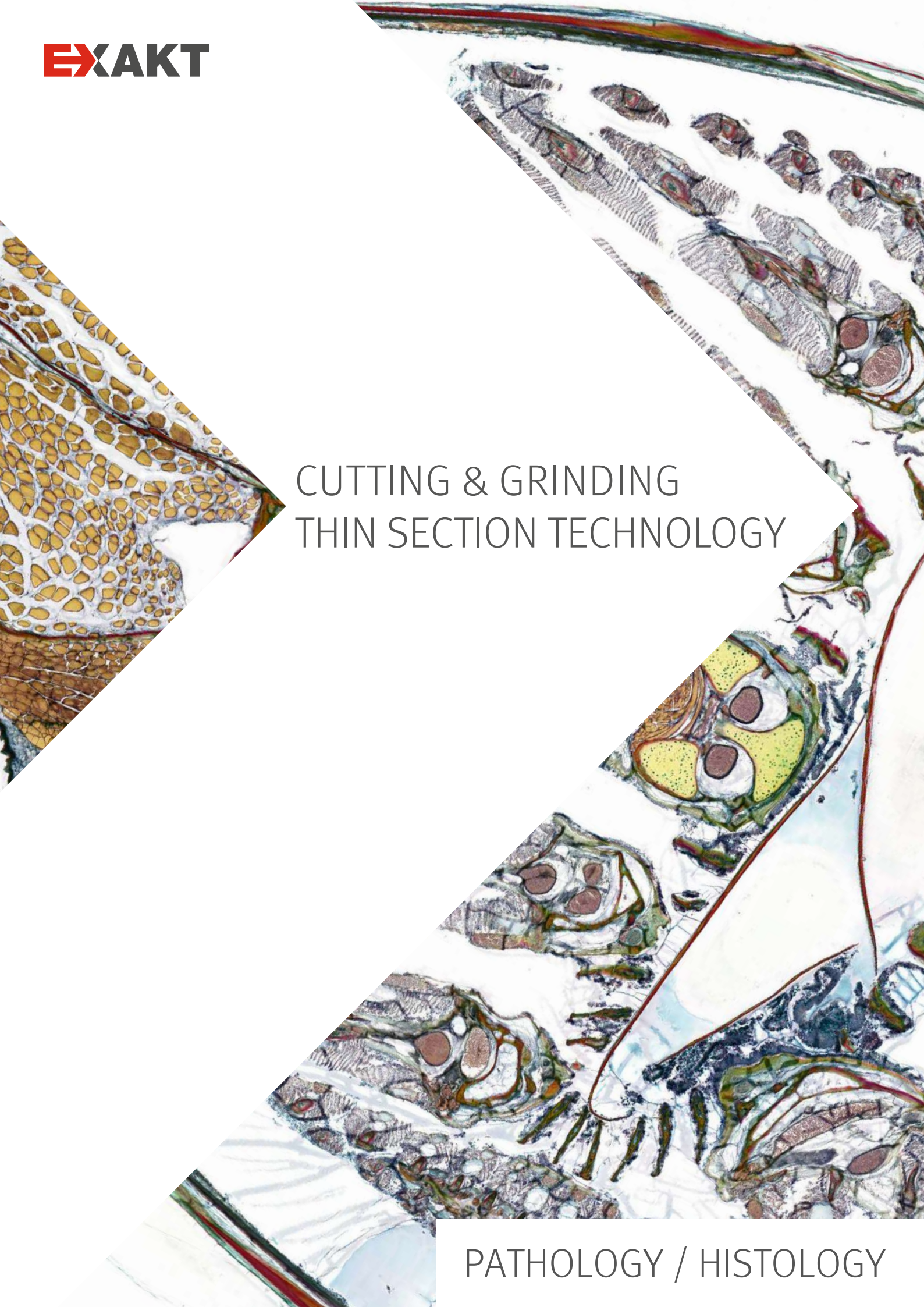
EXAKT



CUTTING & GRINDING
THIN SECTION TECHNOLOGY

PATHOLOGY / HISTOLOGY

AT A GLANCE

› Create coplanar cuts with excellent surface quality.

