Kris was raised and educated in Wroclaw, a city in southwestern Poland. He attended the University of Wroclaw, obtaining his Master’s degree in Organic Chemistry. Kris then attended the Technical University, receiving his PhD in Biochemistry under the tutelage of Professor Marion Kochman. Kris studied the structure of the active site and the mononucleotide binding site of an aldolase. Using photo-affinity labeling, Kris identified the amino acid residues responsible for coordinating the mononucleotide. I mention this early study, because it represents the beginning of what will be a theme throughout Kris’ research—his interest in molecular structure, and the relationship between structure and function. Of further significance, Paul Hargrave was a collaborator on this project, and in 1986 Kris came to the United States to join Paul’s laboratory as a postdoctoral fellow at the University of Florida (Gainesville, FL, USA). This was his introduction to vision research.

While a postdoctoral fellow, Kris studied the inactivation of photolyzed rhodopsin. Specifically, he isolated and characterized rhodopsin kinase and the protein phosphatase responsible for determining the phosphorylated state of rhodopsin, and then isolated and further characterized arrestin, a modulator of rhodopsin dephosphorylation.

In 1989, while in Portland, I had the pleasure to serve as the chair of a search committee looking for a young vision scientist to join the faculty. Of the many talented applicants, Kris was chosen owing to the quality of his work and an unbridled enthusiasm expressed in his cover letter and then in person. Kris postulated that we were nearing the point when further biochemical and structural studies of phototransduction would provide a formalism for understanding disparate retinal pathologies. While in Portland, Kris continued his studies of rhodopsin kinase and arrestin, in what is a second theme characterizing his research, that Kris has never really concluded a project, he simply adds new ones, like rings to a tree. He continued with his interests in molecular structure, crystallizing and then determining the structure of sangivamycin, a small kinase inhibitor. He then added an interest in calcium and calcium-binding proteins; initially describing a protein to become known as recoverin or s-modulin. It’s an EF hand calcium-binding protein found in photoreceptors, now thought to interact with rhodopsin kinase. It’s also involved in a human disease that causes retinal degeneration. The project initiated a long-term collaboration with John Crabb and later a collaborative reunion with Grazyna Adamus.

In 1992, Kris was recruited to the University of Washington (Seattle, WA, USA), where he would stay for approximately 13 years. In addition to his studies of rhodopsin kinase, arrestin, and recoverin, Kris expanded his interests in calcium-binding proteins, discovering the family of guanylate cyclase activating proteins (GCAPs). Following light absorption and a decline in intracellular calcium, GCAPs stimulate the cyclase to synthesize cyclic guanosine monophosphate (cGMP), thereby returning its levels toward the dark-adapted state. The project involved electrophysiological collaborations with Peter Detweiler, and genetic and molecular studies that would initiate a long-term collaboration with Wolfgang Baehr, this year’s recipient of the Proctor Award. Continuing with his interests in molecular structure, Kris and his colleagues determined in a seminal study the structure of rhodopsin. We finally learned how rhodopsin is folded in the membrane, as well as critical information about the binding site of the chromophore and interaction sites for other members of the phototransduction cascade. The structural determination also provided a basis for understanding
how mutations in the ops in gene could lead to retinal degeneration.

While in Seattle, