

2018

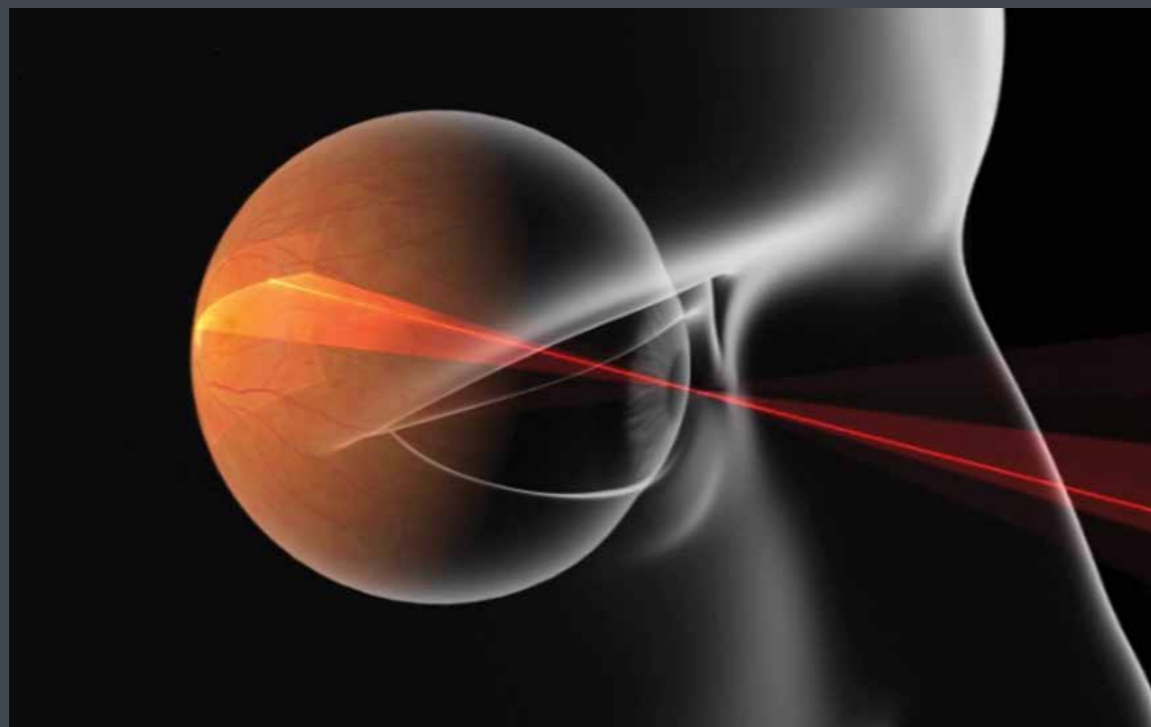
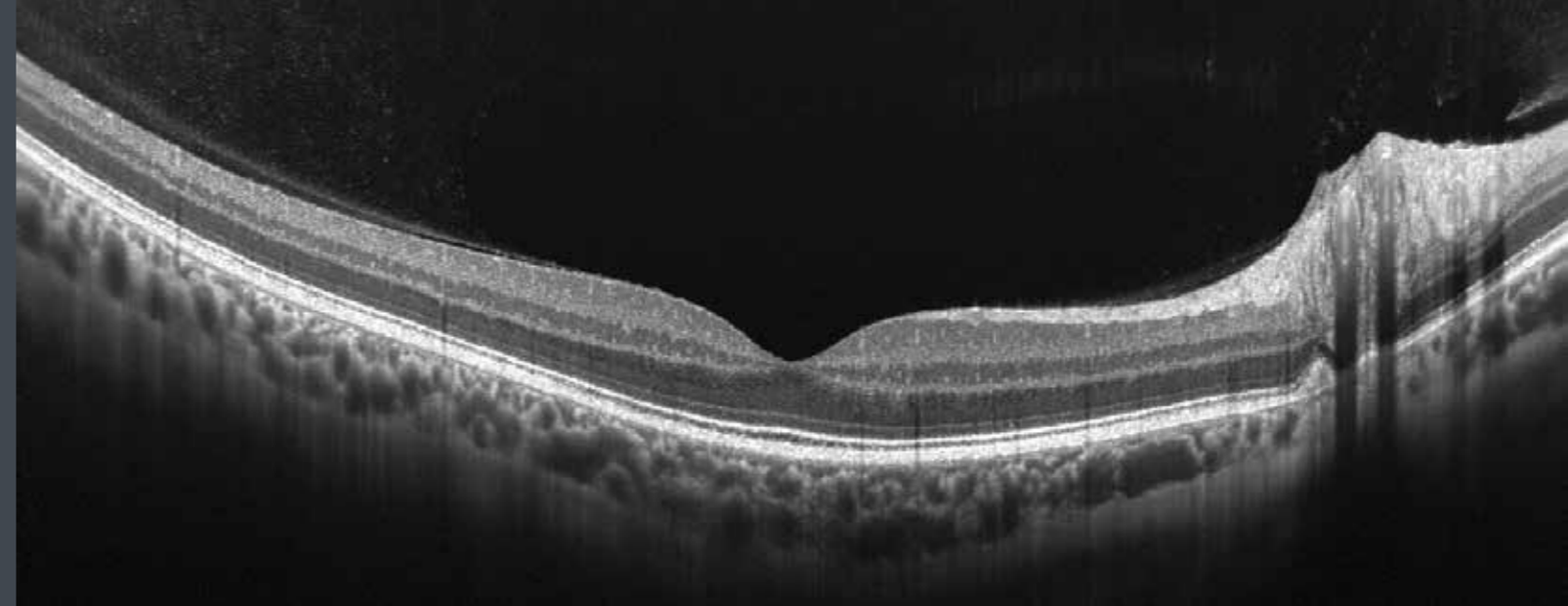
Going beyond the
surface of your retina



OCT-HS 100
Optical Coherence Tomography

Canon

Fast, easy acquisition with incredible detail



Incredible detail

- 3 μm optical resolution.
- Digital resolution comparable with 1,6 μm .
- Up to 13 mm wide scans with 200* times averaging.
- 3D representation, with more depth.
- Clear observation with SLO (scanning laser ophthalmoscope) technology.

* Part of AX HD software.

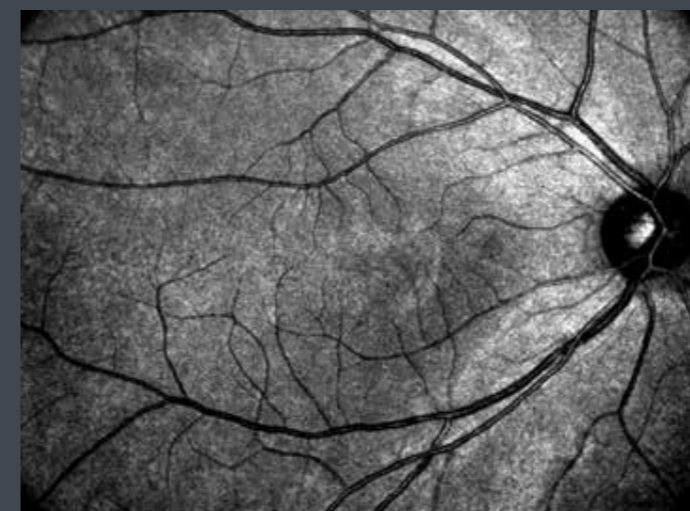
Clinical image courtesy of Tomohiro Iida, MD, PhD, Professor and Chairman Tokyo Women's Medical University.

Fast

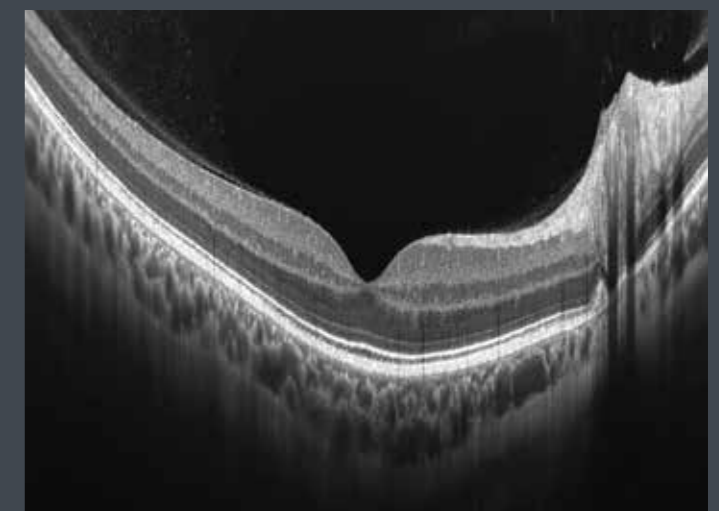
- Full OCT scan in under 2 seconds.
- Full Angio scan in 3 seconds.
- 70,000 A-scans per second.

Easy acquisition

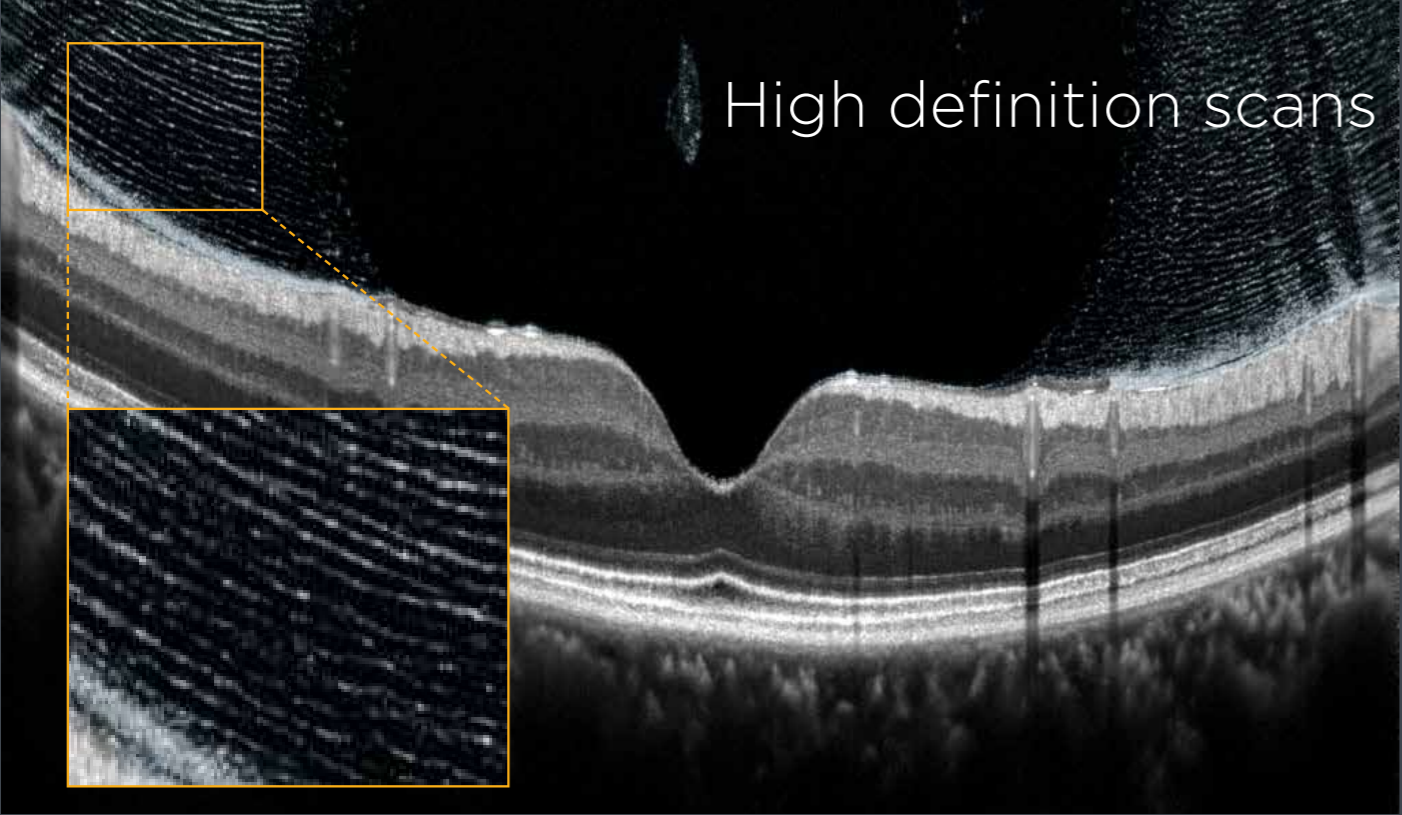
- Fully automated 3 click acquisition.
- Easy to learn and delegate with customisable preset scan protocols.
- Convenient automated patient workflow for increased efficiency and less errors.
- Real-time auto retinal tracking.
- Auto Re-Scan in case of eye movement.
- Easy follow up on same scan position with identical scan parameters.