› Produce burr-free cross-cuts.

› Secure structural retention of the cut surface of soft and hard tissues, bones, and implants.

› Keep cutting loss to an absolute minimum.

› Minimise injury risk.

› Coplanar grinding with tolerances of up to 3 micron.

› Create thin sections for transmitted-light microscopy, light-filter use, staining and immunohistochemistry.

EXAKT 312

EXAKT 302

EXAKT310

CROSS-SECTION CUTS

› reliable and gentle process

› minimal cutting loss

› designed for serial thin sections

THIN CUTS

› safe and consistent processing of hard and soft objects

› sample processing with full control of every work step

THIN-SECTION CUTS

› outstanding surface quality

› retain structure of specimens

› time-saving and efficient process

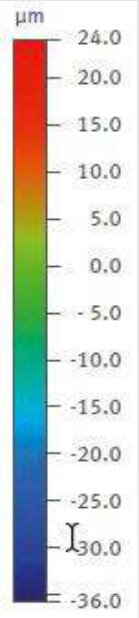
› minimal risk for operator

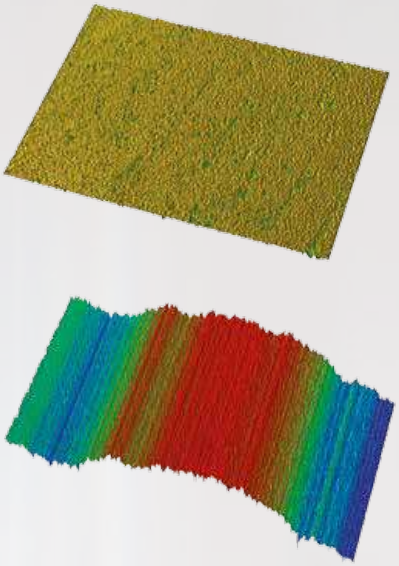
EXAKT 311

EXAKT 300

EXAKT 400 CS

CUTTING



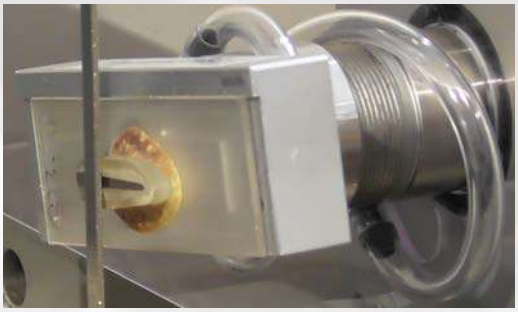


Comparison of roughness values EXAKT band saw (top) with wire saw (bottom)

EXAKT 300 – compact laboratory device with splash guard

EXAKT 311 – precision with large working table

Parallel control system - precise feed control and automatic sample positioning



Various sample supports - ideal cutting with CP technology

CONTACT POINT PROCESS (CP-MODE)

In CP-mode the sample rotates in an oscillating motion. The sample is cut gently at a specific point and not across the entire cut surface, as is the case in CL-Mode.

PRECISE- CONSISTENT- VERSATILE

Whenever conventional cutting processes reach their limits, or the requirements for the sample surface quality are very specific, the high-precision EXAKT Diamond Band Saws are the solution.

Cut the uncuttable with EXAKT!

HIGHLIGHTS

› Excellent cut surface and roughness values

› Efficient - up to 10 times faster cutting process in CP mode

› Gentle - minimal mechanical and thermal stress on the sample

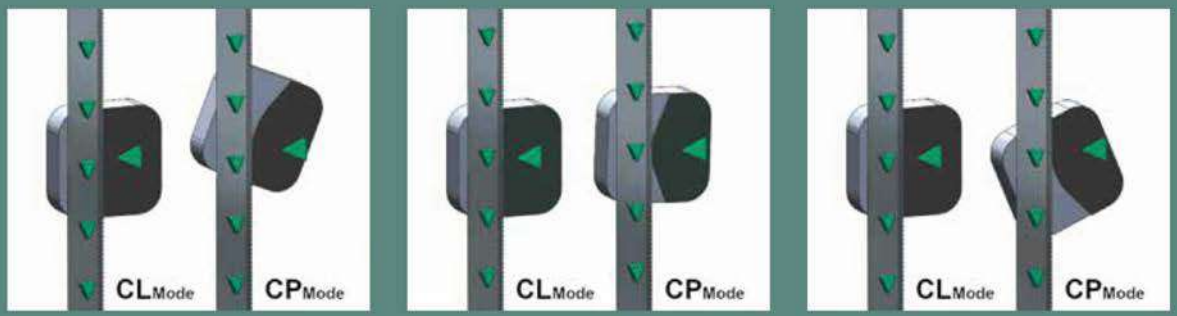
› Durable - reduced wear using the CP process

› Minimal cutting-loss as low as 190µm*

› Cooling water connection with recirculation and precisely adjustable water supply

› High quality - long lasting cutting bands available in different grits

* depending on the type of specimen



CUTTING
PATHOLOGY & ANATOMY

Large working table plus splash guard and rip fence cutting guide

Easy to change diamond band

Water gun and mobility set

Easy to operate and clean

LASER aided sample orientation

LED illumination

The EXAKT 312 is very easy to operate and clean. Band changes can be made without tools or re-adjustment. The stainless-steel housing and surfaces are designed for good water and tissue drainage. Modules can be quickly removed without tools for thorough cleaning and disinfection.

PRECISE - SAFE - HYGIENIC

The EXAKT 312 Diamond Band Saw doesn't cut, it grinds to guarantee outstanding surface quality. This surface free of artifacts, micro-fractures, and breakouts allows you to immediately inspect and assess the sample as the cell information of very different tissue densities remains intact. Even challenging samples with implants are precisely and safely processed.

Guiding the precision cut is easy, and the operation is clean and quiet. Water cooling reduces dust development and ensures that the sample doesn't overheat.

Since the cutting band grinds rather than cuts, there is no immediate injury risk in case of inadvertent contact.

HIGHLIGHTS

› Superior cut surface quality

› Enables cuts down to 1 mm

› Integrated water cooling prevents overheating of the sample, reduces dust development, and keeps the cutting band cleaner

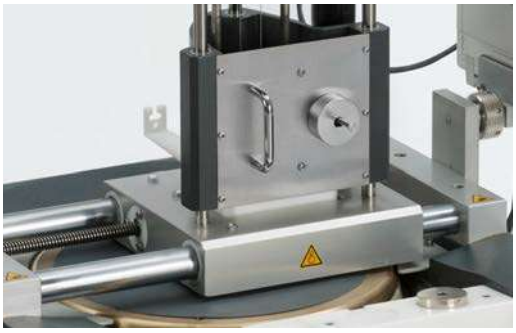
› Cutting band changed without tools or re-adjustment

