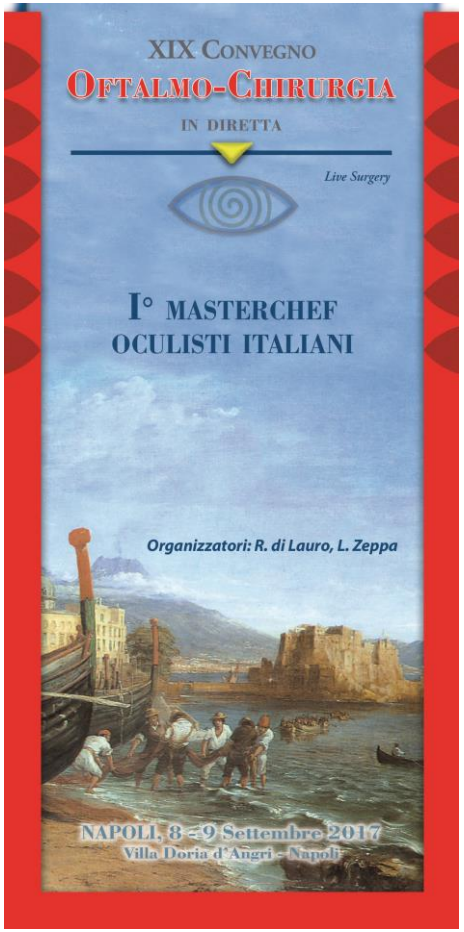
XIX Congresso Oftalmo-Chirurgia in Diretta
Organizzatori: R. di Lauro, L. Zeppa
Napoli, 8-9 Settembre 2017



Edema Maculare Diabetico e Patologie Vascolari Retiniche
Presidente: C. Azzolini
Moderatori: A. Morocutti, R. Ratiglia

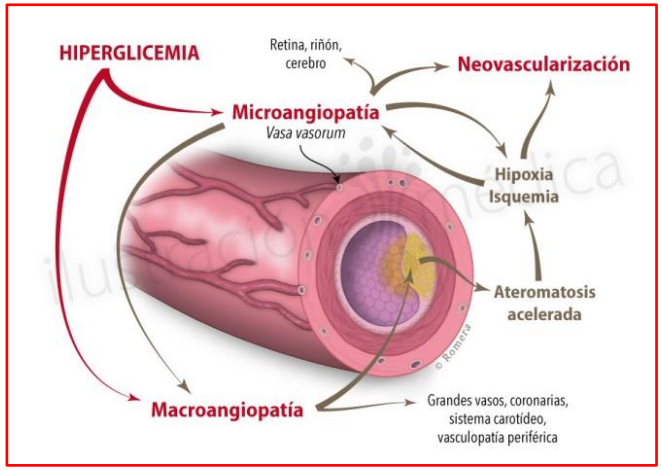
Angio-OCT nella retinopatia diabetica

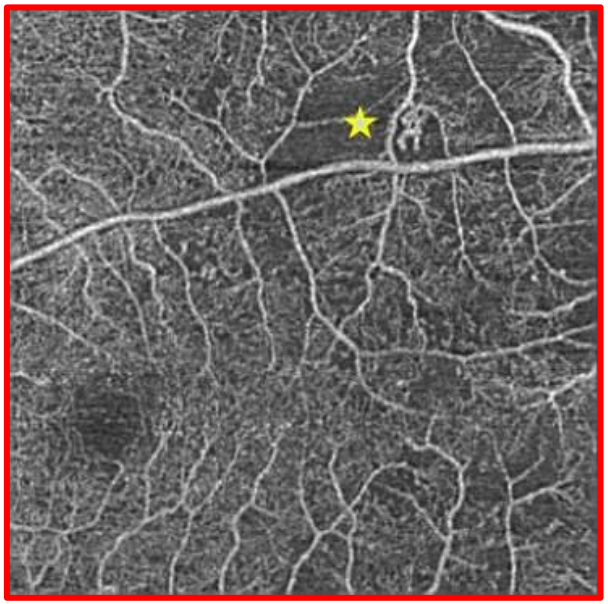
www.amedeolucente.it

Disclosure

Consulting Free

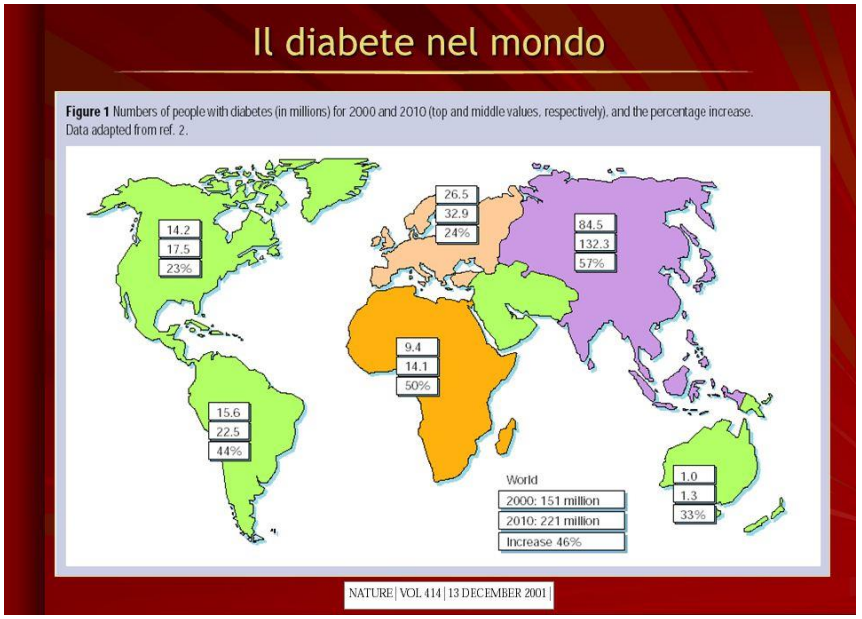
- Carl Zeiss Meditec
- Alfa Intes
- Mesofarma srl



