocular distance adjustable between 54 and 75 mm, head rotatable by 360°	Binocular inclined 45° and vertical tube, interocular distance adjustable between 54 and 75 mm, head rotatable by 360°
Eyepieces	Pair of wide field eyepieces WF 10x 20 mm with eyepiece lock and rubber eyepiece cups	
Objectives	Zoom objective, 0.7x to 4.5x	
Enlargement	7x to 45x	
Diameter of Image Field	4.4 mm to 28.6 mm	
Distance from Specimen	100 mm	
Maximum Height of Object	80 mm	
Object Plate	Base with detachable object plates (plastic, black/white and glass) 95 mm dia. and 2 specimen clips	
Illumination	Top-, transmitted- and mixed-light illumination, adjustable 12 V, 15 W halogen lamp, power supply 230 V 50/60 Hz	
Dimensions	250x220x350 mm^3 approx.	
Weight	6 kg approx.	
Supplied	Complete with dust cover	

CAMERAS

Digital Camera Moticam1
B-1021162

Digital Camera Moticam2
B-1021164

Art. No.	B-1021162	B-1021164
Camera sensor	1/2.9” CMOS, color image	1/3” CMOS, color image
Pixel size	4.2 µm x 4.2 µm	3.2 µm x 3.2 µm
Sensitivity (V/Lux-sec)	4.6	1.0
Resolution	1280 x 720, 1 Mpixel	1600 x 1200, 2 Mpixel
Dynamic range	64.8 dB	61 dB
Output	mini USB	
Power supply	via USB interface 2.0	
Microscope adapter	2 adapters 30 mm and 38 mm, c-mount	
System requirements	Windows XP/Vista/7/8/10, MAC OS X and Linux	

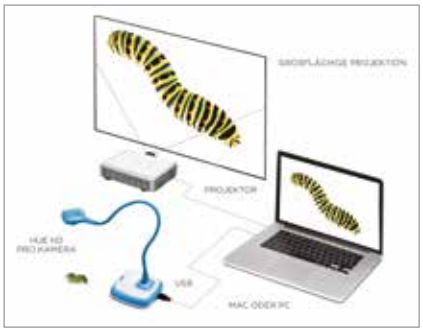


Moticam Digital Camera
Inexpensive color digital camera for direct connection to a PC or laptop computer via a USB interface. The camera can be attached directly to the ocular lenses of all current microscopes. No external power supply is needed since the camera is powered via USB. Includes: USB cable, calibration object holder, macro extension tube, focusable glass lens, 2 ocular adapters and software CD.
The Motic Images Plus 3.0 software stands out for its user-friendliness and offers the following functions (among others):

- Calibration function and white balance
- Real-time imaging
- Video recording
- Expansion of exposure under inadequate lighting conditions
- Digital image processing
- Measurement of dimensions of individual elements of the image or of whole groups of elements including calculation of area
- Spatial calibration (measurement of distance differential between two points)
- Intensity analysis for measurement of three-dimensional structures

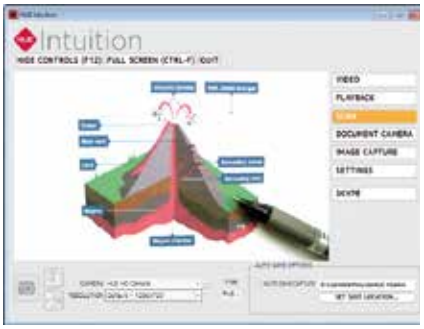
Vision Viewer™
Robust, ultra high resolution desktop digital color camera for direct connection to a PC or notebook via a USB interface. Thanks to video head that can pivot and swivel via its flexible gooseneck, the camera can be easily and accurately connected, e.g. to microscopes and telescopes, or directed towards visual material, running processes or items of scientific or technical interest so that they can be viewed on a monitor. The heavy, triangular base ensures the necessary stability. Audio recordings are possible via a microphone equipped computer. An external power supply is not necessary as the camera is powered via the USB connection. Includes microscope adapter and Applied Vision™ software. Compatible with interactive whiteboards. The Applied Vision™ software for picture recording, reproduction and processing is characterized by its user friendliness and features e.g.: full screen, real time video; still frame recording; time-lapse recording; internet streaming; can be used in local network; zoom function; brightness, contrast control and positive/negative image display; drawing tools: organizer/memo function; choice of background; creation of image collages; comparison of two adjacent images; measurement of the distance between 2 points or the area of a circle; exporting data; compatible with Windows, Mac and Linux: free software updates; unlimited local licences.

Characteristics:
Image digitization: CMOS 3.2 Mpixel
Photosensitivity: 20 lux
Output signal: digital / USB 2.0
Resolution: 2048x1536
Live video: up to 30 images per second
Focus: manual
White balance: automatic / manual
Microscope adapter: 34.5 mm built-in and 28 mm
Power supply: via USB
Cable: USB connecting cable, approx. 150 cm
Dimensions: approx. 180x180x640 mm^3
Weight: approx. 1.7 kg
B-1003436



Digital Camera HUE HD Pro
This inexpensive, innovative and simple-to-use color video camera with HD resolution is a perfect instrument for a large number of possible applications including presentation of objects, images and text in video and sound recordings, for observation of ongoing processes, for establishing video portfolios, for sending video e-mails and chatting with schools in other countries via software such as Skype™. It can be attached to a stable camera tripod or directly into a USB socket on a laptop and makes it possible to take images of full A4 size thanks to its wide-angle lens. Compatible with interactive whiteboards with a USB port. “HUE Intuition”, specially developed for the camera, is user-friendly and provides easy access to all the camera’s functions, including sound and image recording, image processing, automatic timer recordings and Skype™ support.
System requirements: Windows XP, 7, 8, 10 or Mac OS X 10.5+, suitable for 32-bit- and 64-bit versions of Windows 10, 8 and 7 and for Mac OS X, 1.5 GHz processor; 512 MB RAM (1 GB recommended), USB port.
B-1021167

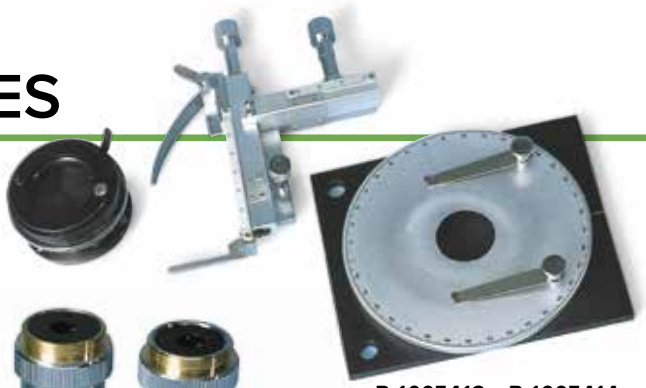
Software “HUE Animation“
Stop-motion animation software for recorded animated films with a simple and user-friendly user interface especially developed for students and teachers. For use with the HUE HD Pro digital camera or other USB cameras for Windows and Mac OS X.
Simply take a few photographs, devise a story, add background sound effects, using paint tools to enhance the pictures, make a time-lapse film and share it on a video platform.
Includes comprehensive manual.
System requirements: Windows XP, 7, 8, 10 or Mac OS X 10.5, minimum 512 MB RAM, up-to-date graphic card driver with support for OpenGL 2.0. Mac users require an Intel processor.
B-1021252



Digital Camera for Microscopes, 2 Mpixel
Inexpensive digital color camera which can be placed directly on any modern microscope tube. The user-friendly “ImageView” software allows, among other things, for real-time video and still pictures, extensive evaluation and measurement options, image processing etc.
Software in German, English, French, Russian, Polish, Turkish, Japanese, Indonesian, Chinese. Includes 2 microscope adapters 30 mm diam. and 30.5 mm diam.
Camera sensor: 1/3,2" CMOS, 2 Mpixel
Power supply: via USB interface, USB cable 1.45 m in length
System requirements: Windows XP/Vista/7/8/10, MAC OSX and Linux
Dimensions: approx. 40 mm x 27 mm diam.
Weight: approx. 30 g
B-1021376

MICROSCOPE-ACCESSORIES

B-1005423 – B-1005426



B-1005412 – B-1005414

B-1005407 – B-1005411

B-1020363

B-1021161

B-1005444 – B-1005447 and B-1005453

B-1005448 – B-1005452

Accessories for the microscopes M100 and B100

Art. No.	Description	Specifications
B-1005423	Wide Field Eyepiece	WF 10x 18 mm
B-1005424	Wide Field Eyepiece	WF 10x 18 mm with pointer
B-1005425	Wide Field Eyepiece	WF 15x 13 mm
B-1005426	Wide Field Eyepiece	WF 20x 11 mm
B-1005407	Achromatic Objective	4x / 0.10
B-1005408	Achromatic Objective	10x / 0.25
B-1005409	Achromatic Objective	40x / 0.65
B-1005410	Achromatic Objective	60x / 0.85
B-1005411	Achromatic Objective	100x / 1.25 (oil)
B-1005412	Abbe Condenser	N.A.1.25 and iris diaphragm
B-1005413	Object Holder	moveable
B-1005414	Polarization Device	Polarisator und Analysator
B-1005416	Spare Lamp	20 W (230 V, 50/60 Hz)

Accessories for the microscopes E5

B-1021161	Plan Eyepiece	W-PL 10x 18 mm
B-1020363	Plan Eyepiece	W-PL 15x 13 mm

Accessories for the stereo microscopes SM20x and SM40x

B-1005444	Wide Field Eyepiece Pair	WF 5x 18 mm
B-1005445	Wide Field Eyepiece Pair	WF 10x 20 mm
B-1005446	Wide Field Eyepiece Pair	WF 15x 13 mm
B-1005447	Wide Field Eyepiece Pair	WF 20x 10 mm
B-1005453	Eyepiece Cups	Pair
B-1005454	Spare Lamp	12 V, 10 W

Objectives for the stereo microscopes SM20x

B-1005448	Achromatic Objective	1x
B-1005449	Achromatic Objective	2x
B-1005450	Achromatic Objective	3x
B-1005451	Achromatic Objective	4x
B-1005452	Achromatic Objective	6x

ACCESSORIES FOR MICROSCOPY

Cover Glasses, non-Ground, Ar-Glass
18x18 mm^2, No. 1 (0.13–0.16 mm thickness), for manual use PU = 200 pcs/tropical packing (vacuum sealed).
B-1005080

Cover Glasses, non-Ground, Borosilicate
18x18 mm^2, No. 1 (0.13–0.16 mm thickness), also suitable for automated processes (cover slipper). PU = 200 pcs/ box.
B-1005081

Microscopic Slides, Cut Edges
approx. 76x26x1 mm^3, PU: 50 pcs/box.
B-1005082

Microscopic Slides, Cut Edges, 90°
approx. 76x26x1 mm^3, PU: 50 pcs/box.
B-1005083

Microscope Slides with One Cavity
15–16 mm diameter, ground edges, 76x26x1,2 mm^3, PU = 50 pcs/box.
B-1008919

Slide Box for 12 Microscope Slides
Sturdy microscope slide box, holds up to 12 microscope slides.
B-1004329

Slide Box for 100 Microscope Slides
Sturdy microscope slide box, holds up to 100 microscope slides.
B-1004332

Slide Box for 50 Microscope Slides
Sturdy microscope slide box, holds up to 50 microscope slides.
B-1004331

Slide Box for 25 Microscope Slides
Sturdy microscope slide box, holds up to 25 microscope slides.
B-1004330

Schiefferdecker Staining Dish
For 20 slides 76x26 mm^2 (back to back), with cover.
B-1008920

Slide Storage Map
For 20 slides, cardboard, with cover
B-1008921

Pasteur Pipettes, 3 ml
Polyethylene, nonsterile. PU = 500 pcs/box
B-1008933

Pasteur Pipettes, 1 ml
Polyethylene, nonsterile. PU = 500 pcs/box
B-1008934

MAGNIFYING GLASSES

Fold-Out Magnifying Glass
This is a fold-out magnifying glass with a diameter of 18 mm and a magnification factor of 10. It has a metal frame painted black and a metal case with hanging eye. Supplied in a leather pouch.
B-1003764

Pick Glass, Large
This version has a holder attached to make it easy to observe objects. A window of area 3.5 cm^2 has a cm/inch scale that allows objects to be measured in the desired system. The plastic magnifying glass folds shut and has a lens of 50 mm diameter that magnifies by a factor of 3.5.
B-1003766

Pick Glass, Small
The anodised aluminium fold-out magnifying glass has a diameter of 21 mm in spite of its small size and magnifies by a factor of 6. A window of area 1.5 cm^2 has a cm/inch scale that allows objects to be measured in the desired system.
Supplied in a leather pouch.
B-1003765

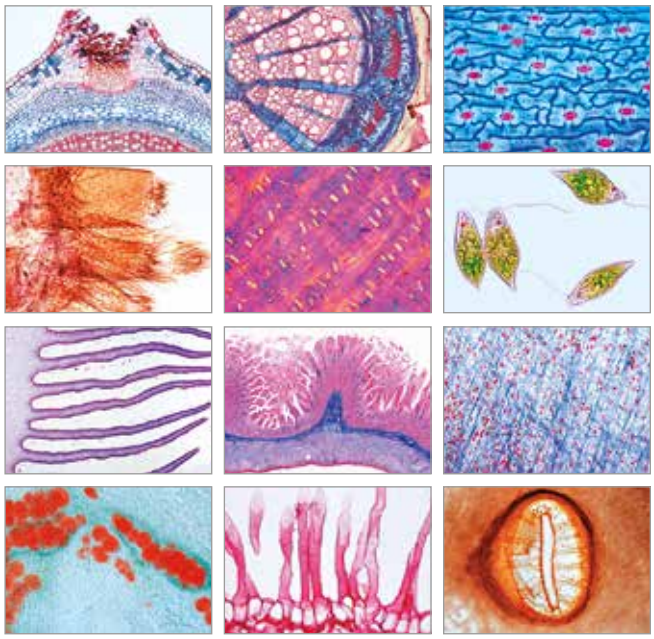
Ergonomic Magnifying Glass with Handle
This magnifying glass with its plastic frame offers a comfortable ergonomically designed handle and is provided with two separate lenses.
First lens Ø 75 mm: magnification: 3x
Second lens Ø 15 mm: magnification: 10x
B-1003768

Bottle Magnifying Glasses with Millimetre Grid 150 ml
Crystal – clear, round bottle of plastic with lid, integrated lens and millimetre grid on the bottom. Therefore it is possible to determine then size of animals and plant part quite accurately during the observation. Lens 55 mm diameter, magnification approx. 4 x.
B-1003789

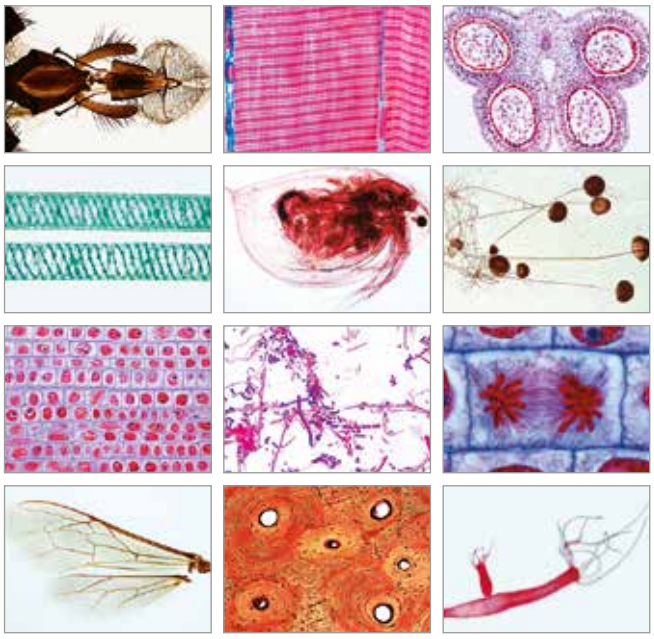
Two Way Magnifying Glass
The built in mirror and the removable top part of this fine magnifying glass allows observation of small animals, bugs, insects and plants from top and bottom side. Size of bottom of the glass 50x50 mm^2. The top part can be used as an extra lens.
Magnification approx. 3x.
B-1003790

Magnifying Glass on Stand 10x
The magnifying glass on its stand allows you to observe small plants or insects at ease, keeping both hands free. Two pre-calibrated glass lenses are attached to the transparent acrylic base in plastic holders.
B-1003769

