# Hyderabad Eye Research Foundation

Jacquelyn Akepogu's research is focussed on understanding the mechanisms used by the corneal endothelial cells for sensing and responding to an increase in intraocular pressure. In specific, she is interested in studying the role of transient receptor potential (TRP) ion channels in this process since these channels behave as mechanosensors and are increasingly being associated with many disease conditions. This is an important problem to address because in patients with an increase in pressure within the eye, there is reported loss of the endothelial cells. Continued loss in corneal endothelial cells or their dysfunction will lead to vision loss due to swelling of the cornea leading to loss of tissue transparency. By understanding the mechanisms driving the cell response, it may become possible for us to develop pharmacological treatment options in the future to prevent the cell loss and preserve vision in these patients.

As the first step, Jacquelyn has characterized in detail the expression and function of TRP-Vanilloid channels in the corneal endothelial cells thereby addressing a significant knowledge lacuna in the field. Her study not only reports the gene level expression of these channels but also takes a closer look at their subcellular localization thereby supporting their involvement in maintaining intercellular communication, a critical aspect of corneal endothelial cell function. She is currently studying the response of the cells to an increase in pressure using in vitro (cell line), ex vivo (corneal tissue) and in vivo animal models and teasing apart the molecular mechanisms that may be driving the changes noted in the cells.

Jacquelyn's research advances our understanding of an important aspect of these cells that has been sparsely studied so far making this project hold immense potential in its translational value.

Sincerely,

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