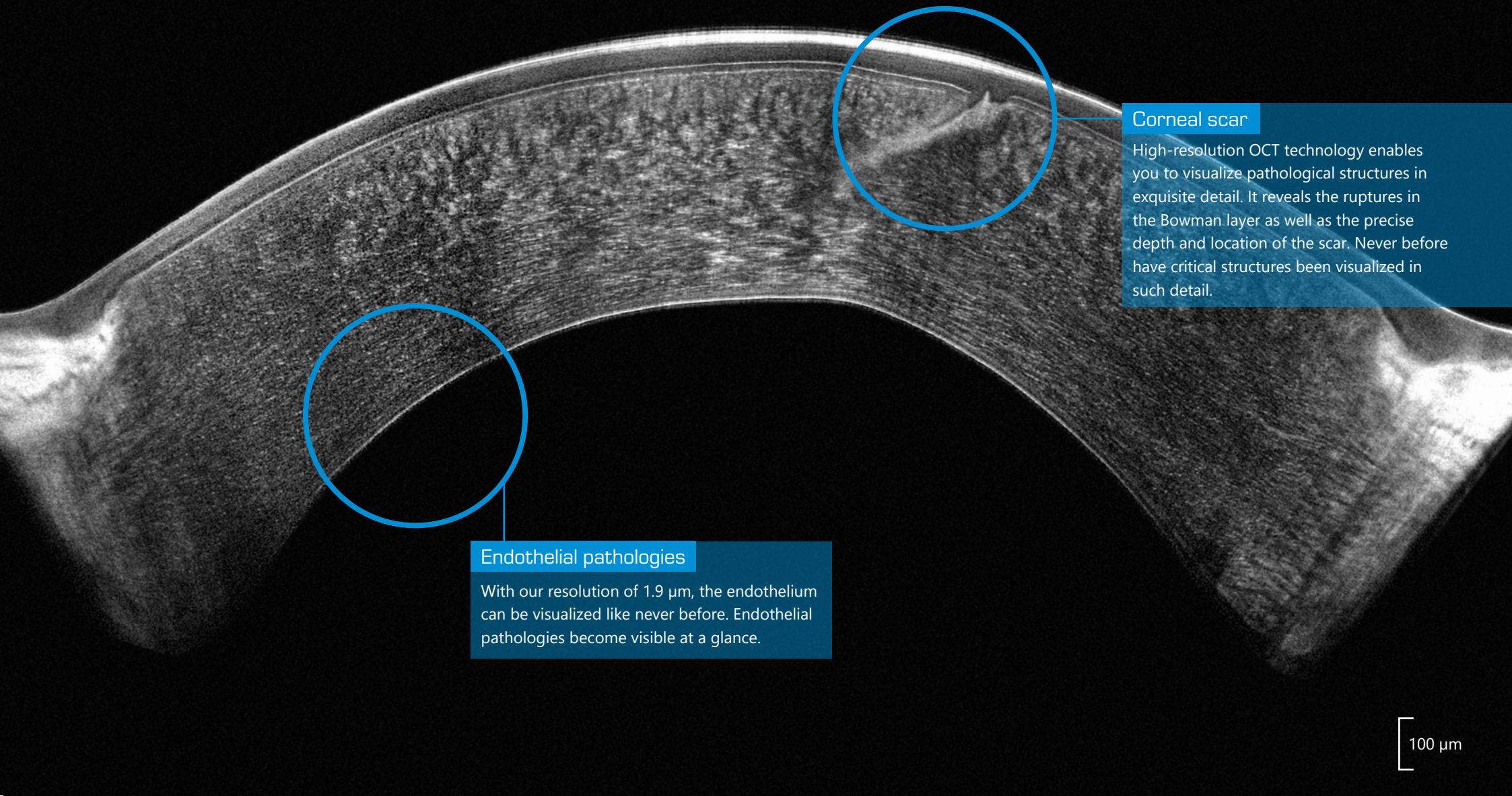
OCULUS
Pentacam® Cornea OCT
High-Resolution
Corneal Visualization



