



Dear Reader,

It is with great pleasure we welcome you to the inaugural issue of the *Journal for Modeling in Ophthalmology*! It is our shared vision to present a dynamic multi-disciplinary approach towards solving the enigmatic causes of the life altering diseases of blindness.

Throughout our careers in medicine and mathematics, we have both realized that the current echo chambers of singular approaches to medicine and mathematics have produced self-limited contributions to science and medicine. It is likely that many answers to outstanding questions in vision loss are sitting on the shelves of clinical researcher's offices, while the tools to unlock them unknowingly exist across the street with modeling experts in the schools of science or engineering. "Big data analysis" is an innovative approach being brought into many facets of business and computer science, however the barriers of tradition, self-selection, and specialization have impaired the medical community's embrace of these concepts. In a sea of specialized journals, which concentrate solely on clinical or abstract paradigms, our approach is to bridge the gap between theoretical and applied sciences to improve understanding of ocular disease processes, identify new biomarkers, develop advanced screening tools for ocular diseases, and to uncover new therapeutic targets for improved disease management and outcomes.

Advancements in imaging and medical education have identified many biological processes involved in ocular disease pathophysiology. The exact mechanisms involving many identified risk factors and physiological parameters, however, remains insufficiently described. The tired standard statistical approaches to interpreting clinical data continues to provide incremental contributions to understanding ocular pathology, but true breakthroughs to existing hurdles in medicine require a novel collaborative approach.

Dynamic mathematical modeling has begun to reach new levels of applicability and holds the potential to reveal previously unseen synergies of risk or protection within individuals. Many tissues in the eye cannot be visualized with current technologies, and simultaneous measurements of multiple factors are not possible, leaving unanswered questions and limited advancement in clinical understanding of the causes of ocular diseases. Theoretical approaches to solving these issues have a tremendous potential. For instance, advances in dynamic mathematical modeling have recently allowed for the exploration of glaucoma risk factor interconnectivity; providing further insight into glaucoma pathophysiology and eventually may allow for individualized screening and improved patient-specific treatment options.

It is with our shared vision of a multi-disciplinary collaborative approach to preventing ocular disease and blindness that we invite you to join our team. Mathematicians, physicians, statisticians, computer scientists, engineers, physicists, research scientists, and all who seek a fresh approach to dynamic analysis of ocular diseases are joining together to solve the unanswered questions of vision loss. We are excited to invite you to join us, collaborate with us, and bring your individual expertise to the *Journal for Modeling in Ophthalmology* where the best ideas in medicine are brought together with the most advanced modeling and big data analysis available to prevent blindness.

Yours truly,

Alon Harris and Giovanna Guidoboni

