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SUBMISSION ROLE: Abstract Submission

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**Study Group:** (none)

## ABSTRACT

**TITLE:** Parallel OCTA Variable Interscan Time Analysis (VISTA) and *En Face* Doppler OCT of Optic Disc and Peripapillary Vasculature

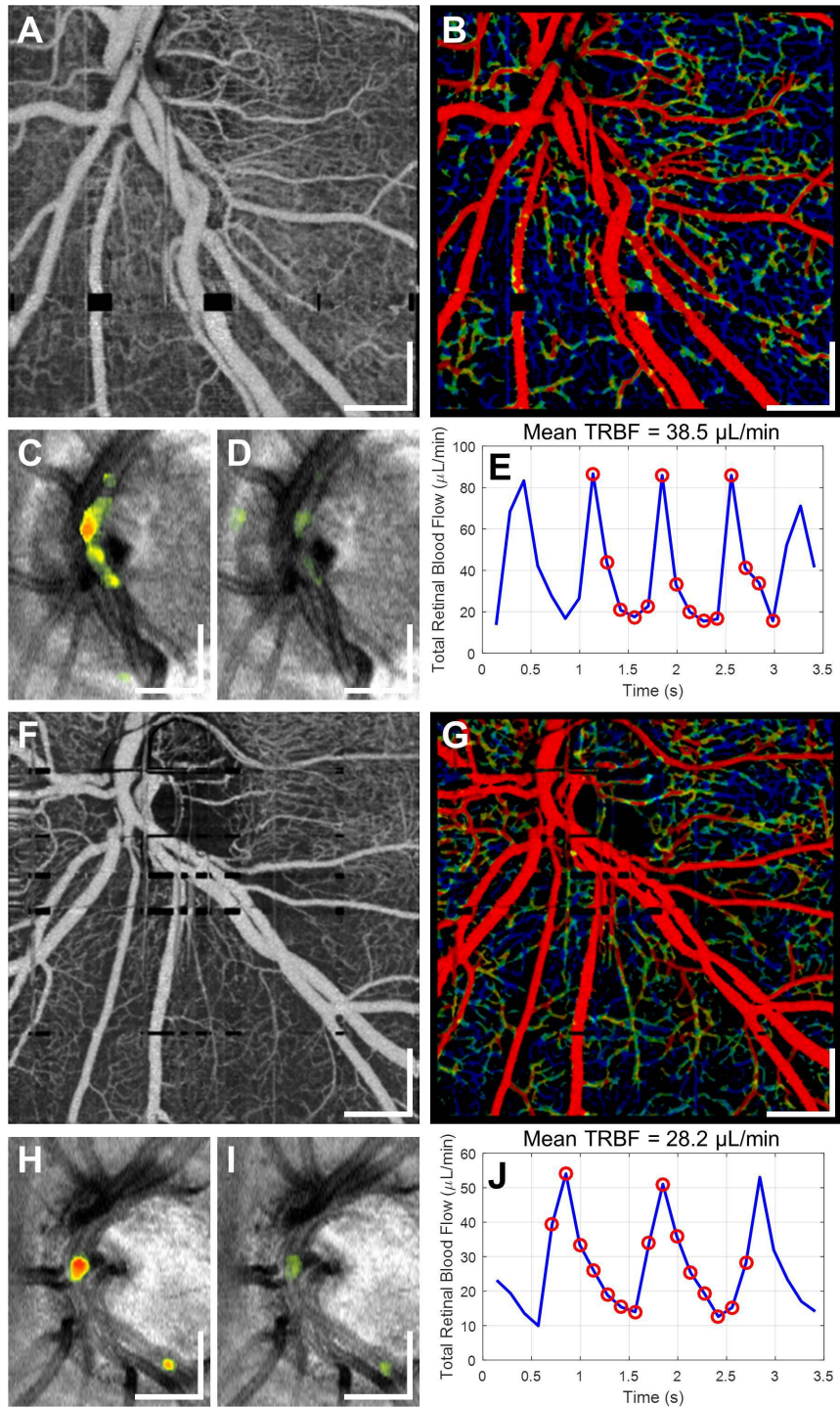
### **ABSTRACT BODY:**

**Purpose:** Variable interscan time analysis (VISTA) using high-speed optical coherence tomography (OCT) has improved quantitative interpretation of OCT angiography (OCTA). *En face* Doppler OCT allows direct quantitative measurement of total retinal blood flow (TRBF). Using VISTA-OCTA and *en face* Doppler OCT images of the optic disc, we aim to investigate the relationship between radial peripapillary capillary perfusion, optic disc perfusion, and TRBF.

**Methods:** OCTA and Doppler scans were acquired from eyes with age-related macular degeneration, glaucoma, diabetic retinopathy, and control subjects using a 1050-nm swept-source OCT prototype at a 400 kHz axial scan rate. VISTA-OCTA was performed by acquiring 5 repeated B-scans at each position and calculating the ratio of the OCTA signals in the OCTA images with 1.5 ms and 3 ms interscan times. OCTA volumes were flattened with respect to the vitreoretinal interface and a 190- $\mu$ m depth slab was projected for visualization of the peripapillary radial capillary plexus. *En face* Doppler OCT volumes were acquired at a 7.1 volumes/sec scan rate to resolve blood flow pulsatility.

**Results:** VISTA-OCTA images provided information on the blood flow speed in the large retinal vessels and peripapillary radial capillary plexus. *En face* Doppler OCT resolved the pulsatility of arterial TRBF and yielded accurate measurement of mean TRBF.

**Conclusions:** The combination of VISTA-OCTA and *en face* Doppler OCT may be useful for extracting information on retinal and optic disc blood flow. Different flattening references other than the vitreoretinal interface are desired in order to measure prelaminar and laminar perfusion.



VISTA and *en face* Doppler images of (A-E) a glaucoma suspect eye and (F-J) an eye with primary open-angle glaucoma. (A, F) 3-ms interscan time OCTA projection from the vitreoretinal interface to 190- $\mu\text{m}$  depth. (B, G) corresponding VISTA images where blue represents slow flow speeds and red represents fast flow speeds. (C, D, H, I) *en face* Doppler axial flow velocity image at systole and diastole overlaid on the intensity projection. (E, J) plots of pulsatile total retinal blood flow. Scale bars 500  $\mu\text{m}$ .

## DETAILS

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## TRAVEL GRANTS and AWARDS APPLICATIONS

**AWARDS:**

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**Affirmations:** Affirmation that abstract data/conclusions have not been published; not redundant with other submissions from same investigators.

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