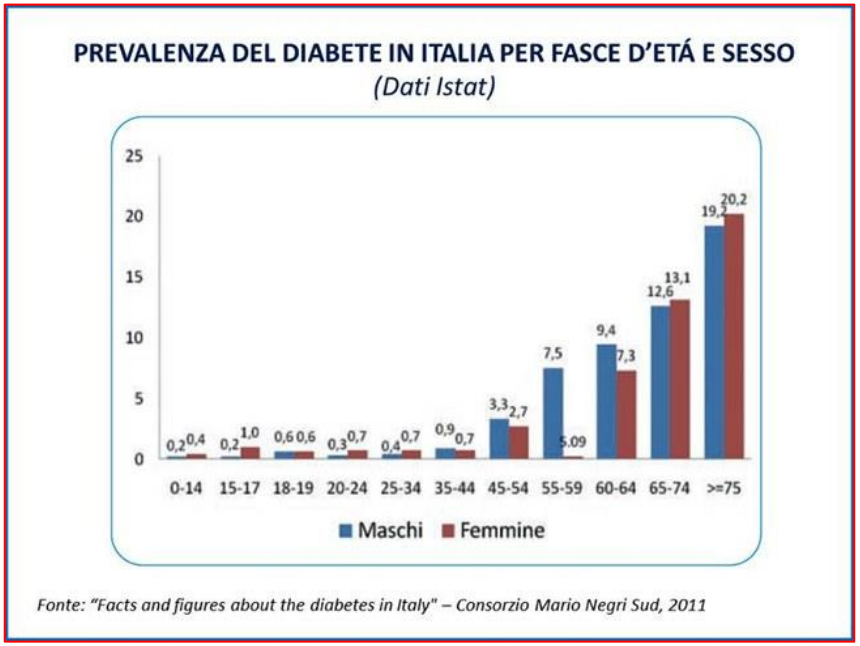


OCT The market is just over $1B in 2012, and it is expected to grow by 18–30% per year for the foreseeable future

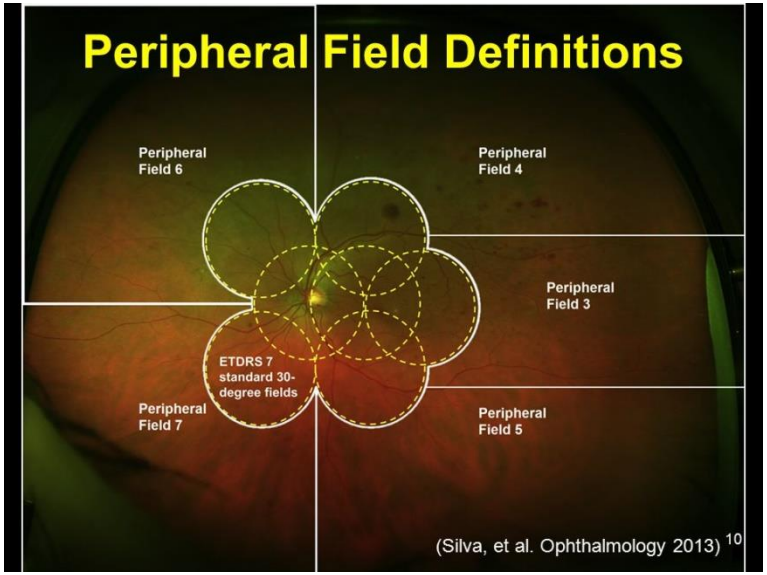
Patient with diabetic retinopathy: **non perfusion** area **with IRMA** is visible ★ as **the center** of the macula looks **normal**

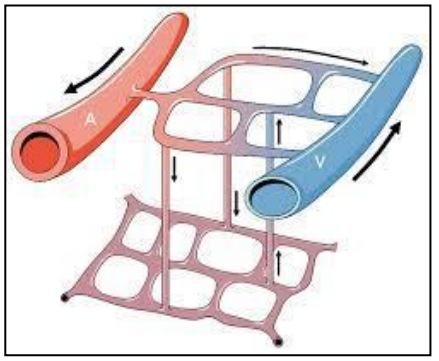


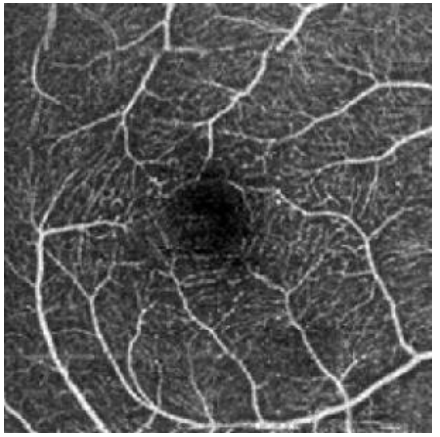
World Health Organization WHO 422 milioni nel 2014
Istat in Italia 5,5% della popolazione è diabetica oltre tre milioni di persone



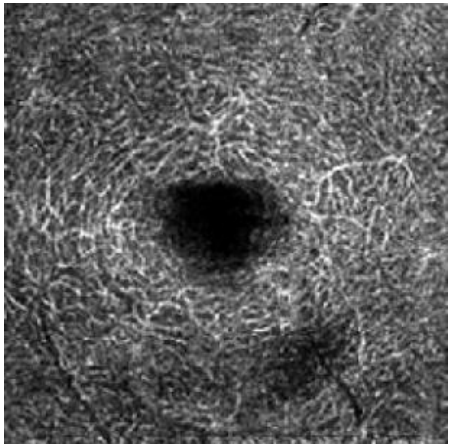
The high resolution of OCTA provides information about areas