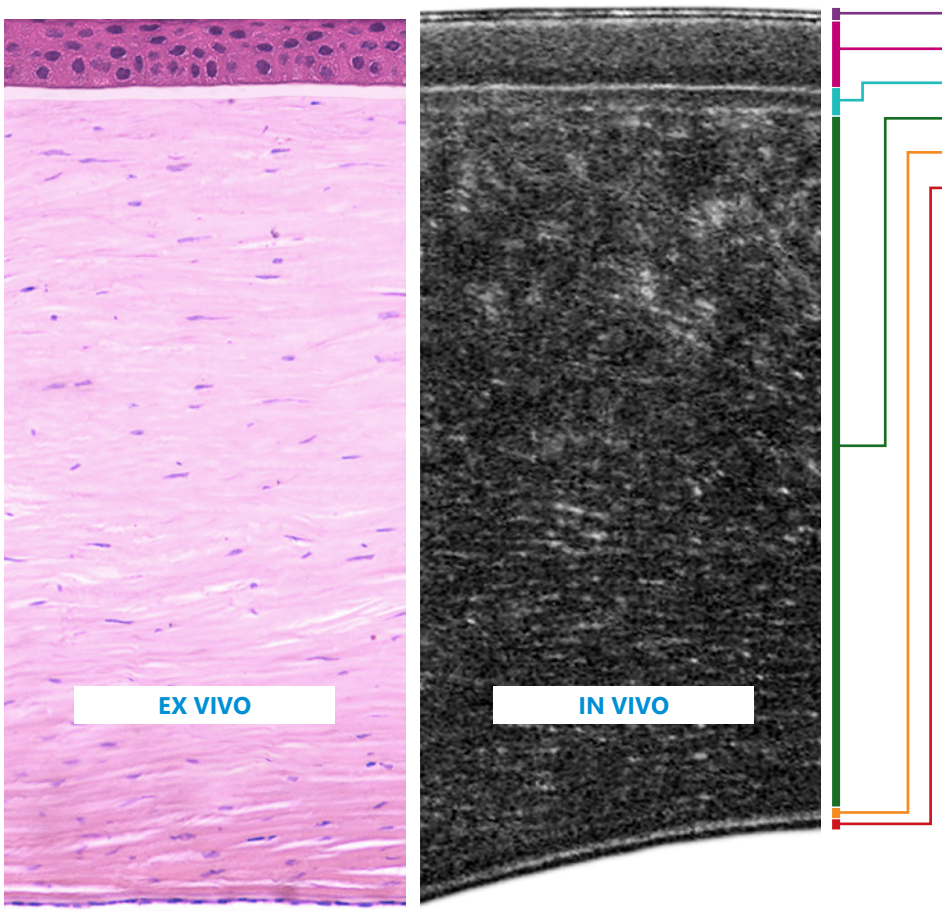
OCULUS®

Images beyond **all expectations**



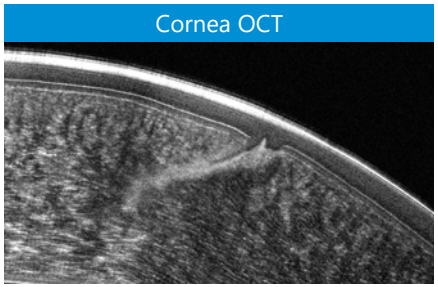
Showing details you have never seen before

The unsurpassed resolution of the Pentacam® Cornea OCT technology makes details visible that have never been seen before in the living eye.

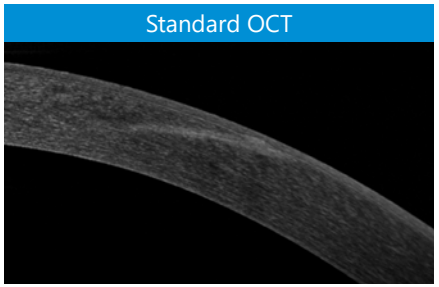


Resolution comparison

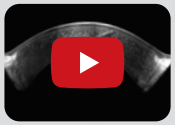
The Pentacam® Cornea OCT uses Spectral Domain OCT with specialized pericentric scanning technology to provide a resolution of corneal structures that conventional systems cannot achieve. While Swept Source OCT systems offer high scan depth, they are limited in resolution to approximately 10 µm, insufficient for revealing fine details.



Resolution: 1.9 µm

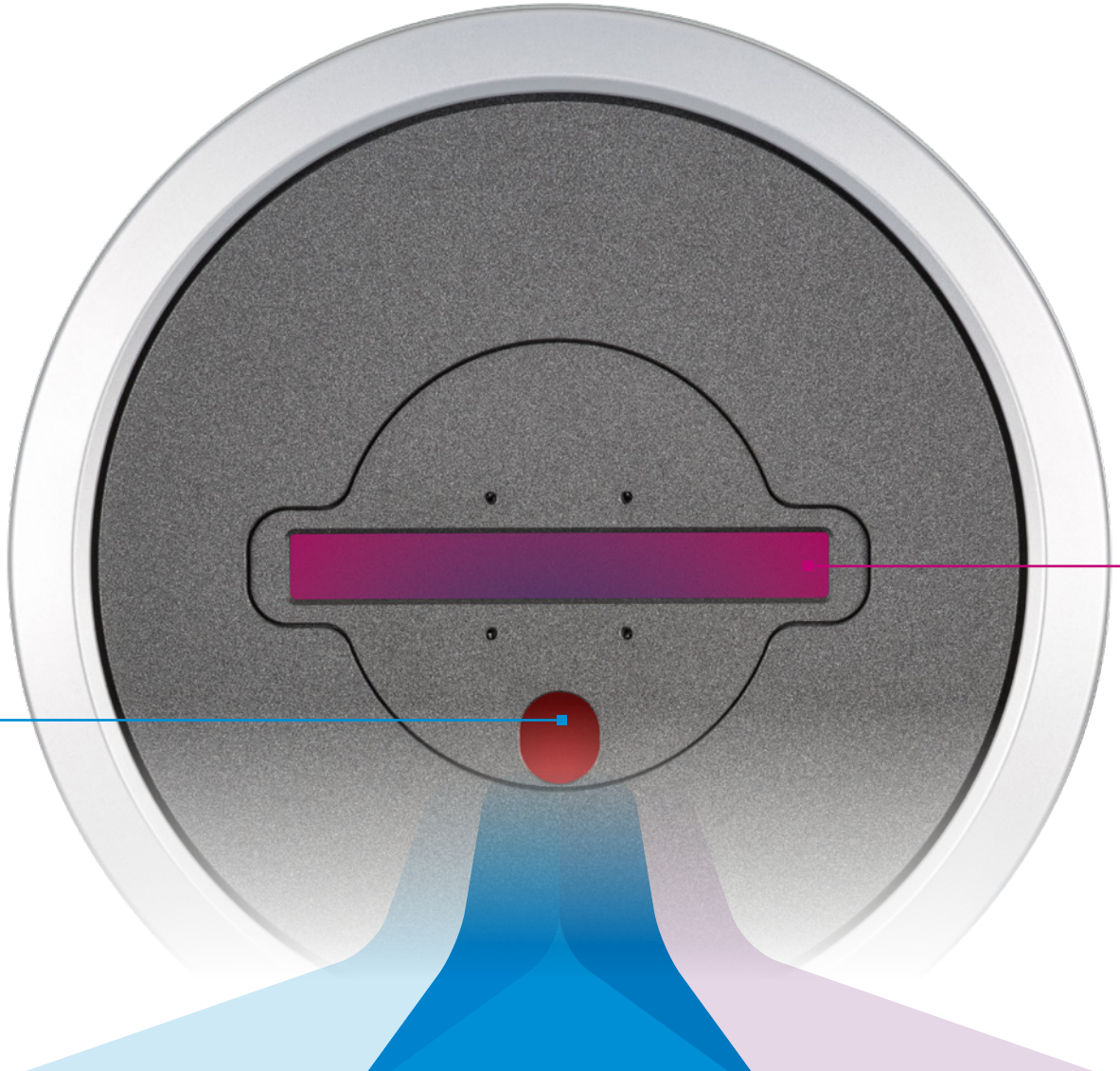


Resolution: approx. 10.0 µm



Find out why the Pentacam® Cornea OCT technology produces **significantly higher resolution** images than swept source OCTs.

Combining **two technologies** in one single device



Gold standard

The **proven Scheimpflug** technology provides the foundation for the most accurate geometric measurement of the entire anterior segment of the eye, backed by normative data from over 20 years.

NEW

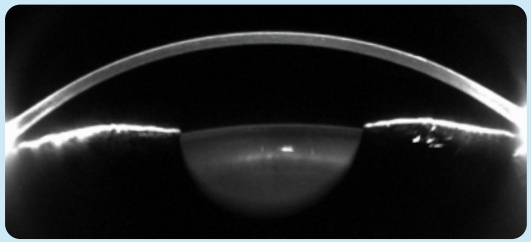
World's first pericentric OCT scanning system for a maximum of resolution in the cornea.

Advantages of the **Scheimpflug** technology

For over 20 years, Scheimpflug technology has been the proven gold standard in anterior segment tomography. All parameters of the anterior segment are measured at once with very high accuracy. Clinical studies from the past two decades have formed the foundation for the software, which meets all needs from refractive screening, to the selection of premium IOLs, IOL calculation, and to fitting of scleral lenses.

Established and validated software with normative data:

- Belin/Ambrósio Enhanced Ectasia Display*
- Cataract Pre-OP Display*
- Corneal Optical Densitometry*
- Fast Screening Report*



Best of both worlds Scheimpflug & OCT

Combining Scheimpflug technology and OCT offers a comprehensive view: Scheimpflug reveals light-scattering structures in the anterior segment with blue light, while OCT provides unparalleled detail. Both measurements are taken simultaneously at exactly the same locations, allowing for immediate and detailed visualization of all anomalies.

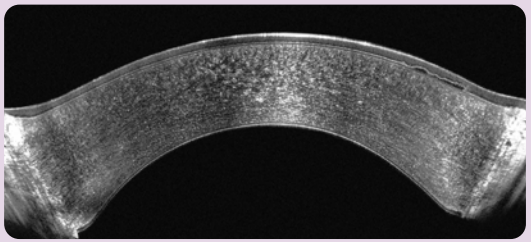
- **Superior image quality:** Scheimpflug visualizes scatter; OCT provides detailed structure
- **Increased accuracy:** Precise measurements at identical corneal locations
- **Advanced diagnostics:** Combining established tomographic analysis with epithelial mapping
- **Downward compatible:** Follow-up measurements based on your existing Pentacam® data

KEY ADVANTAGE

Advantages of the **Cornea OCT** technology

High-resolution OCT technology enables detailed visualization of corneal structures, including precise measurement of epithelial thickness. This measurement is crucial for early detection of corneal ectasia. Epithelial thickness mapping also enhances surgical planning, contributing to optimal outcomes of vision correction procedures. OCT imaging is essential for post-operative care, monitoring healing and detecting complications after LASIK or keratoplasty.

- **Ultra high-resolution** over the **entire cornea**
- Unique **wide-angle pericentric** scan system
- Averaging mode for "**Optical Biopsy**"**
- **Epithelial thickness** mapping



* See Software Configurations information brochure

** Term quoted by Renato Ambrósio Jr

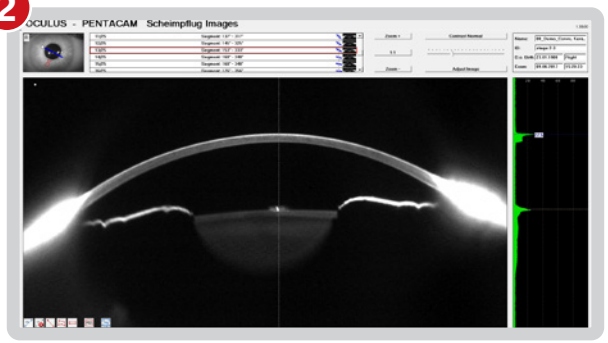
Your **workflow** for more safety, deeper insights, and for better results!

Use the unrivalled combination of Scheimpflug images, normative data and high-resolution corneal OCT images to make the best possible decision.

1

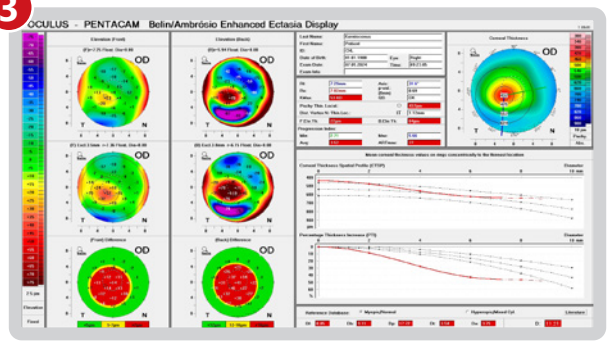
Complete **measurement** in less than one second

2



First check based on the **Scheimpflug image**

3

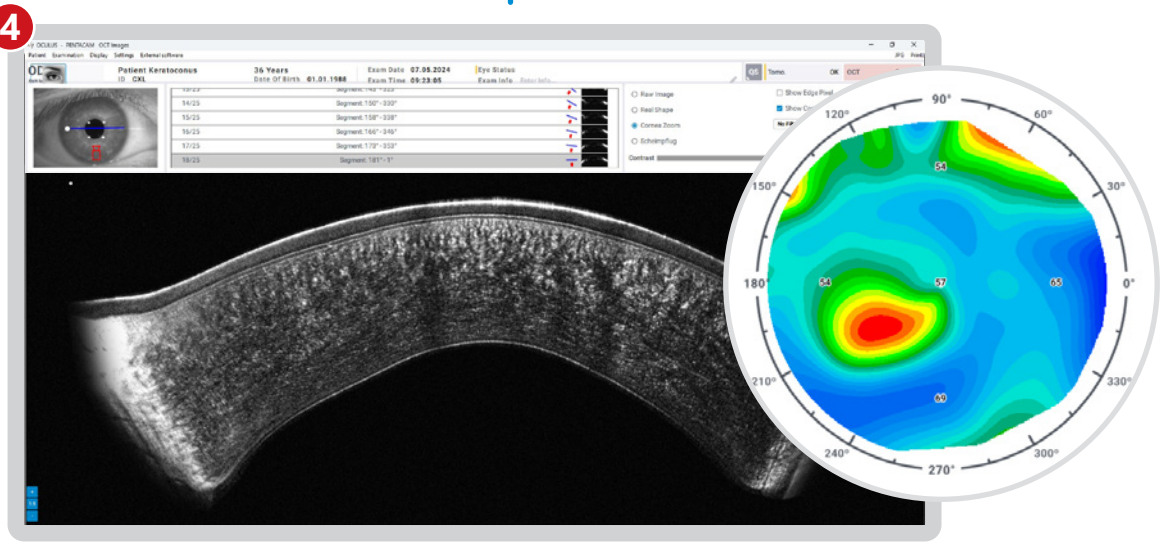


Belin/Ambrósio Enhanced Ectasia Display shows increased ectasia risk: keratoconus

4

3D Cornea OCT scan for analysis of corneal sublayers

Epithelial thickness mapping: doughnut pattern?



5

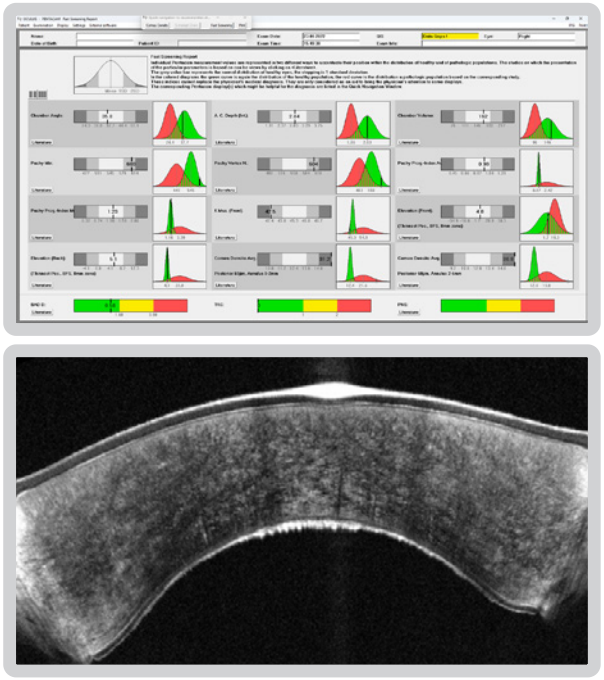
Assessment completed

Cornea experts' first choice

Cornea experts around the world rely on the outstanding analysis capabilities of the Pentacam® Cornea OCT.