MICROSCOPE SLIDES



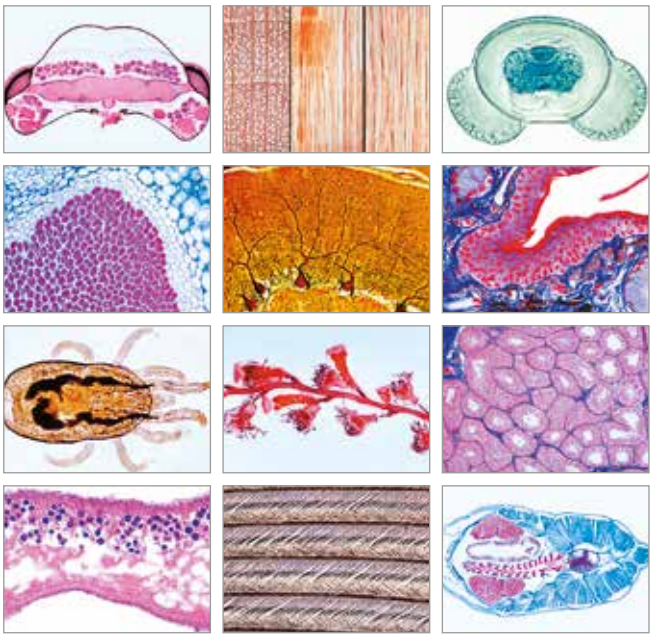
Series of Microscope Slides “School Set B”
50 microscope slides with detailed accompanying text.
Zoology:
1. Paramaecium 2. Euglena, flagellate with eyespot
3. Sycon, a marine sponge, t.s. 4. Dicrocoelium lanceolatum, sheep liver fluke, w.m. 5. Taenia saginata, tapeworm, proglottids t.s. 6. Trichinella spiralis, l.s. with encysted larvae 7. Ascaris, roundworm, t.s. of female 8. Araneus, spider, leg with comb w.m. 9. Araneus, spider, spinneret w.m. 10. Apis mellifica, honey bee, mouth parts w.m.
11. Apis mellifica, hind leg of worker w.m. 12. Periplaneta, cockroach, chewing mouth parts w.m. 13. Trachea from insect w.m. 14. Spiracle from insect w.m. 15. Apis mellifica, sting and poison sac w.m.
16. Pieris, butterfly, portion of wing with scales w.m. 17. Asterias rubens, starfish, arm (ray). t.s.
Histology of Man and Mammals:
18. Fibrous connective tissue 19. Hyaline cartilage of mammal, t.s.
20. Adipose tissue, stained for fat 21. Smooth (involuntary). muscle l.s. and t.s. 22. Medullated nerve fibres, osmic acid fixed material showing Ranvier’s nodes 23. Frog blood smear, showing nucleat ed red corpuscles 24. Artery and vein of mammal, t.s. 25. Liver of pig, t.s. 26. Small intestine of cat, t.s. 27. Lung of cat, t.s. showing alveoli
Cryptogams:
28. Oscillatoria, a blue-green alga 29. Spirogyra in scalariform conjugation 30. Psalliota, mushroom, t.s. of pileus with basidia and spores 31. Morchella, morel, t.s. of fruiting body with asci and spores
32. Marchantia, liver wort, antheridia l.s. 33. Marchantia, archegonia l.s. 34. Pteridium, braken fern, rhizome t.s. 35. Aspidium, fern, t.s. of leaf with sori
Phanerogams:
36. Elodea, waterweed, stem apex l.s. with meristematic tissue
37. Dahlia, t.s. of tuber with inuline crystals 38. Allium, onion, dry scale with calcium oxalate crystals 39. Py rus, pear, t.s. of fruit showing stone cells 40. Zea mays, corn, typical monocot root t.s. 41. Tilia, lime, woody dicot root t.s. 42. Solanum tuberosum, potato, t.s. of tuber with starch 43. Aristolochia, birthwort, one year stem t.s. 44. Aristolochia, older stem t.s. shows secondary growth 45. Cucurbita, pumpkin, l.s. of stem with sieve tubes, and vessels 46. Root tip and root hairs 47. Tulipa, tulip, epidermis of leaf with stomata 48. Iris, typical monocot leaf, t.s. 49. Sambucus, elderberry, stem showing lenticells, t.s. 50. Triticum, wheat, grain sagittal l.s. with embryo and endosperm
B-1004262



Series of Microscope Slides “School Set A”
25 microscope slides with detailed accompanying text.
Zoology:
1. Amoeba proteus, nucleus and pseudopodia 2. Hydra, w.m. extended specimen 3. Lumbricus, earthworm, typical t.s. back of clitellum
4. Daphnia and Cyclops, small crustaceans 5. Musca domestica, house fly, head and mouth parts w.m. 6. Musca domestica, leg with clinging pads (pulvilli) 7. Apis mellifica, honey bee, anterior and posterior wing
Histology of Man and Mammals:
8. Squamous epithelium, isolated cells from human mouth 9. Striated muscle, l.s. showing striations 10. Compact bone, t.s. special stained for cells and canaliculi 11. Human scalp, l.s. of hair follicles 12. Human blood smear, red and white corpuscles
Bacteria and Cryptogams:
13. Bacteria from mouth, bacilli, cocci, spirilli, spirochaetes 14. Diatoms, mixed species 15. Spirogyra, with spiral chloroplasts 16. Mucor, mold, w.m. 17. Moss stem with leaves w.m.
Phanerogams:
18. Ranunculus, buttercup, typical dicot root t.s. 19. Zea mays, corn, monocot stem t.s. 20. Helianthus, sunflower, dicot stem t.s., 21. Syringa, lilac, leaf t.s. 22. Lilium, lily, anthers t.s. 23. Lilium, ovary t.s. showing ovules 24. Allium cepa, onion, w.m. of epidermis shows simple plant cells 25. Allium cepa, l.s. of root tips showing cell divisions (mitosis). In all stages
B-1004261

› For viewing the microscope slides in student experiments, we recommend the M100 course microscope on page 135. For more advanced investigations, it is best to use the E5 model series microscopes on page 136.

MICROSCOPE SLIDES



Series of Microscope Slides "School Set C"
50 microscope slides with detailed accompanying text.
Zoology:
1. Trypanosoma gambiense, sleeping disease, blood smear 2. Plasmodium berghei, malaria parasite, blood smear 3. Radiolaria, mixed species 4. Foraminifera, mixed species 5. Obelia hydroid, w.m. of colony 6. Hydra, t.s. of body in different levels 7. Planaria, typical t.s. through the body 8. Apis mellifica, honey bee, head with compound eyes and brain t.s. 9. Apis mellifica, abdomen of worker t.s. 10. Ctenocephalus canis, dog flea 11. Dermanyssus gallinae, chicken mite 12. Helix pomatia, snail, hermaphrodite gland, t.s. with ova and spermatozoa 13. Mya arenaria, clam, gills t.s. and l.s. ciliated epithelium 14. Branchiostoma lanceolatum (Amphioxus), typical t.s. of body 15. Bird, wing and down feathers, w.m. 16. Salamandra larva, sections showing mitotic stages 17. Chicken embryo, 48 hour, t.s. with neural tube and chorda
Histology of Man and Mammals:
18. Ovary of cat, t.s. with follicles 19. Testis of mouse, t.s. showing spermatogenesis 20. Cerebellum of cat, t.s. shows Purkinje cells 21. Spinal cord of cat, t.s. showing nerve cells 22. Kidney of cat, t.s. cortex and medulla 23. Retina of cat, t.s. for rods and cones 24. Tongue of rabbit, t.s. of papilla foliata with taste buds
Bacteria:
25. Bacillus subtilis, stained for bacilli and spores 26. Streptococcus lactis, milk souring organisms, smear showing chains
Cryptogams:
27. Volvox, with daughter colonies and sexual stages, 28. Fucus vesiculosus, brown alga, female conceptacle with oogonia t.s. 29. Fucus vesiculosus, male conceptacle with antheridia t.s. 30. Cladophora, green alga, filaments with multinucleate cells 31. Claviceps purpurea, ergot, sclerotium t.s. 32. Puccinia graminis, wheat rust, uredinia on wheat leaf t.s. 33. Puccinia graminis, aecidia and pycnidia on barberry leaf t.s. 34. Saccharomyces, yeast, budding cells 35. Physcia, lichen, thallus with symbiotic algae t.s. 36. Fern prothallium, w.m. with sex organs 37. Equisetum, horse tail, strobilus with spores l.s.
Phanerogams:
38. Lupinus, root nodules with symbiotic bacteria t.s. 39. Euphorbia, spurge, stem with lactiferous ducts l.s. 40. Pinus, pine, three sections of wood 41. Tilia, lime, three sections of wood 42. Elodea, waterweed, aquatic stem with primitive bundle t.s. 43. Cucurbita, pumpkin, stem t.s. bundles and sieve plates 44. Fagus, beech, sun and shade leaves, two t.s. 45. Nerium, oleander, xerophytic leaf with sunken stomata, t.s. 46. Pinus, pine, male cone with pollen l.s. 47. Pinus, female cone with ovules l.s. 48. Pinus, pollen grains 49. Lilium, lily, t.s. of young anthers, meiotic stages of the pollen mother cells 50. Taraxacum, dandelion, composite flower l.s.
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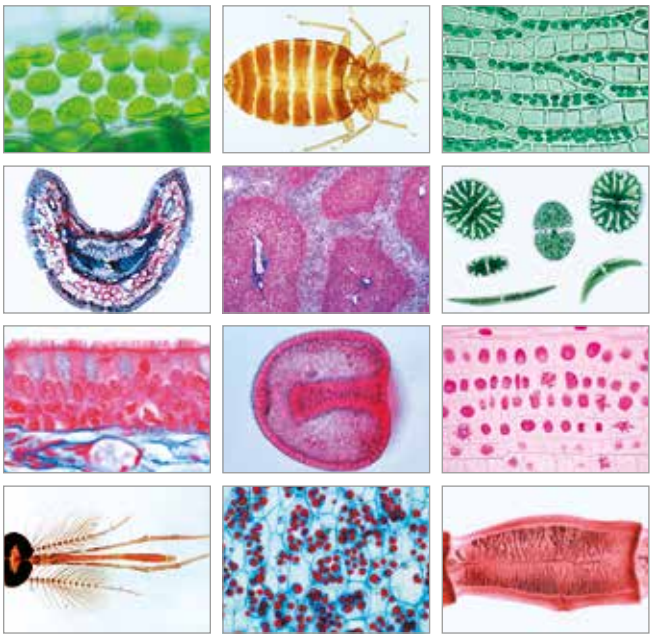

Series of Microscope Slides "School Set D"
50 microscope slides with detailed accompanying text.
Histology of Man and Mammals:
1. Ciliated epithelium, t.s. 2. Tendon of cow, l.s. 3. Heart muscle, human, t.s. and l.s. 4. Lymph gland of pig, t.s. 5. Esophagus of cat, t.s. 6. Stomach of cat, t.s. of fundic region 7. Large intestine (colon), t.s. mucous cells 8. Pancreas of pig, t.s. with islets of Langerhans 9. Thyroid gland, sec. colloid 10. Adrenal gland of cat, t.s. 11. Sperm of bull 12. Motor nerve cells, smear from spinal cord of cow 13. Cerebrum, human, t.s. pyramidal cells 14. Human skin, l.s.
Zoology:
15. Distomum hepaticum, beef liver fluke 16. Taenia spec., tapeworm 17. Culex pipiens, mosquito, head mouth parts of female 18. Culex pipiens, head and reduced mouth parts of male 19. Cimex lectularius, bed bug
Cytology and Genetics:
20. Mitochondria 21. Golgi apparatus, t.s. of spinal ganglion 22. Chloroplasts 23. Aleurone grains 24. Storage, t.s. of liver or kidney 25. DNA in cell nuclei, Feulgen staining 26. DNA and RNA in different colors 27. Giant chromosomes from the salivary gland of Chironomus 28. Human chromosomes, in the stage of metaphase 29. Meiotic and mitotic stages in sec. of crayfish testis 30. Maturation divisions in ova of Ascaris megalocephala 31. Cleavage stages in ova of Ascaris, iron-hematoxylin
Bacteria and Diseased Organs of Man:
32. Escherichia coli, bacteria from colon 33. Eberthella typhi, typhoid fever 34. Tuberculous lung, t.s. 35. Coal dust lung (Anthracosis), t.s. 36. Liver cirrhosis, t.s. 37. Arteriosclerosis, t.s. 38. Metastatic carcinoma (cancer). of human liver, t.s.
Embryology:
39. Sea-urchin development, 2, 4 and 8 cell stages 40. Sea-urchin development, morula, blastula and gastrula 41. Frog embryology, sec. of the blastula stage 42. Frog embryology, sag. sec. through larva
Ecology and Environment:
43. Leaf (needle). of fir, healthy and damaged by acid rain 44. Leaf of beech, healthy and damaged by acid rain 45. Bacteria from waste-water
Botany:
46. Nostoc, blue green alga 47. Desmids, various species 48. Sphagnum, peat moss, w.m. of leaf 49. Triticum, wheat, t.s. of stem 50. Salvia, sage, t.s. of a square stem
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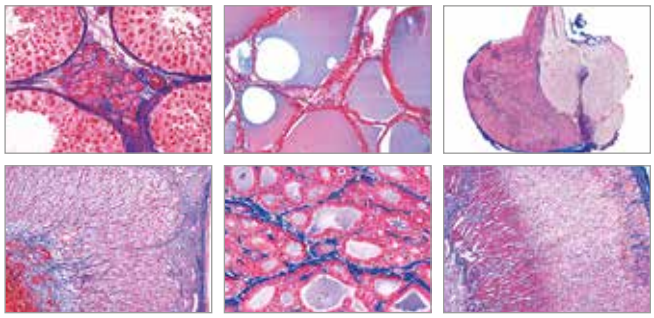
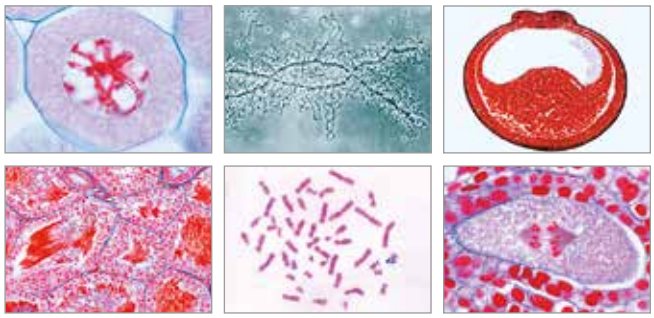


Series of Microscope Slides "Hormone Organs and Hormonal Function"
7 microscope slides with accompanying text.
1. Ovary of cat, corpus luteum t.s. 2. Testis of mouse, t.s. showing Leydig's cells 3. Adrenal gland of cat, t.s. 4. Pancreas of cat, t.s. with islets of Langerhans 5. Thyroid gland, normal function t.s. 6. Thyroid gland, over-activity of the gland t.s. 7. Hypophysis sagittal l.s.
B-1004228



Series of Microscope Slides "Genetics, Reproduction and Embryology"
19 microscope slides with accompanying text.
1. DNA and RNA stained in different colors, l.s. onion root tips 2. Lilium, young anthers, meiosis, early prophase stage, t.s. 3. Lilium, young anthers, diplotene stage, t.s. 4. Lilium, ovary with embryosac t.s. 5. Capsella bursa pastoris, l.s. of embryos 6. Human chromosomes, spread in the metaphase stage, w.m. 7. Lamp brush chromosomes 8. Hydra with testis t.s. 9. Hydra with ovaries t.s. 10. Tapeworm (Taenia), mature proglottid, w.m. 11. Ascaris, sec. of uteri showing maturation of ova 12. Cockchafer (Melolontha), ovaries t.s. 13. Frog (Rana), testis t.s. showing spermatogenesis 14. Frog embryology: four cell stage t.s. 15. Frog: morula stage l.s. 16. Frog: neurula stage t.s. 17. Chicken (Gallus) embryology: 24 hour t.s. 18. Chicken embryology: 72 hour t.s. 19. Mouse, uterus containing embryo t.s.
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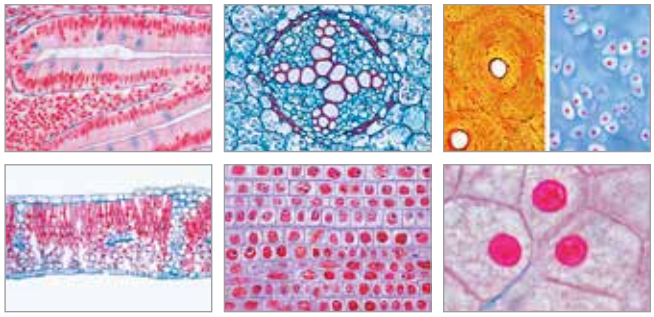
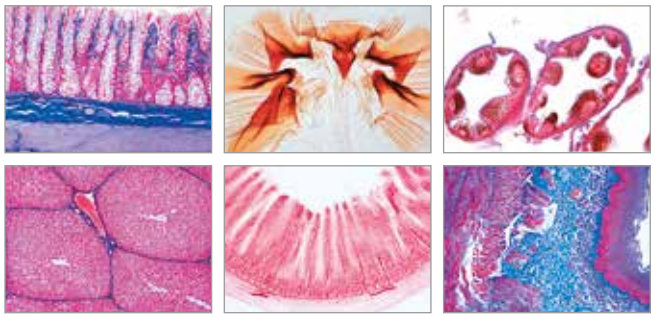
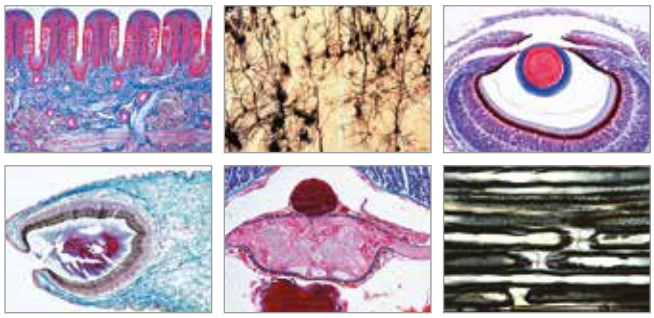