› Fast and easy cleaning without tools to remove contaminated modules

› Customer-tested reliability - hundreds of systems in use around the world

› Maximum safety

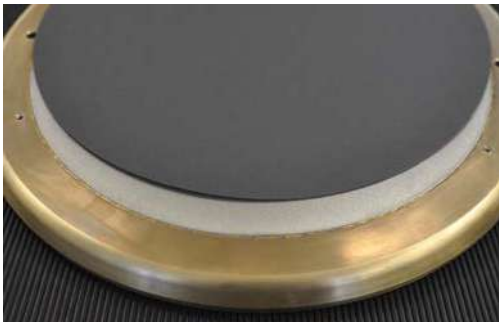
GRINDING AND POLISHING



Oscillation slide

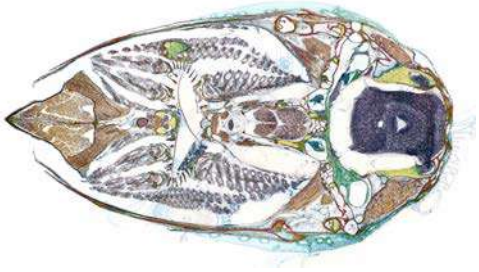
Vacuum head to fix specimen slide

µ-precise setting & control of sample removal

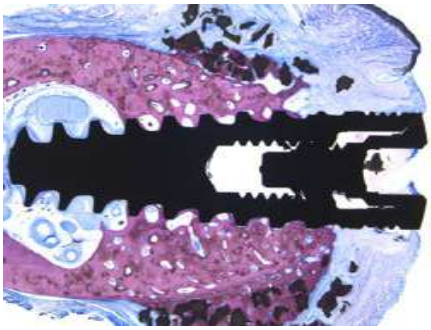


Grinding plate: Diamond coated or with grinding paper

Thin section of a rabbit-knee



Stabiliseded anchovy head; Movat pentachome



Implant

Titanium prothesis

PRECISE - STABLE - CONTROLLED

The EXAKT 400CS Grinding Unit is considerably different from conventional grinding units.
The grinding disk runs vibration-free for tolerances of just a few micrometers.
You can precisely set and measure the ground material down to the micron with the high-precision measuring system and the unit stops automatically once the target for material removal is reached.
Uniform water rinsing, the continuously adjustable speed of the grinding disk, and the oscillation of the sample results in a perfect, coplanar grind with minimal mechanical and thermal loading of the sample.
Precise control of all grinding parameters guarantees a consistently reproducible grinding process.

HIGHLIGHTS

› Coplanar tolerance – precise down to the micron

› Vacuum mounting - different specimen slide sizes

› High-precision measuring sensor - precise setting of material removal

› Gentle and controlled material removal - gravimetric setting of grinding force

› Uniform grind - continuously adjustable sample oscillation and grinding disk speed

› Integrated water rinsing in the vacuum head

› A variety of abrasive and polishing papers (backing material and grit) suitable for your application

THIN SECTION CUTTING TECHNOLOGY – HISTOLOGY

Creating histological thin sections from non-cuttable tissues and materials is a very important part of laboratory-based medical research.
Prof. Dr. Dr. Dr. Karl Donath developed, influenced, and advanced the required technology in Hamburg, Germany, in the 1980s. In close cooperation with Dr. Donath, EXAKT developed the required equipment allowing for maximum precision and control over the entire process.
From dehydration and infiltration of the sample, embedding in plastic to precise cutting and grinding, the technology guarantees precision down to the micron. Cell structures remain intact since the sample does not need to be decalcified. Precise assessment of the interface between the soft tissue, bone and implant is ensured, and deformation-free sample processing is guaranteed over the entire preparation process.