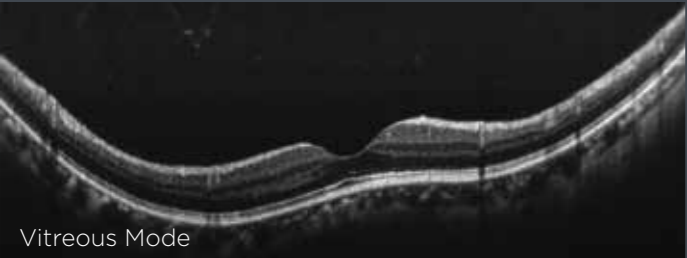
Clear retinal observation with SLO.



Incredible level of detail.



Up to 200 scans* can be averaged, resulting in fantastic image quality. The layer structure as well as the vitreous pleated structure can now be observed in even greater detail than ever before.

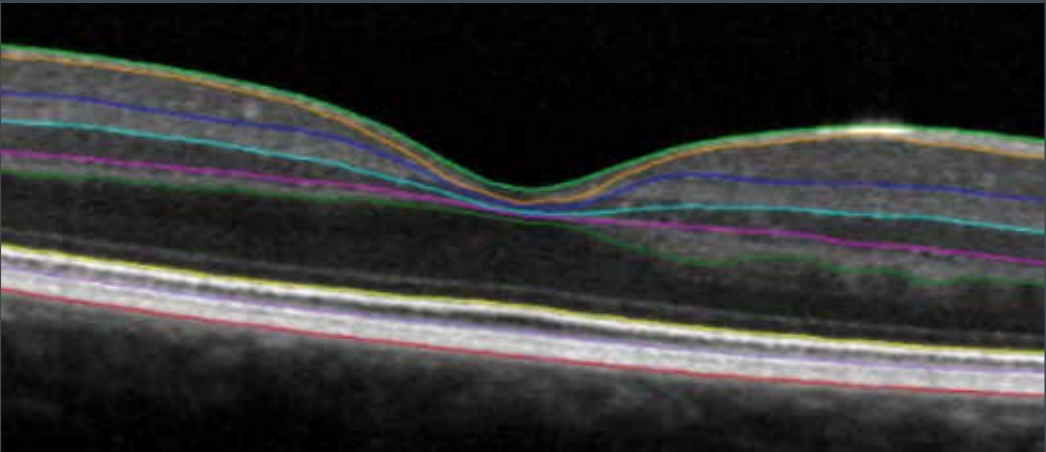


Enhanced Depth Imaging

Optimised scanning modes, to create optimal imaging of the vitreous or choroid modes.

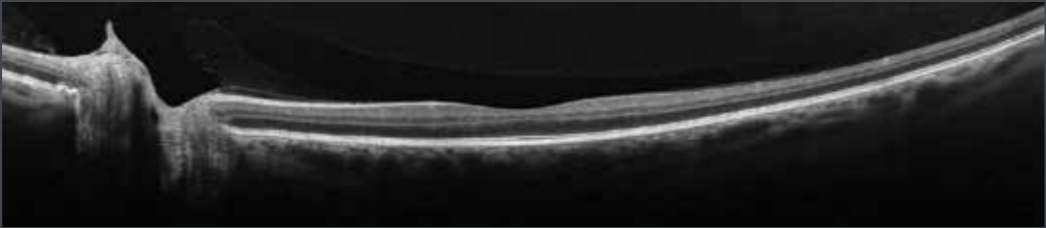
10 layer recognition

The OCT-HS100 can determine 10 boundaries of the retina.



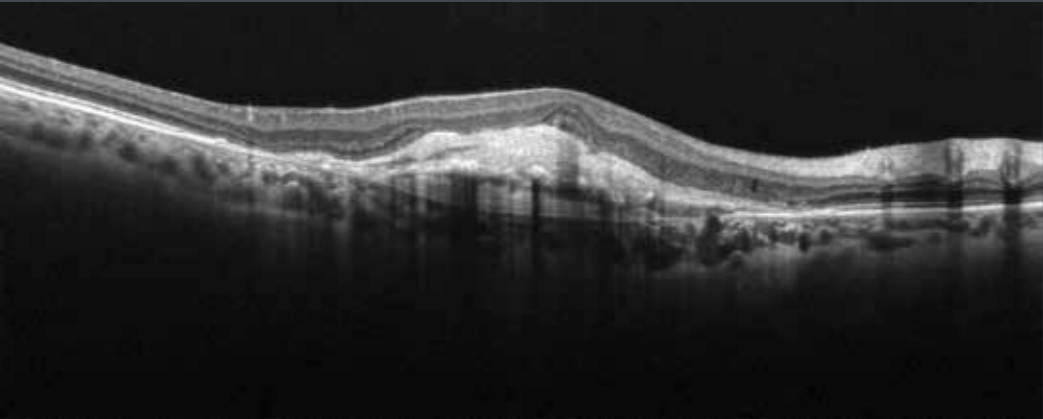
Wide Field

Scan width up to 13 mm.

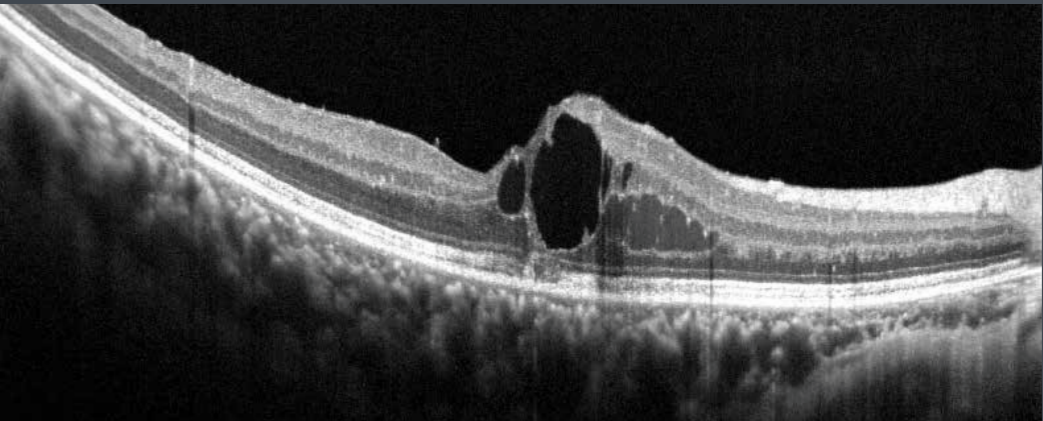


*Part of AX HD software.

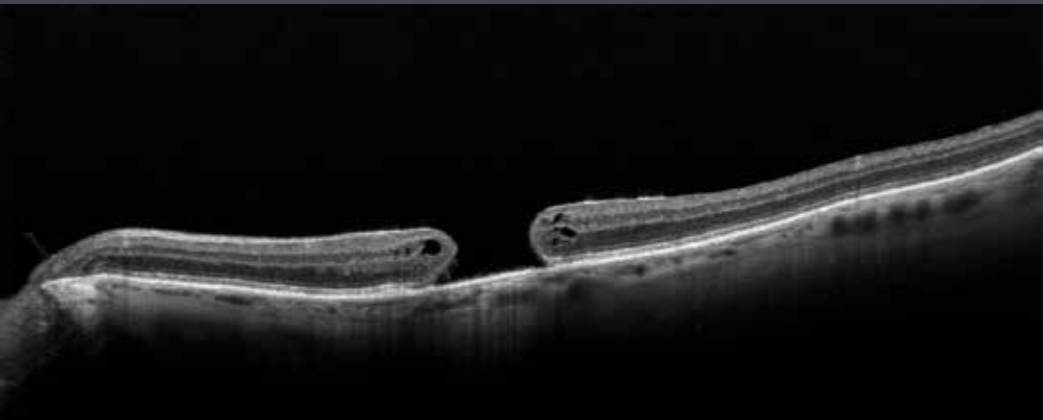
Example images



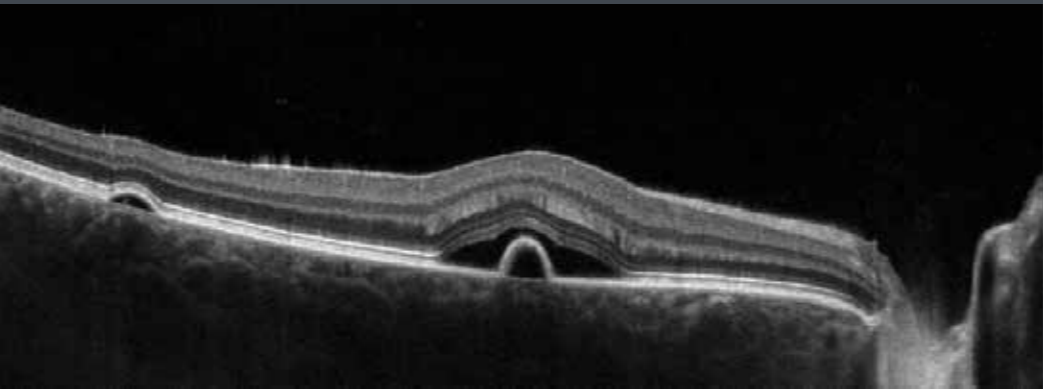
• End stage choroidal neovascularisation.



• Branch retinal vein occlusion.



• Full thickness macular hole.



• Central serous chorioretinopathy.

Images courtesy Skanderborg Eye Clinic, Denmark.

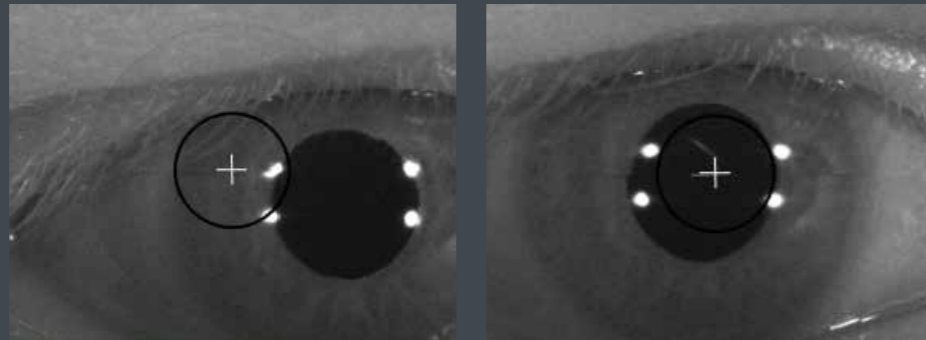


Automated acquisition makes the OCT-HS100 extremely easy to use and very easily delegable

Fully automated 3 click acquisition

1. Anterior Eye Alignment
Just click on the centre of the pupil for initial alignment.

Centre of the pupil is detected and then automatically held as centre.



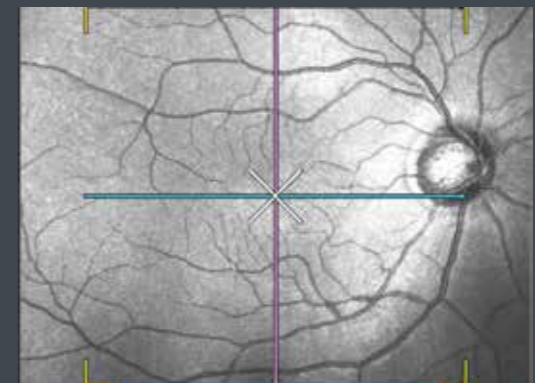
2. Click on **start** - this will initiate the automatic process of alignment and optimisation, including auto focus and auto C-gate.



3. Simply click on **capture** when you are satisfied with the preview image. The OCT-HS100 will then automatically complete the scanning sequence. During scanning, real-time retinal tracking will compensate for involuntary eye movements. Sections that are missing scan data caused by larger eye movements will be re-scanned automatically.

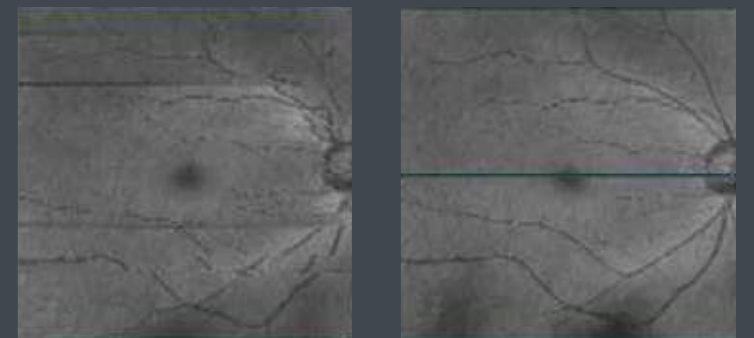
Real-time Auto Retinal tracking

Involuntary eye movements during examinations are unfortunately unavoidable. Canon's retinal tracking uses the built-in SLO to track the retina in real-time to maintain the exact scanning position automatically. This retinal tracking greatly reduces movement artefacts and increases image quality greatly.



Auto Re-Scan

Additionally, when the eye movement during capture is too great to be compensated by retinal tracking, re-scanning is done automatically from the shifted position and the final image will be corrected.



5 default examination sets

To make operation easier, the enormous diversity in scan modes (scan direction, size, orientation and more) have been combined in 5 default sets: Macula disease, Glaucoma, Choroid, General and Anterior.*

Customisable preset scan protocols

Besides the default examination sets, custom scan protocols can be created, according to specific requirements.

