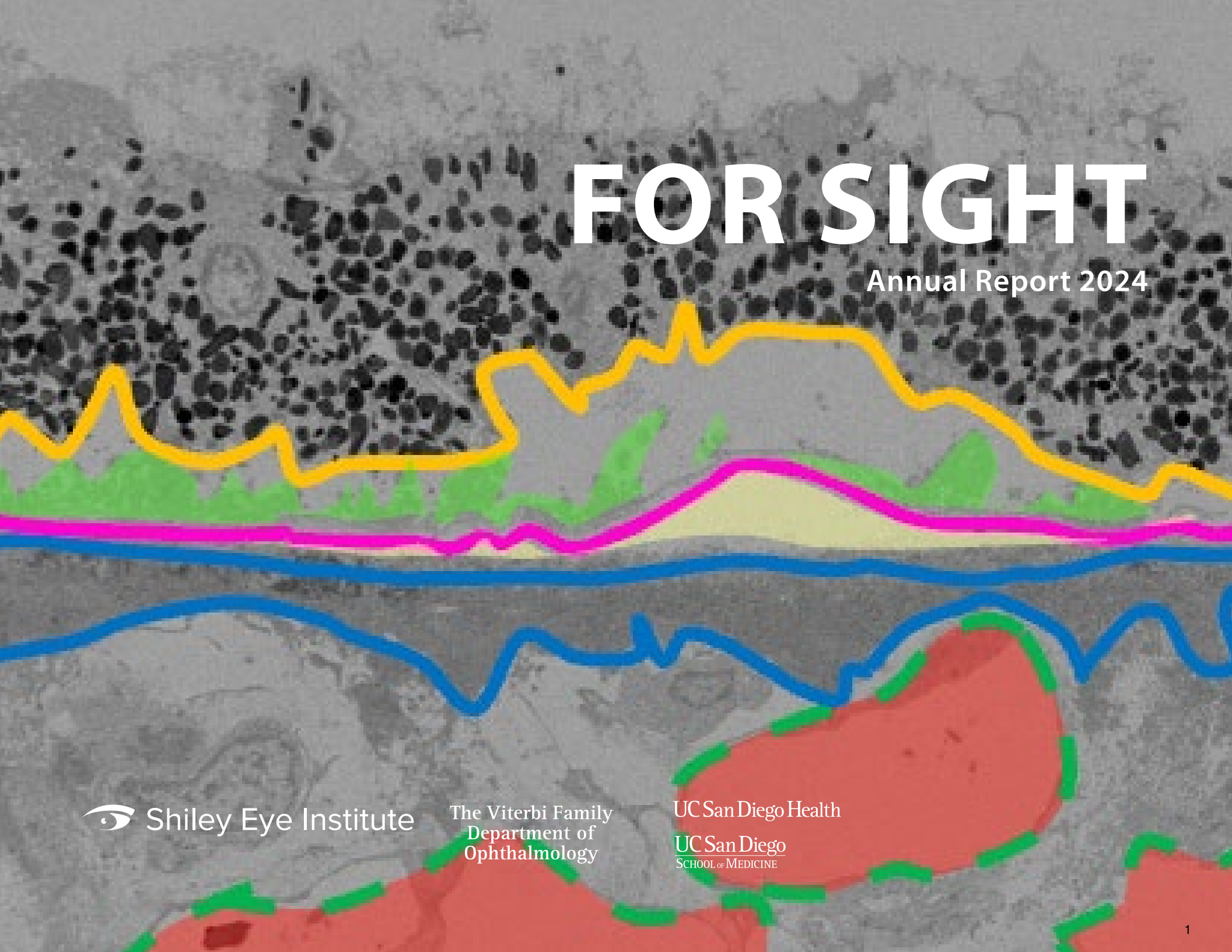

FORSIGHT

Annual Report 2024

Shiley Eye Institute

The Viterbi Family Department of Ophthalmology

UC San Diego Health

UC San Diego School of Medicine

SEI Faculty Receives the Trifecta of Grant Awards

Christopher B. Toomey, MD, PhD, Assistant Professor of Ophthalmology, receives three prestigious career development awards – from (1) the National Eye Institute, (2) Larry L. Hillblom Foundation and (3) Foundation for Fighting Blindness!

Toomey is a clinician-scientist and a vitreoretinal surgeon at the Shiley Eye Institute and Viterbi Family Department of Ophthalmology at UC San Diego. Toomey has a laboratory in the Glycobiology Research and Training Center on the UC San Diego campus.

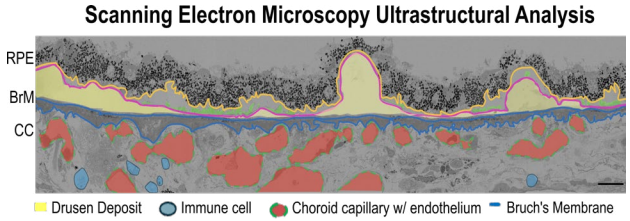

***Figure 1**: Scanning Electron Micrograph in AMD. Drusen (yellow) are lipoprotein and protein aggregates that form in an extracellular matrix, known as Bruch's membrane (BrM, dark blue), under the retinal pigmented epithelium (RPE) in patients with AMD. Underlying the drusen is the vascular supply to the retina, choriocapillaris (CC). Immune cells (light blue) and blood vessels (red) are segmented. Scale bar – 10 microns.*

Toomey's laboratory research program investigates the molecular origins of age-related macular degeneration (AMD). AMD affects approximately 20-30% of the population over the age of 70. Current AMD treatments are for patients who have vision loss and are in the late stages of their disease. The AMD research that Toomey is doing focuses on discovering treatments to prevent the disease prior to the onset of vision loss. His goal is to treat people early on, so they can be spared of all the complications associated with AMD.

The Toomey lab is performing quantitative analysis of scanning electron micrographs in AMD post-mortem samples to determine the ultrastructural origins of the disease. Drusen's (small yellow deposits that build up under the retina) extracellular deposits define the early and intermediate stages of AMD. In a collaboration with the Salk Research Institute Biophotonics Facility and the Sanford Burnham Prebys Medical Discovery Institute, Toomey performs scanning electron microscopy (**Figure 1**) combined with laser capture microdissection proteomics on drusen to understand the intersection between

aging, genetics and metabolism in the progression of AMD.

Most recently, Toomey has received research grants from National Eye Institute, Research to Prevent Blindness, Foundation for Fighting Blindness, Alcon Research Institute, Larry L. Hillblom Foundation and the Robert Machemer, MD and International Retinal Research Foundation to support his research endeavors.