Series of Microscope Slides "Cells, Tissues and Organs"
13 microscope slides with accompanying text.
1. Cells in sec. of salamander liver 2. Mitosis, l.s. from allium root 3. Ranunculus, t.s. of dicot root 4. Monocot and dicot stems, t.s. 5. Syringa, lilac, t.s. of mesophytic dicot leaf 6. Columnar epithelium, t.s of blind gut from rabbit 7. Bone and hyaline cartilage, t.s. 8. Striated muscles of mammal, l.s. 9. Smooth muscles of mammal, l.s. and t.s. 10. Lung of cat, t.s. 11. Human blood smear 12. Human body skin, l.s. 13. Young mouse, sag. s. of entire specimen
B-1004225



Series of Microscope Slides "Metabolism"
15 microscope slides with accompanying text.
1. Hydra, fresh water polyp, t.s. with ectoderm and entoderm 2. Carabus, ground beetle, gizzard 3. Salivary gland of cat, t.s. 4. Esophagus of cat, t.s. 5. Fundic stomach of cat, t.s. 6. Small intestine of cat, t.s. routine stained 7. Small intestine, t.s. blood vessels injected 8. Appendix of human, t.s. 9. Large intestine of cat, t.s. 10. Liver of pig, t.s. 11. Malpighian tubules of insect, t.s. 12. Primordial kidney (mesonephros) of frog, t.s. 13. Hind-kidney (metanephros) of rabbit, t.s. 14. Kidney of mouse with pelvis, l.s. 15. Kidney of mouse, t.s. injected to show storage.
B-1004226



Series of Microscope Slides "Organs of Sense"
16 microscope slides with accompanying text.
1. Paramaecium, silvered to show the neuroformative system 2. Lumbricus, earthworm, t.s. with ventral nerve cord 3. Insect brain, frontal l.s. 4. Planaria, sec. through ocelli 5. Haliotis, marine snail, pinhole camera eye l.s. 6. Helix, snail, eye l.s. 7. Alloteuthis, cuttlefish, camera eye l.s. 8. Compound eye of an insect, l.s. 9. Young rat, head with eyes t.s. 10. Retina of cat, t.s. showing rods and cones 11. Internal ear (cochlea) from guinea pig, l.s. 12. Taste buds from tongue of rabbit, t.s. 13. Peripheral nerve fibres, osmic acid material showing Ranvier's nodes 14. Spinal cord of cat t.s. with large motor nerve cells 15. Cerebellum of cat, t.s. routine stained 16. Cerebrum of cat, t.s. silvered to show the pyramid cells.
B-1004227

MICROSCOPE SLIDES

Series of Microscope Slides for Human Biology

Description		Art. No.
Series of Microscope Slides “Sensory Organs”	10 microscope slides. For details see page 17.	**B-1004243**
Series of Microscope Slides “Nervous System”	11 microscope slides. For details see page 27.	**B-1004244**
Series of Microscope Slides “Respiratory and Circulatory System”	10 microscope slides. For details see page 29.	**B-1004238**
Series of Microscope Slides “Digestive System”	11 microscope slides. For details see page 30.	**B-1004239**
Series of Microscope Slides “Human Scalp and Hair”	12 microscope slides. For details see page 33.	**B-1004268**
Series of Microscope Slides “Normal Human Histology I”	50 microscope slides. For details see page 33. Färbung: Standard	**B-1004234**
Series of Microscope Slides “Normal Human Histology I” (HE)	50 microscope slides. For details see page 33. Färbung: HE	**B-1008716**
Series of Microscope Slides “Normal Human Histology II”	50 microscope slides. For details see page 33. Färbung: Standard	**B-1004235**
Series of Microscope Slides “Normal Human Histology II” (HE)	50 microscope slides. For details see page 33. Färbung: HE	**B-1008717**

Series of Microscope Slides for Zoology

Description		Art. No.
Series of Microscope Slides “Insects (Insecta)”	40 microscope slides. For details see page 64.	**B-1003965**
Series of Microscope Slides “The Honey Bee (Apis mellifica)”	18 microscope slides. For details see page 63.	**B-1004265**
Series of Microscope Slides “Invertebrata, Elementary Set”	25 microscope slides. For details see page 61.	**B-1004245**
Series of Microscope Slides “Invertebrata, Supplementary Set”	50 microscope slides. For details see page 61.	**B-1004246**
Series of Microscope Slides “Protozoa”	10 microscope slides. For details see page 62.	**B-1003960**
Series of Microscope Slides “Coelenterata and Porifera”	10 microscope slides. For details see page 62.	**B-1003961**
Series of Microscope Slides “Vermes (Helminthes)”	20 microscope slides. For details see page 62.	**B-1003962**
Series of Microscope Slides “Crustacea”	10 microscope slides. For details see page 63.	**B-1003963**
Series of Microscope Slides “Arachnoidea and Myriapoda”	12 microscope slides. For details see page 63.	**B-1003964**
Series of Microscope Slides “Mollusca”	15 microscope slides. For details see page 64.	**B-1003966**
Series of Microscope Slides “Echinodermata, Bryozoa and Brachiopoda”	10 microscope slides. For details see page 64.	**B-1003967**
Series of Microscope Slides “Cephalochordata (Acrania)”	10 microscope slides. For details see page 64.	**B-1003968**
Series of Microscope Slides “The Paramaecium (Caudatum)”	8 microscope slides. For details see page 64.	**B-1004247**
Series of Microscope Slides “Histology of Vertebrata excluding Mammalia”	25 microscope slides. For details see page 65.	**B-1004230**
Series of Microscope Slides “Histology of Mammalia, Elementary Set”	25 microscope slides. For details see page 65.	**B-1004231**
Series of Microscope Slides “Histology of Mammalia, Supplementary Set”	50 microscope slides. For details see page 65.	**B-1004232**

Series of Microscope Slides for Botany

Description		Art. No.
Series of Microscope Slides “Phanerogamae”, Elementary Set	25 microscope slides. For details see page 66.	**B-1004253**
Series of Microscope Slides “Phanerogamae”, Supplementary Set	50 microscope slides. For details see page 67.	**B-1004254**
Series of Microscope Slides “Cryptogamae”, Elementary Set	25 microscope slides. For details see page 71.	**B-1004250**
Series of Microscope Slides “Cryptogamae”, Supplementary Set I	25 microscope slides. For details see page 71.	**B-1004251**
Series of Microscope Slides “Gymnospermae”	15 microscope slides. For details see page 70.	**B-1003974**
Series of Microscope Slides “Ferns and Fern Allies (Pteriodophytes)”	15 microscope slides. For details see page 70.	**B-1003973**
Series of Microscope Slides “Fungi and Lichen”	20 microscope slides. For details see page 71.	**B-1003971**
Series of Microscope Slides “Algae”	30 microscope slides. For details see page 70.	**B-1003970**
Series of Microscope Slides “Liverworts and Mosses (Bryophyta)”	15 microscope slides. For details see page 70.	**B-1003972**
Series of Microscope Slides “Angiospermae Roots Set”	15 microscope slides. For details see page 72.	**B-1003976**
Series of Microscope Slides “Angiospermae Stems”	20 microscope slides. For details see page 73.	**B-1003977**

Series of Microscope Slides for Botany

Description		Art. No.
Series of Microscope Slides “Arrangement and Types of Vascular Bundles”	13 microscope slides. For details see page 73.	**B-1004255**
Series of Microscope Slides “Angiospermae Leafs”	15 microscope slides. For details see page 74.	**B-1003978**
Series of Microscope Slides “Angiospermae Flowers”	15 microscope slides. For details see page 75.	**B-1003979**
Series of Microscope Slides “Angiospermae Fruits and Seeds”	15 microscope slides. For details see page 75.	**B-1003980**
Series of Microscope Slides “Cryptogamae”, Supplementary Set II	25 microscope slides. For details see page 71.	**B-1004252**

Series of Microscope Slides for Microbiology

Description		Art. No.
Series of Microscope Slides “Pathogenic Bacteria”	25 microscope slides. For details see page 79.	**B-1004249**
Series of Microscope Slides “Bacteria”	25 microscope slides. For details see page 79.	**B-1003969**
Series of Microscope Slides “Parasitology Short Set”	25 microscope slides. For details see page 78.	**B-1004266**
Series of Microscope Slides “Parasitology”	50 microscope slides. For details see page 78.	**B-1004248**
Series of Microscope Slides “The Ascaris megalocephala Embryology”	10 microscope slides. For details see page 79.	**B-1013479**

Series of Microscope Slides for Cell Biology and Embryology

Description		Art. No.
Series of Microscope Slides “The Animal Cell”	12 microscope slides. For details see page 81.	**B-1003981**
Series of Microscope Slides “The Plant Cell”	12 microscope slides. For details see page 80.	**B-1003982**
Series of Microscope Slides “Angiospermae Cells and Tissues”	20 microscope slides. For details see page 80.	**B-1003975**
Series of Microscope Slides “Mitosis and Meiosis Set I”	6 microscope slides. For details see page 84.	**B-1013468**
Series of Microscope Slides “Mitosis and Meiosis Set II”	5 microscope slides. For details see page 85.	**B-1013474**
Series of Microscope Slides “Development of the Microspore Mother Cells of Lilium candidum”	12 microscope slides. For details see page 85.	**B-1013484**
Series of Microscope Slides “Genetics”	25 microscope slides. For details see page 92.	**B-1003983**
Series of Microscope Slides “Pig Embryology (Sus scrofa)”	10 microscope slides. For details see page 86.	**B-1003987**
Series of Microscope Slides “Chicken Embryology (Gallus domesticus)”	10 microscope slides. For details see page 86.	**B-1003986**
Series of Microscope Slides “Sea Urchin Embryology (Psammechinus miliaris)”	12 microscope slides. For details see page 86.	**B-1003984**
Series of Microscope Slides “Frog Embryology (Rana)“	10 microscope slides. For details see page 86.	**B-1003985**

Thin Slides of Rock

Description		Art. No.
Rocks and Minerals, Basic Set no. I	10 microscope slides. For details see page 109.	**B-1012495**
Rocks and Minerals, Basic Set no. II	10 microscope slides. For details see page 109.	**B-1012498**
Thin Sections, Sedimentary Rocks	22 microscope slides. For details see page 109.	**B-1018500**
Thin Sections, Igneous Rocks	31 microscope slides. For details see page 109.	**B-1018490**
Thin Sections, Metamorphic Rocks	29 microscope slides. For details see page 109.	**B-1018495**
Thin Sections, Fossils and Meteorites	4 microscope slides. For details see page 109.	**B-1018505**

LABORATORY EQUIPMENT

Measurement, evaluation and analysis with a link to computer is an important part of a modern education in the natural sciences and technology. On the following pages, we would therefore like to introduce you to the highly innovative and versatile Software Coach 7 and the lab interfaces VinciLab and €lab, as well as numerous sensors.

You will also find numerous instruments that should not be missing from any laboratory.
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- Inexpensive, electronic weighing scales.
- Thermometers and much more.

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SOFTWARE COACH 7

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Coach
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- With Coach 7 you have the most complete environment for STEM Education!
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- All needed tools in one environment
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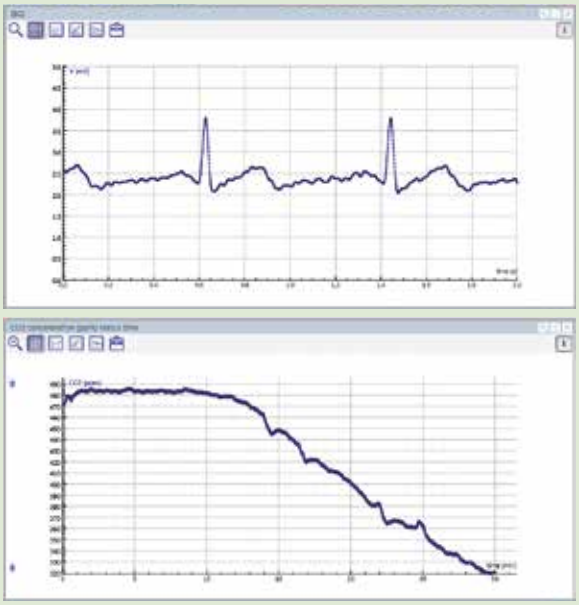
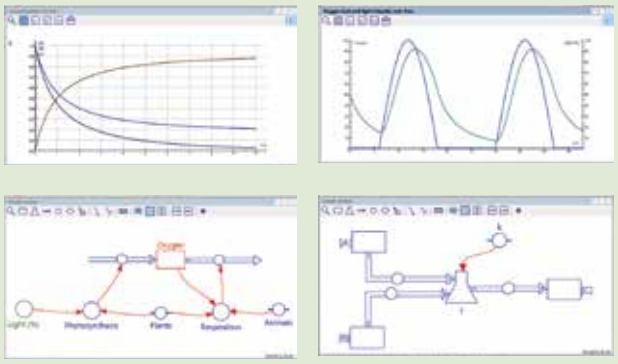
SOFTWARE COACH 7

› The most versatile and complete software for STEM Education. Coach your students into the world of science.

Data-logging
An interface equipped with a selection of sensors is a universal measurement instrument and can be used in many experiments. The Coach Measurement Activities enable you to measure and record data over a period of time via an interface and sensors. The rate of data collection is available over a wide range of time-periods and frequencies. Different measurement methods: time-based (with- and without triggering), event-based, manual (with- and without sensors) allow performing a wide range of experiments. Real-time presenting data while being collected makes data collection an interactive process whereby direct observations may be immediately compared with the graph, encouraging thinking about the data.



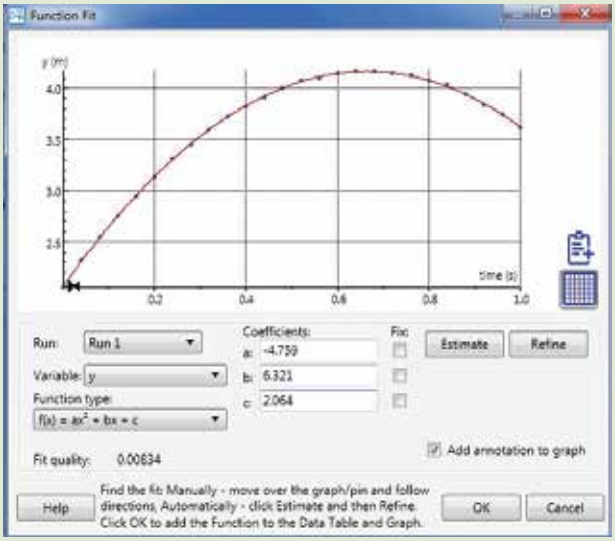
Data Video
Brings the real world into your classroom and allows analyzing attractive events and “difficult” experiments that are impossible to perform in the classroom. The Coach Data Video Activities enable you to make measurements on digital video clips (manually by clicking or automatically by tracking the selected object) or still images, and to analyze motions or shapes of real objects. To bridge the gap between the visual display of a motion and its abstract graphical representation the graphs are synchronized with the video frames. Students can capture their own videos with the help of a camera or mobile phone. They also can use affordable high-speed cameras to capture very fast motions and to analyze these motions in details. Additionally Coach offers many extra features like capturing and editing a video or correcting a perspective distortion.



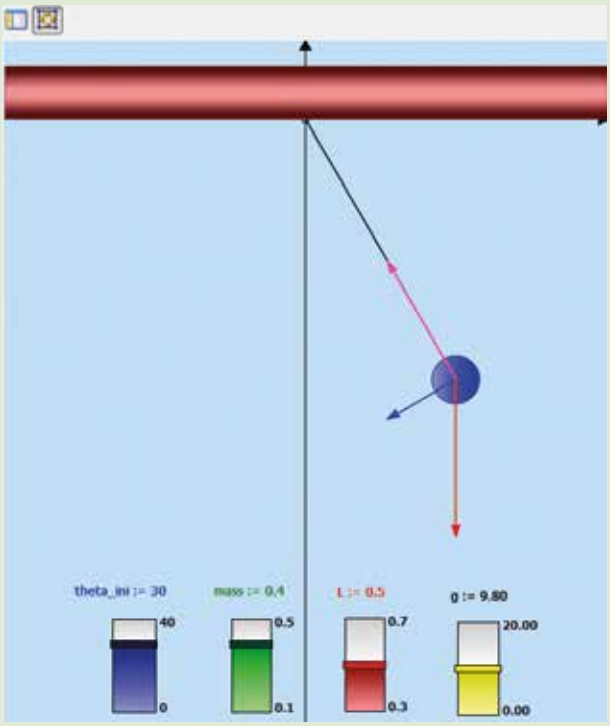
Modeling
Helps students to understand the world of computational models; such models are used today in every area of research and industry. The Coach Modeling Activities enable you to use ready-to-go models or to create models of dynamic changing systems. In such models the evolution of a system is computed step by step. Modeling allows solving realistic problems that are difficult to solve analytically at the school level. It encourages students to think, to discuss their ideas and to clarify their understandings. The data generated by a model can be compared with experimental data and the model can be modified to match the real experiment.