*With optional anterior segment adapter ASA-1

Extensive Normative Database

Comparison references available for full retinal thickness, NFL+GCL+IPL / GCL+IPL thickness and significance; RNFL thickness and significance

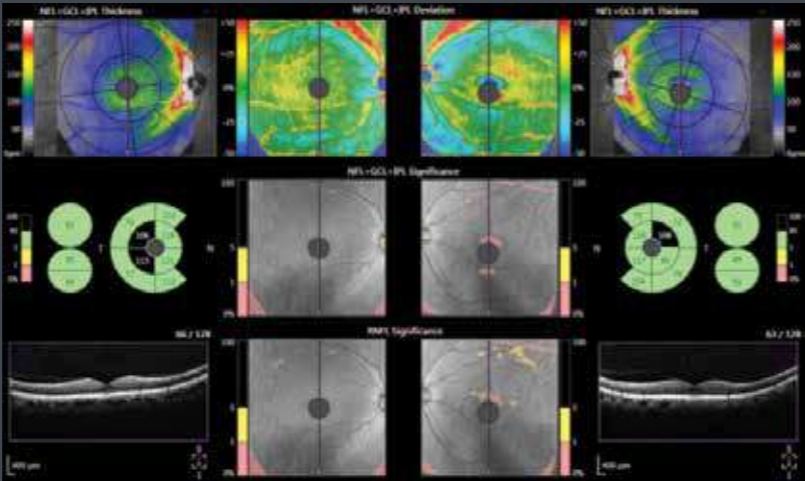
Macula Thickness Analysis

This shows the tomogram image of the macula and analysis results of retinal thickness. The primary scanning direction is horizontal and priority is given to resolution in the horizontal direction.



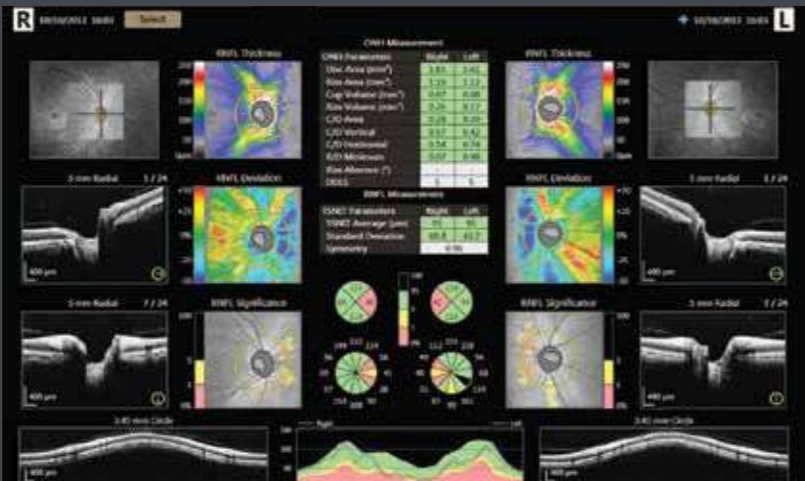
NFL+GCL+IPL / GCL+IPL Analysis

This shows the tomogram image from the macula up to the optic disc and analysis results of retinal thickness. The primary scanning direction is vertical, and priority is given to resolution in the vertical direction.



Optic Disc Analysis

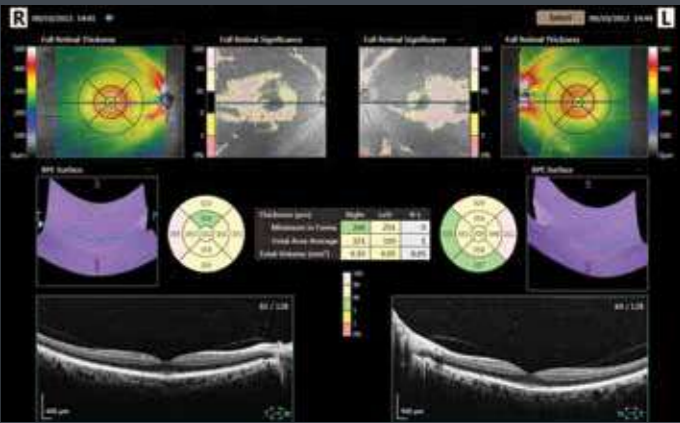
This shows the thickness of RNFL (Retinal Nerve Fiber Layer) and analysis results of the optic disc shape.



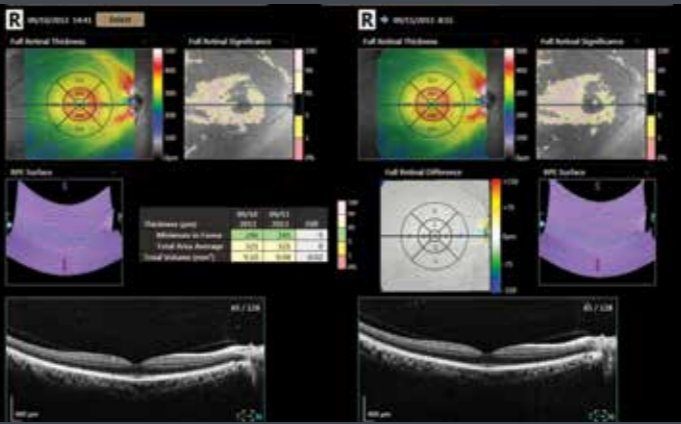
Versatile reporting possibilities



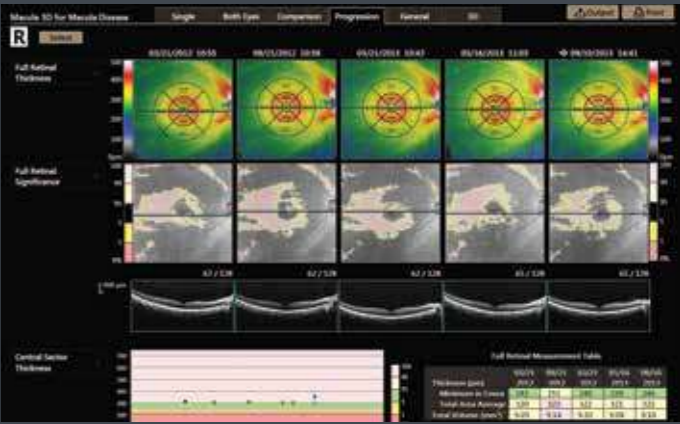
Single
Analysis results of one eye.



Both
Analysis results comparing examinations of both eyes in the same scan mode and same size of scanning area, on the same date.



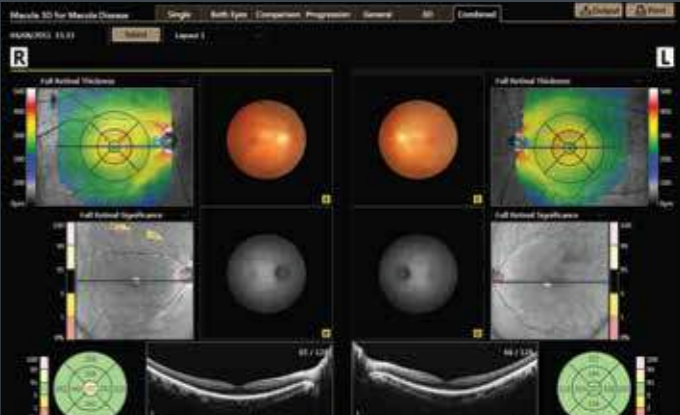
Comparison
Analysis results comparing two examinations of eyes on the same side in the same scan mode, same size of scanning area, from different dates.

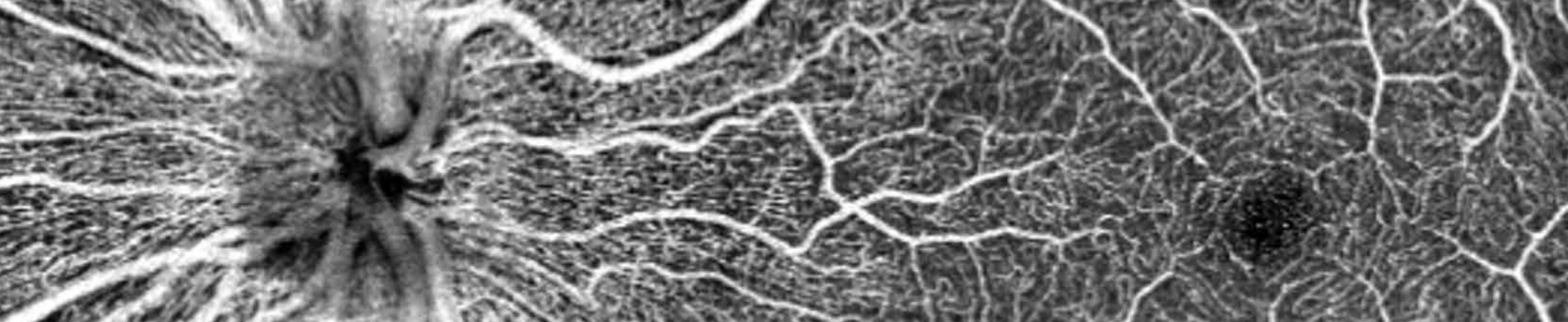


Progression
Analysis results comparing five examinations arranged in time sequence of eyes on the same side in the same scan mode, and same size of scanning area.

Combined Report

This screen shows the analysis results comparing examinations of both eyes, accompanied with retinal images taken with a Canon retinal camera (optional) sharing the same database.



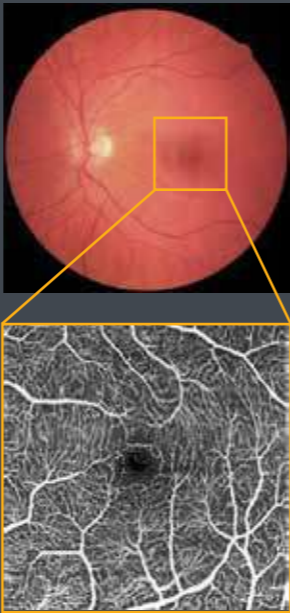




OCT-Angiography

What is OCT angiography?

OCT Angiography (OCT-A) is a technology that can visualise the retinal blood vessels based on the information obtained from multiple sequential scans made at the same position and taken just msec apart. A sophisticated algorithm will filter out any signal differences between the sequential scans. The detected changes are actually showing the moving blood cells inside the blood vessels. With this data, the software can construct an image of all retinal blood vessels in great detail. With OCT-A, it is possible to observe the retinal blood vessels without invasive fluorescein angiography. OCT-A can provide detailed visualisation of even the smallest blood vessels, even in 3D. Neither injection with fluorescein nor pupil dilation is required and examinations just take seconds!



Angio Expert OCT-Angiography

AX Lite

OCTA The optional OCTA license will provide basic OCT angiography

AX HD

- OCTA** By adding the OCTA 2 license to the OCTA license, full OCT
- OCTA 2** Angiography features will be available, including OCTA Analysis.
- MOSAIC** Additionally AX HD can be extended with the optional mosaic license.

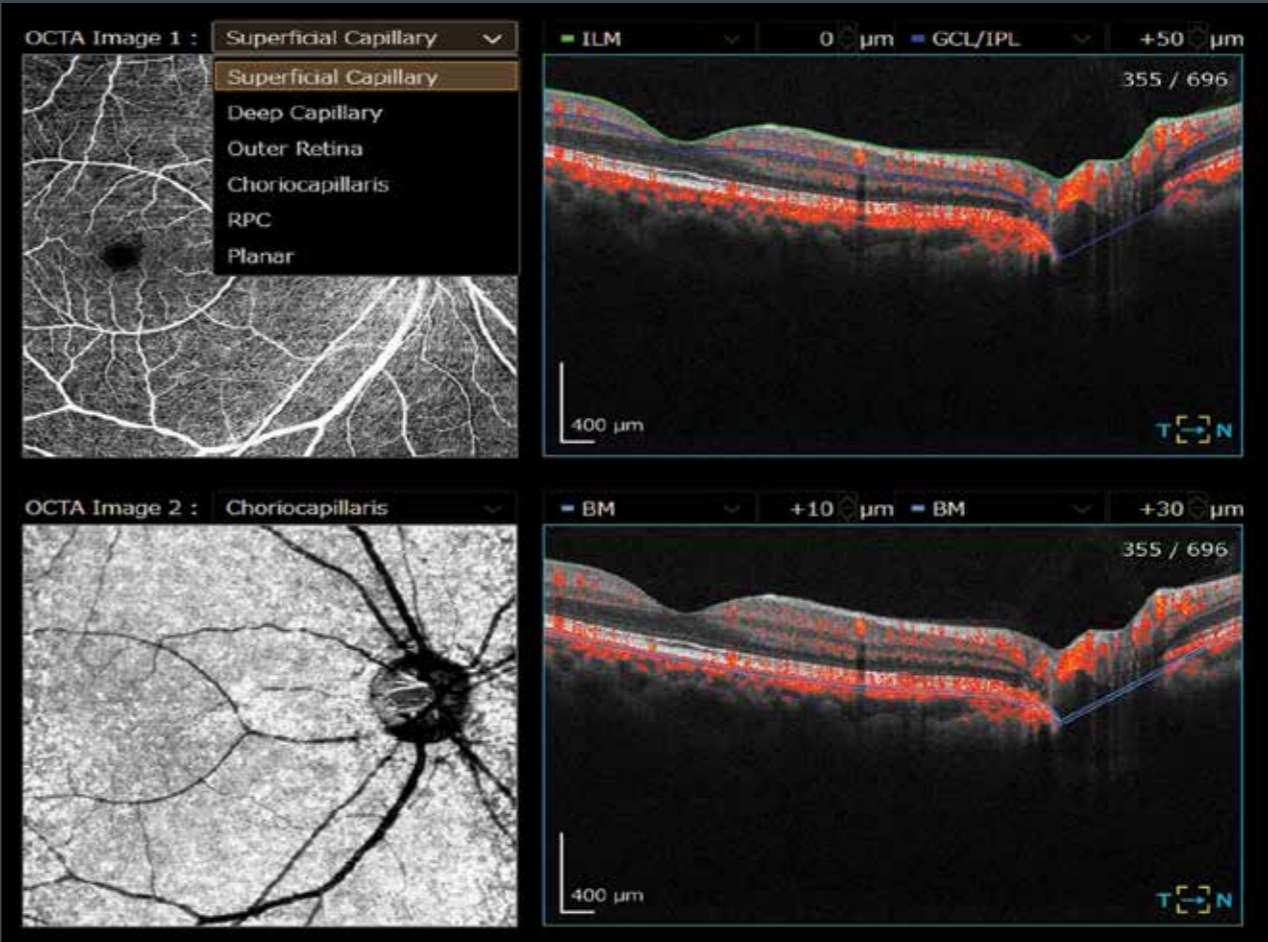
Functionalities	AX HD	AX LITE
B-scan repetitions (NoR)	2/3/4/6/10	2/3
Wide area scans	✓	✗
High density OCT-A scans	✓	✗
200 X Averaging (OCT B-scan)	✓	✗
Projection Artefact Removal	✓	✓
Flow Fusion Technology	✓	✗
OCT-A Analysis	✓	✗
OCT-A Progression report	✓	✓
Automated Area selection	✓	✗
OCT-A mosaic (with optional license)	✓	✗

