The power of Adaptive Optics
in the hands of clinicians

rtx1™-e

Adaptive Optics Retinal Camera

imagine eyes®

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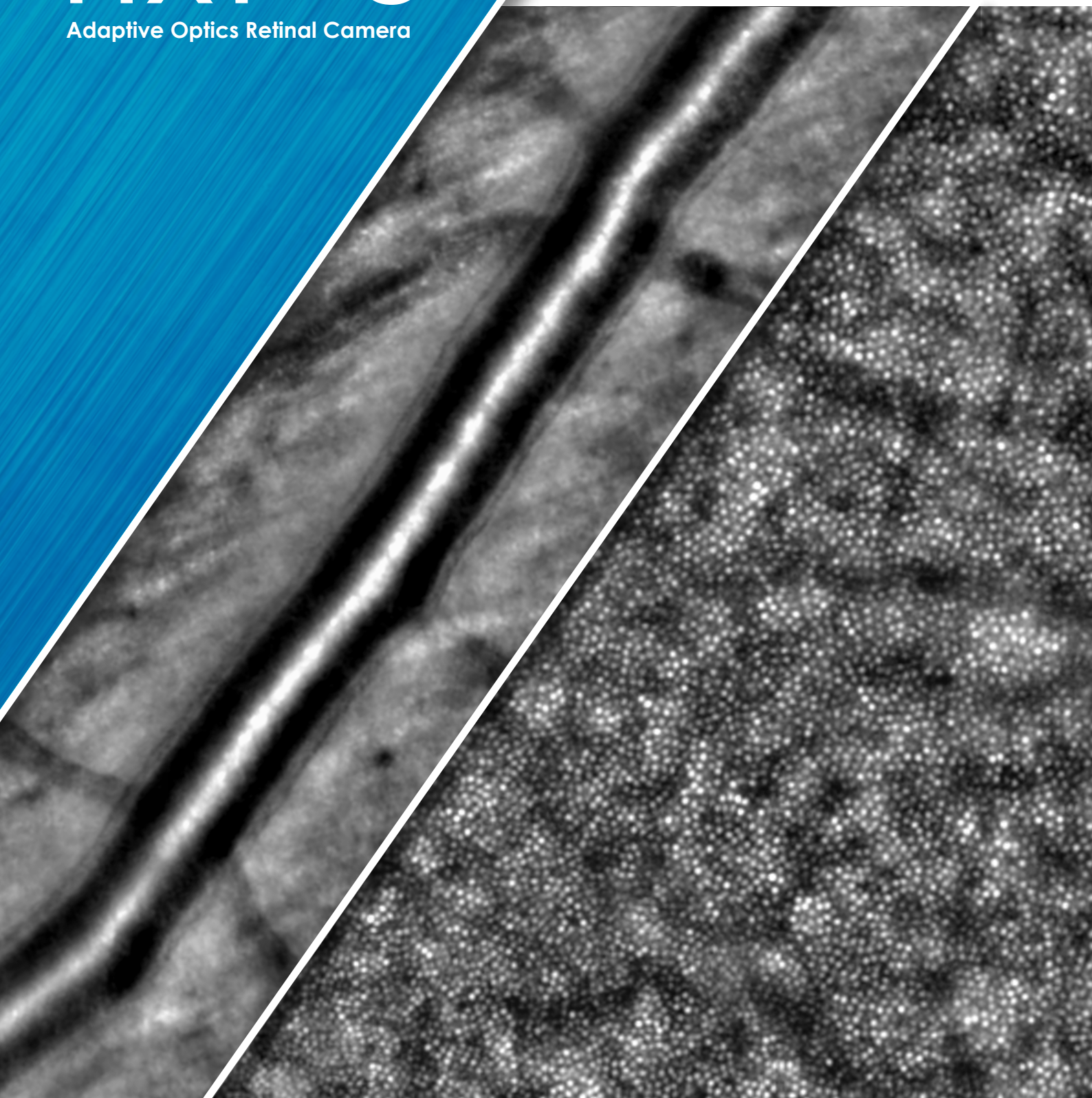
See the retina beyond current limits

The rtx1™ is an infrared retinal camera that offers a lateral resolution at least 10 times higher than OCT and other conventional imaging devices.