Data Processing
Data collected from sensors, video clips or generated by models can be displayed as digital values, on meters and graphs. They can be further processed with the help of:

- Analysis tools: zooming, reading values, finding a slope, finding an area under a graph,
- Processing tools: selecting and removing data, smoothing a graph, calculating new variables by using mathematical functions, function fit, calculating a frequency spectrum
- Statistical tools: finding statistical data information, creating a histogram.



Animations
Help students to better understand the meaning of data. Presenting data in a table or graph may not be enough for students to fully understand the underlying principles of a phenomenon. Animation is another way of representing the data. The Coach Animations consist of animated graphics objects, like ellipses, rectangles, vectors or images, which can be linked to model variables, program variables or sensor values to control their screen movement. Additionally interactive control objects, like buttons and sliders, allow altering parameter variables during the execution of the animation to interact with the system and to see the effect of those changes.



Authoring facilities
Build your own activities CMA offers many ready-to-go teaching and learning activities. You can use these activities directly in the lessons or adapt them to your own needs. Coach also enables you to build your own activities filled with exciting learning content. Create your own custom activities with the type of tool to be used, for the desired student level, with your texts, images, videos, student questions, and with a layout that displays the way you want it.

Control
The unique combination of measuring and control allows controlling processes, to automate measurements and to study the behaviour of systems.

LABINTERFACES

VinciLab – the most powerful and versatile data-logger

VinciLab
The VinciLab is a modern advanced graphic data-logger. It is a hand-held Linux device equipped with two processors and 8 GB memory. Works standalone and with Windows and MAC computers. The dedicated desktop applications, installed on VinciLab, offer tools for collecting data, managing user files, setting up the device and its wireless connection, browsing the web, watching video files, playing audio files, etc. All applications can be easily updated via the VinciLab Update server available via a Wi-Fi connection.
The powerful Coach Application, installed on VinciLab, offers live sensor data displays, real-time graphing, tools for data processing and possibilities to create new or open ready-to-go student activities (experiment manuals), enriched with texts, images and web-pages. Coach 7 and Coach 7 Lite support measurements with VinciLab. During such measurement VinciLab is connected to the computer via a USB port or communicates via a Wi-Fi connection, and is controlled by Coach running on the computer. The collected data are transferred in real-time to the computer and the measurement can be followed directly on the computer screen.
By using wireless connectivity and the VNC protocol the VinciLab's screen can be remotely viewed and controlled from any computer or mobile device connected to the same network.

Display: 5" high-resolution capacitive color touch screen
Resolution: 12-bit
Sampling rate: 1 MHz
Sensor inputs: Four analog BT inputs, two digital BT inputs
Built-in: Sound sensor, 3-axis, accelerometer (2 g, 4 g, 8 g)
Wireless connectivity: Wi-Fi and Bluetooth®
Computer connection: USB mini port
USB port: Full USB for USB peripherals
Software on board: Coach Linux
Software on computer: Coach 7or Coach 7 Lite
Power supply: Rechargeable battery, via USB from computer or via power adapter

B-1021477

€Lab – affordable way to start with data collection

€Lab
€Lab is a simple and friendly USB lab interface, which can be used to introduce students to measurements with the computer. This is a good solution for users who don't need the versatility of a standalone device.
Resolution: 12-bits
Sampling rate: 40 kHz
Sensor Inputs: two analog BT inputs
Computer connection: USB
Software on computer: Coach 7 or Coach 7 Lite
Power supply: via USB, no extra power supply needed
B-1021478

Comparison of the interfaces

Interface	€Lab	VinciLab
School level	middle	middle/high
Sampling rate	40 kHz	1 MHz
Sensor inputs	2 analog	4 analog, 2 digital
Power supply	via USB	rechargeable battery
Screen	no	Touch screen 5"
Operating system	internal	Linux
Device software	none	Coach App
Platforms	PC, Mac	PC, Mac, Stand alone
Connection	USB	USB
Computer software	Coach 7, Coach 7 Lite	Coach 7, Coach 7 Lite

SENSORS

Heart-Rate Sensor, Exercise
The heart-rate sensor, BT47i monitors a person's heart beat. Each time the heart beats, an electrical signal is generated. This signal is measured at the surface of the skin by electrodes embedded in the chest belt of the sensor. The system consists of a transmitter belt, plug-in receiver, and an elastic strap.
Transmitter: T31 by Polar Transmitter
Range: 90 cm
Can be used to:
• Compare the heart rate of different individuals,
• Check the person's heart rate before, before, during and after a vigorous activity,
• Monitor the recovery rate.
B-1021484

Heart-Rate Sensor*
The heart-rate sensor 027i provides a simple way to study the heart's function. The sensor clip consists of a small infrared LED and an infrared light sensor. The sensor measures the light level transmitted through a tissue of the ear lobe that occur as the blood volume changes in the tissue.
Range: 0 ... 5 V, each heartbeat gives a peak.
Can be used to:
• Investigate the heart rate of different individuals,
• Measure of the heart rate before and after a vigorous activity,
• Determine the recovery rate of the heart after physical exercise,
• Measure the heart rate before and after drinking coffee or cola.
B-1021485

ECG Sensor
The ECG sensor BT36i measures voltages that are produced by the heart. These voltages are measured at the skin of the wrists and elbow through electrodes. The voltages are amplified by the sensor and filtered and transferred through an optical coupler.
Range: 0 ... 5 mV
Resolution (12-bit): 1.2 µV
Includes: a package of 100 electrode patches.
Can be used to:
• Monitor ECG in rest and after mild exercise,
• Investigate CG changes with mild stimulants,
• Record the electrical activity of a muscle (EMG).
B-1021487

*** Sensor Cable**
All sensors not marked with * require a sensor cable, which has to be purchased separately. The cables are sold per piece (B-1021514) and in packages of four (B-1021515).

Blood Pressure Sensor
The blood pressure sensor BT17i is used to measure arterial blood pressure in humans (non-invasively). It measures the pressure signal caused by the interaction between the cuff and the blood flow through the brachial artery.
Range: 0 ... 375 mm Hg
Includes: standard adult size adjustable cuff (24 cm to 35 cm) and bulb pump (with release valve).
Can be used to:
• Blood pressure as a vital sign,
• Effect of exercise on blood pressure.
B-1021761

Spirometer Sensor
The spirometer BT82i measures air flow rate during human respiration. The sensor consists of a flow tube through which the air is inhaled and exhaled and a differential pressure sensor.
Range: -5 ... 5 L/s
Resolution (12-bit): 0.01 L/s
Includes: disposable bacterial filter and 10 disposable mouthpieces.
Can be used to:
• Record breathing patterns before, during and after exercise,
• Measure important lung capacities like Forced Expiratory Volume, Forced Vital Capacity and Tidal Volume.
B-1021489

Disposable Bacterial Filter
Disposable bacterial filter for spirometer BT82i.
B-1021490

Disposable Mouthpiece
Package of 100 disposable mouthpieces for spirometer BT82i.
B-1021491

Colorimeter
The colorimeter BT29i measures the amount of light transmitted through a sample solution. It has four LED light sources emitting light of different wavelengths: violet 430 nm, blue 470 nm, green 565 nm and red 635 nm.
Range: 90 ... 10 %T
Resolution (12-bit): 0.025 %T
Includes: 10 plastic cuvettes with caps.
Can be used to:
• Investigate application of Beer's law e.g. Crystal violet or Copper Sulphate,
• Determine unknown concentrations,
• Measure reaction rate, reaction order or reaction equilibrium,
• Determine biological molecules e.g. sugars, protein, vitamins.
B-1021492

Redox Sensor
The redox sensor BT57i measures the ability of a solution to act as an oxidizing or reducing agent. The sensor consists of an ORP electrode and an amplifier.
Range: -450 mV ... 1100 mV
Resolution (12-bit): 0.5 mV
ORP electrode: sealed, gel-filled, epoxy body, Ag/AgCl reference
Temperature range: 0 ... 600°C
Can be used to:
- Measure the oxidizing ability of chlorine in swimming pools,
- Iinvestigate redox titrations to determine the equivalence point in oxidationreduction reactions.

B-1021479

pH Sensor
The pH sensor BT61i is a general-purpose pH measurement system that allows measuring the degree of acidity/pH value. The sensor consists of a pH amplifier and pH electrode. The pH electrode is not delivered with the pH sensor and has to be purchased separately (order number B-1021481).
Range: 0 ... 14 pH
Resolution (12-bit): 0.005 pH
Can be used to:
- Measure pH values of different acids and bases,
- Monitor pH in acid-base titration experiments,
- Monitor pH during chemical reactions,
- Investigate of water quality in streams and lakes.

B-1021480

Additionally required:
B-1021481 pH Electrode

pH Electrode
The pH electrode 031 is a gel-filled Ag-AgCl combination-electrode in a plastic tube. It has a coax cable with a BNC connector. It is supplied in a bottle filled with a protective solution. The electrode cannot be refilled.
B-1021481

Conductivity Sensor
The conductivity sensor BT27i measures the ability of a solution to conduct an electric current between two electrodes. The conductivity sensor consists of a conductivity electrode and an amplifier. The sensor has three measurement ranges, which can be selected using a switch.
Ranges: 0 ... 200 µS, 0 ... 2000 µS, 0 ... 20000 µS
Resolution (12-bit): 0.082µS, 0.82µS, 8.2 µS
Can be used to:
- Monitor the rate of reaction in chemical reactions,
- Monitor changes in conductivity in aquatic systems,
- Perform conductivity titrations,
- Find the rate at which ionic species diffuse through membranes.

B-1021493

Salinity Sensor
The salinity sensor BT78i measures the salinity of a solution, which indicates the amount of all the salts dissolved in water. The sensor consists of a Salinity electrode and an amplifier.
Range: 0 ... 50 ppt
Resolution (12-bit): 0.02 ppt
Can be used to:
• Measure of salinity of water sources,
• Measure the change in salinity of saltwater as the water evaporates,
• Monitor the rate of reaction in a chemical reaction.
B-1021494

Turbidity Sensor
The turbidity sensor BT88i measures the turbidity of water samples in the range between 0 ... 200 NTU.
Range: 0 ... 200 NTU
Resolution (12-bit): 0.2 NTU
Includes: one empty cuvette and one cuvette containing 100 NTU StablCal Formazin Standard, which is used to calibrate the sensor.
Can be used to:
• Measure turbidity of a water sample from various locations,
• Determine the rate of settling of a sample,
• Measure the formation of a precipitate.
B-1021495

Temperature Sensor NTC *
The temperature sensor BT01 is a low-cost, general-purpose temperature sensor that can be used to measure temperature in the range of -40°C to 140°C, in liquids (water, mild acidic solutions) and air. The sensing element of the sensor is an NTC thermistor, which is positioned in a stainless steel tube. The thermistor is a variable resistor whose resistance decreases non-linearly with increasing temperature.
Range: -40°C ... 140°C
Accuracy: 2°C at -40°C; 0.6°C at 30°C; 1.8°C at 140°C
Can be used to:
• Monitor indoor and outdoor temperatures,
• Monitor freezing and boiling water,
• Investigate the temperature during endothermic and exothermic reactions,
• Investigate evaporation.
B-1021497

Thermocouple Type K *
The thermocouple sensor 0135i measures temperatures in two ranges, which can be selected using the switch. The sensor uses a thermocouple type K, which consists of Chromega and Alomega wires that are welded together to form a measuring junction.
Range: -200 ... 1300°C , -20 ... 110°C
Resolution (12-bit): 0.39°C, 0.035°C
Can be used to:
• Measure the temperature inside a Bunsen burner flame or candles,
• Determine the melting point of copper, bismuth, or other solids,
• Measure temperature in specific heat experiments.
B-1021498

Temperature Sensor
The temperature sensor BT84i measures temperature and temperature differences in the range between -20°C to 110°C. This sensor uses the solid-state temperature transducer, whose output is linearly proportional to the temperature. The transducer is positioned in the point of a stainless steel tube. In liquids the response of the temperature sensor is quite fast (between 1.3 and 2.0 s).
Range: -20°C ... 110°C
Resolution (12-bit): 0.07°C
Can be used to:
• Monitor indoor and outdoor temperatures,
• Monitor freezing and boiling water,
• Investigate the temperature during endothermic and exothermic reactions,
• Investigate evaporation.
B-1021499

Light Sensor 200 lx*
The light sensor 0142i measures light intensities in the range between 0 and 200 lux. It consists of a phototransistor, which receives light through a glass fiber. Because of its range the sensor is suitable for measurements in normal indoor situations. The sensor can also be used as a light gate.
Range: 0 ... 200 lx
Resolution (12-bit): 0.05 lx
Can be used to:
• Verify inverse square law,
• Monitor changes in light caused by a chemical reaction,
• Investigate light reflection and absorption,
• Investigate light interference patterns.
B-1021501

Light Sensor, Three Ranges
The light sensor BT50i measures light intensity and has three measurement ranges, which can be selected using a switch. Because of its ranges the sensor is suitable as well for indoor as for outdoor measurements. Full sun illumination is within the range of the sensor. The spectral response of the sensor approximates the response of the human eye.
Ranges: 0 ... 1500 lux, 0 ... 15000 lux, and 0 ... 150000 lux
Resolution (12-bit): 0.37 lx, 3.7 lx, 37 lx
Can be used to:
• Verify inverse square law,
• Investigate light reflection and absorption,
• Study solar energy,
• Monitor monitoring sunrise and sunset times.
B-1021502

Light Sensor*
The light sensor 0513 measures light intensity and is sensitive to the visible light spectrum and also infrared. Because of its range the sensor is suitable for measurements in normal indoor situations.
Range: 0.1 ... 10 W/m^2
Can be used to:
• Verify inverse square law,
• Monitor change in light caused by a chemical reaction,
• Measure the rapid changes of the light intensity.
B-1021503

UVB Sensor*
The UVB sensor 0389 measures the intensity of ultraviolet radiation. This sensor consists of a broadband UV sensitive silicon photodiode and responds primarily to UVB radiation.
Range: 290 ... 320 nm
Resolution (12-bit): 0.25 mW/m^2
Can be used to:
• Measure the UVB transmittance of various sunglasses and regular glasses,
• Measure the UVB intensity as a function of time throughout the day,
• Measure the UVB transmittance of fabrics, both wet and dry.
B-1021505

UVA Sensor*
The UVA sensor 0388 measures the intensity of ultraviolet radiation. This sensor consists of a broadband UV sensitive silicon photodiode and responds primarily to UVA radiation.
Range: 320 ... 390 nm
Resolution (12-bit): 5 mW/m^2
Can be used to:
• Measure the UVA transmittance of various sunglasses and regular glasses,
• Measure the UVA intensity as a function of time throughout the day,
• Measure the UVA transmittance of fabrics, both wet and dry.
B-1021504

CO_2 Gas Sensor 5,000 ppm
The CO_2 sensor BT24i is used to monitor low concentrations of gaseous carbon dioxide.
The sensor uses the Non-Dispersive Infrared Detection (NDIR) method.
Range: 0 ... 5000 ppm
Typical resolution: 20 ppm
Includes: 250-mL sampling bottle.
Can be used to:
• Investigate CO_2 level during respiration of small animals and insects,
• Monitor CO_2 changes during photorespiration and photosynthesis in light/dark,
• Measure CO_2 level during cellular respiration of peas or beans.
B-1021506

CO_2 Gas Sensor 100,000 ppm
The CO_2 sensor BT25i is used to monitor high concentration of gaseous carbon dioxide.
The sensor uses the Non-Dispersive Infrared Detection (NDIR) method.
Range: 0 ... 100,000 ppm
Typical resolution: 1,000 ppm
Includes: 250-mL sampling bottle.
Can be used to:
• Investigate CO_2 levels of human breath,
• Monitor production of CO_2 during chemical reactions,
• Monitor production of CO_2 during decomposition of organic materials in soils.
B-1021507

Dissolved Oxygen Sensor*
The dissolved oxygen sensor BT34i can be used to measure the concentration of dissolved oxygen in water samples. The sensor is automatically temperature compensated, using a thermistor built into the sensor. Disposable caps with pre-fit membranes allow you to quickly and conveniently change membranes.
Range: 0 ... 15 mg/L
Resolution (12-bit): 0.2 mg/L
Includes: replacement membrane cap, polishing strip, oxygen probe electrolyte, filling pipette, empty calibration bottle and Sodium Sulfite Calibration Standard.
Can be used to:
• Monitor dissolved oxygen concentration in an aquatic systems, measure Biological Oxygen Demand (B.O.D.) in water samples,
• Determine the relationship between the dissolved oxygen concentration and the temperature of water.
B-1021496