CASE 1

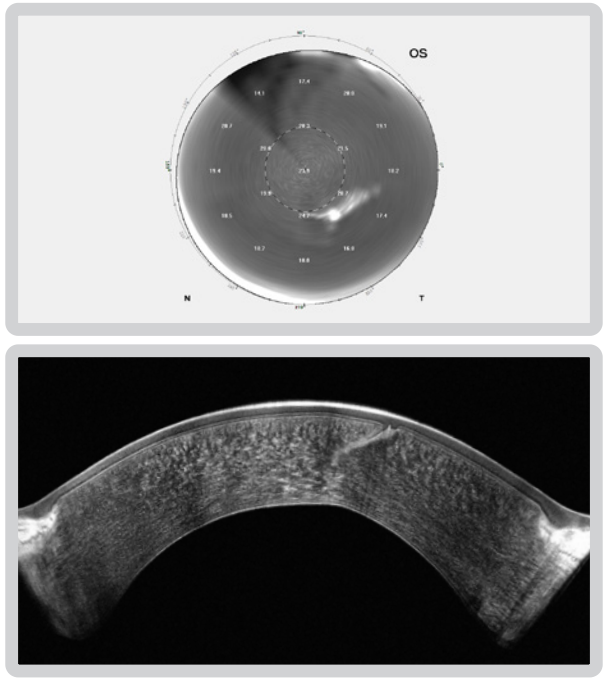
Premium IOL candidate? No!
Early Fuchs' dystrophy



The abnormal densitometry of the corneal endothelium is already evident in the Pentacam® Fast Screening Report. The Pentacam® Cornea OCT reveals small excresences in Descemet's membrane.

CASE 2

LASIK candidate: Look for the scars before cutting a flap.



The optical corneal densitometry of the Pentacam® shows clearly the location of a scar in a potential ablation zone. High-resolution OCT images reveal the exact depth of the scar as well as damage in Bowman's layer.



"Knowing instead of assuming. The Pentacam® Cornea OCT has given me completely new insights."

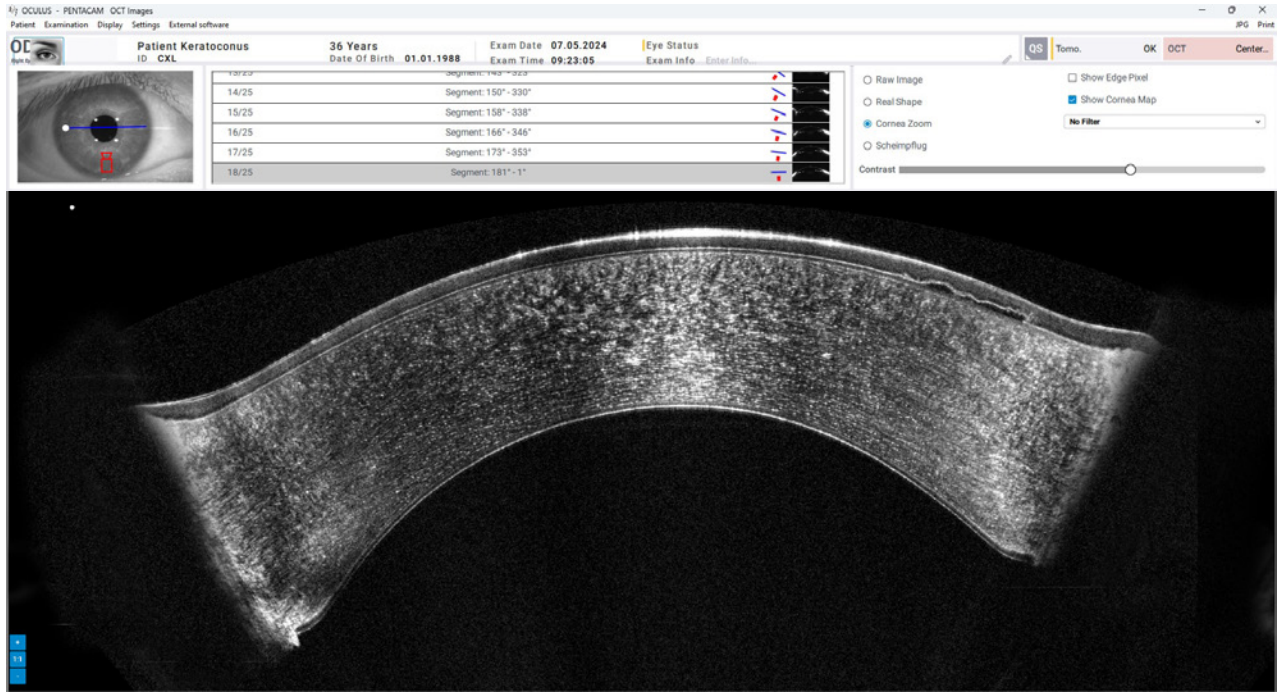
Imagine a world where the intricate layers of the cornea are illuminated with such precision that every detail is revealed, much **like turning on a light in a dark room.**

R. Ambrósio Jr

Renato Ambrósio Jr

Pentacam® Cornea OCT
Imaging modes and software

Experience unparalleled precision and detail with the combined capabilities of Cornea OCT and Scheimpflug imaging. This powerful synergy allows for comprehensive corneal assessment, providing precise measurements of all refractive layers and detailed visualization of sublayers, crucial for early detection, optimal surgical planning and post-operative care.



Cornea Zoom mode

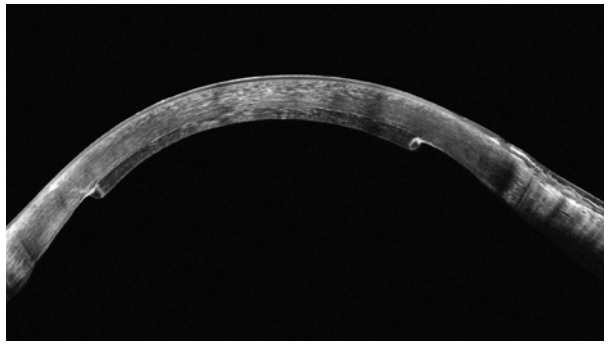
The Corneal Zoom mode revolutionizes corneal imaging by providing a comprehensive view of the entire cornea in just one image. This advanced mode ensures unparalleled clarity and detail, enhancing diagnostic capabilities.

