**R Theodore (Ted) Smith MD PhD** is Professor of Ophthalmology and Neuroscience in the Icahn School of Medicine at Mount Sinai and Director of Biomolecular Retinal Imaging at the New York Eye and Ear Infirmary of Mount Sinai. He graduated summa cum laude, Phi Beta Kappa from Rice University with a BA in mathematics. He was then awarded a Marshall Scholarship by the British government to study in England, where he earned his PhD in mathematics at the University of Warwick under Professor James Eells with a thesis on harmonic mappings of curved Riemannian spaces. Returning to the States, he held faculty positions in mathematics for 5 years at MIT and Columbia.

At this point the pull of his family lineage of physicians called him to medicine, and he enrolled at the Albert Einstein COM, graduating as the president of the Einstein chapter of AOA. He did his ophthalmology residency at Columbia Presbyterian and a retina fellowship at the U of ILL at Chicago Circle under Professor Morton Goldberg. He returned to Columbia as faculty in 1986, rising to Professor of Clinical Ophthalmology and Biomedical Engineering, and founding his NIH supported Retinal Imaging lab. He was also clinical PI of the Columbia Macular Genetics study, which discovered the complement factor H and factor B risk genes for age-related macular degeneration (AMD). He was then recruited to NYU by Professor Jack Dodick as Director of Vision Research, where he served until being recruited by Professor James Tsai to ISMMS in his present position. His imaging lab, funded by two NIH R01 grants, is now at the NYEEI, in active collaboration with Richard Rosen’s Advanced Retinal Imaging Lab..

Dr. Smith’s research interests emphasize advanced retinal imaging and diagnostics for accurate patient evaluation at the cellular and molecular level, especially in age-related macular degeneration. His work encompasses both the development of new technology, such as quantitative autofluorescence (qAF) imaging with a modified scanning laser ophthalmoscope, and the quantitative analysis of images, for which his PhD in mathematics and 30 years’ experience as a medical retinal specialist have prepared him well. He has also reached new understanding of the high-risk AMD phenotype of reticular macular disease, also known as subretinal drusenoid deposits (SDD), and its relationship to systemic vascular disease. His work on hyperspectral AF imaging makes it possible to identify the spectral signatures of individual compounds in complex biological systems *ex vivo*, as recently published by his group, the international Hyperspectral Autofluorescence Consortium. By analysis of hyperspectral AF data, the Consortum have discovered the dominant spectral signatures of the retinal pigment epithelium (RPE), enabling spectral biopsy of RPE and subRPE lesions such as drusen, the hallmark lesion of early AMD. Indeed, they have also discovered the **spectral signature for drusen,** and, remarkably, drusen precursors (sub-RPE deposits) not previously visualized in vivo. These fluorescence signals can lead to molecular identification by imaging mass spectrometry, hence the concept of molecular imaging. The RPE in AMD is at the center of the two main lesions of early AMD—namely, drusen and SDD—as shown by Dr. Smith’s collaborator Dr. Christine Curcio, the world’s leading AMD pathologist, who is providing histological and cell biological direction to this project. Ultimately, the goal is to engineer a *clinical hyperspectral AF camera* to give specific knowledge of changing RPE/AMD lesion status and better potential targets for therapeutic intervention.

Ted has also recently turned his attention to deep learning from big data for automated screening of AMD and predictive modeling of disease progression, and plans a telemedicine demonstration project here at the NYEEI which will use these new tools.

Dr. Smith’s academic career has included many residents, medical students and fellows in his research endeavors, a feature he finds most rewarding and is continuing here at ISMMS.