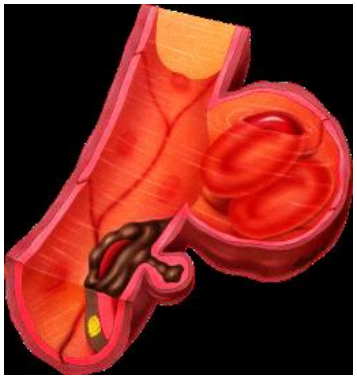


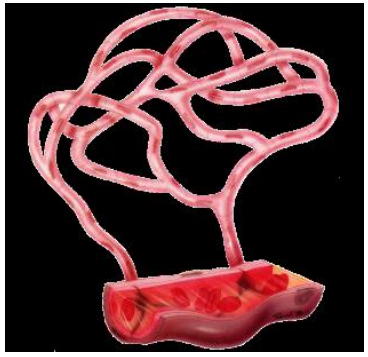
Superficial capillary

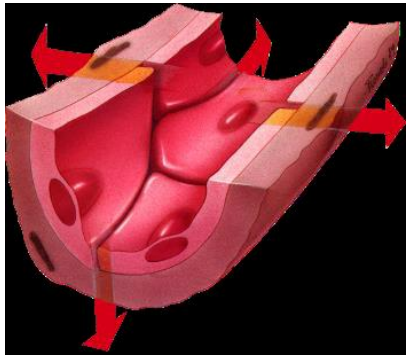


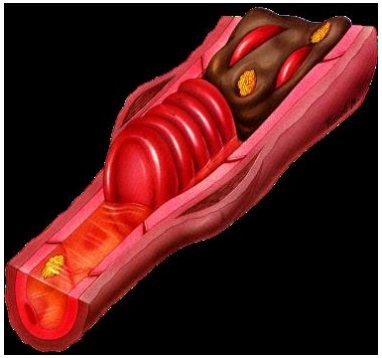
Deep capillary

- capillary nonperfusion
- vessel dilation and attenuation
- telangiectasias
- microaneurysms
- vascular proliferation



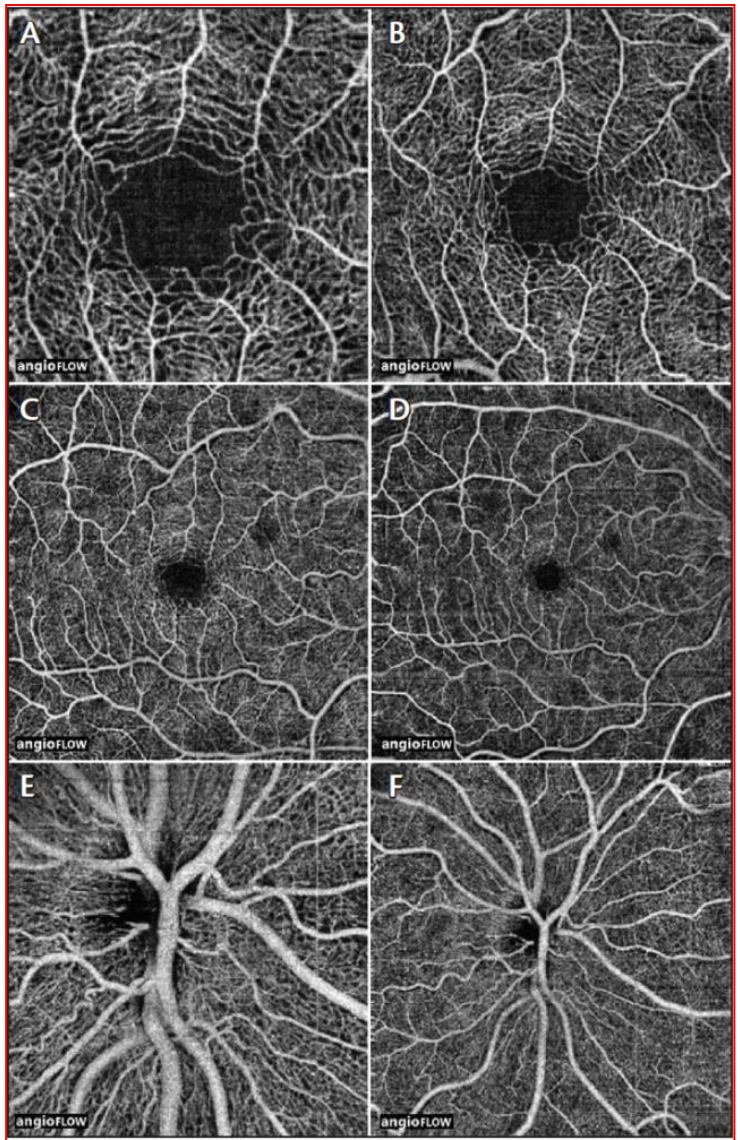


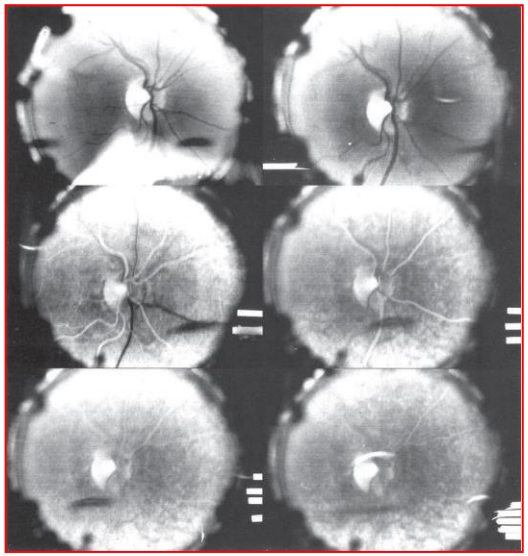




Capillary Network

Image shows at the Fovea:
2.0 x 2.0 mm (A)
3.0 x 3.0 mm (B)
6.0 x 6.0 mm (C)
8.0 x 8.0 mm (D)
Images at the Optic Nerve:
3.0 x 3.0 mm (E)
6.0 x 6.0 mm (F)





A Method of Photographing Fluorescence in Circulating Blood in the Human Retina

By Harold R. Novotny, B.S., and David L. Alvis, M.D.

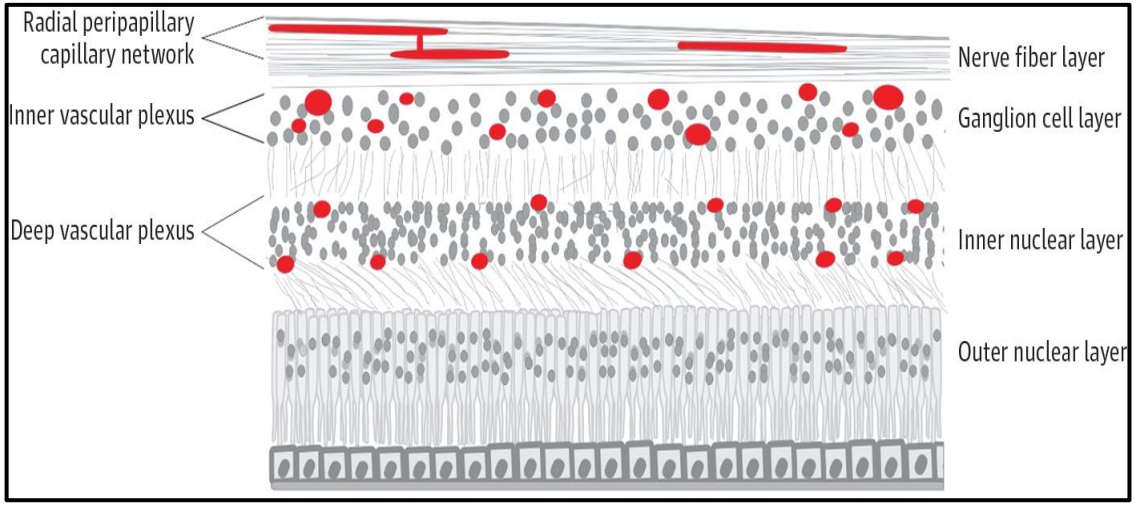
THE PHYSIOPATHOLOGY of the retinal vasculature would be better understood if more were known about blood flow in these vessels. Because of the unique quality of transparency in the eye, methods depending on direct observation of the retinal vessels seem especially inviting. Already reported by various authors are technics for

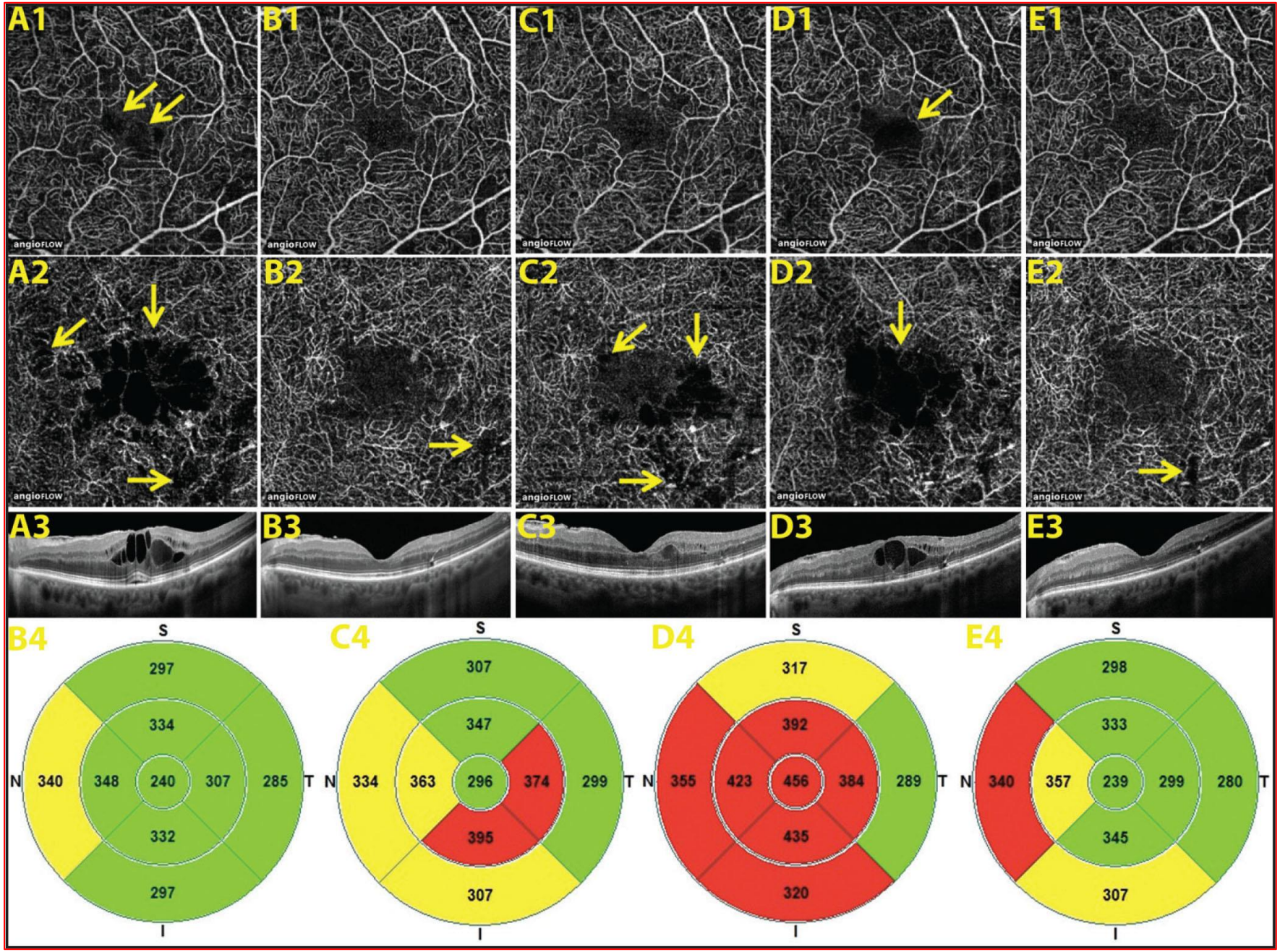
omitting wave length was 520 mμ, in the green. Kodak wratten filters no. 47 and no. 58, combined with a 3-mm. layer of 0.25 M copper sulfate, were accordingly inserted into the optical system (figs. 1 and 2) at appropriate points.