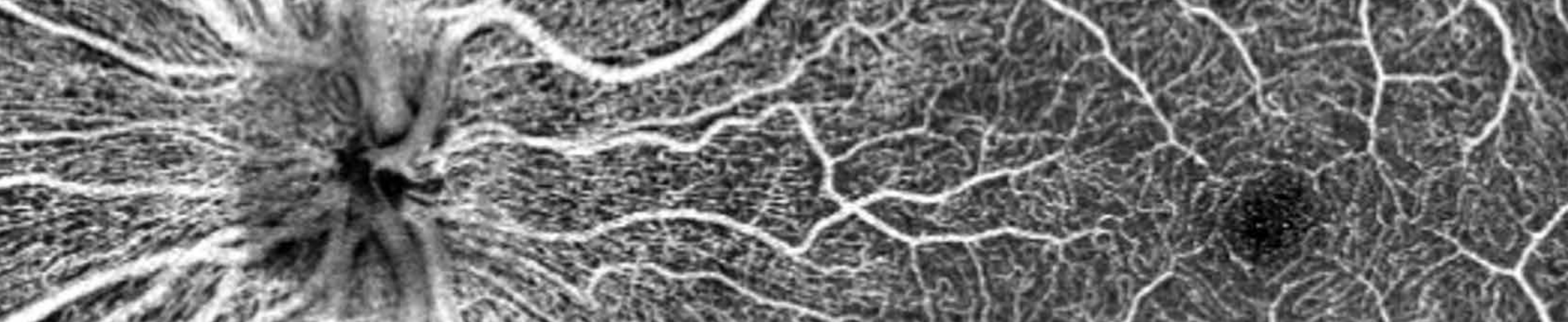


OCT-Angiography

- Fast**
Extremely short scan times: standard scans can be done in less than 3 seconds.
- Real-time tracking**
The OCT-HS100 has SLO based real-time retinal tracking with added rotational tracking; it will minimise artefacts. Combined with sophisticated image post processing, it results in excellent image quality.

- Freely selectable layers**
The OCT-A software allows you to freely select layers to create the preferred OCT-A image. Layers can be defined based on the initial auto segmentation of the retinal layers and a user defined offset.
- Available preset layers**
Superficial capillary, choriocapillaris, deep capillary, outer retina, RPC and Planar.



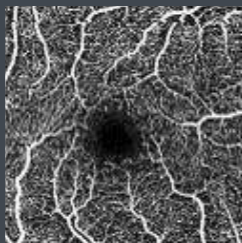


AX OCT-Angiography

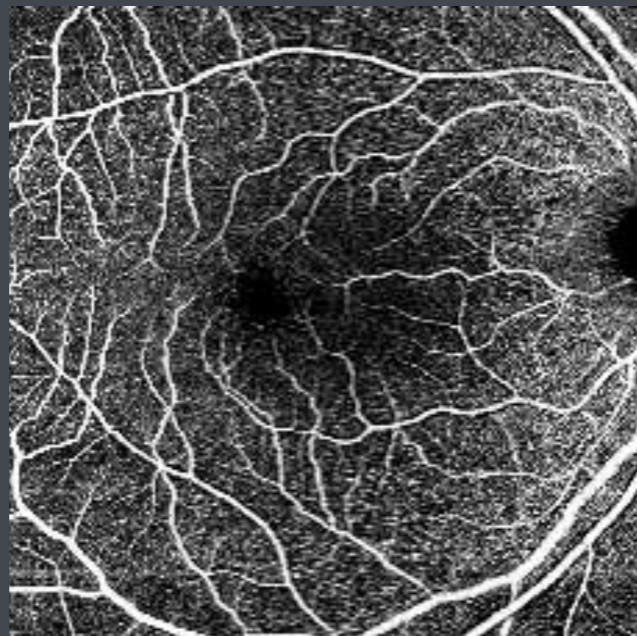
Scan Windows

Scan window is from 3 x 3 to 8 x 8 mm.
Scan size 232 x 232 scans
B-scan repetitions: 2 or 3.

3 x 3 mm

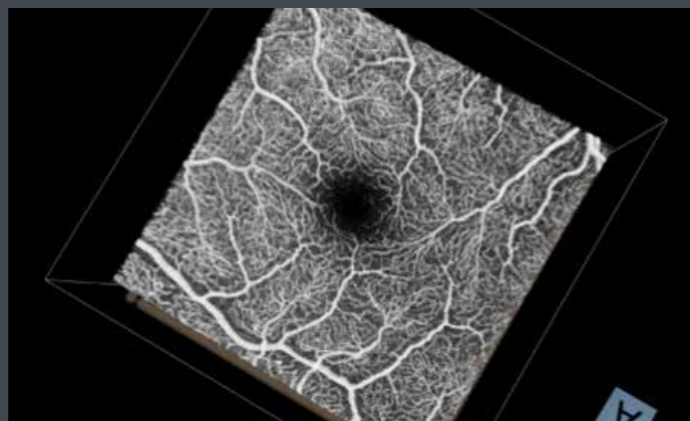
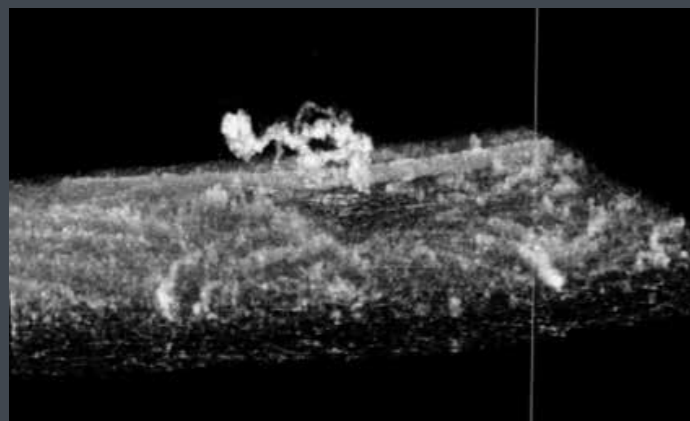


8 x 8 mm



3D OCT-A

Detailed positioning of artery/vein and capillary. 3D representation with more depth.

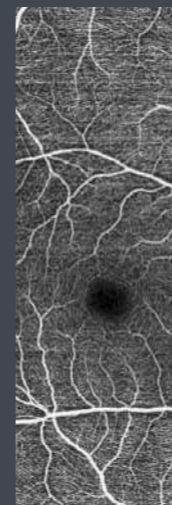


Clinical image courtesy of Dr. Joshua Torrent Despouy,
Ostholstein, Germany.

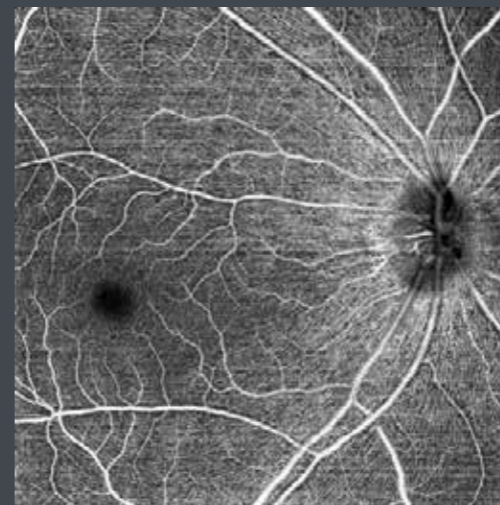
Unlock the full potential of the OCT-HS100 with AX HD OCT-Angiography

Wide field and high definition images.

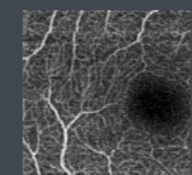
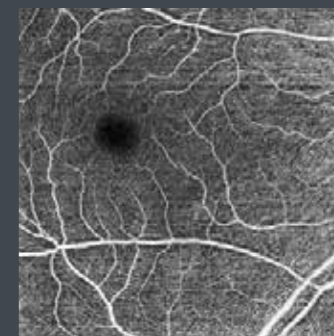
Vertical Wide
(232 x 696)



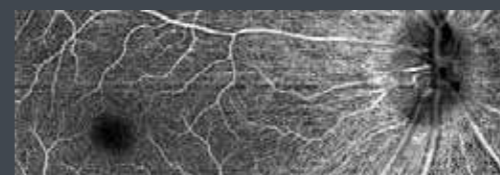
Large Square
(696 x 696)



Medium Square
(464 x 464)

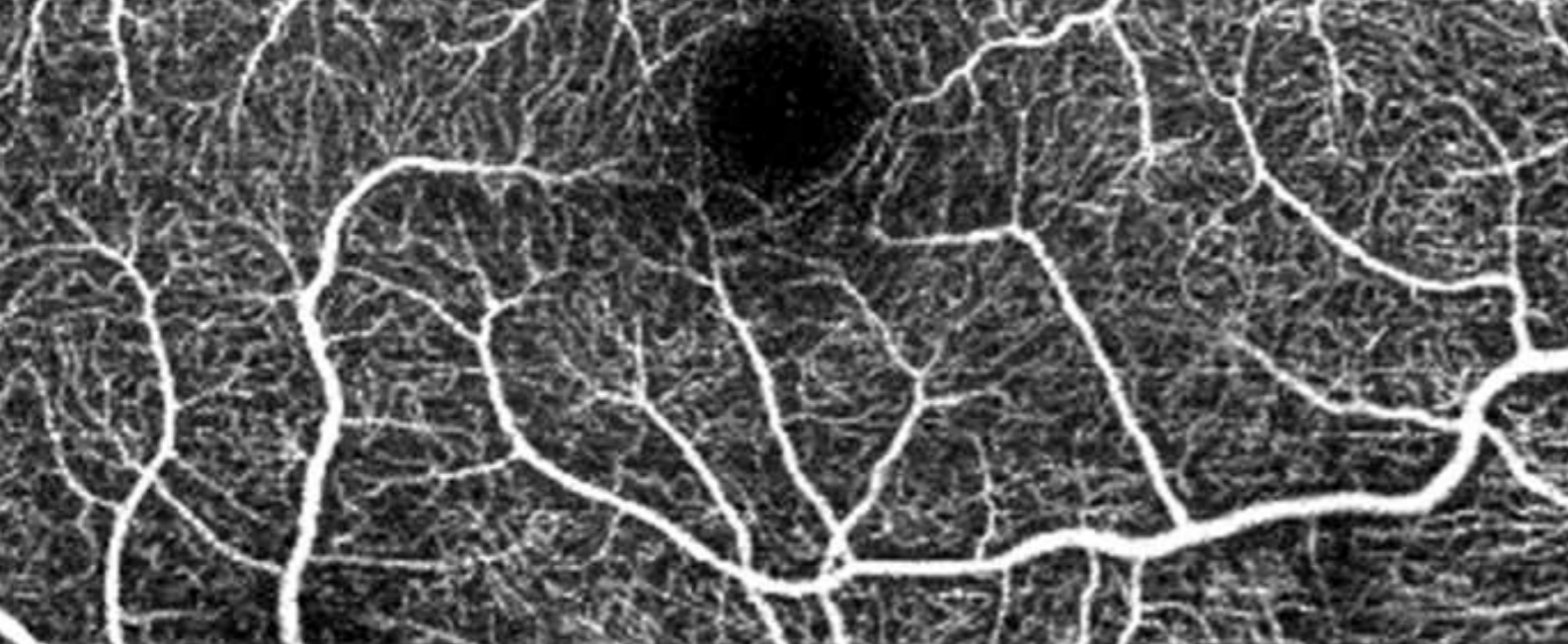


OCT-A
Standard scan
(232 x 232)



Horizontal Wide
(696 x 232)

Clinical image courtesy of Tomohiro Iida, MD, PhD,
Professor and Chairman, Tokyo Women's Medical University.