With the rtx1™, you can examine the retina at a scale where single cells are visible.

rtx1™ images reveal retinal details that remain invisible with other techniques :
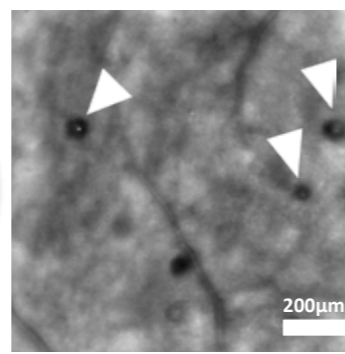
- Parafoveal photoreceptor cones
- Wall structure of arterioles
- Micro-aneurisms, micro-hemorrhages and other small lesions

Small drusen are revealed by changes in the cone cell mosaic
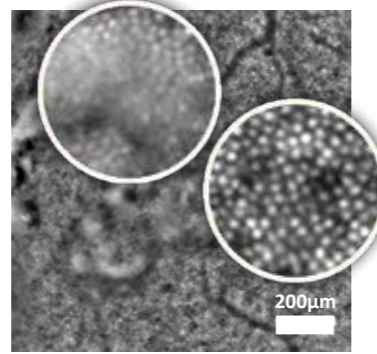
Micro-aneurisms are visible without injecting fluorescein

200µm

Familial Drusen [1]

200µm

Diabetic retinopathy [1]

> " In all patients, AO images showed dark elements that were smaller than what could be resolved by fundus imaging and OCT "
>
> Bek. *Acta Ophthalmologica 92*, 753–758.

Clinician-friendly adaptive optics

The time when AO technology could be mastered only by physicists and engineers belongs to the past.

Designed in collaboration with clinicians, the rtx1™ unites ultrahigh resolution images, patient throughput and usability.

Fast and easy to operate
Acquisition in 2 seconds with the user-friendly interface

Comfortable for the patient
Non-mydriatic on 4mm pupil and infrared only illumination

Cellular level follow-up
Distortion-free AO images perfectly aligned in 2 clics

> " The rtx1 demonstrates that, unlike the common assumption, performing AO retinal imaging can be almost as easy as standard retinal imaging "
>
> Pr. Paques, Quinze-Vingt National Hospital, Paris, France.
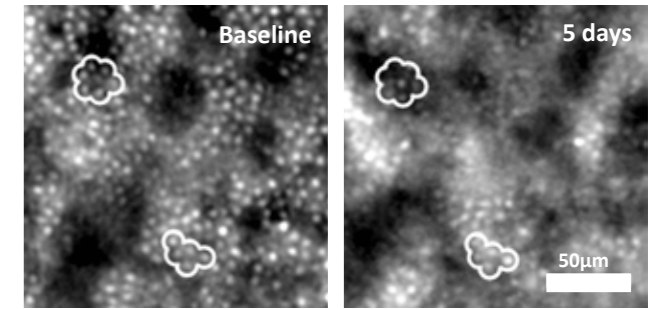
Track microscopic retinal changes

Unlike AO-SLO devices, the rtx1™ delivers distortion-free retinal images.

Building on this unique advantage, the rtx1 software AOimage™ allows to easily capture images of the same retinal region through different visits and align these images with high accuracy.
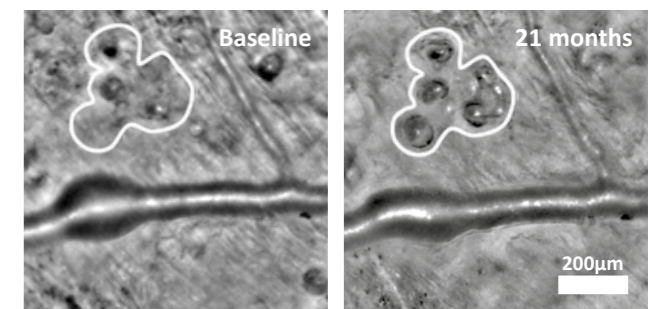
This follow-up functionality results in enhanced sensitivity for tracking minute changes in the retina over time.

