

# Bruch's Membrane

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Joint project of Ali, Bainbridge, Stevens Groups



## What is it?

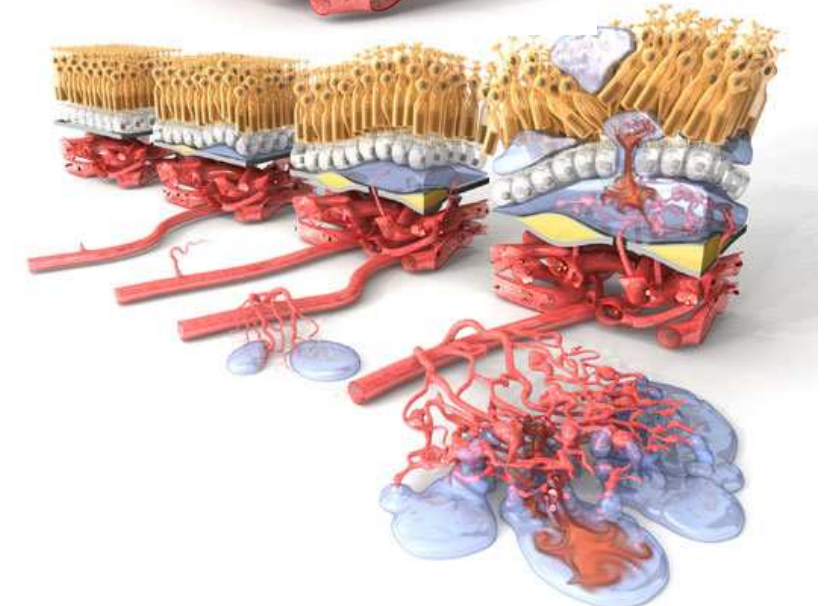
- Membrane of the retina that degenerates during age-related macular degeneration (AMD)
- AMD is leading cause of vision loss
- Affects 30 million people worldwide
- Currently no cure

## How do you propose to tackle this?

- Stevens Group - electrospinning PCL-based scaffolds functionalised with peptides
- Ali/Bainbridge Groups - investigate RPE cell response to synthetic scaffolds
- Optimal scaffold will maintain and deliver fully functional monolayer of RPE cell

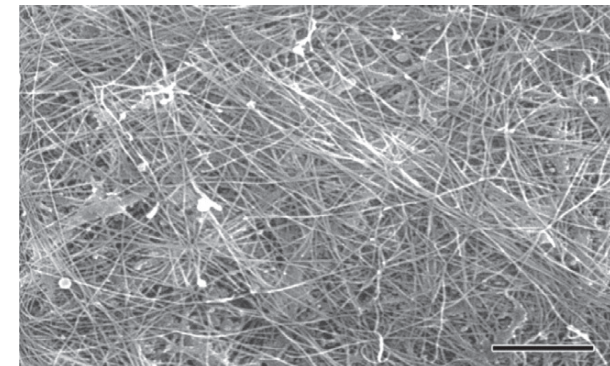
## Difficult Challenges

- Native membrane is 2-4  $\mu\text{m}$  thick
- Native fiber diameter is 60 nm
- Maintain RPE cell morphology and function on scaffold
- Mechanically compatible for in vivo implantation



**Retinal structure and progression of age-related macular degeneration**

Images from <http://www.scienceofamd.org/>



**Human Bruch's Membrane, Bar = 20 $\mu\text{m}$**

Reproduced from Warnke et al. *Acta Biomater*, 2013, 9: 9414.