High definition OCT-A image

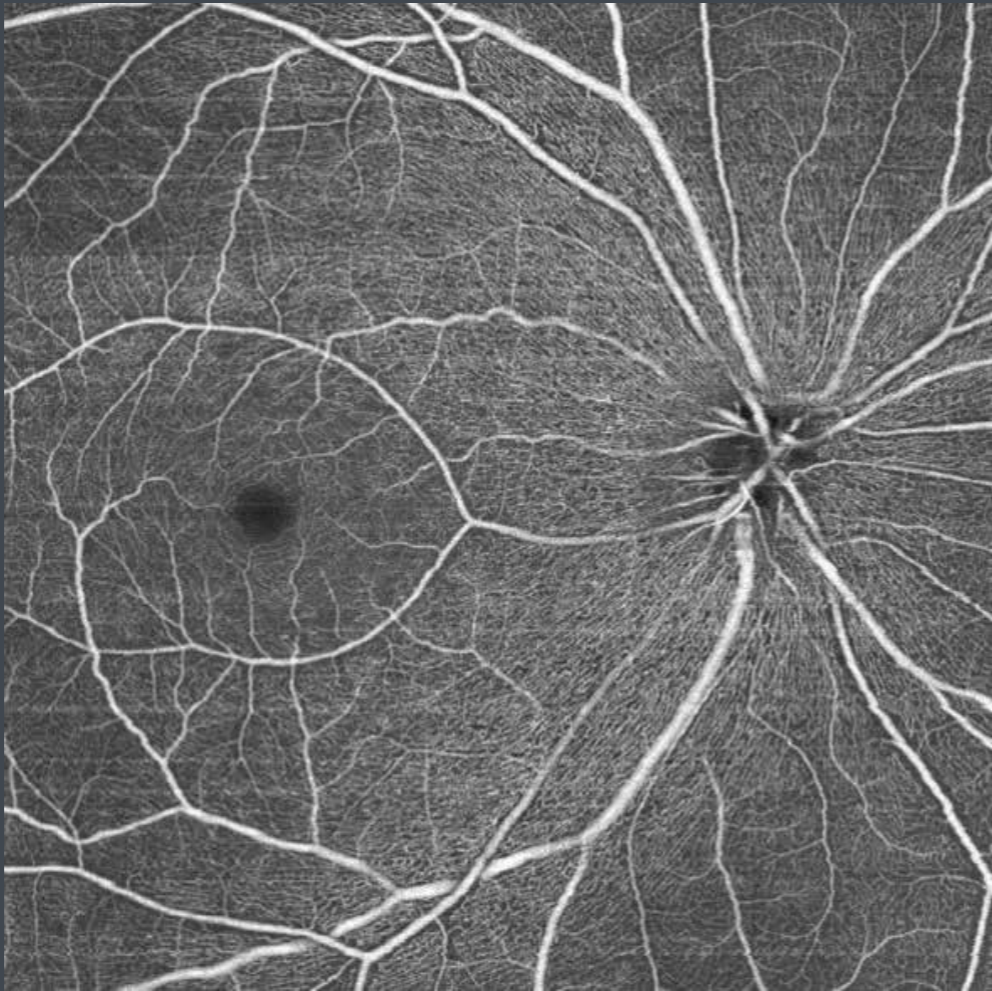
By increasing the Number of B-scan repetitions from 3 to up to 10 times, the image quality will significantly improve, but with longer scan duration.

Overview scan windows

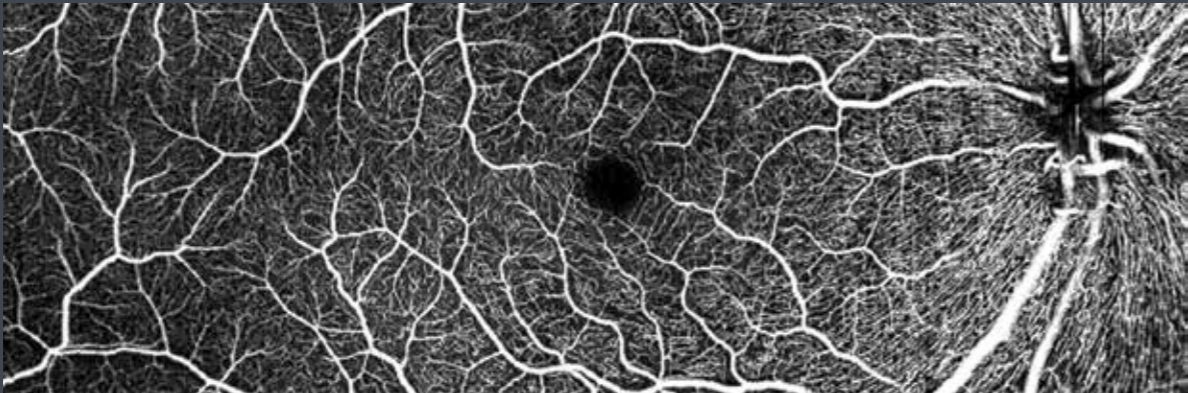
Scan Size	OCTA	OCTA 2				
	232 x 232	232 x 232	464 x 464	696 x 696	696 x 232	232 x 696
3 x 3	●	●				
4 x 4	●	●	●			
5 x 5	●	●				
6 x 6	●	●	●	●		
8 x 8	●	●	●	●		
9 x 9			●	●		
10 x 10			●	●		
9 x 3					●	
12 x 4					●	
3 x 9						●
B-scan repetition (NoR)	2, 3	2, 3, 4, 6, 10	2, 3, 4, 6	2, 3, 4	2, 3, 4, 6	2, 3, 4, 6



Wide field OCT-A scans
Wide field high quality images in a single scan: 12 x 4, 10 x 10 mm.

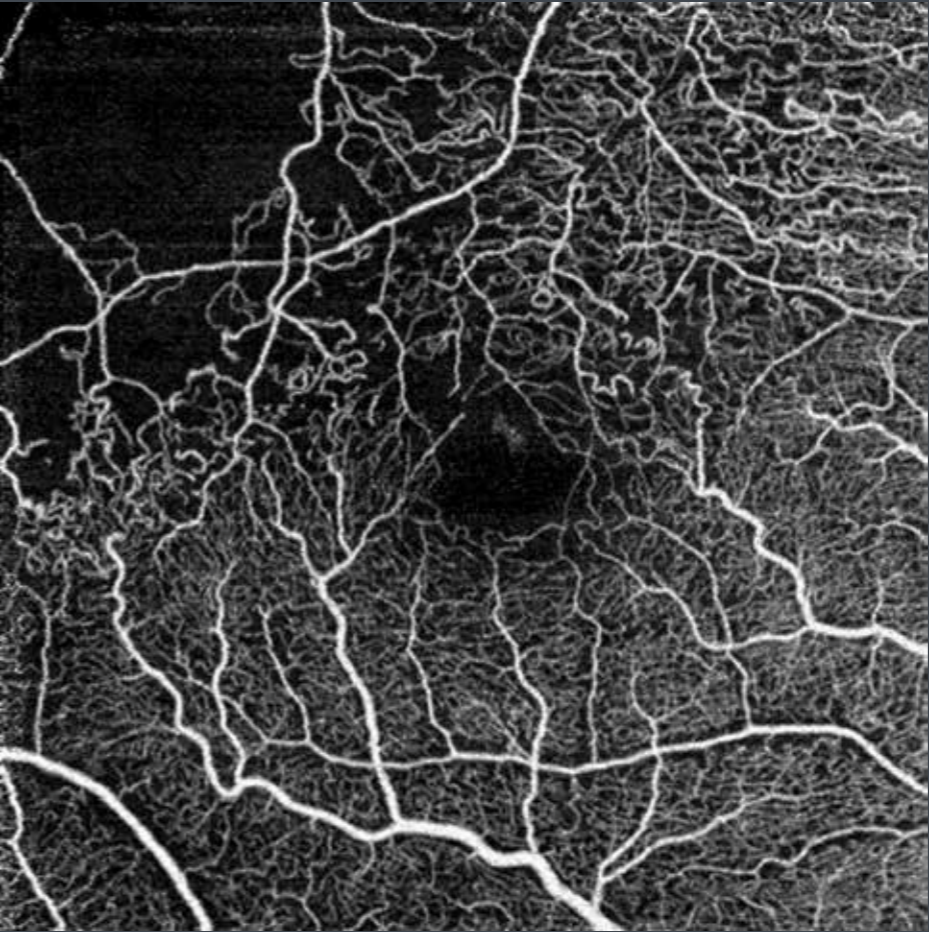


10 x 10 mm



12 x 4 mm

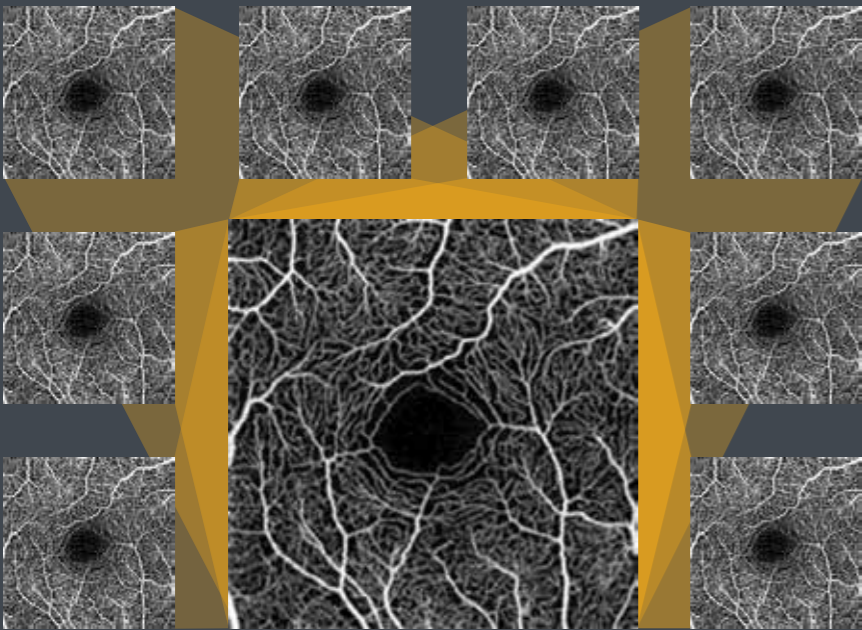
Example:
Branch Retinal Vein Occlusion.



Courtesy of Dr. Diana Iturralde Errea, Mondragón, Gipuzkoa, Spain.

FLOW FUSION TECHNOLOGY

Combining the data of repeated OCT-A acquisitions

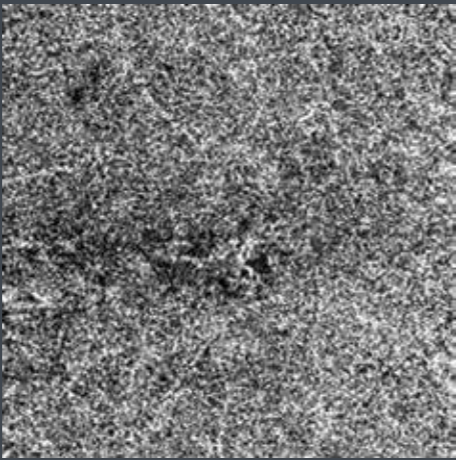
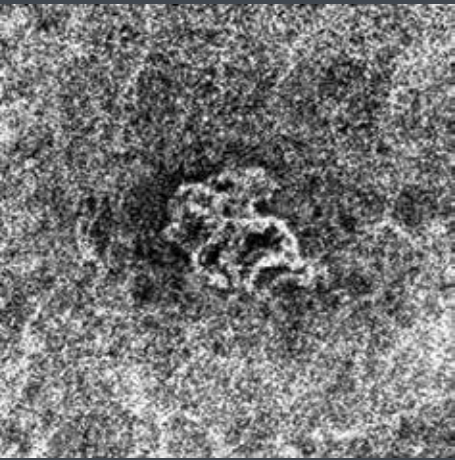


Using the OCT-HS100 special repeat acquisition mode and real-time tracking, up to 10 consecutive acquisitions could be captured at identical position.