Oxygen Gas Sensor*
The oxygen gas sensor BT59i measures the gaseous oxygen concentration. The wide measurement range allows it to be used in study of human and cellular respiration.
Range: 0 ... 100 %
Resolution (12-bit): 0.03 %
Lifetime: 5 years in open air
Can be used to:
• Monitor changes in oxygen concentration during photosynthesis and respiration of plants,
• Monitor respiration of animals, insects, or germinating seeds,
• Measure the oxygen levels during human respiration.
B-1021508

CO_2 to O_2 Tee
The CO_2-O_2 tee allows connecting a CO_2 gas sensor and O_2 gas sensor to be used at the same time.
B-1021509

Humidity Sensor
The humidity sensor BT72i measures relative humidity. The sensor consists of an integrated circuit, which uses a capacitive polymer to sense humidity. The holes in the sensor box provide air circulation.
Range: 0 ... 100 %
Resolution (12-bit): 0.04 % RH
Can be used to:
• Study transpiration rates of plants,
• Optimize conditions in a greenhouse or terrarium,
• Determine good days for static electric demonstration.
B-1021510

Pressure Sensor
The pressure sensor BT66i is designed to measure absolute gas pressure. The pressure is measured via a pressure valve, which is located on the side of the box. The sensor has two measurement ranges, which can be selected using a switch.
Range: 0 ... 700 kPa, 0 ... 130 kPa
Resolution (12-bit): 0.2 kPa, 0.04 kPa
Includes: a plastic 20-ml syringe with Luerlock, two plastic tubes (5 cm and 45 cm long), a three-way valve with Luer-lock connectors, two Luer-lock connectors.
Can be used to:
• Measure pressure changes in gas-law experiments, Boyle's and Gay-Lussac's laws,
• Measure vapor pressure of liquids,
• Measure air pressure for weather studies.
B-1021511

α, β, γ Sensor *
The radiation sensor BT70i detects alpha, beta and gamma ionizing radiation. The sensor outputs a pulse when decay is detected. Also, a clicking sound is emitted and a LED light flashes. The sensor is suitable to detect low-level radiation, emitted by e.g. potassium fertilizers or gas lantern mantles.
Range: 0 ... 1000 cps (counts per second)
Can be used to:
• Monitor background radiation,
• Record radioactive decay and determine half-life,
• Investigate radiation versus shielding.
B-1021512

Sound Sensor
The sound sensor BT80i consists of a microphone followed by an internal amplifier. It measures variations in air pressure caused by sound waves. Because of the high sensitivity, the sensor is very much suited to detect pressure pulses. The dB-calibration in the Coach software allows using this sensor for dB-measurements (up to 124 dB).
Range: -45 ... 45 Pa
Resolution (12-bit): 22 mPa
Can be used to:
• Measure sound waveforms and beat patterns,
• Investigate human voice and sounds from various musical instruments,
• Measure the speed of sound through air and other materials.
B-1021513

Sensor Cable
The sensor cable is used to connect sensors to the data logger.
The cables are sold per piece and in packages of four.
Length: 1.5 m

Sensor Cable
B-1021514

Set of 4 Sensor Cables
B-1021515

Extension Cable (Analog) BT-BT
Cable for extending the length of analog BT sensor cables.
Length: 5 m
B-1021500

VinciLab Stand
Plastic stand for the VinciLab data-logger.
B-1021516

Web Cam
The USB webcam that allows capturing videos. The webcam has a built-in microphone, built-in LED lighting and a tripod is included. It is able to capture up to 30 frames per second at VGA resolution (640x480).
B-1021517

POWER SUPPLIES

IDEAL FOR STUDENT EXPERIMENTS

AC/DC Power Supply 0 – 12 V, 3 A
Extra low voltage power supply with continuously adjustable, stabilised and regulated DC output voltage. DC voltage output is short circuit proof and noise voltage proof. Three AC outputs galvanically isolated from the DC voltage outputs are overload protected via semiconductor fuses (multifuses).
- Safety extra-low voltage (SELV) and functional extra-low voltage (FELV)
- Safety transformer conforming to EN 61558-2-6
- Safe isolation between power supply and output circuits

DC output: 0 – 12 V, max. 3 A
AC outputs: 3 / 6 / 9*/ 12 V, max. 3 A (*differential)
Output power: max. 36 W
Stability under full load: ≤ 50 mV
Residual ripple under full load: ≤ 10 mVpp
Terminals: 4 mm safety sockets

AC/DC Power Supply 0 – 12 V, 3 A (230 V, 50/60 Hz)
B-1021091
AC/DC Power Supply 0 – 12 V, 3 A (115 V, 50/60 Hz)
B-1021092

Transformer with Rectifier 3/ 6/ 9/ 12 V, 3 A
Extra low voltage power supply with overload protection contained in plastic housing. Output voltage switchable in four stages.
- Safety extra-low voltage (SELV) and functional extra-low voltage (FELV)
- Safety transformer conforming to EN 61558-2-6
- Safe isolation between power supply and output circuits

AC output: 3/ 6/ 9/ 12 V, max. 3 A
DC output: 3/ 6/ 9/ 12 V, max. 3 A
Dimensions: approx. 210x170x90 mm³
Weight: approx. 2.6 kg

Transformer with Rectifier 3/ 6/ 9/ 12 V, 3 A (230 V, 50/60 Hz)
B-1003316
Transformer with Rectifier 3/ 6/ 9/ 12 V, 3 A (115 V, 50/60 Hz)
B-1003315

AC/DC Power Supply 0 – 30 V, 5 A (230 V, 50/60 Hz)
Continuously adjustable AC/DC power supply unit with digital displays for voltage and current readings, particularly suitable for experiments for students and trainees. The outputs are galvanically isolated. A pushbutton can be used to turn the capacitor filtration of the output direct voltage on and off (smoothing). In the event of an overload, the device is turned off by a thermal overload protection switch.
DC output: 0 – 30 V, max. 5 A
AC output: 0 – 30 V, max. 5 A
Max. output power: 150 VA
Display: 2 x 3 digit LED
Digit height: 15 mm
Connections: 4 mm jacks
Voltage supply: 230 V ±10% 50/60 Hz
Dimensions: approx. 280x205x140 mm³
Weight: approx. 8.3 kg
B-1002769

AC/DC Power Supply 0 – 20 V, 5 A
Power supply with adjustable and stabilised DC voltage and analog voltage and current display for DC voltage. The DC voltage component features an automatically alternating voltage and current control and is protected against continuous short circuits. The AC voltage can be selected in eight steps, the output is protected by an overcurrent circuit breaker.
- Safety extra-low voltage (SELV) and functional extra-low voltage (FELV)
- Safety transformer conforming to EN 61558-2-6
- Safe isolation between power supply and output circuits

DC output: 0 – 20 V, 0 – 5 A
AC output: 2, 4, 6, 8, 10, 12, 15, 20 V, max. 5 A
Residual ripple: <10 mV
Dimensions: approx. 235x175x245 mm³
Weight: approx. 8 kg
AC/DC Power Supply 0 – 20 V, 5 A (230 V, 50/60 Hz)
B-1003562
AC/DC Power Supply 0 – 20 V, 5 A (115 V, 50/60 Hz)
B-1003561

USABLE AS A CURRENT SOURCE

DC Power Supply, 1 – 32 V, 0 – 20 A (230 V, 50/60 Hz)
High-quality switched-mode power supply in space-saving housing with intelligent control of fan speed to ensure safe and quiet operation. Simple, precise and fast adjustment of voltage and current levels with dual-function rotary knobs for coarse and fine adjustment. Adjustable current limiting in open circuit. Three user-definable stored configurations for voltage and current limiting make it easy to recall frequently used settings. Full remote control of voltage and current plus output which can be turned on and off.
Display: 3-digit, 15 mm, green LED
Output voltage: 1 – 32 V DC
Output current: 0 – 20 A (output with pole terminals on rear)
0 – 5 A (output with 4-mm safety sockets on front)
Max. power output: 640 W
Residual ripple: 5 mVrms
Efficiency: > 87.0 %
Dimensions: approx. 200x90x255 mm^3
Weight: approx. 2.6 kg
B-1012857

USABLE AS A CURRENT SOURCE

DC Power Supply 0 – 20 V, 0 – 5 A
Universal power supply with digital current and voltage display. Output voltage and output current are continuously adjustable. The device can be used as a constant voltage source with current limiting or as a constant current source with voltage limiting.
DC output: 0 – 20 V, 0 – 5 A
Output power: 100 W
Stability under full load ≤0,01% + 5 mV, ≤0,2% + 5 mA
Residual ripple ≤1 mV, 3 mA
Display: 2 x 3 digit LED
Terminals: 4 mm safety sockets
Dimensions: approx. 130x150x300 mm^3
Weight: approx. 4.7 kg
DC Power Supply 0 – 20 V, 0 – 5 A (230 V, 50/60 Hz)
B-1003312
DC Power Supply 0 – 20 V, 0 – 5 A (115 V, 50/60 Hz)
B-1003311

For experiment
see page 90

DC Power Supply 0 – 300 V, 0 – 400 mA
Stabilised power supply with two outputs for operating electrophoresis chambers. Timer (1 – 999 min.) with alarm function.
Mains voltage: 100 – 240 V, 50/60 Hz
Dimensions: approx. 12x15x18 cm^3
Weight: approx. 0.6 kg
B-1010263

HAND-HELD MEASURING INSTRUMENTS

THE IDEAL METER FOR STUDENT EXPERIMENTS

+ Unmistakeable measurement readings
+ Only an inexpensive 1.5 V battery element is needed for operation
+ Full functionality guaranteed even when the battery is no longer fully charged
+ Lithium batteries with higher open-circuit voltage can also be used
+ Battery protected by automatic cut-off after approximately 50 mins.
+ Distinct difference between 0 V display and the equipment being switched off due to inherently different position of needle

› No need to change fuses

› CAT III, 600 V

Analog Multimeter ESCOLA
Clear moving-coil instrument in shock-resistant plastic casing with two mirrored linear scales and clearly distinguishable measuring ranges. Includes battery test function and display of charge status as well as electronic calibration of zero point to the centre of the scale for all DC current and voltage ranges. Use of a measurement amplifier ensures the measured values are linear even for AC voltages of up to 40 kHz. When used normally, the measuring instrument will give years of service since the discharge current is 2.5 mA max. during operation.
Scale length: 80 mm
Operating voltage: 1 – 3.5 V DC
Battery type: Mignon, AA, R6
Accuracy: Class 2 (DC), class 3 (AC)
Dimensions: approx. 100x150x50 mm^3
Weight: approx. 300 g

Analog Multimeter Escola 30
Permanently short-circuit-proof student measuring instrument for measuring voltage and current in the safety extra-low voltage range. The electronic overload protection is achieved without the use of an equipment fuse, therefore obviating any need to change fuses or order spares. The protective system nevertheless operates without any auxiliary energy and is guaranteed even when the battery is flat or no battery is present.
Direct and alternating voltage:
0.3 – 30 V, 5 ranges each
Direct and alternating current:
1 – 3000 mA, 5 ranges each
Instrument category: CAT I, 30 V
B-1013526

Analog Multimeter Escola 100
Meter for classroom and practical experiments to measure voltage and current up to 600 V or 10 A respectively. Also features audible continuity testing. Includes a fuse to guarantee safety up to CAT III. The separate terminal sockets for current and voltage permit connection of the instrument that allows for current as well as voltage to be measured without having to reconnect the measuring leads. When switching from one measuring range to another, the circuit is never broken. All current measuring ranges are overload-proof for long-term current of up to 10 A. The generous protection of all current measuring ranges by means of additional semiconductor protection prevents inadvertent blowing of the fuse in many cases.
Direct and alternating voltage: 0.1 – 600 V, 9 ranges each
Direct and alternating current: 0.1 mA – 3000 mA, 11 ranges each
Internal resistance: 1 MΩ
Long term maximum voltage: 600 V
Instrument category: CAT III, 600 V (DIN EN 61010-1:2010, 61010-2-033:2012)
B-1013527

Note:
Electrical safety of measuring instruments for current and voltage are assessed according to measurement categories stipulated in IEC 61010-1:
CAT I or unstipulated: Approved for measurements in circuits which are not directly connected to the low voltage mains grid (e.g. batteries).
CAT II: Approved for measurements in circuits which are directly connected, by a mains lead and plug for instance, to the low voltage mains grid (e.g. household or office appliance and lab equipment).
CAT III: Approved for measurements in circuits which are part of a building's wiring installation (e.g. stationary consumers, distribution terminals, appliances connected directly to the distribution box).
CAT IV: Approved for measurements in circuits which are directly connected to the source of the low voltage mains (e.g. electricity meters, main service feed, primary excess voltage protection).
Note: the closer measurement is to be made to the low-voltage mains installation, the higher the measuring category needs to be.

+ Ideal for student experiments!
+ Easy to replace fuses!

Digital Multimeter P1035
Compact 3½ digit multimeter for measuring voltage, current and resistance and also including diode and continuity tests. Complete with pouch, leads and battery.
DC voltage: 200 mV – 600 V, 5 ranges, ±0.5% ± 2 digits
AC voltage: 200/ 600 V, 2 ranges, ±1.2% ± 10 digits
DC current: 2000 µA – 10 A, 4 ranges, ±1% ± 2 digits
Resistance: 200 Ω – 2000 kΩ, 5 ranges, ±0.8% ± 2 digits
Display: 3½ digit LCD, 27 mm, max: 1999
Operating voltage: 9 V battery
Safety classification: CAT III 600 V (IEC-1010-1)
Fuse: F1: F 200 mA / 600 V
F2: F 10 A / 600 V, Imax. = 10 A for 30 s with minimum interval 15 mins
Dimensions: approx. 70x150x48 mm³
Weight: approx. 260 g
B-1002781

More multimeters at 3bscientific.com!

Demo Multimeter
Electronic meter featuring a double scale for analog measurement of current and voltage in demonstration experiments. It can handle measurements of current and voltage values and also allows the zero point to be set up in the centre of the scale for measurement of DC quantities. Switching between measuring ranges does not break any circuits connected to the equipment. This means it is possible to carry out measurements on voltage converters, for example, without causing induction surges. Resistance R, conductance G, impedance Z and admittance Y can easily be determined as quotients of current and voltage measurements thanks to the non-interrupting switch capability without the need to change the wiring. This equipment is protected by fuses and authorised for making measurements in circuits directly connected to the low-voltage mains via plugs (CAT II), i.e. for measurements on house-hold appliances, for example. The current measuring ranges are resistant to long-term overloading up to 10 A. The meter is suitable for use as a free-standing instrument or for setting up in training panel frames.
Voltage ranges: 0.1 – 600 V AC/DC, 9 ranges
Current ranges: 0.1 mA – 10 A AC/DC, 11 ranges
Measuring category: CAT II: 600 V
Dimensions: approx. 259x297x125 mm³
Weight: approx. 1.7 kg
B-1017895

Digital Mini Multimeter
Very reasonably priced mini multimeter in pocket format for measuring voltage, DC current, resistance and temperature and also including diode and continuity tests. Overload protection for mA ranges, 10 amp range is unprotected. Includes measuring leads, type K thermocouple and battery.
DC voltage: 200 mV – 250 V, 5 ranges, ±0.8% ± 2 digits
AC voltage: 200/ 250 V, 2 ranges, ±1.2% ± 10 digits
DC current: 200 µA – 10 A, 5 ranges, ±1,0% ± 2 digits
Resistance: 200 Ω – 2000 kΩ, 5 ranges, ±0.8% ± 2 digits
Temperature: 0 – 1000° C, ±2,0% ± 3 digits
Display: 3½ digit LCD, 12 mm, max: 1999
Operating voltage: 9 V battery
Safety classification: CAT II 250 V (IEC-1010-1)
Fuse: F1: F 250 mA / 300 V
F2: F 10 A / 300 V, Imax. = 10 A for 10 s with minimum interval 15 mins
Dimensions: approx. 70x140x30 mm³
Weight: approx. 210 g
B-1002783

Noise
- **Damages hearing**
- **Makes it more difficult to hear genuinely important signals**
- **Impedes both physical and mental work**
- **Disturbs and adversely affects well being**
- **Disturbs relaxation and sleep**
- **Can cause chronic stress, physical ailments and illness**

Noise Level Indicator SPL
Handy and easy-to-use noise level meter with digital display in decibels (dB) and an arbitrarily adjustable trigger threshold for use as a traffic-light style noise indicator with a happy green face and a sad red face. Can be mounted on a wall or set up on a table top. Its well-conceived compact design makes it easy to transport. Automatically switches to electricity-saving stand-by mode when noise is low for a long period. The brightness of the display can also be adjusted. Includes a stand base, USB/miniUSB cable and USB power supply.
Display: 100 mm diam, with LED
Measuring range: 40 dB to 130 dB
Resolution: 1dB
Thresholds for color display: Adjustable to any level in steps of 1 dB
Voltage supply: 5 V DC via miniUSB socket
Power consumption: 150 mA (normal operating mode)
<1 mA (stand-by)
USB power supply: 100 – 240 V, 50/60 Hz
Dimensions: approx. 130x145x12 mm^3
Weight: approx. 400 g
B-1012741

Sound Level Meter P5055
Digital measuring instrument for universal application in detecting noise levels from a variety of sound sources over a broad range. Features built-in calibration signal plus maximum value and value hold functions. Slow mode for average noise level and fast mode for recording brief sound sequences and determining maximum noise level. A-weighting of frequency (based on human hearing) for open-air measurements and also C-weighting, e.g. for measurements of engine noise. Robust plastic casing, analog output for external measuring instruments, threaded hole for mounting on a stand. Foam-filled carry case.
Measurement range: 35 – 130 dB
Resolution: 0.1 dB
Accuracy: ±3.5 dB at 94 dB (1kHz)
Display: 3½-digit LCD, 17 mm
Microphone: Electret capacitor micorphone
Voltage supply: 9 V block-type battery
Dimensions: approx. 251x64x40 mm^3
Weight: approx. 250 g
B-1002778

Noise Level Meter P8005
Digital noise meter with background noise suppression for all types of measurements of ambient noise, e.g. for measuring noise levels in schools, offices, factories, traffic and homes or for noise projects. Includes data logger and USB port for long-term measurements. Choice of manual and automatic operating modes. Capability for min. and max. measurements. Includes case, USB cable, Windows software, stand, 9 V mains adaptor, 9 V battery and instruction manual.
Frequency range: 31.5 Hz – 8 kHz
Dynamic range: 50 dB
Level ranges: 30 – 80 dB (low)
50 – 100 dB (medium)
80 – 130 dB (high)
30 – 130 dB (automatic)
Precision: ±1.4 dB
Digital display: 4 digit LCD, 20 mm
Multi-functions display: Digital display of measurement, measuring time, bar graphs plus overs and unders
Applicable standards: IEC-61672-1 type 2, ANSI S1.4 type 2
Response times: 125 ms (fast), 1s (slow)
Microphone: ½-inch, with electret capacitor
Analog output: AC/DC
Voltage supply: 9 V battery or 9 V mains adaptor
Dimensions: approx. 90x280x50 mm^3
Weight: approx. 350 g
B-1002780

Dosimeter Radex RD 1706
Used for determining dose rates in µSv/h for β-, γ- and X-rays, this radiation meter can be operated by non-professionals while nonetheless offering the features of a professional dosimeter. Including two built-in Geiger-Müller counter tubes and a large, illuminated LCD display. The device measures the activity of β-and γ-particles and uses the results to calculate the dose rate. Detection of each particle is indicated by an audio signal to facilitate searching for radioactive sources. The difference between the mean dose rate and background radiation level, as well as the background radiation level itself are displayed in the "background" mode. Measured values remain saved after the device has been turned off.
Counters: Two GM counter tubes SBM20-1
Measurement variable: Ambient equivalent dose rate H*(10)
Measuring range: 0.05 ... 999.0 µSv/h
Alarm threshold: Adjustable from 0.10 to 99.0 µSv/h
Alarm: Audio or vibration signal
Measurement and calculation times: 26 s
1 s (at H*(10) > 3.5 µSv/h)
Value display duration: Continuous
Energy detection range
X-radiation and γ-radiation: 0.03 to 3.0 MeV
β-radiation: 0.25 to 3.5 MeV
Batteries: 1.5 V, AAA (1 x or 2 x)
Operating time: 500 h
B-1012894

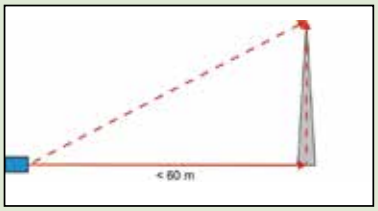
Geiger Counter
Versatile, easy to use and compact precision instrument for measuring α-, β- and γ-radiation. With filter selection switch for filtering out types of radiation, large display and integrated USB interface. Including USB cable, Windows software, and operating instructions. The following functions and operating modes are available for measurement:
- Standard mode for displaying the current radiation level. Also equipped with variable acoustic and optical warning threshold signal and display of average radiation from previous day.
- Pulse counting either permanent or with variable gate time. Additional optional acoustic count indication.
- Count rate measurement.
- Integrated display of date and time.
- The number of pulses registered is stored in the internal memory. This facilitates recording e.g. of weekly values for up to 10 years.
- Computer docking station. The software enables the measured data to be evaluated and processed on an MS-Windows PC.

Radiation types: α from 4 MeV, β from 0.2 MeV, γ from 0.02 MeV
Measured variables: equivalent dose in Sv/h, mSv/h, µSv/h
pulses/s, pulses/variable time interval
Display: LCD, 4 digit, numerical with display of measured variable, quasi analog bar chart, operating mode indicators
Radiation detector: End window Geiger-Müller counter tube, stainless steel housing with neon-halogen filling
Measuring length: 38.1 mm
Measuring diameter: 9.1 mm
Mica window: 1.5 – 2 mg/cm^2
Gamma sensitivity: 114 pulses/min for ^{60}Co radiation = 1 µSv/h in background radiation energy band
Background rate: 10 pulses per minute approx.
Internal memory: 2 kilobytes
Battery life: 3 years approx.
B-1002722

Geiger-Müller Counter Tube
Self-quenching halogen pulse ionisation chamber for detecting alpha, beta, gamma and x-ray radiation. In metal housing with mica window, removable mounting clamp with shaft. Long plateau length.
Filling: Neon/argon mixture, halogen as quenching agent
Cathode dimensions: approx. 39x14 mm^2
Window: mica, 9 mm dia.
Mass per unit area: 1.5 – 2.0 mg/cm^2
Plateau length: 400 V – 600 V
Operating voltage: 400 – 600 V (recommended: 500 V)
Relative plateau slope: 0.04 %/V
Dead time: 90 µs
Limiting resistor: 10 MΩ, integrated in holder
Shaft: approx. 100 mm x 10 mm dia.
B-1001035

Additionally required:
B-1002746 HF Patch Cord, 1 m
B-1001033 Digital Counter (230 V, 50/60 Hz) or
B-1001032 Digital Counter (115 V, 50/60 Hz)

HAND-HELD MEASURING INSTRUMENTS



Laser Range Finder
Professional laser range finding instrument with multi-lined LCD display and background illumination especially designed for distance measurements of extremely high precision and for locations difficult to access. Speed buttons for direct and indirect measurement (according to Pythagoras), area and volume calculation, addition and subtraction operations. With internal memory for 99 recorded measurement values, retractable 90° bracket for precise targeting of the measurement point, spirit level and tripod socket. Including case, batteries and instruction manual.
Measurement range: 0.05 – 60 m
Measurement units: m (metre), in (inch), ft (feet)
Accuracy: ± 2 mm
Internal memory: 99 values
Laser: 620 nm – 680 nm, <1 mW, class: 2
Voltage supply: 2 x 1.5 V AAA batteries
Display: Multi-lined multifunction display
Dimensions: approx. 118x54x28 mm³
Weight: approx. 135 g
B-1020907

pH Meter
Digital pH measuring instrument for the measurement of the pH value of aqueous liquids using the immersion probe tips to determine the electrical potential difference between acidic, neutral and basic liquids.
The device has a robust housing with compact dimensions and is easy to operate. It is equipped with a large LCD display with continuous background illumination, 2 adjustment potentiometers for calibrating to pH = 4 or to pH = 7 using the matching screwdriver. Including calibration solution, screwdriver, battery and instruction manual.
pH range: 0 – 14 pH
Resolution: 0.01 pH
Accuracy: ± 0.05 pH
Temperature compensation: 0 – 50° C
Voltage supply: 9 V battery (NEDA 1604)
Display: 3½-digit LCD display, 18 mm, max. 1999
Dimensions: approx. 150x70x25 mm³
Weight: approx. 230 g
B-1020915

pH Meter (2 in 1)
Digital pH meter for the simultaneous measurement of the pH value of aequous fluids and their temperatures. The measurement of the pH value is performed by determining the electrical potential difference between acidic, neutral and base fluids. Robust, water-proof housing, large LCD display with permanent background illumination and simple to operate. Including calibrating solution, batteries and instruction manual.
pH range: 0 – 14 pH
Resolution: 0.01 pH
Accuracy: ± 0.05 pH
Temperature compensation: 0 – 50° C
Temperature measurement: 0 – 50° C
Resolution: 0.1° C
Accuracy: ± 1° C
Voltage supply: 4 x 1.5 V (AG-13) batteries
Protection class: IP 65 water-proof
Display: 3½-digit LCD display, 11 mm, max. 1999
Dimensions: approx. 190x35x35 mm³
Weight: approx. 100 g
B-1020914

Digital Luxmeter
Reasonably priced, easy to use pocket luxmeter for testing and measurement of light conditions. C.I.E. standard spectrum. Including light sensor, pouch and battery
Measuring ranges: 200 – 50000 lux, 4 ranges, ±5%
Voltage supply: 12 V battery (A23)
Dimensions: approx. 65x115x25 mm³
Weight: approx. 160 g
B-1002779

OSCILLOSCOPES

PC Oscilloscope 2x25 MHz
Dual-channel, PC-based oscilloscope to be connected to a computer. Features powerful PC software for control and data requests. The highest possible degree of safety for users and the computer system thanks to galvanic isolation of the USB port.

- Mathematical functions including fast Fourier transforms (FFT)
- 20 Automatic measuring modes
- Data export for further processing (bin, txt, csv or xls)
- Image file for screenshots (png, bmp or gif)

Includes two probes (1:1, 10:1), a USB connecting cable, two BNC cables, operating instructions and software CD for Windows® XP/Vista/7/8/10.
B-1020857

Digital Oscilloscope 2x30 MHz
Latest generation, dual-channel, digital storage oscilloscope with high-resolution color display and large internal data memory.

- Mathematical functions including fast Fourier transforms (FFT)
- 20 Automatic measuring modes
- User-friendly operation featuring autoset and autoscale
- PASS/FAIL function implemented
- VGA output for connection to an external monitor
- LAN connection for remote connection via network
- USB connection for real-time data transmission or reading of internal memory

Includes two probes, two BNC cables, USB connecting cable, and software CD for Windows 2000/XP/VISTA/7/8/10.
B-1020910

	PC Oscilloscope (B-1020857)	Digital Oscilloscope (B-1020910)
Channels	Two	
Band width	25 MHz	30 MHz
Sample rate	200 MSa/s	250 MSa/s
Operating modes	CH1, CH2, XY	
Input coupling	DC, AC, GND	
Input impedance	1 MΩ ±2% II 10 pF ± 5 pF	
Input voltage	0 – 400 V DC or ACpp	
Deflection coefficient	2 mV/div. – 50 V/div.	2 mV/div. – 10 V/div.
Time-base coefficient	5 ns/div. – 100 s/div.	
Trigger type	Alternate, Edge, Video, Pulse, Slope	Edge, Video, Pulse, Slope
Trigger modes	Auto, Normal, Single	
Trigger detection	Sample, Peak Detect, Average	
Memory size	5000 measurements	10000 measurements
Interface	USB 2.0	USB 2.0, VGA, LAN
Power supply	via two USB ports	100 – 240 V, 50/60 Hz
Dimensions	approx. 170x120x18 mm^3	approx. 355x178x118 mm^3
Weight	approx. 260 g	approx. 1,6 kg

LABORATORY SCALES

Mechanical Balance 610
• Solid, all-metal construction
• Notched positions for sliding weights on three sliding beams
• Captive sliding weights
• Magnetic damping
• Zero point adjustment
• Extensible scale range
Scale range: 0 – 610.0 g (2610.0 g with additional weights)
Readability: 0.1 g
Sliding weight: 0.1 –10 g (front), 10 g – 100 g (rear),
100 – 500 g (center)
Plate diameter: 150 mm
B-1003419

Additional Weights for Mechanical Balance (not shown)
Additional weights to extend the scale range of the mechanical balance 610 (B-1003419).
Weights: 1x 0.5 kg, 2x 1 kg
B-1014616

Mechanical Balance 311
• Solid, all-metal construction
• Notched positions for sliding weights on four sliding beams
• Captive sliding weights
• Magnetic damping
• Zero point adjustment
Scale range: 0 – 311.00 g
Readability: 0.01 g
Sliding weight ranges: 0.01 – 1 g (1st beam), 1 – 10 g (2nd beam),
10 –100 g (3rd beam), 100 –200 g (4th beam)
Pan diameter: 100 mm
B-1003421

+ Top quality
+ Precision
+ High resolution
+ Easy to read

Analytical Scales AES 200
Precision analytical scales with automatic adjustment mechanism and high resolution. Tough metal casing with complete glass windscreen, large graphic display and RS232 and USB port. The scales offer practically every function needed in laboratories:
• Counting items
• Percentage weights
• Switching between different units
• Capacity display for weight range
• GLP/ISO protocols
• Programmable 4-digit ID number
• CAL adjustment program for setting accuracy
• Pipette calibration program
• Dosing mode
• Alibi memory and internal memory
Max. measuring range: 220 g
Precision: 0.1 mg
Reproducibility: 0.2 mg
Linearity: ±0.2 mg
Time to settle: 4 s approx.
Item counting
Minimum weight: 0.5 mg
References: 10, 20, 50, freely selectable
Weight display: LCD, 17 mm
Weighing platform: 85 mm diam.
Power supply: 13.8 V DC power supply, mains voltage 110 – 230 V,
50/60 Hz
Dimensions: approx. 206x335x335 mm^3
Weight: approx. 5.4 kg
B-1018347

+ High quality overload protection
+ Easy to read
+ Rapid weighing
+ High resolution
+ Powered by batteries or from the mains
+ Hook for weighing items underneath the scales

	B-1020859	B-1020860
Weight range	420 g	620 g
Accuracy	0.01 g	0.1 g
Display	LCD, 20 mm	
Weight ranges	g, kg, N, oz, lb, lb:oz	
Scale pan	120 mm diam.	170x140 mm^2
Dimensions	approx. 202x224x54 mm^3	
Weight	approx. 1 kg	

Precision Scale PCB 2000
Inexpensive precision scales for weighing, item counting, differential weighing, percentage calculations, suspended weights. With PRE-TARE function for storing weights of empty calibrated vessels, formula function for addition of weights of formula ingredients, freely programmable weight unit, GLP/ISOlogging of weight data, scale adjustment etc., with date, time, identification number and hold function (for weighing animals) which enables an average to be calculated for stable weight measurements. Removable stainless steel weighing platform.
Weight range: 2000 g
Reading accuracy: 0.1 g
Calibration: via external weight
Weighing platform: 130x130 mm^2
Display: LCD, 15 mm
Power supply: mains adapter or 9 V block battery (not included)
Data interface: RS-232
Dimensions: approx. 163x245x79 mm^3
Weight: approx. 1.4 kg
B-1021079

Electronic Scales Scout SKX
Precision scales with removable stainless steel weighing platform for weighing by mass, determining moles of substance and for establishing density. Also includes transportation lock, mechanical and software overload/underload protection, stability indicator, auto tare, low battery indicator, auto shut-off, user selectable printing options, user-selectable communication settings and calibration weight.

Electronic Scale Scout SKX 420 g (not shown)
B-1020859

Electronic Scale Scout SKX 620g
B-1020860

Electronic Scales
Universal scales in robust plastic casing, with easy-clean foil keyboard. Menu functions, easy selection using two buttons. High-resolution, easy-to-read LCD display, overload and underload display, battery or mains operation optional. Automatic shutdown after five minutes in battery operation. Batteries included.
Scale range: B-1003433: 0 – 200 g, B-1003434: 0 – 5000 g
Accuracy: B-1003433: 0,1 g, B-1003434: 1 g
Weight units: g/ lb:oz
Counter-balancing range: subtractive, entire weight range
Power supply: 3 AA alkaline batteries
Dimensions: approx. 193x135x39 mm^3
Weight: approx. 470 g

Electronic Scale 200 g
B-1003433

Electronic Scale 5000 g (not shown)
B-1003434

STIRRERS AND HEAT SOURCES

Magnetic Stirrer with Heater
Magnetic stirrer with stainless steel hotplate and secure safety circuit. Variable heating temperature and smooth starting stirrer motor. Housing resistant to chemicals.
Quantity stirred, max. (H_2O): 10 l
Speed: 100 – 2000 rpm
Heater power: 400 W
Heating temperature range: Room temperature to 320° C
Work plate: 125 mm dia.
Dimensions: approx. 168x105x220 mm^3
Weight: approx. 2.4 kg

Magnetic Stirrer with Heater (230 V, 50/60 Hz)
B-1002807
Magnetic Stirrer with Heater (115 V, 50/60 Hz)
B-1002806

Magnetic Stirrer
Ultra flat magnetic stirrer with non wearing drive featuring no moving parts. With feature for changing direction of stirring automatically every 30 seconds for improved homogenisation. Work plate and housing resistant to chemicals, non slip and secure base. Including plug in power supply and stirring rods.
Quantity stirred, max. (H_2O): 0.8 l
Speed: 15 – 1500 rpm
Work plate: 100 mm dia.
Power supply: power supply unit 100 V – 240 V, 50/60 Hz
Dimensions: approx. 117x12x180 mm^3
Weight: approx. 0.3 kg
B-1002808

PCR Thermal Cycler
A thermal cycler makes it possible to multiply ("amplify") very small initial quantities of DNA for the purposes of analysis. The polymerase chain reaction (PCR) utilizes repeated cycles of heating and cooling of the reacting mixture in the presence of the DNA polymerase, enzyme for the purpose of copying a piece of DNA (the template). Short lengths of DNA, so-called primers, determine precisely which section of the template is to be copied. The samples are later made visible by means of DNA electrophoresis. The possibility of quickly making multiple copies of a particular section of DNA makes PCR an extremely useful technique in modern biology.
Plug-in power supply: input 90 V – 264 V AC, 47 – 63 Hz, output 12 V, 5 A
Capacity: 6 PCR vessels, each containing 0.2 ml
Number of PCR programs: 3
Number of temperature cycles: 1 – 99
Temperature range: 6° C – 99° C
Precision: ± 0.2° C
Screen size: 128x64 mm^2
Dimensions: approx. 262x150x100 mm^3
Weight: approx. 1.35 kg
B-1021240

Electrical Burners
Burners for experiments which would have formerly needed to be undertaken using a Bunsen burner. Designed to be both thermally and electrically safe. Heating via a column of hot air with a patented air management system. Featuring operation and temperature displays.
• Controlled via energy regulator with bimetallic strips.
• Protected against overheating.
• No overheating of housing during long periods of use.
• Boils liquids without causing them to spit
• Perfectly sealed against spilt liquids.
Liquid reservoir: Up to 140 mm in diameter
Dimensions: approx. 170x130x195 mm^3
Weight: approx. 3.8 kg

Electrical Burner LAB2 (230 V, 50/60 Hz)
Operating temperature: 20 ... 650° C
Temperature of
heating element: max. 900° C
Electrical power consumption: 500 W
Fuse: F-type, 5A, 250 V
B-1010252

Electrical Burner LAB3 (230 V, 50/60 Hz)
Operating temperature: 20 ... 750° C
Temperature of
heating element: max. 1000° C
Electrical power consumption: 900 W
Fuse: F-type, 6.3A, 250 V
B-1010253

THERMOMETER

Insertion Thermometer
For measuring the temperature in air, liquids and soft materials. Temperature sensor made of stainless steel with protective case, switchable between ° C and ° F, On/Off switch and automatic switch-off.
Measuring range: -50° C – 150° C / -58° F – 302° F
Division: 0.1° C/F
Accuracy: ±1° C / ±2° F
Temperature sensor: approx. 130 mm x 4 mm diam.
Weight: approx. 29 g
B-1003334

Digital Quick-Response Pocket Thermometer
For instantaneous measurements on surfaces, in liquids, soft plastic media, air/gases, very small objects. For connection to a K-type NiCr-Ni measurement sensor. Sensor not included in scope of supply.
Measuring range: -65° C – 1150° C / -85° F – 1999° F in 2 ranges
Division: 0.1° C/1° C/F
Accuracy in lowest range: 0,05% of measured value ±0,2% FS
Display: 3½ digit LCD display, 13 mm in height
Dimensions: approx. 106x67x30 mm³
Weight: approx. 135 g
B-1002803

Additionally required:
B-1002804 K-Type NiCr-Ni Immersion Sensor, -65° C – 550° C or
B-1002805 K-Type NiCr-Ni Immersion Sensor, -200° C – 1150° C

More thermometers at 3bscientific.com!

K-Type NiCr-Ni Immersion Sensor, -200 – 1150° C
Sheath thermocouple with stainless steel (Inconel) tube, flexible and silicone cable.
Measuring range: -200° C – 1150° C
Response time: approx. 3 s
Tube: approx. 150 mm x 1.5 mm diam.
B-1002805

Tube Thermometer, Graduated -10 – 110° C
Glass thermometer with eyelet, scale on white background, special red filling, in transparent square plastic case.
Measuring range: -10° – 110° C
Scale division: 1° C/F
Dimensions: approx. 260 mm x 6 mm diam.
B-1002879

K-Type NiCr-Ni Immersion Sensor, -65 – 550° C
Temperature measurement sensor with stainless steel (V4A)-tube, spring-mounted (rigid) and silicone cable.
Measuring range: -65° C – 550° C
Response time: approx. 3 s
Tube: approx. 130 mm x 1.5 mm diam.
B-1002804

Digital Pocket Thermometer
Temperature sensor made of stainless steel with protective case, watertight, switchable between ° C and ° F, Min/Max/Hold function, automatic switch-off.
Measuring range: -40° C – 200° C / -40° F – 392° F
Division: 0.1° C/F
Accuracy: ±1° C / ±2° F
Dimensions: approx. 150x20x18 mm³
Weight: approx. 20 g
B-1003335

Insertion Thermometer F
Waterproof digital thermometer with a 125 mm long sensor to measure the temperature of liquid, pulverulent and soft substances. With memory function, min/max function, reversible ° C/° F. Plastic casing, clip and LR 44 button battery included
Measuring range: -40...+200° C
Accuracy: ±0.8 degree (from 0...100° C), ±1 degree (from -20...0° C), ±1.5 degree (others)
Measurement interval: 1 s
Dimensions: approx. 205x20x17 mm³
Weight: approx. 56 g
B-1010219

THERMOMETERS

Digital Thermometers
Versatile digital thermometers for type-K temperature sensors with single or dual input (B-1002794) for measuring instantaneous or differential temperature (T1 – T2 B-1002794). With storage of maxima and Data-Hold function. Includes type-K temperature sensor (B-1002794 2x), battery, holster and carrying bag.

Digital Thermometer, 1 Channel
B-1002793

Digital Thermometer, 2 Channels (not shown)
B-1002794

	B-1002793	B-1002794
Designation	Digital Thermometer, 1 Channel	Digital Thermometer, 2 Channels
Measuring range	-50° C – +1300° C -58° F – +2000° F 223 K – 2000 K	-50° C – +1300° C -58° F – +2000° F
Division	0.1° C/F, 1 K	0.1° C/F
Accuracy	±0.5% +1° C / +2° F ±1% +2 K	±0.5% +1° C / +2° F
Display	3½ digit illuminated LCD	3½ digit illuminated LCD
Digit size	21 mm	21 mm
Voltage supply	9 V battery	9 V battery
Dimensions	approx. 90x170x45 mm³	approx. 90x170x45 mm³
Weight	approx. 350 g	approx. 350 g

Digital Thermometer Type K/IR
Digital two channel thermometer with two K- type inputs and additional external infra-red sensor. Can also be used for measurements at low temperatures. With automatic shut off, maximum value storage and data hold function. Includes case, 2 K-type thermocouple sensors, infra-red temperature sensor, 9 V battery and instruction manual.
Measurement inputs: 2x K-type, external IR input
Measuring functions: T1, T2, T3, T1-T2, T1-T3, T2-T3
Measuring range: -200 – 1372° C (type K), -30 – 550° C (IR)
Measurement error: ±0.5% + 2° C (type K), ±2.5% + 2° C (IR)
Resolution: 0.1° C
Unit of measurement: ° C or K
Emission factor: 0.95 fixed
Digital display: 3¾ digit LCD
Background lighting: blue
Operating voltage: 9 V battery
Dimensions: approx. 75x200x50 mm³
Weight: approx. 280 g
B-1002799

Digital Thermometer, Min/Max
Insertion thermometer with Hold and Min/Max function in robust plastic housing and temperature sensor made of stainless steel. Switchable between ° C and ° F, On/Off switch, hanging strap and folding angled support.
Measuring range: -50° C – 200° C /
-58° F – 392° F
Division: 0.1° C/F
Dimensions: approx. 95x65x20 mm³
Cable length: approx. 1400 mm
Measurement probe: approx. 120 mm
B-1003010

+ Fast, easy and accurate measurements
+ Automatic selection of measurement range
+ Practical single-handed operation
+ Modern, handy design
+ Large-scale 3½-digit LCD display

Infra-Red Thermometers
Surface thermometer for contactless temperature measurement from a safe distance, e.g. in inaccessible places, hot or moving objects. With laser diode for laser sighting, illuminated LCD display, range overflow display, measured value storage function, selection between Celsius and Fahrenheit, automatic switch off. The model B-1020909 permits rapid measurement of temperature differential with the LED display (red, green or blue). Including case, battery and instruction manual.

Infra-Red Thermometer 380° C D
B-1020909

Infra-Red Thermometer 800° C
B-1002791

	B-1020909	B-1002791
Measuring range	-50° C – 380° C -58° F – 716° F	-50° C – +800° C -58° F – +1472° F
Division	0.1° C/F	0.1° C/F
Accuracy	±2% of measured value ±2° C / 4° F	±1% of measured value ±1° C / 1.8° F
Response time	< 1 s	150 ms

Thermal Imaging Camera
Modern infra-red thermal imaging camera for producing images of infra-red radiation from an object based on detected infra-red radiation in relation to the ambient temperature.
- User-friendly graphic menu operation
- Photography using built-in digital camera
- Up to 25000 photos can be saved on Micro SD card
- Recordings featuring time and date documentation
- Images with emission factor and measurements
- Five color palettes for thermal imaging
- Five levels of photograph and thermal imaging superimposition
- Cross-hairs, plus cold-spot and hot-spot display
- Minimum and maximum value display
- Automatic shut-off

Includes case, batteries, Micro SD card and instruction manual.
Temperature range: -20° C ... 300° C/
-4° F ... 572° F
Precision: ±2% or 2° C (4° F)
Display: 60 mm (2.4") LCD-TFT
Thermal image
resolution: 60x60 pixels
Field of vision: 20° x 20°
Emission factor: Adjustable from
0.1 – 1.0
Wavelength: 8 – 14 µm
Image frequency: 6 Hz
Focus range: 50 cm (fixed)
Memory: Micro SD card
Voltage supply: 4 x 1.5 V AA batteries
Display: Multi-line, multi-function display
Dimensions: approx. 212x95x62 mm³
Weight: approx. 320 g
B-1020908

Infrared Temperature and Humidity Gauge
Digital measuring device for contact-free temperature measurement from large distances, e.g. of hot or moving objects or inaccessible points of measurement, and for simultaneous humidity display. With laser diode as detection aid, integrated in the measuring probe, illuminated LCD display, max and data-hold function, switchable between ° C and ° F, automatic switch-off. Includes pouch and battery.
Measuring range, temperature: -50° C to +500° C; -58° F to +932° F
Divisions: 0.1° C/F
Accuracy: ± 2% of measured value ± 2° C / 4° F
Measuring range, humidity: 5% to 95%
Divisions: 0.1%
Accuracy: ± 3.5%
LCD dual-function display: 3 ½-digit, 21 mm with backlighting
Voltage supply: 9 V battery
Dimensions: approx. 90x170x45 mm³
Weight: approx. 360 g
B-1002795

DISSECTING KITS AND INSTRUMENTS

Dissecting Set DS14
Stainless steel instruments in carry case. Fully autoclavable.
Contents:
1 scalpel handle no. 3
5 scalpel blades no. 10 for handle no. 3
1 surgical scissors, pointed / blunt, straight, 14 cm
1 dissecting scissors, pointed / pointed, ring grip, 11.5 cm
1 dissecting forceps, pointed / straight, serrated, 12.5 cm
1 anatomical tweezers, blunt / straight, 11.5 cm
1 lancet needle, metal, straight, 15 cm
1 dissecting needle, metal, straight, blunt
1 dissecting needle, metal, angled, blunt
1 section lifter, 16 cm
2 Farabeuf retractor, blunt, 12 cm
1 artery forceps, straight, 14 cm
1 artery forceps, angled, 14 cm
1 ruler, metal, 15 cm
B-1021245

Dissecting Set DS6
Stainless steel instruments in carry case.
Contents:
1 scalpel handle no. 4
5 scalpel blades no. 22 for handle no. 4
1 dissecting scissors, pointed / pointed, ring grip, 11.5 cm
1 dissecting forceps, pointed / straight, serrated, 12.5 cm
1 dissecting needle with plastic handle, straight, pointed
1 dissecting needle with plastic handle, angled, pointed
B-1021246

Dissecting Set DS8
Stainless steel instruments in carry case.
Contents:
1 scalpel handle no. 4
5 scalpel blades no. 22 for handle no. 4
1 surgical scissors, pointed / blunt, straight, 14 cm
1 anatomical tweezers, blunt / straight, 11.5 cm
1 dissecting needle with plastic handle, straight, pointed
1 dissecting needle with plastic handle, curved, pointed
1 pipette 2 ml, 11 cm
1 ruler, plastic, 15 cm
B-1005964

Dissecting Set DS9
Stainless steel instruments in carry case. Fully autoclavable.
Contents:
1 scalpel handle no. 4
5 scalpel blades no. 22 for handle no. 4
1 scalpel with 4 cm blade
1 dissecting scissors, pointed / pointed, ring grip, 11.5 cm
1 dissecting forceps, pointed / straight, serrated, 12.5 cm
1 anatomical tweezers, blunt / straight, 11.5 cm
1 tweezers, 11 cm
1 lancet needle, metal, straight, 15 cm
1 dissecting needle, metal, straight, pointed
B-1003771

Dissection Dish, Stainless Steel
High-quality specimen dish made of rust-free stainless steel. Ideal for preparing specimens in classrooms and laboratories. Includes separate, washable, long-life specimen preparation mat. Stackable.
Suitable for autoclaves.
Dimensions: approx. 30.5x20x4 cm^3
B-1021248

Dissection Dish, Plastic
Robust, non-breakable and non-leak HDPE polythene dissection dish. Includes separate, washable, long-life specimen preparation mat with smooth surface. Stackable. Not suitable for use with wax. Not suitable for autoclaves.
Dimensions: approx. 32x23x4 cm^3
B-1021247

Dissecting Instruments

Microscope Scissors, 11,5 cm
Stainless steel.
B-1008922

Scissors, 12 cm
Stainless steel, straight, extremely pointed.
B-1008923

Scissors, 14,5 cm
Stainless steel, straight, pointed/pointed.
B-1008924

Dissection Needle, Pointed
Plastic-handle.
B-1008926

Dissection Needle, with Blade
Plastic-handle.
B-1008927

Anatomical Forceps, Pointed
Stainless steel, pointed, 14.5 cm.
B-1008928

Anatomical Forceps, Blunt
Stainless steel, blunt, 14.5 cm.
B-1008929

Soft Tweezers
Stainless steel, 10 cm.
B-1005076

Scalpel Handle No. 3
Stainles steel.
B-1008931

Scalpel Blades, Size 10
Single packed, sterile, carbon steel.
100 pcs/box. For scalpel handle no. 3.
B-1008932

Protective Goggles, Teacher
These snug-fitting protective goggles that comply with DIN EN 166 F have adjustable sidearms and can therefore be adjusted for different head shapes. The mist-proof polycarbonate lenses offer good visibility and effective lateral protection.
B-1010257

Vinyl Gloves
Powdered disposable vinyl gloves - great skin protection and good tolerance.
Contents:
100 pieces in a practical dispenser carton.

Vinyl Gloves, Size S
B-1005077

Vinyl Gloves, Size M
B-1005078

Vinyl Gloves, Size L
B-1005079

PIPETTES

Microlitre Pipettes
Using this microlitre pipette, your pupils can work with precision. The pipettes have a volume display that can be set easily and accurately, they also have an inbuilt pipette tip ejector system. What is more, they fit well in the hand, and offer an excellent price-performance ratio.

Microlitre Pipette, 10 – 100 µl
B-1013418

Microlitre Pipette, 20 – 200 µl
B-1013420

Microlitre Pipette, 100 – 1000 µl
B-1013421

Peleus Ball, Standard
High quality production (made in Germany) and therefore longlasting.
B-1013392

DIN-B Burette with Schellbach Stripe, 10 ml
Burette tube for measuring small amounts of liquid with Schellbach stripe and tap at the side with standard ground (NS) glass connector and cock plug.
Volume: 10 ml
Scale divisions: 0.02 ml
Error limits: Class B
B-1018065

Pipette Tips
1000 tips for microlitre pipettes.

Pipette Tips, Crystal, up to 10 µl
B-1013424

Pipettenspitzen, Yellow, 20 - 200 µl
B-1013425

Pipettenspitzen, Blue, bis 1000 µl
B-1013426

Petri Dishes, 55x15 mm
Without vents, PS, crystal clear, packed machine sterile, 15 pcs/bag.
B-1012538

Petri Dishes, 94x16 mm
Without vents, PS, crystal clear, packed machine sterile, 20 pcs/bag.
B-1012540

Petri Dishes, 94x16 mm, 2-parts
With vents, 2-parts, PS, crystal clear, packed machine sterile, 20 pcs/bag.
B-1012541

Pasteur Pipettes
Polyethylene, nonsterile. PU = 500 pcs/box.