> " We, for the first time, visualized longitudinal changes during the recovery of cone photoreceptors in the eyes of VKH patients "
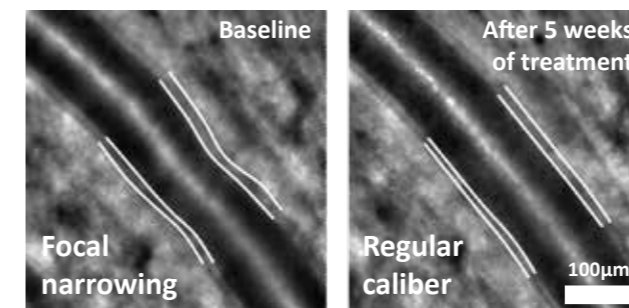>
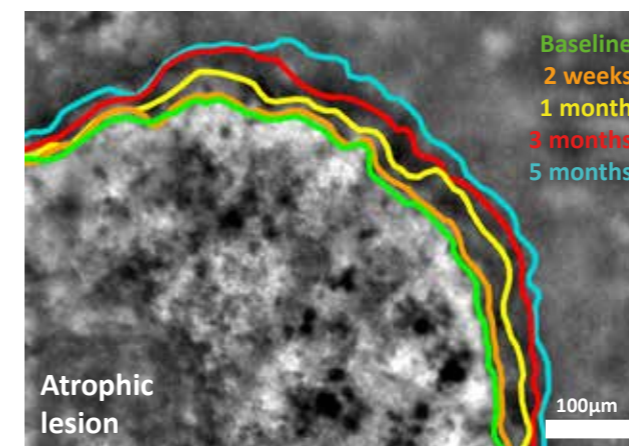> Nakamura et al. *Graefes Arch Clin Exp Ophthalmol (2018)* 256: 387.

Baseline   5 days
50µm

Follow-up images of cones - MEWDS [1]

Baseline   21 months
200µm

Follow-up images of micro-aneurisms [3]

Baseline   After 5 weeks of treatment

Focal narrowing   Regular caliber   100µm

Arteriolar remodeling during anti-hypertensive therapy [2]

Baseline
2 weeks
1 month
3 months
5 months

Atrophic lesion   100µm

Geographic atrophy progression [1]

Enable new advances in biomarkers

The rtx1™ has empowered clinical researchers to investigate a wide array of candidate biomarkers for assessing the micro-structural integrity of the retina.

rtx1™ images are compatible with a semi-automated application[1] for analyzing the distribution of parafoveal cone cells and the wall structure of small arteries, for research use only.

THE *Reference* **in AO Retinal Imaging**

The rtx1™ is the only AO imaging device that has received regulatory clearance in multiple countries[2]. It is the most widely-used AO device in clinical settings. With over 100 peer-reviewed publications describing various new insights in the retina enabled by its unrivaled resolution, the rtx1™ is defining a new standard in retinal imaging.

> *The image resolution achieved by this technology is superior to that of any other current diagnostic tool.*
>
> Zaleska-Zmijewska et al. *Journal of Diabetes Research 2017*, 1–9.

> *Adaptive optics retinal imaging provided non-invasive and sensitive information on the pathologic disruption of the cone mosaic, even in the absence of subjective (visual loss) or objective (diagnostic imaging) abnormalities.*
>
> Ziccardi, L. et al. *American Journal of Ophthalmology 160,* 301–312.e6

TECHNICAL SPECIFICATIONS   rtx1™-e Adaptive Optics Retinal Camera

Imaging type	En face reflectance imaging
Detection type	Low-noise CCD camera
Illumination	Near infrared LED, 850nm
Exposure time	< 10 ms
Imaging field of view[3]	4° x 4°
Fixation stimulation range	H ± 14.5° / V ± 10°
Camera pixel pitch on the fundus[3]	1.6 µm
Optical resolution on the fundus[3,4]	250 line pairs per millimeter (lppmm)
Adaptive optics control	Fully automated, resistant to blinking and movement
Depth focussing range[3]	1600 µm
Pupil diameter	≥ 4 mm
Refractive error compensation	-12 to +6 D
Total footprint (WxDxH)	137x53x132-162 cm

1. The analysis application is not part of the rtx1™ product and is for research use only.

2. The rtx1™ is an approved medical device in the European Union (device class 2a) and in Japan. In the USA, the rtx1™ has not received FDA clearance. It is an investigational device and requires Institutional Review Board (IRB) oversight for use in any research application. Further information is provided in the user's documentation.

3. Some specifications are dependent on several factors including but not limited to: ocular biometry, pupil diameter, optical defects, ocular media transparency.

4. The system can image line pairs of 2 µm in line width.