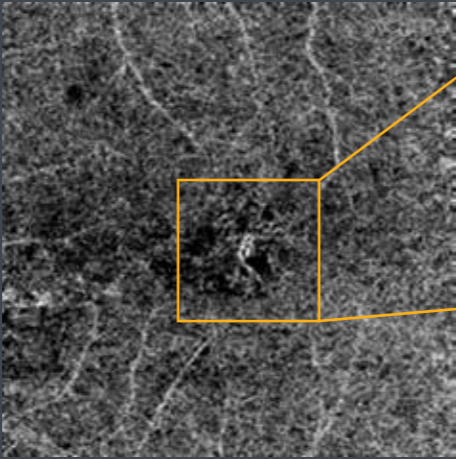
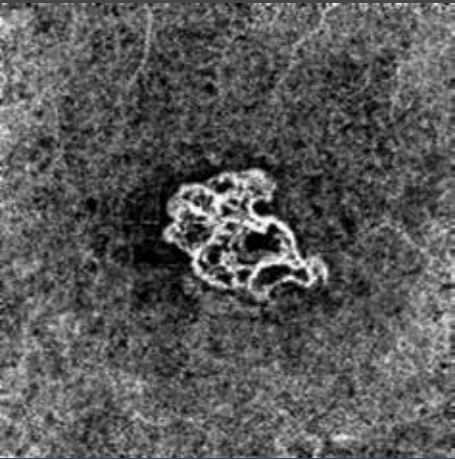
Averaging the 3D data of these multiple OCT-A acquisitions greatly improves image quality: it provides high contrast and clear flow visualisation, and can even eliminate motion artefacts.

Flow fusion technology could also be used to scan in multiple short examinations and then simply fuse the data afterwards; this procedure is less burdensome for patients and can be a great solution during difficult examinations.

Flow Fusion and CNV evaluation



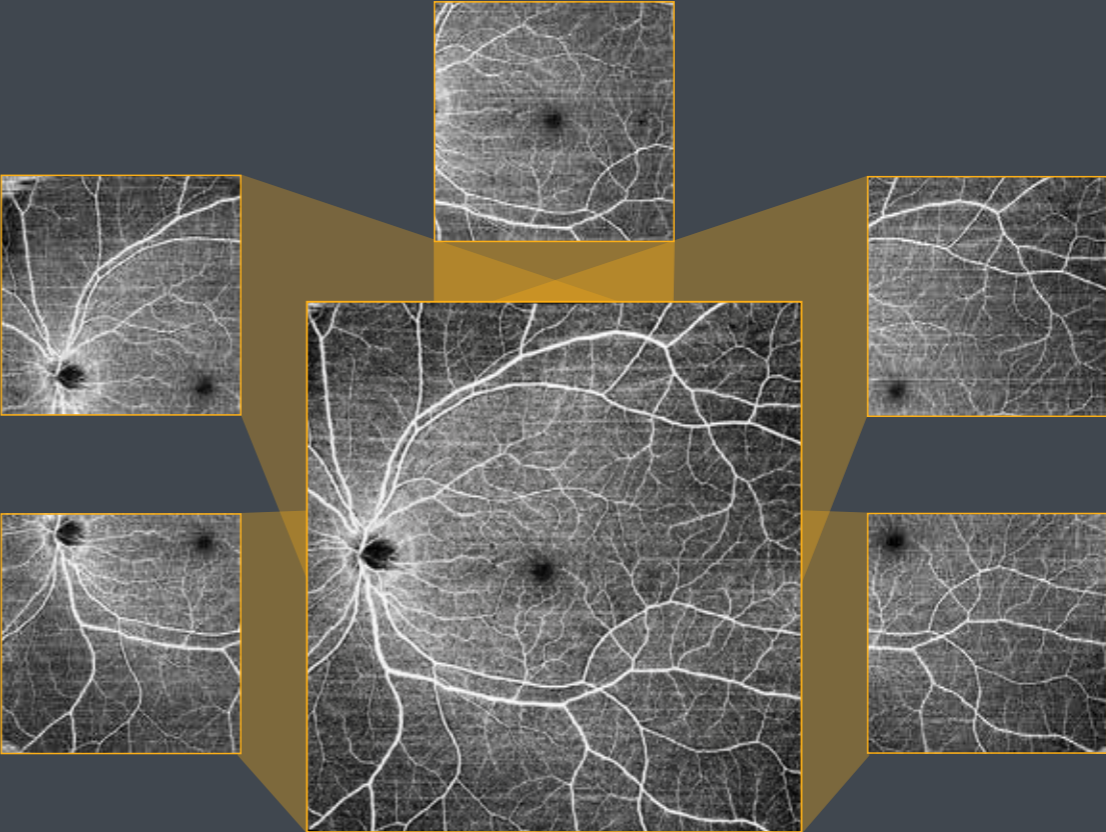
Single Acquisition



Result after averaging 5 repeated acquisitions. CNV is shown much clearer!

OCT-A MOSAIC

Possible with AX HD and additional optional mosaic license



4 or 5 wide field images montage

Up to 17.5mm wide OCT-A with auto-stitching
Ultra wide vessel imaging for observing whole posterior blood flow

Additionally, the mosaic functionality could be used to obtain a wide area scan of even challenging patients. Simply use multiple smaller scans that have a much shorter acquisition time and recombine them into the required scan size afterwards.

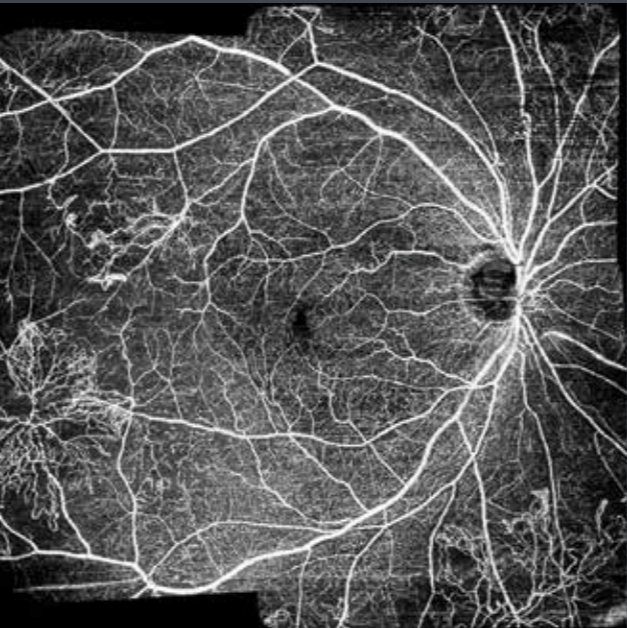


Image courtesy of Tomohiro Iida, MD, PhD,
Professor and Chairman
Tokyo Women's Medical University

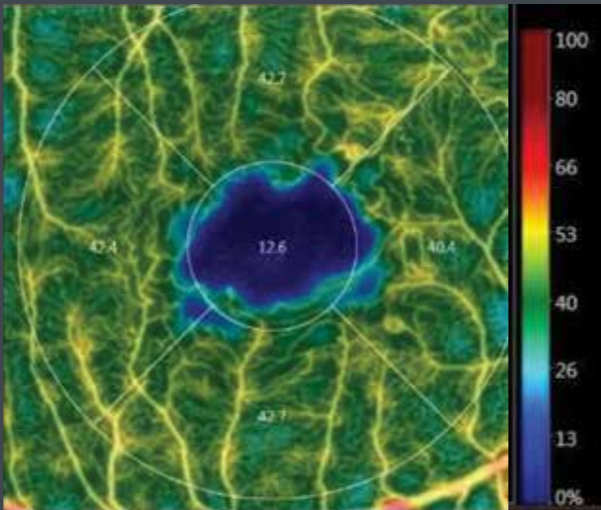
OCT-A Analysis Tools

Part of AX HD



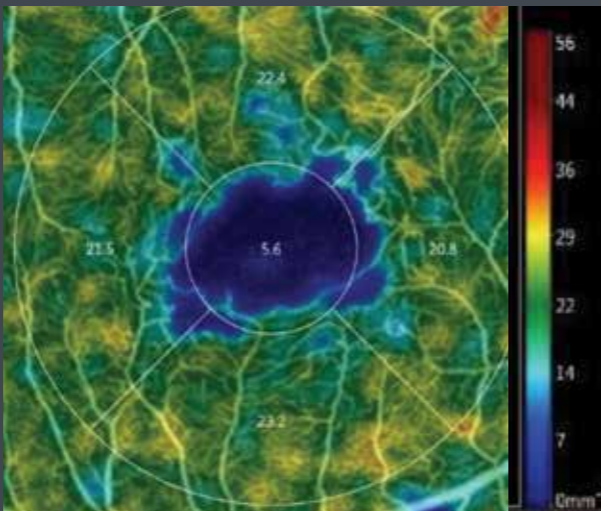
Area Density Analysis

This function creates a binary image from an OCT-A image and indicates the percentage of white pixels in the region by percent (%) in a colour map or as values on each sector of ETDRS grid.



Skeleton Density Analysis

By converting the original OCT-A image into a binary image and representing the white pixels just as thin lines, the tree structure of the vascular system can be made visible. The Skeleton Density function will indicate the total length of these thin lines by area.



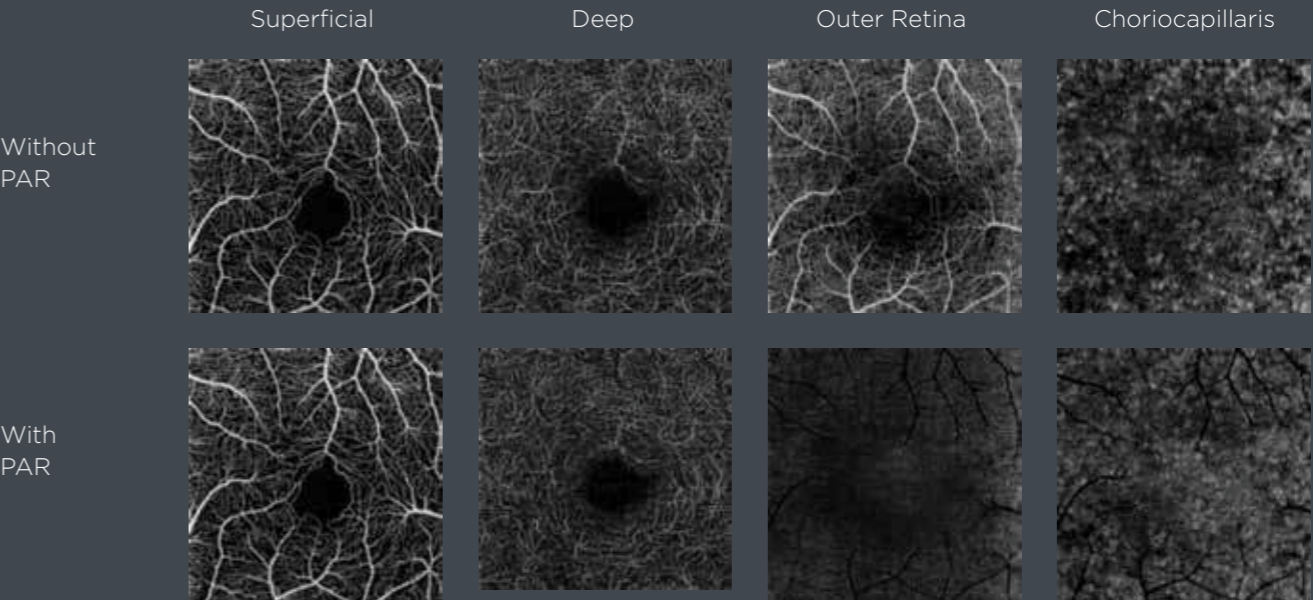
Automated Area Analysis

For determining distance, area, area density and skeleton density. Area (Auto Select) will greatly facilitate area analysis; just click on a non perfused area or the foveal avascular zone, and the selected area and surface area will automatically be displayed (sqmm). If required, the user can modify the automatically drawn boundaries or select the area completely manually.