Key features:

- **Wide coverage:**
  Visualizes the entire 15 mm cornea in one image.
- **High-resolution:**
  Finest axial resolution of 1.9 µm.
- **Comprehensive scanning:**
  25 radial scans, matching Scheimpflug images.
- **Enhanced detection:**
  Unprecedented visibility of corneal anomalies.

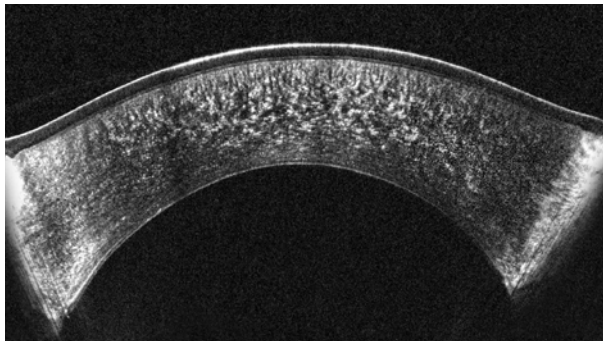
Advanced imaging and analysis: unleashing the power of OCT and Scheimpflug technology

After a first overview provided by the Fast Screening Report, additional displays show further, case-specific information. Depending on the irregularities found, the interactive navigation bar recommends displays which lead you to suitable detailed analyses – custom-tailored to the individual patient.



Real shape B-scans and comparison with Scheimpflug images

The real shape mode represents the B-scans of the Pentacam® Cornea OCT in the true geometry of the cornea. This enables visualization of geometric changes in corneal sublayers and allows direct comparison of B-scans with Scheimpflug images in identical sectional planes. While Scheimpflug images reveal structures that scatter light, OCT images provide ultra high-resolution details of these structures

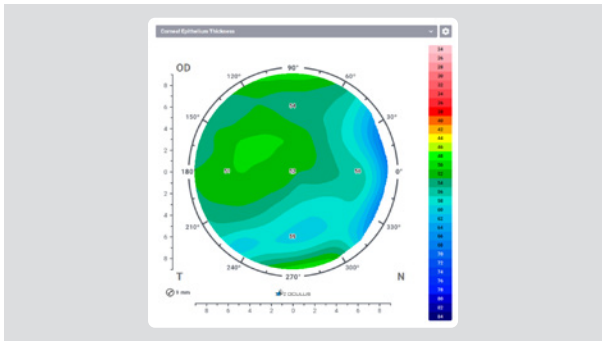


Averaging mode

The averaging mode revolutionizes corneal imaging by combining multiple images to produce exceptionally clear and detailed views.
This mode enhances diagnostic capabilities and supports “non-invasive optical biopsies”.

Key features:

- **Enhanced image quality:** Combines up to 25 images, reducing noise and increasing contrast.
- **Unprecedented detail:** Provides sharp, detailed images for accurate corneal assessment.
- Non-invasive “**Optical Biopsy**”*: Allows detailed corneal examination as in a biopsy or histological exam without invasive procedures.



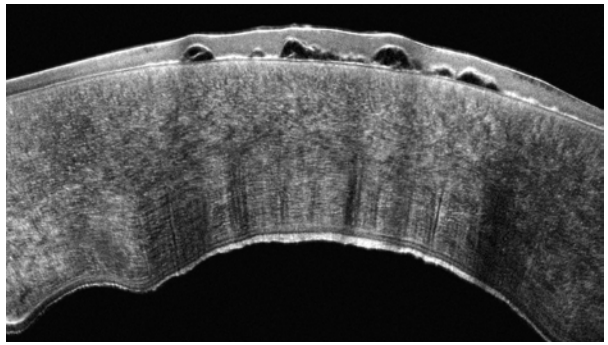
Epithelial thickness mapping

Epithelial thickness mapping offers significant advantages in evaluating ectasia risk prior to laser vision correction. Specifically, it can help distinguish between early keratoconus and corneal warpage. It provides precise measurement of epithelial thickness, crucial for assessing changes post-Laser Vision Correction (LVC), including epithelial remodeling. This map serves as a valuable complement to tomography for assessing ectasia risk, particularly powerful when combined with measurements of corneal biomechanics, offering a comprehensive insight into overall ectasia risk.

