

# Swept-Source optical coherence tomography angiography of the anterior segment

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Poster # PB051

## PURPOSE

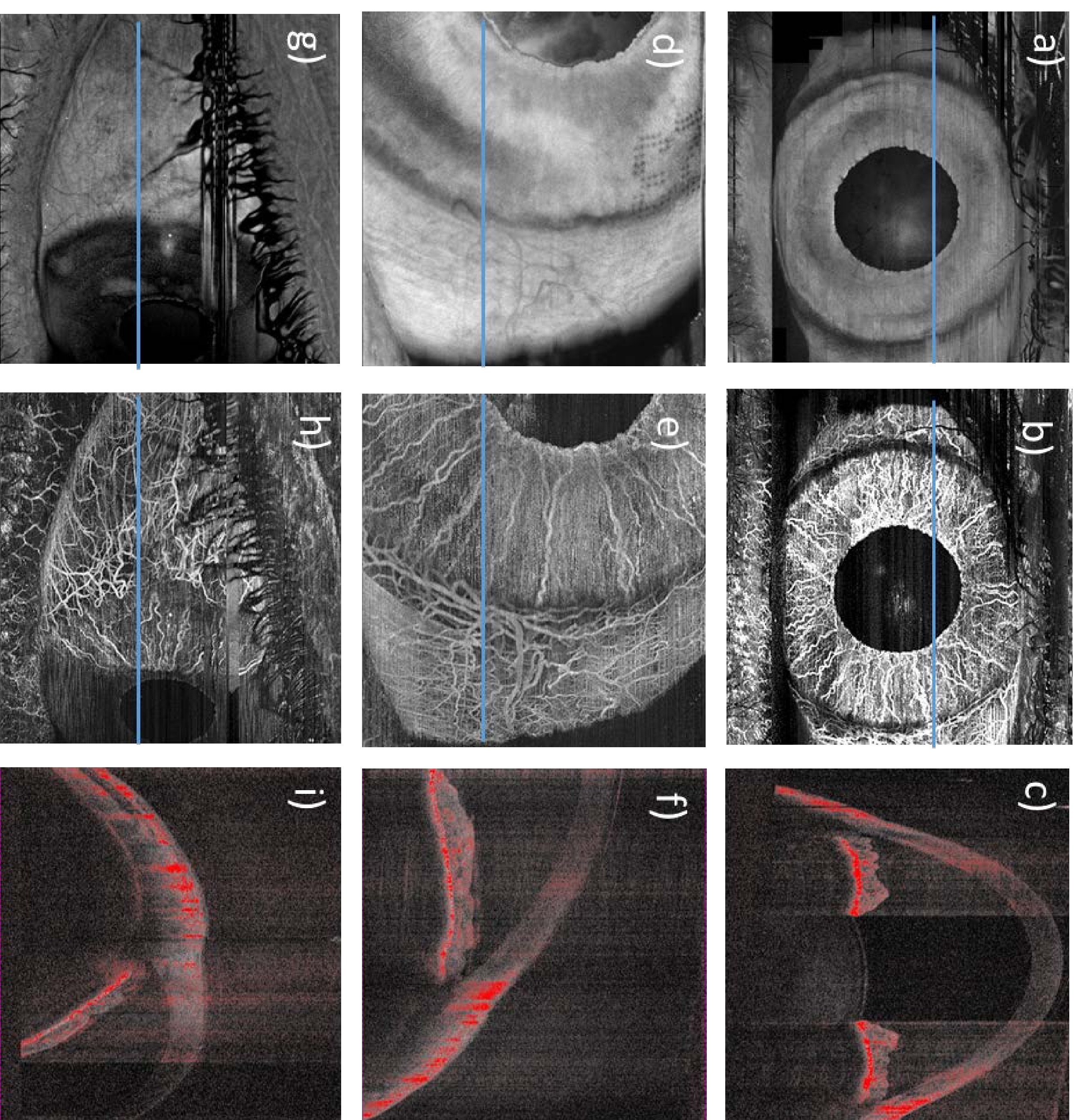
Several pathologies can affect the anatomy of the ocular circulatory system and cause changes in blood flow. Optical coherence tomography angiography (OCTA) provides a noninvasive tool for the assessment of the anterior segment vasculature, which may aid in the diagnosis and management of iris neovascularization, tumors, and pterygia, among others. We conducted a clinical study to evaluate the ability of a swept-source OCTA system to image the anterior segment of the eye.

## METHODS

- A modified PLEX®Elite 9000 swept-source OCT system (ZEISS, Dublin, CA) with 200 KHz sampling frequency and 6mm scan depth was used to image the ocular anterior segment of five healthy volunteers.
- Two scan patterns were used in this study:
  - Pattern 1: 16x16 mm field of view (FOV) with 500 points per B-scan, two B-scans per averaged cluster, and 500 clusters.
  - Pattern 2: 8x8 mm FOV with 300 points per B-scan, four B-scans per averaged cluster, and 300 clusters.
- Scleral surface of all subjects was scanned using pattern 1
- Limbal area of all subjects was scanned using pattern 2
- Iris of all subjects was scanned using both patterns
- Enhanced depth imaging (EDI) mode was used to achieve better sensitivity in deeper regions.

## RESULTS

- A total of five eyes of five subjects were scanned in this study. In two subjects, iris scans were unsuccessful, likely due to dark pigmentation. All other scans were successfully acquired.
- Figure 1 presents OCT structural and angiography images
- Blood flow shows superficially on the sclera, while it is concentrated on the deeper region of the iris and absent on the avascular section of the limbal angle.



**Figure 1.** AS imaging using a 200 kHz SS-OCT prototype system. Structural and vascular images obtained from the iris (a-b), limbus (d-e) and sclera (g-h), and their corresponding B-scan images, acquired at the location denoted by the blue line, (c), (f) and (i). The red color denotes blood flow signals.

## CONCLUSIONS

We have demonstrated the ability of the modified PLEX®Elite 9000 swept-source OCT system to image the vasculature of the iris, limbus and sclera. The speed of the system yields images free of motion artifacts and the depth-window allows for visualization of the anterior segment without fold-back errors.

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