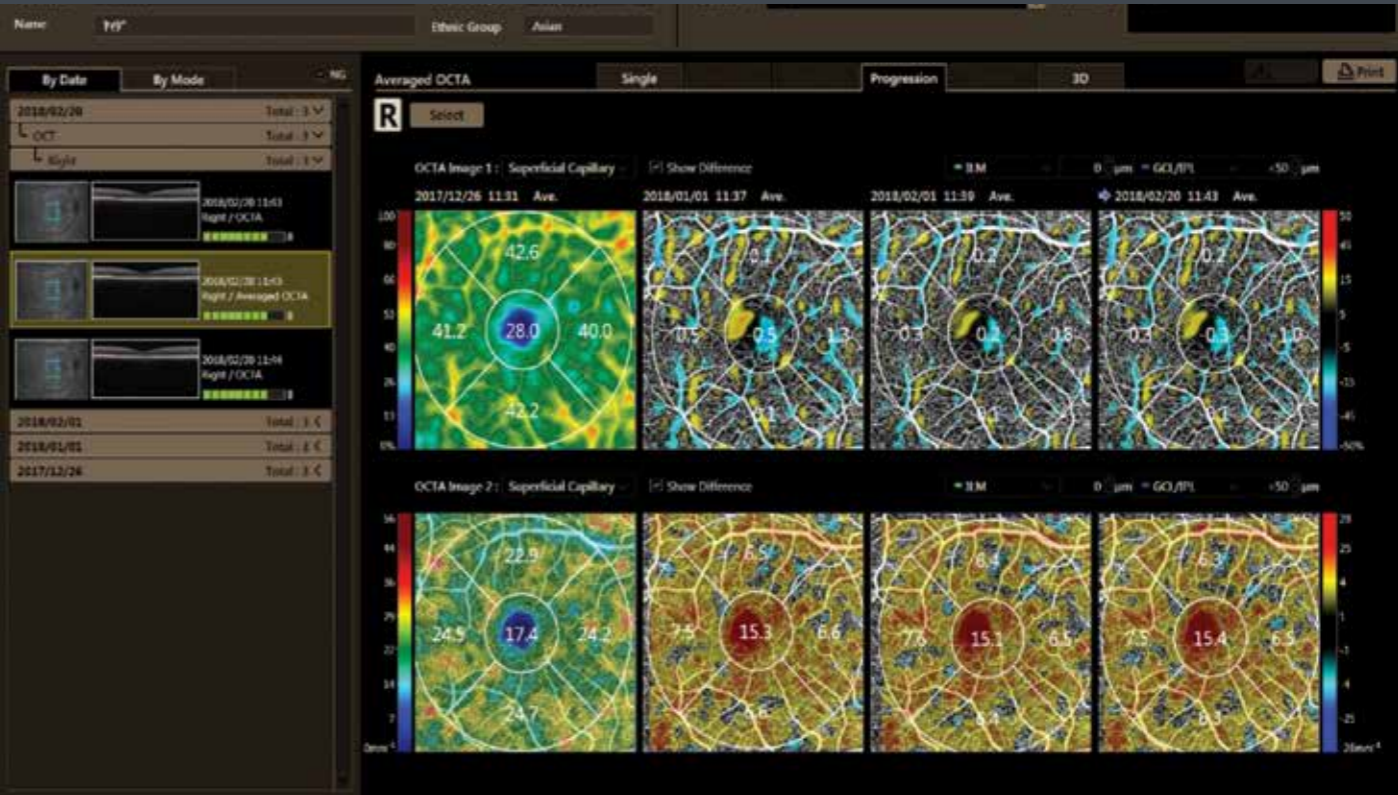
Projection Artefact Removal

Projection artefacts from the overlying retinal circulation can interfere strongly with the correct diagnosis. Projection Artefact Removal (PAR) is therefore crucial, Angio Expert uses the full 3D signal data, for natural projection artefacts removal, but without removing any relevant clinical information.



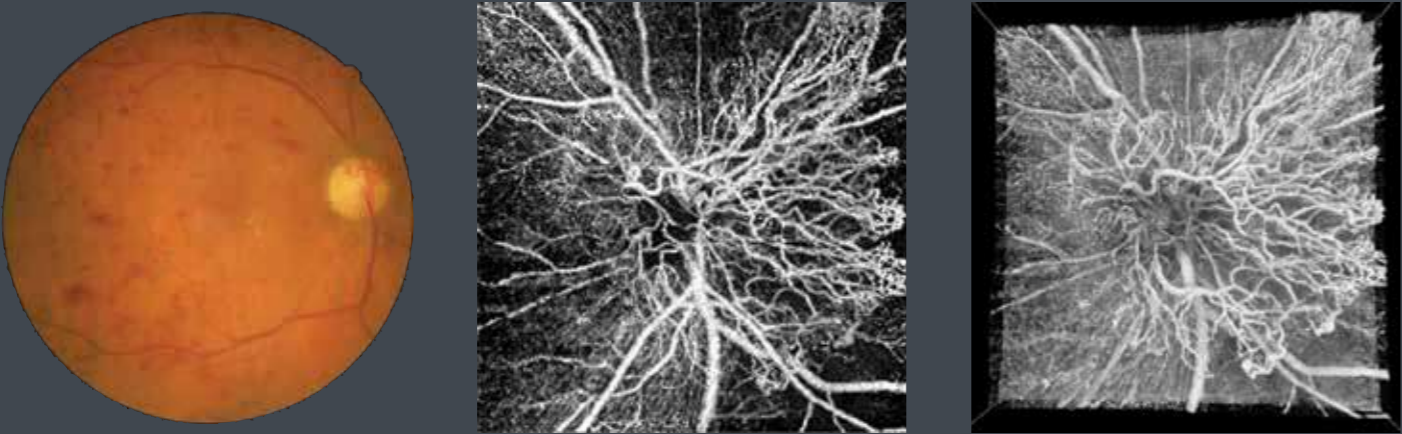
OCT-A progression

Up to 4 examinations can be shown in the Progression report.



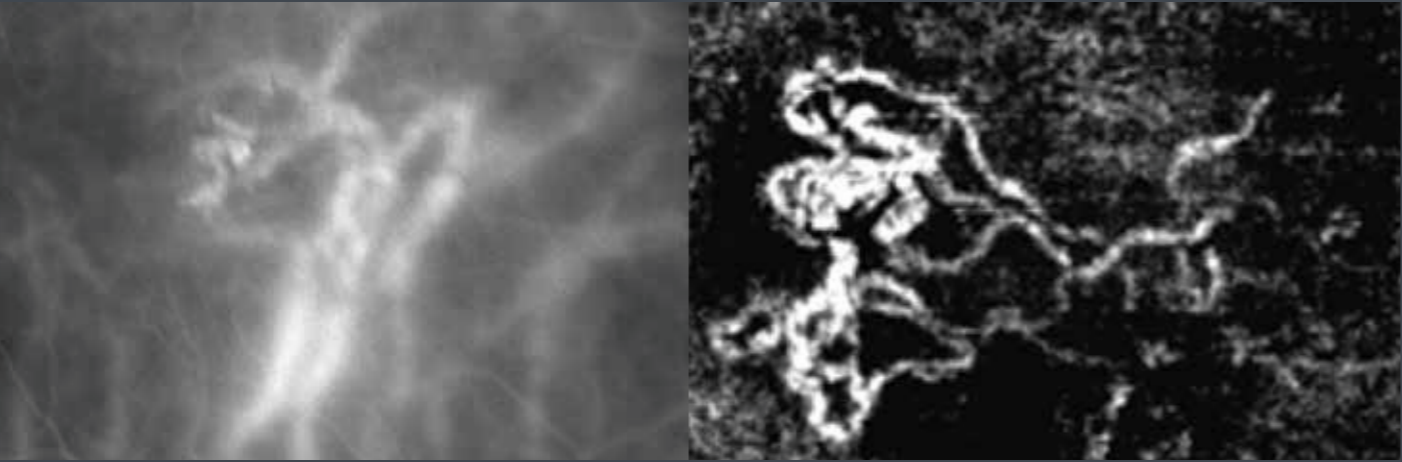
Example clinical images OCT-A

Proliferative diabetic retinopathy, colour Image, OCT-A and 3D visualisation



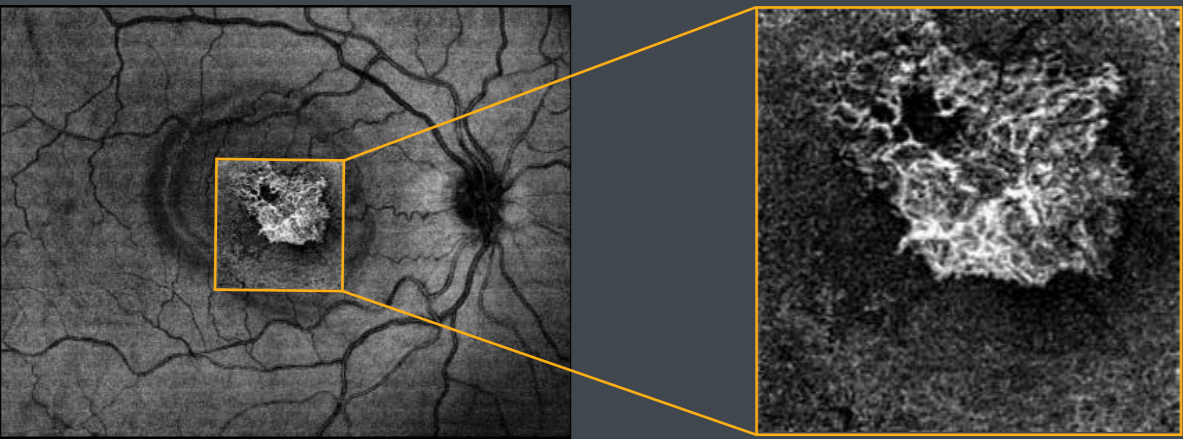
Clinical image courtesy of Dr. Joshua Torrent Despouy, Ostholstein, Germany.

Polypoidal choroidal vasculopathy (PCV); regular ICG image compared with OCT-A

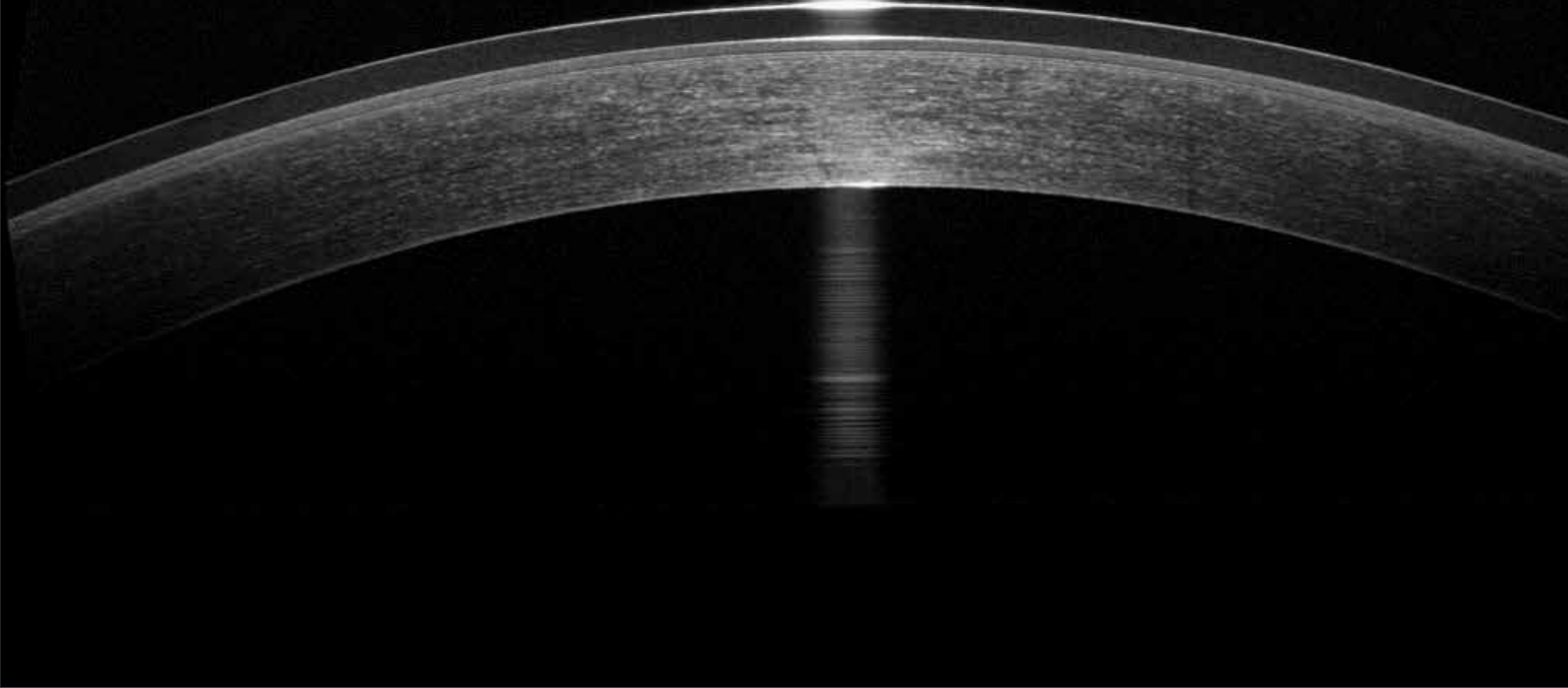


Courtesy of Dr. Diana Iturralde Errea, Mondragón, Gipuzkoa, Spain.

Choroidal neovascularisation



Courtesy of Dr. Diana Iturralde Errea, Mondragón, Gipuzkoa, Spain.



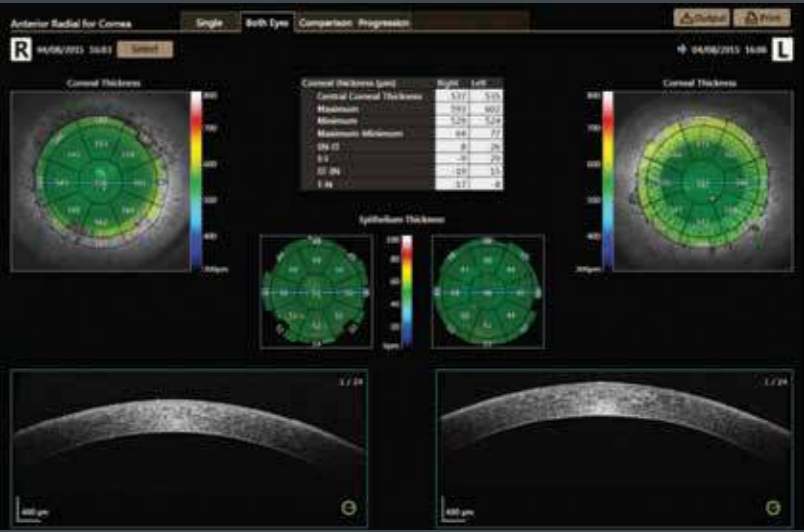
Healthy cornea with contact lens.