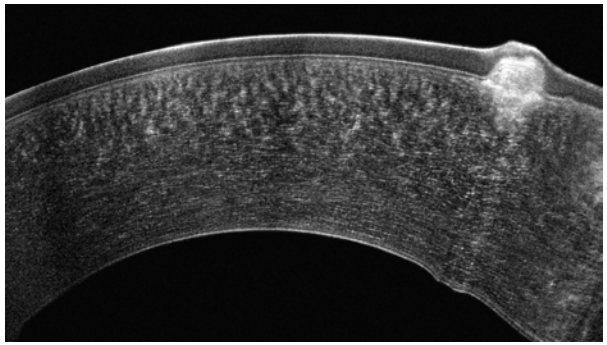
* Term quoted by Renato Ambrósio Jr

Images you must have seen

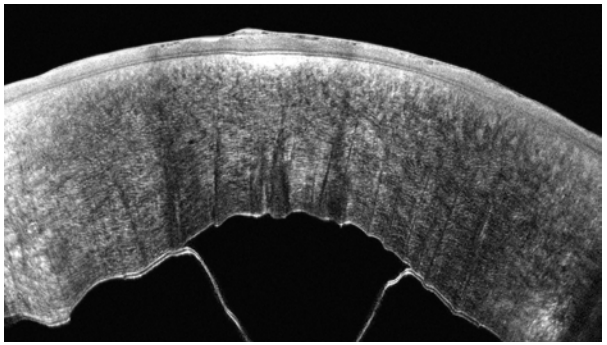
Cornea OCT Images – impressive, convincing, simply sharp



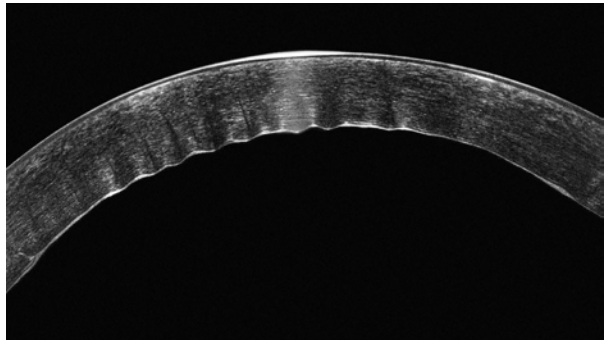
Bullous keratopathy in Fuchs' dystrophy



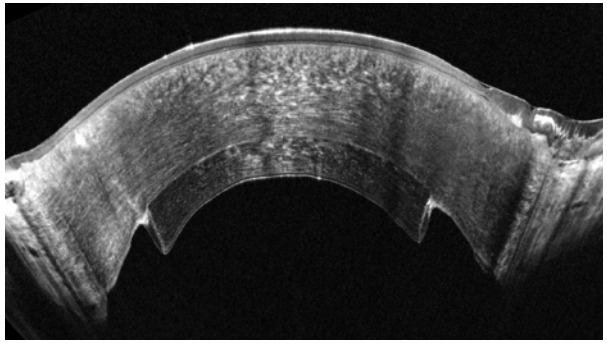
Salzmann's nodular degeneration



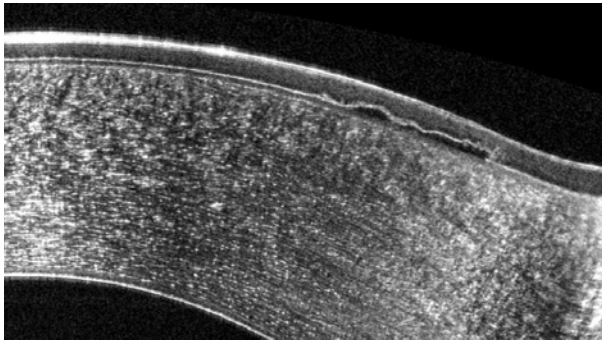
Endothelial detachment



Corneal edema



DSAEK



Map-dot fingerprint

Would you like to see more?

Find more impressive images and cases, including measurement data, at pentacam-cornea-oct.com or by scanning the QR code

Build on your existing examination data

Seamless follow-ups with the Pentacam® Cornea OCT.

