1145-92-1322 **Tracy L. Stepien*** (stepien@math.arizona.edu), Department of Mathematics, University of Arizona, Tucson, AZ , and **Timothy W. Secomb** (secomb@u.arizona.edu), Department of Physiology, University of Arizona, Tucson, AZ. *Spreading Mechanics and Differentiation of Astrocytes During Retinal Development.*

Retinal vasculature is essential for adequate oxygen supply to the inner layers of the retina, the light sensitive tissue in the eye. In embryonic development, formation of the retinal vasculature via angiogenesis is critically dependent on prior establishment of a mesh of astrocytes, which are a type of brain glial cell. Astrocytes emerge from the optic nerve head and then migrate over the retinal surface as a proliferating cell population in a radially symmetric manner. Astrocytes begin as stem cells, termed astrocyte precursor cells (APCs), then transition to immature perinatal astrocytes (IPAs), which eventually transition to mature astrocytes. We develop a partial differential equation model describing the migration of astrocytes where APCs and IPAs are represented as two subpopulations. Numerical simulations are compared to experimental data to assist in elucidating the mechanisms responsible for the distribution of astrocytes. (Received September 21, 2018)