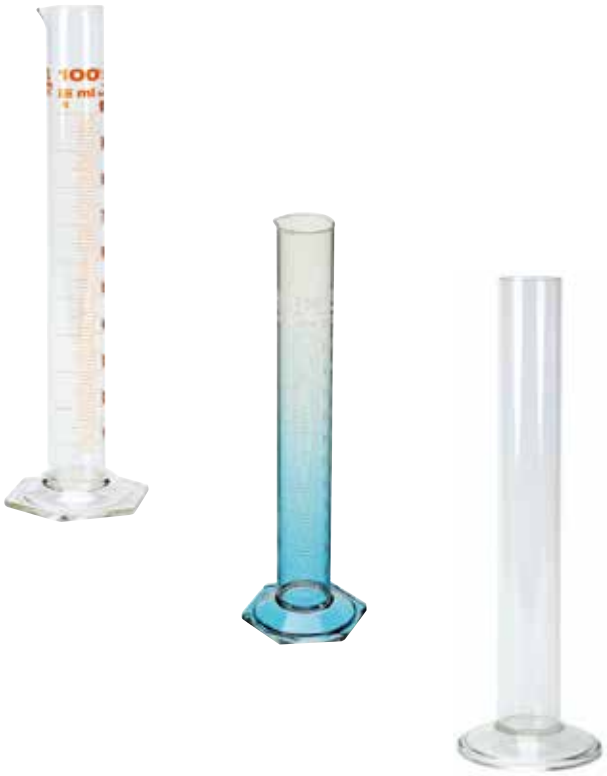
Pasteur Pipettes, 3 ml
B-1008933

Pasteur Pipettes, 1 ml
B-1008934

GLASSWARE

Graduated Cylinder, 100 ml
Graduated cylinder made of Duran glass. Tall form with spout with hexagonal base.
Scale: 100 ml
Divisions: 1 ml
B-1002870

Graduated Cylinder, 250 ml
Graduated cylinder made of borosilicate glass. Tall form with spout and hexagonal base.
Scale: 250 ml
Divisions: 2.5 ml
B-1010114



Free Standing Cylinder, without Graduation
Ungraduated cylinder made of Duran glass with round base and coarse ground rim, without graduation.
Height: 300 mm
Diameter: 40 mm
B-1002871

Beakers, 600 ml
Set of 10 beakers made of Borosilicate glass. With scale, 100 ml divisions and spout.

Set of 10 Beakers, Low Form
B-1002872

Set of 10 Beakers, Tall Form
B-1002873

Wash Bottle 250 ml
B-1008682

Wash Bottle 500 ml
B-1009812

Cuvette, Rectangular
Plane-parallel cuvette of plexiglas with highly-polished optical surfaces for investigating the paths of light beams in liquids.
Dimensions: approx. 80x30x80 mm^3
B-1003534

STAND EQUIPMENT AND CABLES

Tripod Stand
Adjustable duplex tripod base, extremely stable, for holding two rods of up to 16 mm in diameter.

Tripod Stand, 150 mm
Leg length: 150 mm
Distance between rods: 95 mm
Weight: approx. 1450 g
B-1002835

Tripod Stand, 185 mm
Leg length: 185 mm
Distance between rods: 135 mm
Weight: approx. 1850 g
B-1002836

Stainless Steel Rods
Constructed from straight, non-corrosive stainless steel.

Stainless Steel Rod, 12 mm x 470 mm
B-1002934

Stainless Steel Rod, 12 mm x 750 mm
B-1002935

Stainless Steel Rod, 12 mm x 1000 mm
B-1002936

Universal Clamp
Universal clamp for attachment of rods up to 13 mm in diameter and for holding plates, rulers, etc. of up to 13 mm thickness in a multitude of alignments. Nickel plated steel screws.
B-1002830

Table Clamp
Table clamp for vertically attaching rods of up to 13 mm to tabletops. Powder coated aluminium alloy, 350 g
Clamping width: 0 – 60 mm
B-1002832

Clamp with Hook
Clamp with hook for attaching rods of up to 16 mm in diameter. Powder-coated zinc die casting, 93 g. Nickel plated steel screws.
B-1002828

Clamp with Jaw Clamp
Stand clamp with jaw clamp for attaching rods up to 16 mm in diameter. Powder coated zinc die casting, 190 g. Clamp with cork lining.
Clamping width: 20 – 40 mm
B-1002829

Universal Jaw Clamp
Clamp with cork lining. Unpainted zinc die casting, 180 g.
Clamping width: 0 – 80 mm
B-1002833

Adjustable Double Clamp
Double clamp with two grippers which can be rotated by 360° with respect to one another for connecting rods of up to 16 mm in diameter. Powder coated zinc die casting, 180 g. Nickel-plated steel screws.
B-1017870

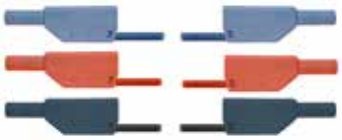
Laboratory Jacks
Height adjustable table with continuously variable extension mechanism for raising experiment equipment. May be fixed in place via wing nuts.

Laboratory Jack I
Maximum load: 30 kg
Tabletop: 320x220 mm²
Height of table: 65 – 250 mm
Weight: approx. 2.6 kg
B-1002943

Laboratory Jack III
Maximum load: 50 kg
Tabletop: 160x130 mm²
Height of table: 60 – 250 mm
Weight: approx. 1.2 kg
B-1002942

Laboratory Jack II
Maximum load: 40 kg
Tabletop: 200x200 mm²
Height of table: 70 – 260 mm
Weight: approx. 2.3 kg
B-1002941

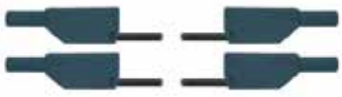
Set of 15 Safety Experiment Leads
Set of 15 copper leads with highly-flexible PVC insulation, 75 cm long, with cascadable 4 mm safety laminated plugs at both ends.
Four leads in each of the colors red, black and blue, and one lead in each of the colors green, brown and yellow-green.
Wire cross-section: 2.5 mm²
Voltage: Low voltage
Max. continuous current: 32 A
B-1002843



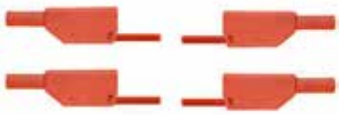
Set of 6 Safety Crocodile Clips 4 mm
Fully insulated safety crocodile clips (3x red, 3x black) with 4 mm safety socket for accepting 4 mm safety test leads or any other 4 mm Multilam plug.
B-1019218

Safety Experiment Leads, 75 cm
Copper leads in highly flexible PVC coating, 75 cm long, with 4-mm, laminated safety plugs at both ends.
Wire cross-section: 2.5 mm²
Voltage: Low voltages
Max. continuous current: 32 A

Pair of Safety Experiment Leads, Black
B-1002849

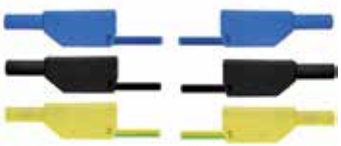


Pair of Safety Experiment Leads, Red
B-1017716



Pair of Safety Experiment Leads, Blue, Red
B-1017718

Pair of Safety Experiment Leads, Yellow/Green, Blue, Black
B-1017719



HF Patch Cord
Shielded patch cords for low-loss, low-capacitance transmission of high-frequency signals. Equipped at either end with a BNC plug.
Impedance: 50 Ω
Length: 1 m
B-1002746

HF Patch Cord, BNC/4 mm Plug
Shielded patch cord for low-loss, low-capacitance transmission of high-frequency signals. Lead with a BNC plug at one end and two 4 mm plugs at the other end.
Impedance: 50 Ω
Length: 1 m
B-1002748

Adaptor, BNC Plug/4 mm Safety Jacks
Crossover from a BNC plug to 4 mm safety jacks with 19 mm spacing.
B-1010181

NUMERICAL INDEX

ALPHABETICAL INDEX

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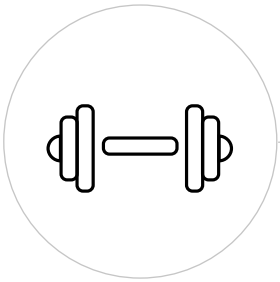
3B SCIENTIFIC® PRODUCT RANGE

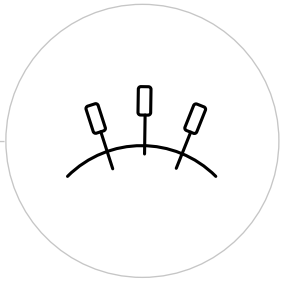
MEDICAL SIMULATION
Simulators and skills trainers enable students to develop or enhance their knowledge, skills, or to analyze and respond to realistic situations in a simulated environment, and to gain competence and confidence. You will find simulators and skills trainers for all your training needs manufactured to meet all your standards at 3bscientific.com.

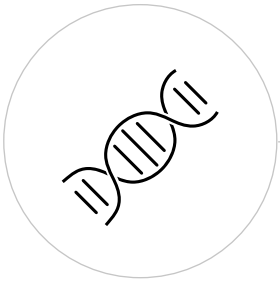
MEDICAL EDUCATION
Anatomical models are an essential teaching tool in medical education both for students and patients. Cast from actual specimens, 3B Scientific's anatomy models are professionally manufactured to meet medical quality standards. All models are hand-painted, made from medical quality phthalate free plastics and lead free paints, and are compliant to the EU REACH regulation. The 3B Scientific brand name represents quality materials, superior craftsmanship and a 3-year quality guarantee.



HEALTHCARE AND HEALTH EDUCATION
3B Scientific has for more than 7 decades focused on providing life-like learning experiences and expanded into patient education for practitioners. In addition to medical simulators and anatomical models for medical education the company provides supplies and devices for healthcare practitioners such as physiotherapists, chiropractors, natural-health professionals, and acupuncturists. Finding the right products is now faster than it has ever been. Visit 3bscientific.com to see the full range of therapy and fitness equipment and accessories.

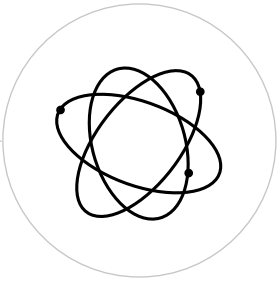
ACUPUNCTURE
Traditional Chinese Medicine (TCM) treats the body as a whole. Today, the integration of eastern and western medicine is growing at a fast pace and clinics and hospitals are providing acupuncture treatments. The quality of the tools and needles used during the treatments is of highest importance for the comfort of the patients. 3B Scientific offers high quality acupuncture needles and tools at competitive prices.





BIOLOGY
The 3B Scientific group has a rich history in this area dating back to 1819 when Calderoni – now Hungary 3B Scientific, was one of the forerunners in natural science education. Engaging Biology classes are the most effective way to create a long-lasting learning experience. 3B Scientific models are perfect tools for fascinating, hands-on education, all cast from actual specimens and made of highest quality material.

PHYSICS
Physics teaching success depends on reaching students with practical, hands-on, inquiry based education. 3B Scientific products support teachers worldwide in mastering this challenge with engaging, exciting products and experiments.

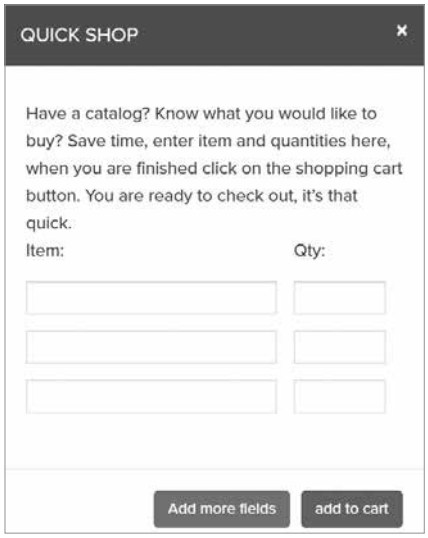


NEW ONLINE OPPORTUNITIES

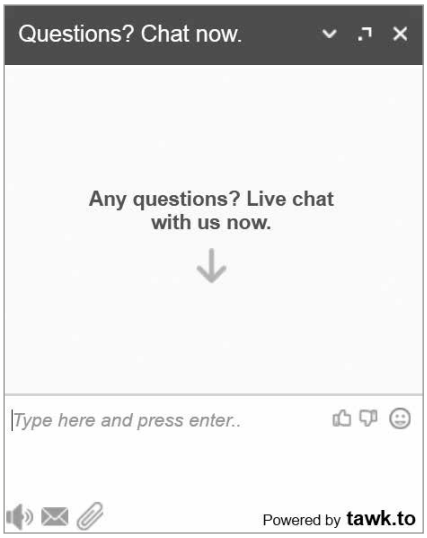
FROM THE CATALOGUE INTO YOUR SHOPPING BASKET

Do you know about our new service on **3bscientific.com?** You'll get to know and like it. When **online** use the **QUICK ORDER** for the desired items from this catalogue or **chat** with competent colleagues in our customer service department. You will get prompt answers to your questions.

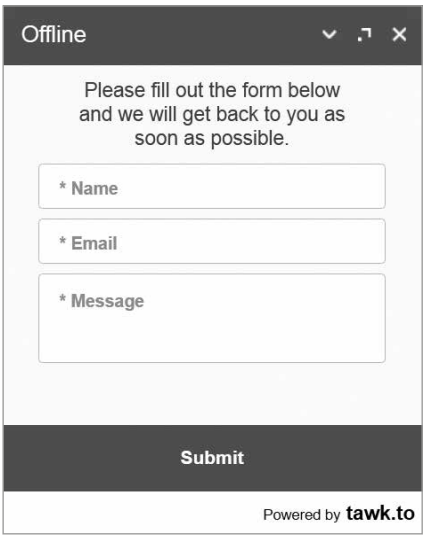
SAVE TIME BY USING THE QUICK ORDER ONLINE!



Ordering online made easy!
Regardless of which 3bscientific.com page you're on, the **Quick Order Button** is always visible. Enter the desired items and the quantity and browse around the shop.
If you want to order more than 5 items, it's not a problem. Simply click on the "Add more fields" button and you can carry on shopping – there's no limit! Once you've got everything you want, click on the shopping basket button and, as usual, your items will be displayed. Here, you can enter any **promotion codes** or change your shopping basket.



Fast answer by chat
During our office hours, you can chat directly with a colleague in the customer service department. You'll find the **chat button** (Questions? Chat now.) on the right edge of the web page.



If you have any questions outside our office hours, you can ask them via the chat function. A button with "offline" will appear. Click on the button and a **contact form** will appear. If you fill this in, your questions will be answered as soon as possible once our office has opened again.

3B Scientific
A worldwide group of companies

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IBAN: HR9823600001102021911

PLANT CELL MODEL

The two piece plant cell model shows the structures of a typical plant cell as viewed by an electron microscope. The cytoplasm and all important organelles of the plant cell are in raised relief and displayed in color.

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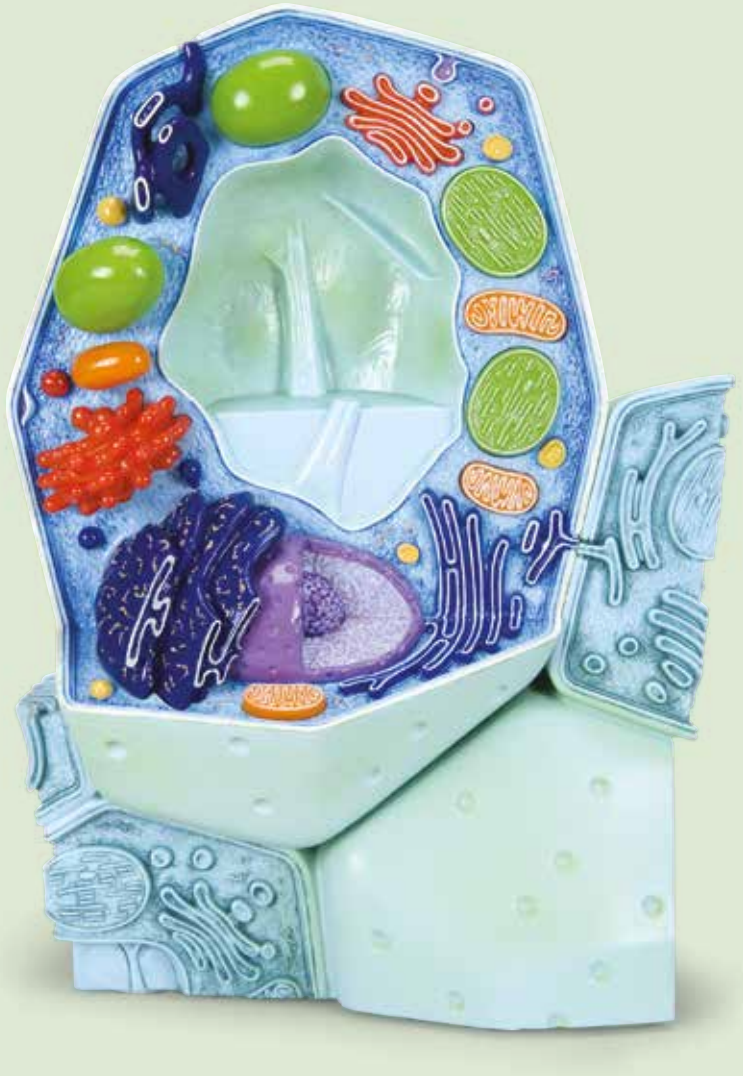

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