Full compatibility with existing Pentacam® examination data

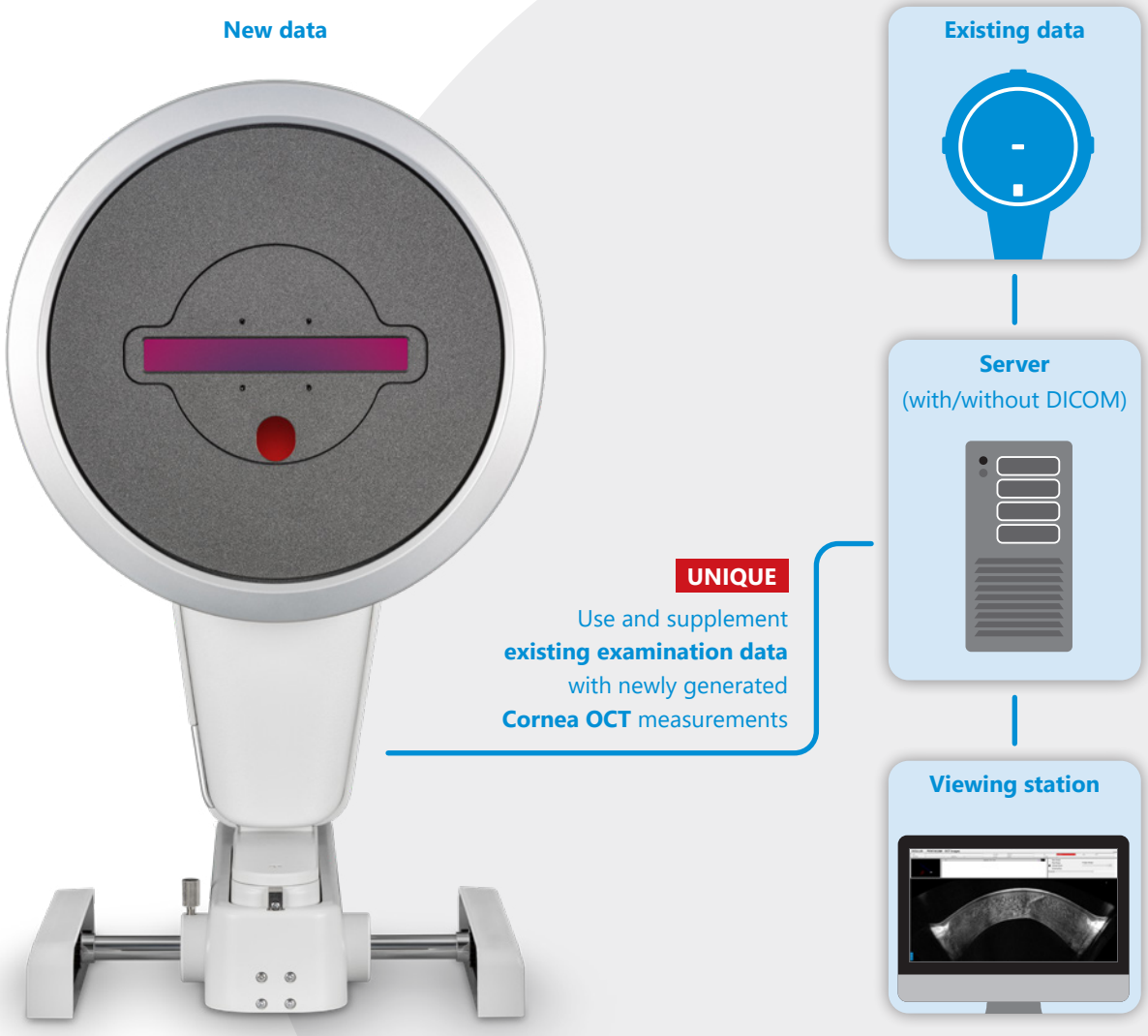
No matter which Pentacam® model you have used in the past, no matter which software version you have worked with: **No data will be lost.** All measured data can be transferred to the new Pentacam® Cornea OCT. This allows for easy follow-up examinations and progression analysis.

The Floating License Key

Licensed Pentacam® software modules for evaluation are stored in the Floating License Key and are already available at all Pentacam® workplaces in your network. You decide which optional examination and evaluation functions you need in addition. To assist you in decision-making, all optional evaluation functions can be accessed up to 20 times for demonstration purposes.

Made for the network

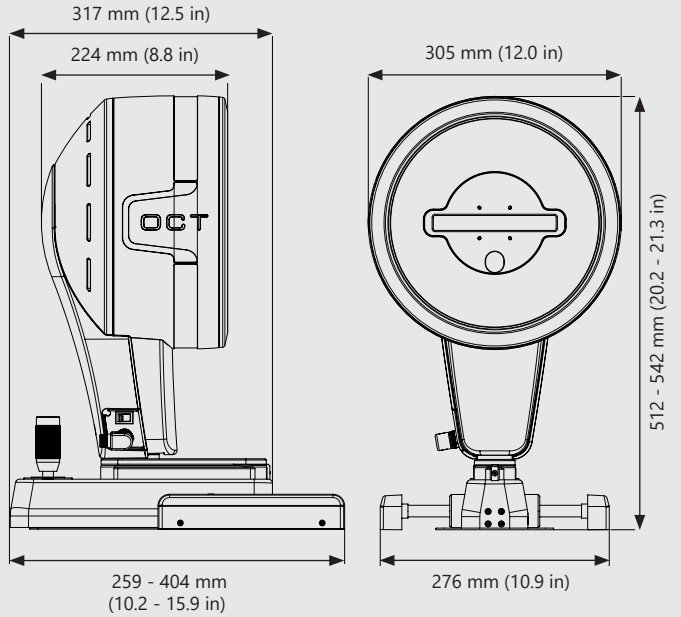
The OCULUS Patient Data Management system (PDM) organizes patient and examination data from all OCULUS instruments. The PDM is network-compatible and can be incorporated into many Electronic Medical Record (EMR) systems. Needless to say, the OCULUS PDM communicates with the DICOM environment and makes results available in DICOM format.



Pentacam® Cornea OCT
Technical Data

OCT camera	
OCT type	Spectral Domain OCT
Axial resolution	1.9 µm
Lateral resolution	10 µm
Scan geometry	Pericentric scan
A-Scan speed	50,000 scans/s
Scheimpflug camera	
Camera	Digital CMOS camera
Light source	Blue LED (475 nm UV-free)
Processor	DSP with 2,746 m operations/s
Speed	100 images in 2 seconds (Cornea Fine Scan)
Measuring points	max. 276,000
Measurement range	
Curvature	3 - 38 mm 9 - 99 D
Precision	± 0.1 D
Reproducibility	± 0.1 D
Operating distance	45 mm (1.8 in)
Technical specifications	
Dimensions (W x D x H)	305 x 259 - 404 x 512 - 542 mm (12 x 10.2 - 15.9 x 20.2 - 21.3 in)
Weight	27.8 kg (61.3 lb)
Max. power consumption	75 W
Recommended computer specifications	Intel® Core™ i7, 2 TB Drive, 32 GB RAM, Windows® 11

CE 0123



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The OCULUS QM system is certified in accordance with ISO 13485 (MDSAP) and (EU) 2017/745 (MDR).

Find your local OCULUS representative on our website.

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