In order to modify the activating light, the blue no.-47 filter was placed in the path of the beam from the electronic flash and from the incandescent viewing source. This made it possible to see, as well as to photograph, the fluorescence

- **The first fluorescein angiogram taken in November 1959, of the right eye of David Alvis with Harold R.Novotny**

- **Hans Littmann of Zeiss Laboratories and G. Mayer-Schwickerath: first xenon-arc photocoagulator in 1954/1956**

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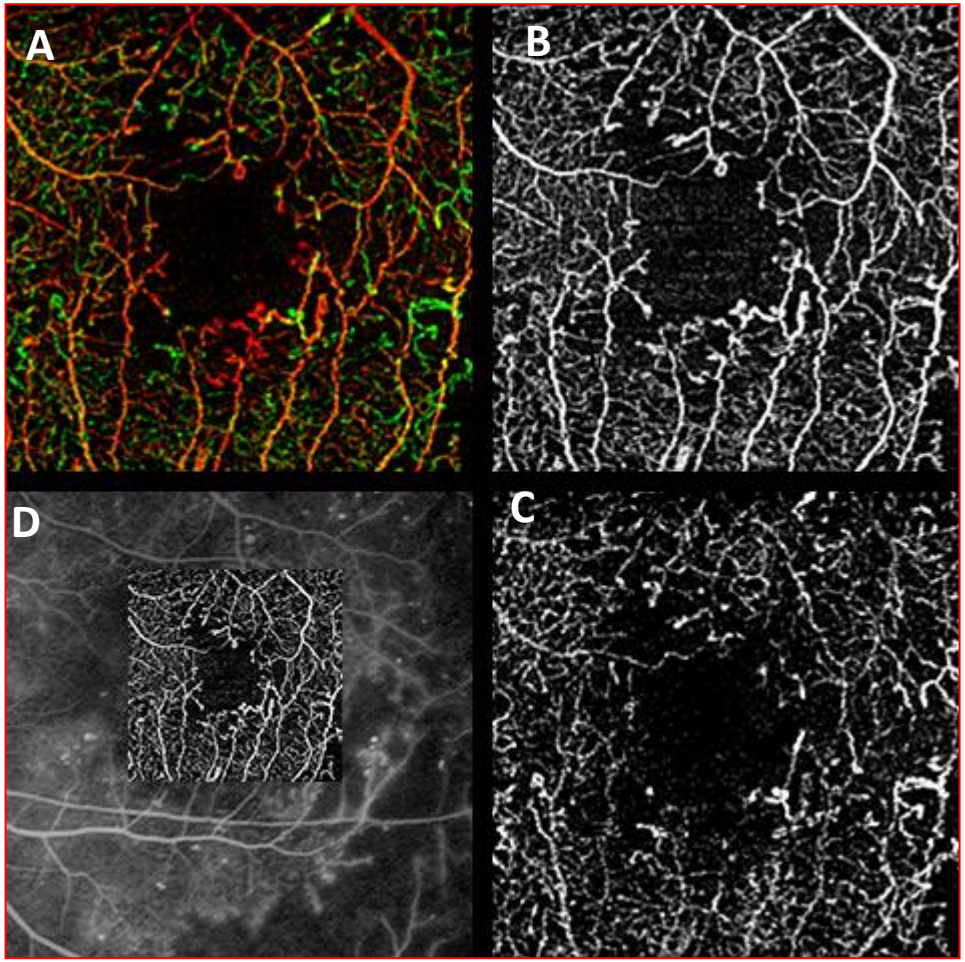
Diabetic Retinopaty with AngioPlex with OMAG



