The retina is the innermost layer of the eye. Its function is to receive and process the visual information that first passes through the optic surfaces located anterior in the eye. The retina has a high metabolic rate, and it is considered as one of the tissues with the largest oxygen consumption per unit weight. In this talk we will learn about the vessels that nourish the retina, how we use mathematical modeling and simulation in our research to describe the vasculature that feeds the retina of a healthy eye, how it changes with disease, and how we can use the model to understand ocular health and disease.