rtx1™
Adaptive optics retinal camera

Track diseases at the microscopic scale in the retina

Images: Courtesy of Quinze-Vingt National Eye Hospital, Paris, France
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 and micro-hemorrhages and other small lesions

In all patients, AO images showed dark elements that were smaller than what could be resolved by fundus imaging and OCT.


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 ultra-high resolution images, patient throughput and usability.

In all patients, AO images showed dark elements that were smaller than what could be resolved by fundus imaging and OCT.


The rtx1 demonstrates that, unlike the common belief, performing AO retinal imaging can be as easy as standard retinal imaging.

Pr. Paques, Quinze-Vingt National Hospital, Paris, France, 2018.
Track microscopic retinal changes

By design, the rtx1 delivers images that are free from motion distortion. Building on this advantage, its software enables capturing images of the same retinal region through different visits, and automatically aligns them with micrometer accuracy.

The rtx1 allowed us to directly observe stem-cell-derived RPE cells after their transplantation in a patient’s retina. We could verify that the mosaic arrangement of these cells was similar to that of natural RPE cells, and stable over time.

Dr. Takagi, Kobe City Eye Hospital, Kobe, Japan, 2019.

During the follow-up of AMD patients, the rtx1 enabled detecting the progression of atrophic lesions over a timescale of weeks, instead of months with conventional imaging.


Enable new advances in biomarkers

The rtx1 empowers clinical researchers to investigate an array of candidate biomarkers for assessing retinal anatomy and pathologies at the cellular level. With the AOdetect™ application, supervised image segmentation enables analyzing the distribution of cell-like structures and the wall morphology of blood vessels.
rtx1 is a certified medical device of class IIa in the European Union. rtx1 is an approved medical device in Japan, China, and Korea. In the USA, rtx1 has not received FDA clearance; it is an investigational device that requires Institutional Review Board (IRB) oversight.

For use by trained eyecare professionals only.

AOdetect is an option of the certified rtx1 device in the European Union, Japan and Korea. In other territories, AOdetect is a separate product for research use only.

The image resolution achieved by this technology is superior to that of any other current diagnostic tool.


Adaptive optics retinal imaging provided non-invasive and sensitive information on the pathological disruption of the cone mosaic, even in the absence of subjective (visual loss) or objective (diagnostic imaging) abnormalities.


AO technology will likely contribute to faster and more cost effective drug development for the treatment of eye diseases.

Lin et al. *Invest Ophth Vis Sc* 2019, 60:4520-4531.

**TECHNICAL SPECIFICATIONS**

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<thead>
<tr>
<th><strong>rtx1-e adaptive optics retinal camera</strong></th>
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<tr>
<td><strong>En face reflectance imaging</strong></td>
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<tr>
<td><strong>Low-noise CCD camera</strong></td>
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<tr>
<td><strong>Near infrared LED, 850nm</strong></td>
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<td><strong>&lt; 10 ms</strong></td>
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<tr>
<td><strong>4° x 4°</strong></td>
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<td><strong>H ± 14.4° / V ± 10°</strong></td>
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<tr>
<td><strong>1.1 µm</strong></td>
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<td><strong>250 line pairs per millimeter (lppmm)</strong></td>
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<td><strong>Fully automated, resistant to blinking and movement</strong></td>
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<td><strong>1600 µm</strong></td>
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<td><strong>≥ 4 mm</strong></td>
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<td><strong>-12 to +6 D</strong></td>
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<td><strong>137 x 53 x 132-162 cm</strong></td>
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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.

"The image resolution achieved by this technology is superior to that of any other current diagnostic tool."


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