UWF Clarus Zeiss

Images can illustrate the presence of microaneurysms and areas of ischemia

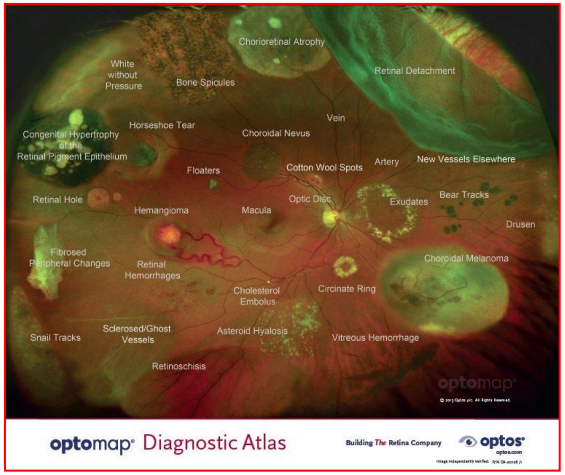
A)Full depth color encoded image

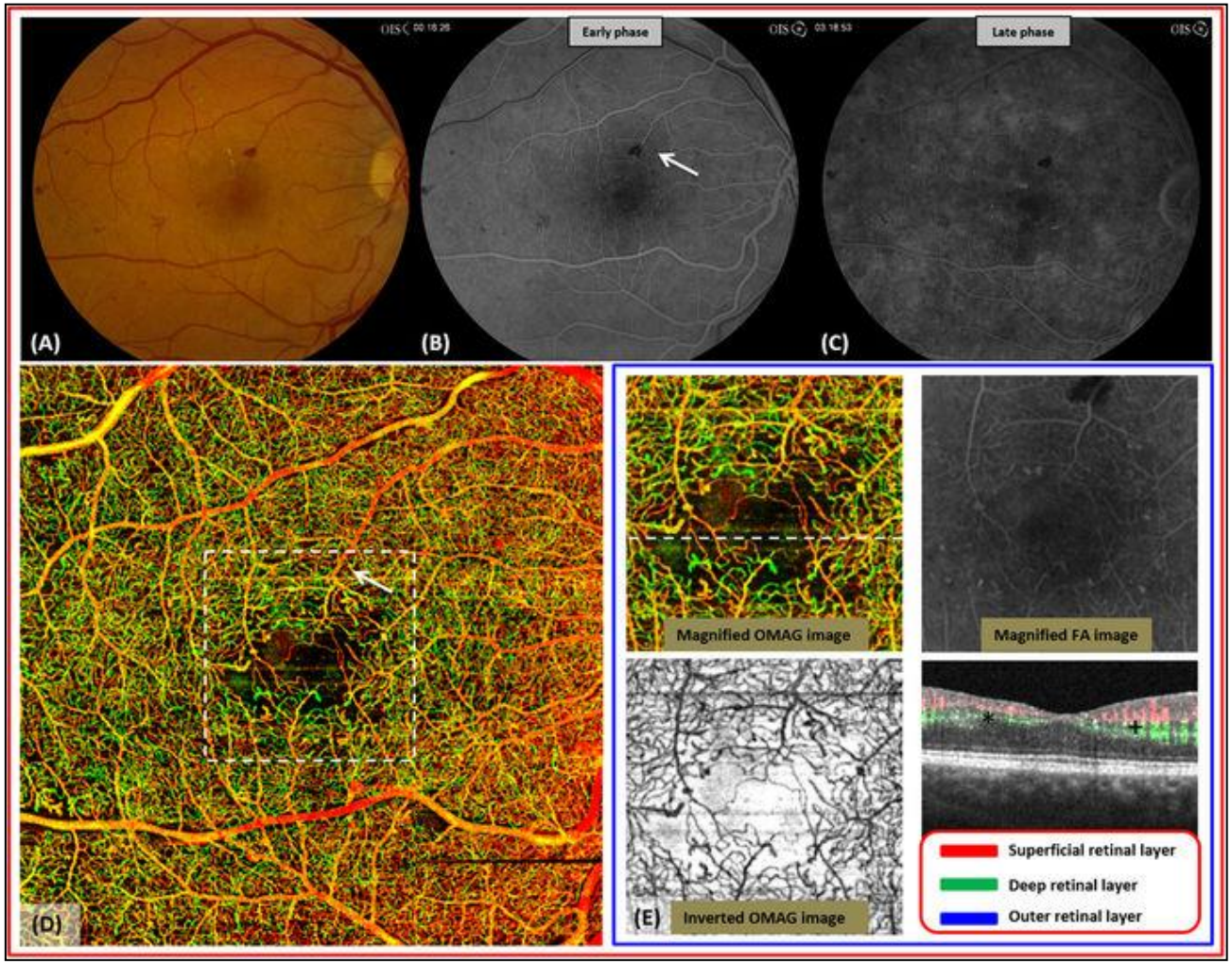
B) Superficial Retinal Layer

C) Deep Retinal Layer

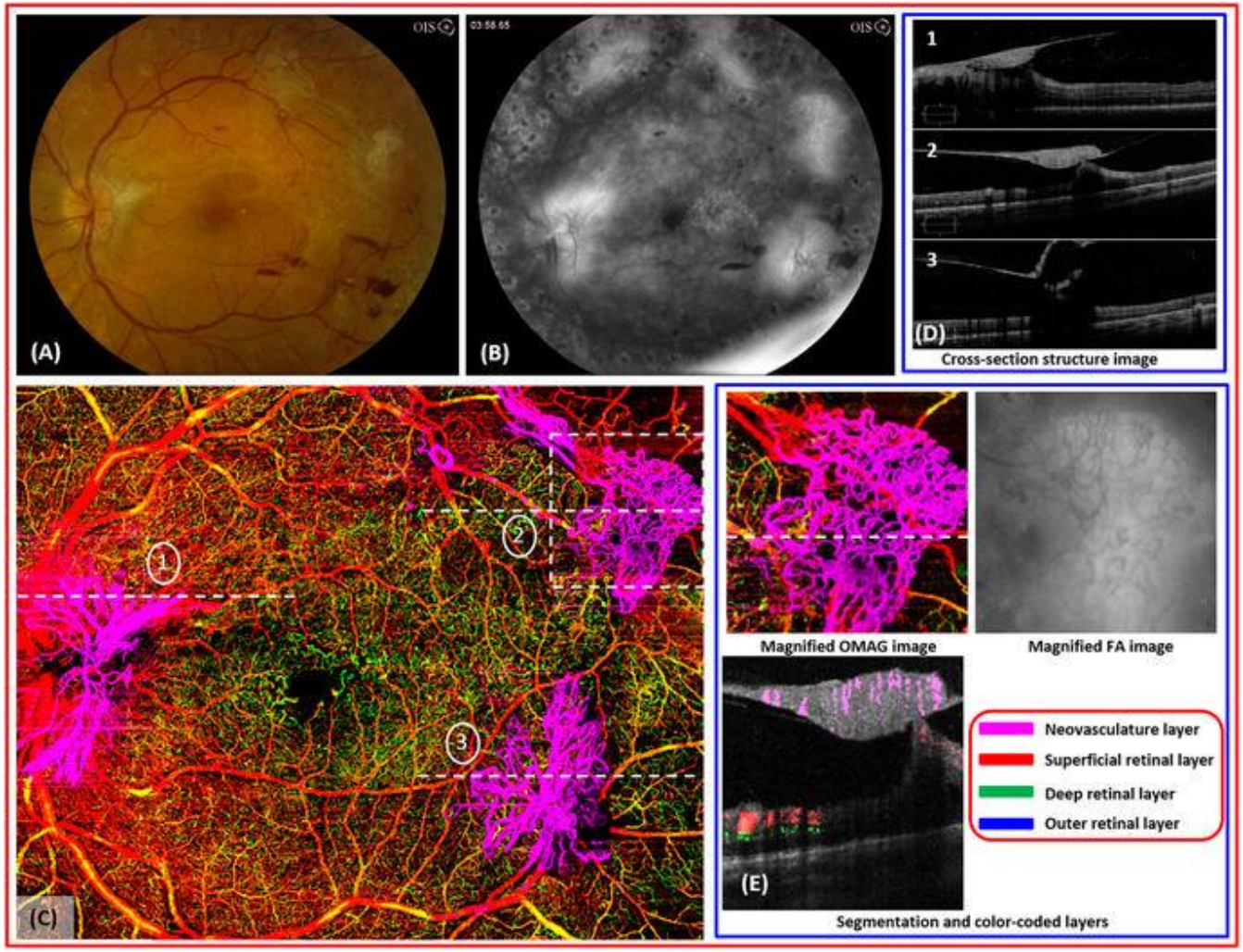
D) Superficial layer overlaid onto FA

Daytona



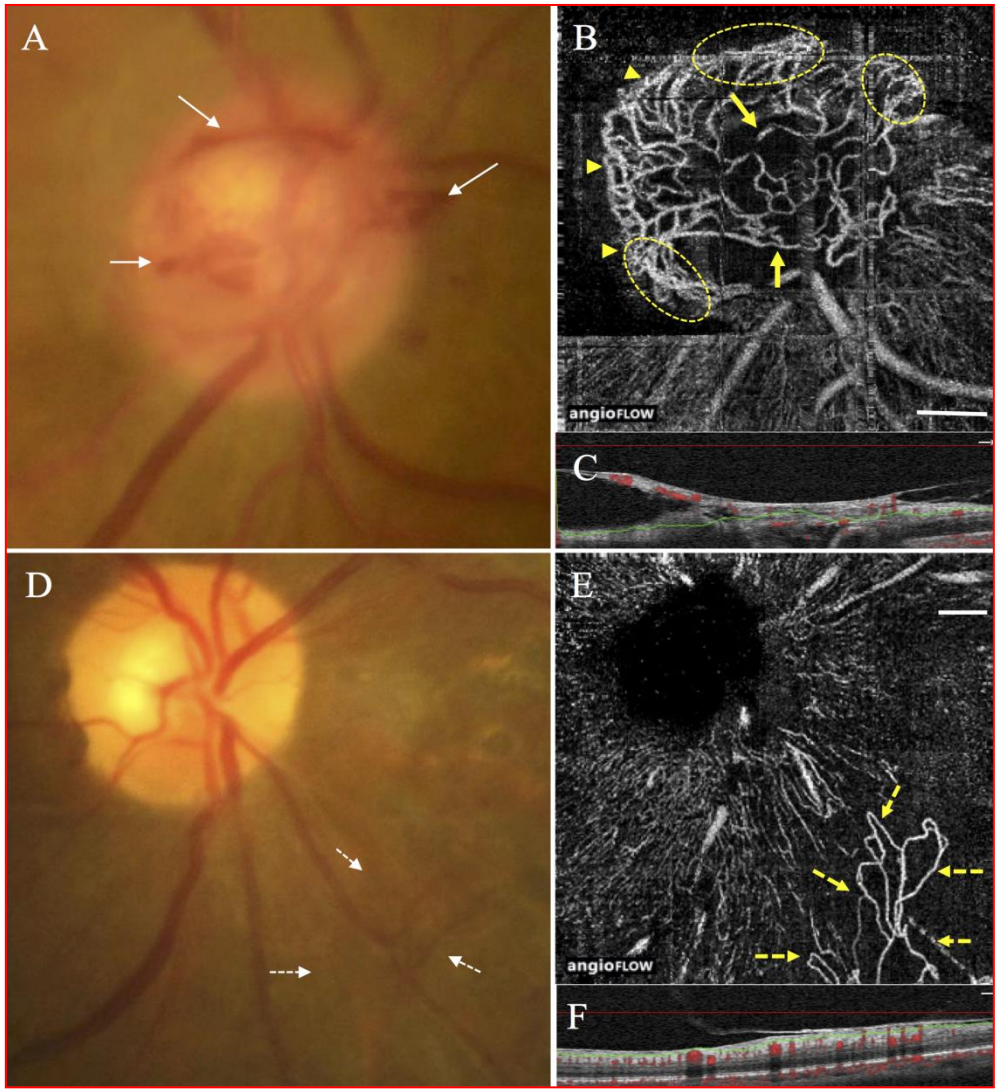


OMAG images of severe non-proliferative diabetic retinopathy in a 31 year-old male.
(A) fundus photo of severe nonproliferative diabetic retinopathy in the right eye shows several intraretinal hemorrhages and microaneurysms (MA).
(B,C) the early and late frames of the fluorescein angiography show diffuse late leakage from MA's.
(D) an enlarged and irregular foveal avascular zone (FAZ) is associated with several dilated vascular bulbs as shown on the whole retinal OMAG image. There is no blockage from hemorrhage on the OMAG scan (arrow).
(E) the magnified OMAG image of central macula marked with white dashed box in (D). Microaneurysms identified in the inverted display of OMAG image (dark appearance) show excellent agreement with those identified in FA image. The flow image shows decreased flow in both superficial and deep layers in the nasal fovea (+) compared to the temporal fovea (*).
by Qinqin Zhang Scientific Reports | 6:22017 | DOI: 10.1038/srep22017



OMAG images of a 31 year-old male with proliferative diabetic retinopathy.
(A) fundus photo of **proliferative diabetic retinopathy** in the left eye. There are multiple, large fibrovascular complexes associated with pre- and intraretinal hemorrhages.
(B) the late frame of the fluorescein angiography demonstrates **diffuse leakage** from several areas of active neovascularization.
(C) the OMAG image of the whole retinal layer shows **three large neovascular complexes** that have penetrated into the vitreous cavity
(D) the structural optical coherence tomography shows the **disruption of internal limiting membrane** by the neovascular complexes (dashed lines indicated with #1,2,3 in (C)) and their growth into the vitreous cavity.
(E) high-definition details of the vascular complex such as the vessel caliber, volume, density of capillary network can be appreciated compared to the FA. The flow OMAG image shows the evidence of vascular flow within the superotemporal neovascularization of elsewhere marked with a white dashed box in (C). by: Qinqin Zhang et al. Scientific Reports | 6:22017 | DOI: 10.1038/srep22017