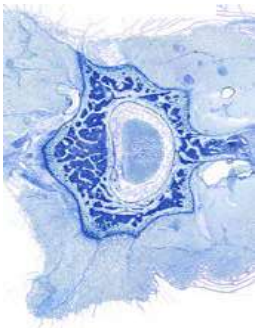
Embedding of specimen

Gluing of specimen on slides

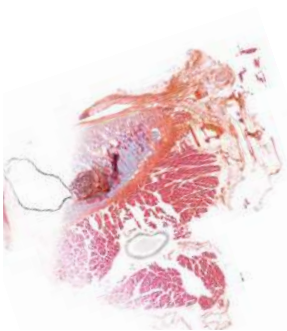
Cutting the specimen

Grinding of the thin section

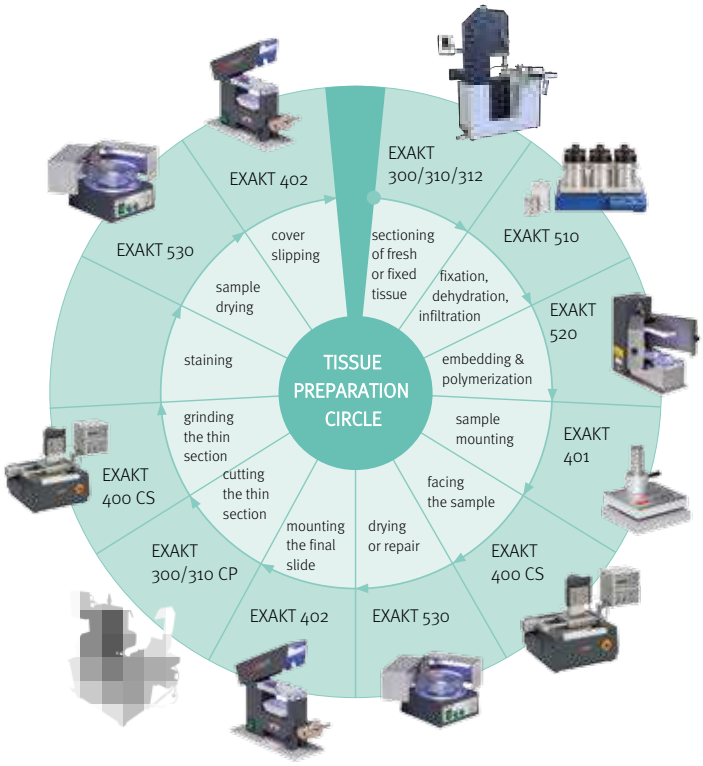
Ankle of a rat
van Gieson – Elastin


Spine of a rat
Toluidine blue

Lower jaw of a rat
Masson Goldner Trichrome


Lower jaw of a rat
Masson Goldner aniline blue

PRECISE - CONSISTENT - CONTROLLED



EXAKT has decades of experience with its trusted and globally tried-and-tested thin section cutting technology.

Ask us to guide you through the sample preparation process for flawless results.

HIGHLIGHTS

› Creation of thin sections down to 10 micron*

› No decalcification of the sample necessary

› Immunohistochemistry of hard tissue

› Precise process control down to the micron over the entire preparation process

› Reliable and consistent

› Designed to your needs

› Everything from one source

› Decades of application expertise

› Individual training programs available

* depending on the type of specimen

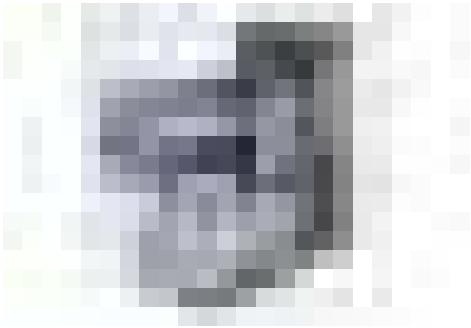
SAMPLE PREPARATION

The entire preparation process is of tremendous importance.
Examination and assessment require samples to have been removed and prepared in accordance with your analysis methods. Improper sample handling can distort your results or even destroy the objects, which are often one-of-a-kind specimens. EXAKT thus focuses on process reliability and consistency throughout the entire sample preparation process.

Control every aspect of sample preparation at all times with the EXAKT system - the proper and complete dehydration of histological samples, total and bubble-free embedding in plastic, as well as precise adhesion for thin sections to better evaluate the adhesive layer thickness.

Dehydration and Infiltration Device EXAKT 510

› Optimized for low sample volume in research
› Fast penetration through agitation
› Six parallel steps in a single ascending dilution series
› Vacuum attachment for perfect infiltration



Light Polymerization Device EXAKT 520

› Reproducible polymerisation process
› Timers for two different intensities
› Cooling unit for samples
› Embedding molds of various sizes

Block Drying and Post Infiltration Device EXAKT 530

› Repair of cracks, bubbles and artifacts
› Dehydration under vacuum heating plate at 40 °C
› Time-controlled light polymerization

Adhesive Press EXAKT 401

› Easy handling for precise adhesion
› Vacuum unit for slides

Precision Adhesive Press EXAKT 402

› Bubble-free adhesion via Plexiglas block
› Vacuum unit for slides
› Adjustable contact pressure
› Light polymerization function

HIGHLIGHTS

› Dehydration and infiltration of samples
› Embedding process with light polymerization and controlled energy application
› Bubble-free adhesion and securing of the sample, coplanar and with a definable adhesive strength layer thickness
› Adhesion without tension or shrinkage
› Residual moisture drawn from samples
› Cracks, bubbles and defects repaired afterwards

EXAKT CUTTING AND GRINDING DEVICES

EXAKT 300 CL/CP

EXAKT 300 CL/CP

Max. cutting height:	100 mm
Max. cutting width:	70 mm
Cutting band speed:	10-560 m/min
Footprint (W x D x H):	1000 x 800 x 850 mm
Weight base unit:	approx. 50 kg
Electric connection:	Option 1: 1 x 220 - 240 (50-60 Hz)
	Option 2: 1 x 100 - 110 (50-60 Hz)