Anterior Segment Analysis

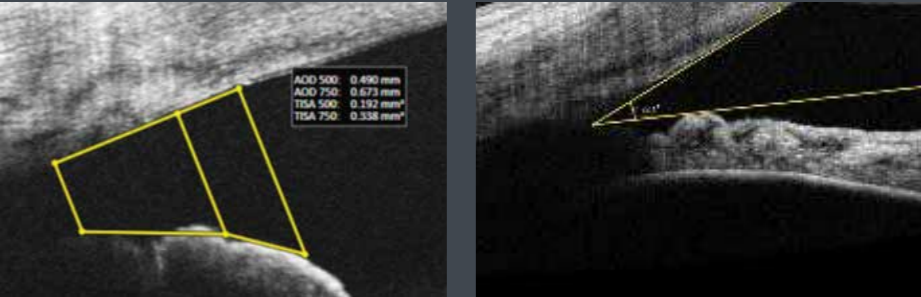
With optional Anterior Segment Adaptor ASA-1



The corneal thickness analysis is shown as maps of corneal thickness, corneal grids, and tables.

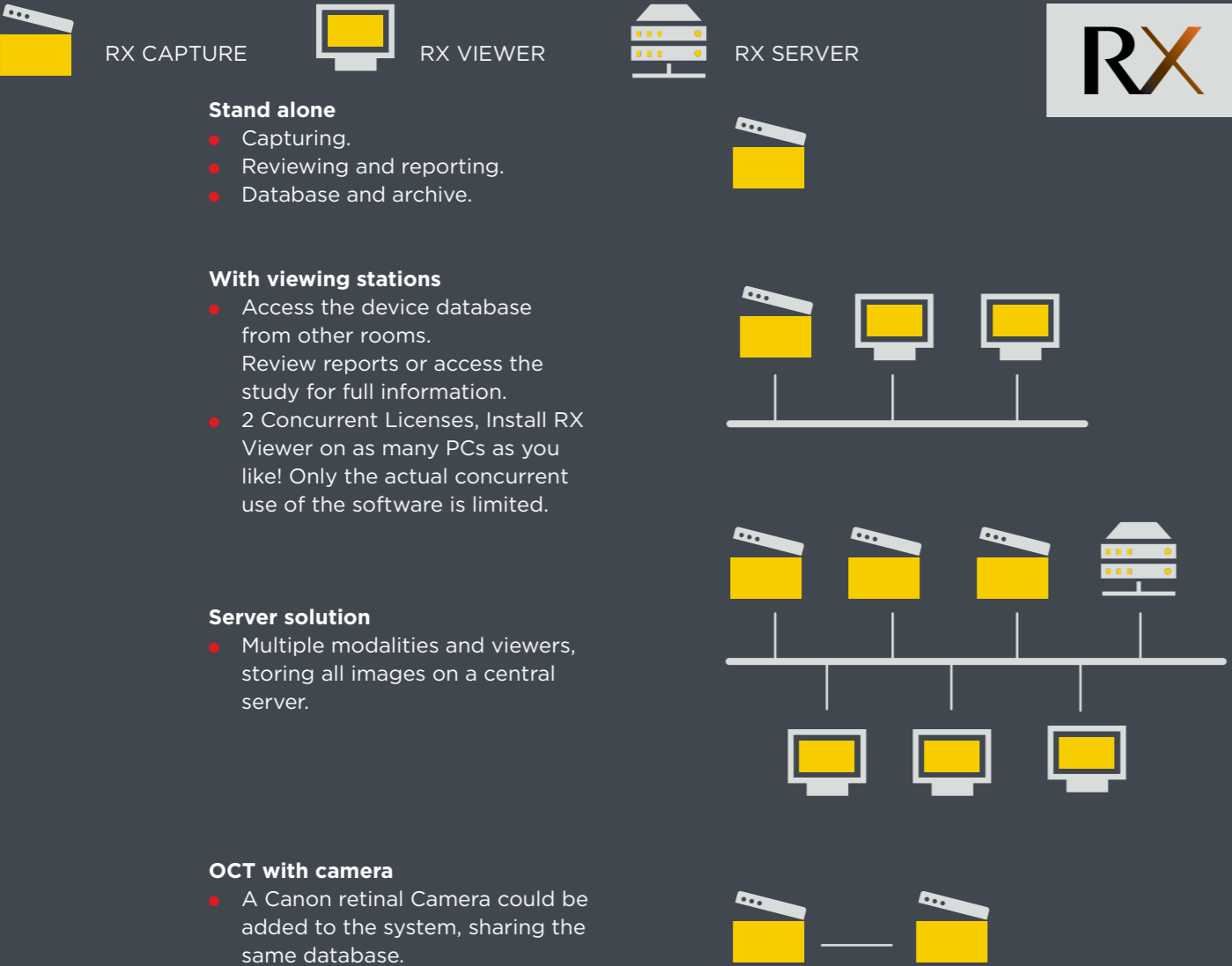


The distance between two points, angles, and AOD (Angle Opening Distance) / TISA (Trabecular Iris Space Area) can be measured.



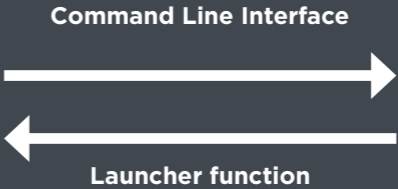
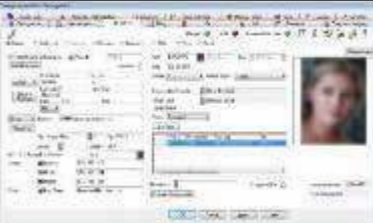
Canon Ophthalmic Software Platform Retinal Expert RX

The new multi modality platform for Canon retinal cameras and OCTs
Designed for seamless integration with Electronic Medical Record Systems
and third party software

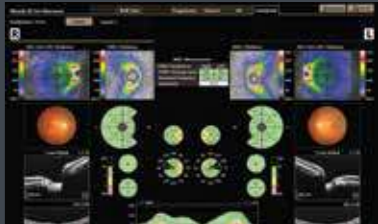


Seamless integration with patient management systems:

EMR can call RX directly via the command line interface.



RX opens on selected level: Patient, Capture or Report. Studies can be reviewed easily.



RX can call the other vendor's software directly to review patient record.

Extensive patient data input options

- Input data manually.
- Import a list from the practice management system (CSV file).
- Uses a modality worklist in a DICOM environment.

Patient ID	IC Capture	Report	Settings	Soft 1
100001	100001	100001	100001	100001
100002	100002	100002	100002	100002
100003	100003	100003	100003	100003
100004	100004	100004	100004	100004
100005	100005	100005	100005	100005
100006	100006	100006	100006	100006
100007	100007	100007	100007	100007
100008	100008	100008	100008	100008
100009	100009	100009	100009	100009
100010	100010	100010	100010	100010
100011	100011	100011	100011	100011
100012	100012	100012	100012	100012
100013	100013	100013	100013	100013
100014	100014	100014	100014	100014
100015	100015	100015	100015	100015
100016	100016	100016	100016	100016
100017	100017	100017	100017	100017
100018	100018	100018	100018	100018
100019	100019	100019	100019	100019
100020	100020	100020	100020	100020
100021	100021	100021	100021	100021
100022	100022	100022	100022	100022
100023	100023	100023	100023	100023
100024	100024	100024	100024	100024
100025	100025	100025	100025	100025
100026	100026	100026	100026	100026
100027	100027	100027	100027	100027
100028	100028	100028	100028	100028
100029	100029	100029	100029	100029
100030	100030	100030	100030	100030
100031	100031	100031	100031	100031
100032	100032	100032	100032	100032
100033	100033	100033	100033	100033
100034	100034	100034	100034	100034
100035	100035	100035	100035	100035
100036	100036	100036	100036	100036
100037	100037	100037	100037	100037
100038	100038	100038	100038	100038
100039	100039	100039	100039	100039
100040	100040	100040	100040	100040
100041	100041	100041	100041	100041
100042	100042	100042	100042	100042
100043	100043	100043	100043	100043
100044	100044	100044	100044	100044
100045	100045	100045	100045	100045
100046	100046	100046	100046	100046
100047	100047	100047	100047	100047
100048	100048	100048	100048	100048
100049	100049	100049	100049	100049
100050	100050	100050	100050	100050
100051	100051	100051	100051	100051
100052	100052	100052	100052	100052
100053	100053	100053	100053	100053
100054	100054	100054	100054	100054
100055	100055	100055	100055	100055
100056	100056	100056	100056	100056
100057	100057	100057	100057	100057
100058	100058	100058	100058	100058
100059	100059	100059	100059	100059
100060	100060	100060	100060	100060
100061	100061	100061	100061	100061
100062	100062	100062	100062	100062
100063	100063	100063	100063	100063
100064	100064	100064	100064	100064
100065	100065	100065	100065	100065
100066	100066	100066	100066	100066
100067	100067	100067	100067	100067
100068	100068	100068	100068	100068
100069	100069	100069	100069	100069
100070	100070	100070	100070	100070
100071	100071	100071	100071	100071
100072	100072	100072	100072	100072
100073	100073	100073	100073	100073
100074	100074	100074	100074	100074
100075	100075	100075	100075	100075
100076	100076	100076	100076	100076
100077	100077	100077	100077	100077
100078	100078	100078	100078	100078
100079	100079	100079	100079	100079
100080	100080	100080	100080	100080
100081	100081	100081	100081	100081
100082	100082	100082	100082	100082
100083	100083	100083	100083	100083
100084	100084	100084	100084	100084
100085	100085	100085	100085	100085
100086	100086	100086	100086	100086
100087	100087	100087	100087	100087
100088	100088	100088	100088	100088
100089	100089	100089	100089	100089
100090	100090	100090	100090	100090
100091	100091	100091	100091	100091
100092	100092	100092	100092	100092
100093	100093	100093	100093	100093
100094	100094	100094	100094	100094
100095	100095	100095	100095	100095
100096	100096	100096	100096	100096
100097	100097	100097	100097	100097
100098	100098	100098	100098	100098
100099	100099	100099	100099	100099
100100	100100	100100	100100	100100

Virtual Server

RX can be installed in a hospital's virtual server environment (such as VMware, Citrix and Microsoft servers) without relying on the client PC environment.

General Data Protection Regulation (GDPR)

To comply with the GDPR regulation, the RX software was updated with several new features:

- Anonymisation**
Anonymising patient personal data: for printing, exporting or saving data.
- User's authority management**
Additional user accounts, with different privilege levels, to limit data mismanagement and other operation mistakes.
- Central account management with LDAP**
LDAP (Leightweight Directory Access Protocol) is used to control users from a central location; e.g. setting password rules, locking account for security reasons.
- Extended logging ability**
As an option, any user activity in creating, modifying and deleting medical information or data can be logged.



RX server and RX viewers have to be purchased separately.

Very little floorspace

The OCT-HS100 takes up very little floor space and is flexible for use in most situations, even against a wall or in a corner.



Scan mode	A-scan	B-scan	Scanning area (mm)
Macula 3D	1024 (H)	128	10 x 10
Glaucoma 3D	1024 (H)	128	10 x 10
Disc 3D	512 (H)	256	6 x 6
Custom 3D	1024 (H/V)	128	3 - 10
Multi Cross	1024 (H) / 1024 (V)	5/5	3 - 13 (H) / 3 - 10 (V)
Cross	1024 (H) / 1024 (V)	1/1	3 - 13 (H) / 3 - 10 (V)
Radial	1024	12	3 - 10
Anterior 3D	512 (H)	256	6 x 6
Anterior Cross	1024 (H) / 1024 (V)	1/1	3 - 6
Anterior Radial	1024	12	6

Scan mode	NoR	A-scan	B-scan	Scanning area
AX Lite	2, 3	232	232	3 x 3 -8 x 8
AX HD	2, 3, 4, 6, 10	232	232	3 x 3 -8 x 8
	2, 3, 4, 6	464	464	4 x 4 -10 x 10
	2, 3, 4	696	696	6 x 6 -10 x 10
	2, 3, 4, 6	696	232	9 x 3, 12 x 4
	2, 3, 4, 6	232	696	3 x 9

Specifications			
A-scans/sec	Max 70,000	Fundus Preview	Confocal scanning laser
Axial resolution	3 µm	Observation light source	780 ± 5 nm
Transversal resolution	20 µm	Internal Eye Fixation	2 mm or 6 mm, 590 nm (orange)
Pupil size requirement	Min 3.0 mm	Field of view	10 x 10 mm, OCT 33°x33°, SLO 44° x 33°
Scanning width	2 - 13 mm	Dimensions (WxDxH)	387 x 499 x 474 (mm)
Scan depth	2 mm	Weight	29 (kg)
OCT light source	855 nm ± 5 nm	Optional Accessory	Anterior segment adapter (ASA-1)
Working distance	35 mm		

The OCT-HS100 can be used in trials evaluated by the VRC



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