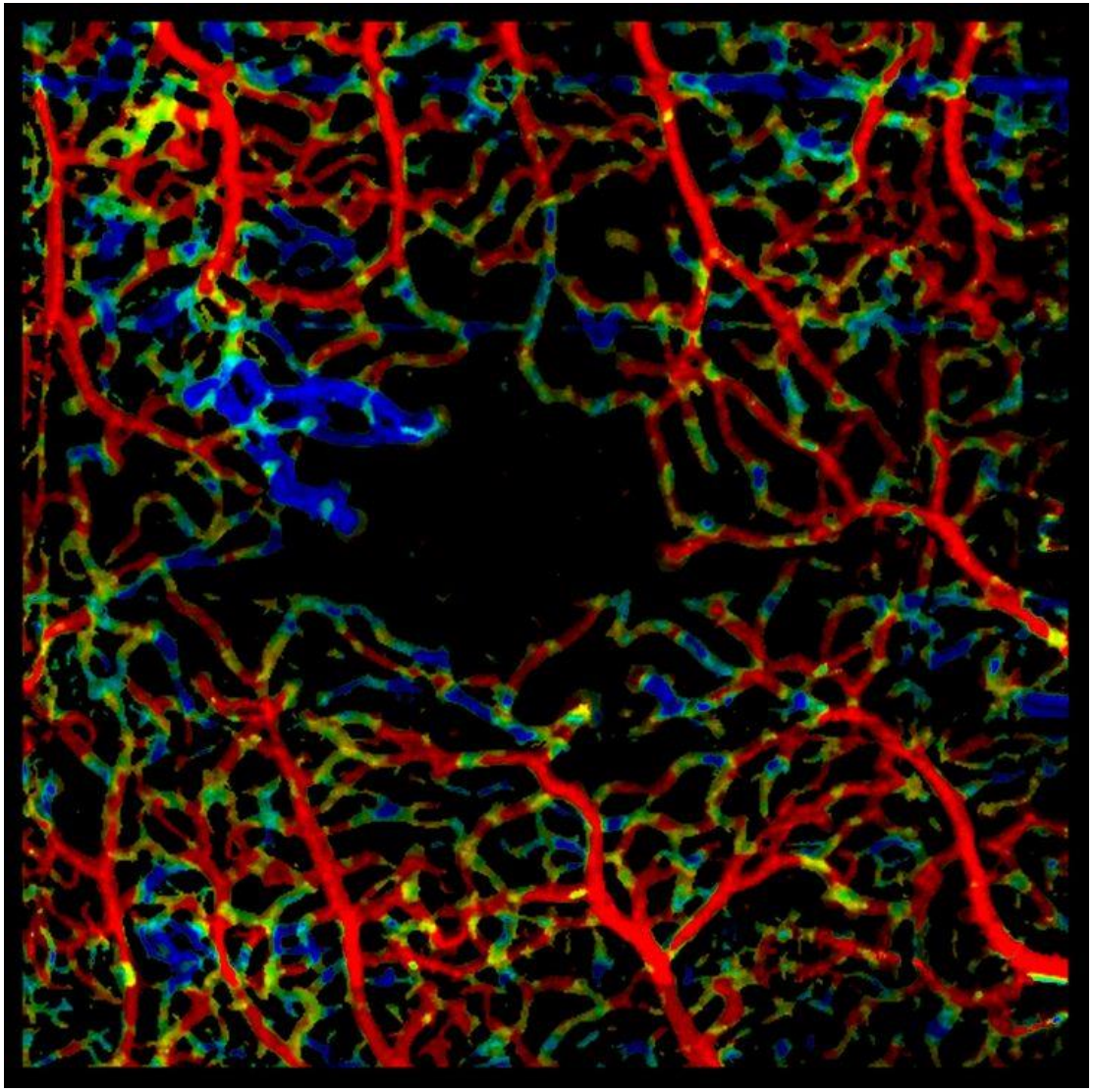
En face OCT angiograms, two distinct morphologic features of new vessels were identified



First, most new vessels had the lesions with irregular proliferation of fine vessels, which were defined as **exuberant vascular proliferation (EVP)** (Fig. 1B)

The second type of new vessels had pruned vascular loops of filamentous new vessels, but **not EVP** (Fig. 1E)

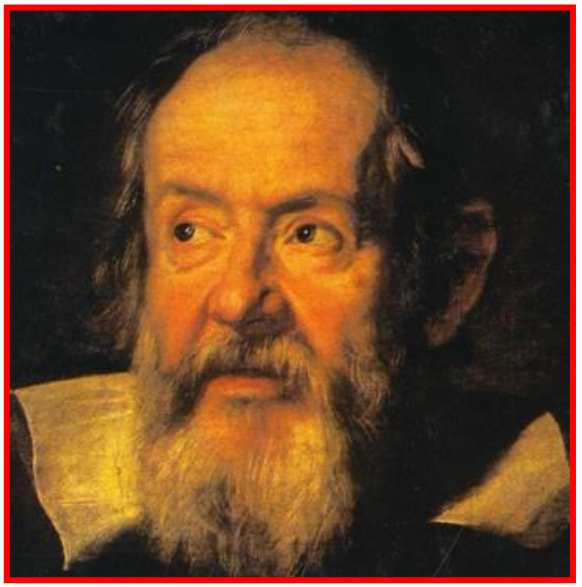
by: Akihiro Ishibazawa et al. IOVS j November 2016 j Vol. 57 j No. 14.



Variable Interscan Time Analysis (VISTA) is a step towards quantitative optical coherence tomography angiography (OCTA) that allows determination of relative blood flow speeds. As a next innovation, the VISTA developers have created 'VISTA visualisation', a method for mapping the VISTA data into a colour-coded format to make image interpretation intuitive and easy for clinicians

The development of VISTA and VISTA visualisation represents a collaboration between teams of clinicians, optical engineers and computer scientists at **MIT and the New England Eye Centre, Boston,** USA**; Bascom Palmer Eye Institute, Miami,** USA; and **the Friedrich-Alexander-University Erlangen-Nürnberg**, **Germany**

VISTA visualisation in a 30-year-old proliferative diabetic retinopathy patient taken over a 3mm × 3mm field of view **(red indicates faster blood flow speeds; blue indicates slower speeds).** Courtesy **OCT Research Group, MIT-NEEC**



Galileo Galilei, padre della scienza moderna

Pisa, 15 febbraio 1564 – Arcetri, 8 gennaio 1642

"Misura ciò che è misurabile, e rendi misurabile ciò che non lo è"


Thank you for your kind attention