EXAKT 302

EXAKT 302

Max. cutting height:	110 mm
Max. cutting width:	180 mm
Cutting band speed:	1000–1200 m/min (depending on AC frequency)
Footprint (W x D):	600 x 580 mm
Height:	720–740 mm
Weight base unit:	approx. 40 kg
Electric connection:	Option 1: 1 x 220–240 (50–60 Hz)
	Option 2: 1 x 100–110 (50–60 Hz)
	Option 3: 1 x 100 x 115 (60 Hz)

EXAKT 310 CP

EXAKT 310 CP

Max. cutting height:	205 mm
Max. cutting width:	165 mm
Cutting band speed:	10-800 m/min
Footprint (W x D x H):	1000 x 1200 x 1350 mm
Weight base unit:	approx. 160 kg
Electric connection:	Option 1: 1 x 220–240 (50–60 Hz)
	Option 2: 1 x 100-110 (50-60 Hz)

EXAKT 311

EXAKT 311

Max. cutting height:	160 mm
Max. cutting width:	165 mm
Cutting band speed:	10-600 m/min
Footprint (W x D x H):	1000 x 1400 x 1350 mm
Weight base unit:	approx. 180 kg
Electric connection:	Option 1: 1 x 220–240 (50–60 Hz)
	Option 2: 1 x 100-110 (50-60 Hz)

EXAKT 312

EXAKT 312

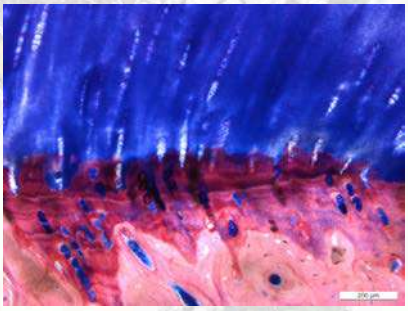
Max. sample size:	220 x 360 mm
Footprint (W x D x H):	1000 x 800 x 1800 mm
Weight:	approx. 150 kg
Electric connection:	Option 1: 1 x 220–240 (50–60 Hz)
	Option 2: 1 x 100 (50–60 Hz)
	Option 3: 1 X 110 - 115 (60Hz)

EXAKT 400 CS

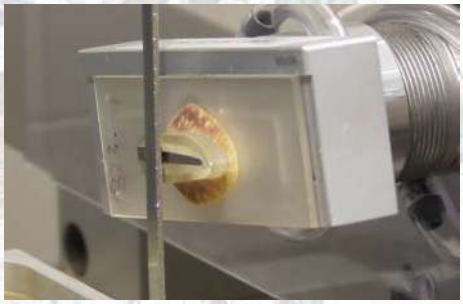
EXAKT 400CS

Max. sample size:	50 x 100 mm for planar objects
Footprint (W x D x H):	1000 x 800 x 700 mm
Weight:	approx. 90 kg
Electric connection:	Option 1: 1 x 220–240 (50–60 Hz)
	Option 2: 1 x 100–110 (50–60 Hz)

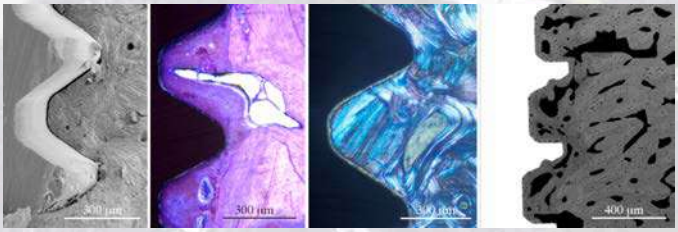
VARIETY OF SAMPLES



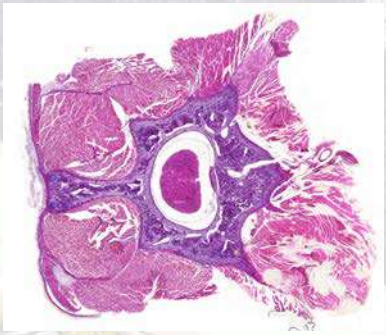
cartilage



tooth sample cutting process



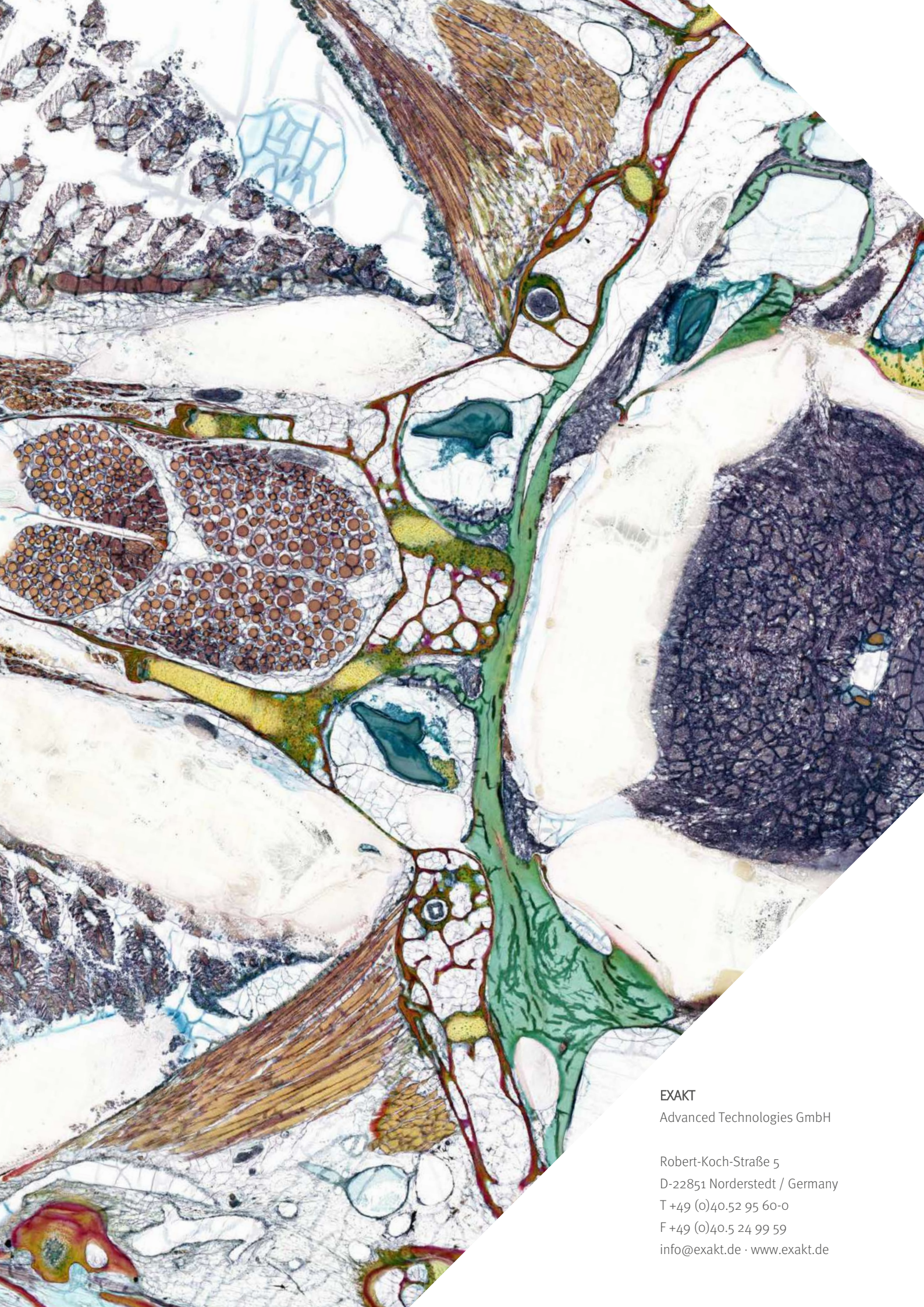
osseointegration



stabilised rat spine
Gill-II hematoxylin

human foot

sheep's head



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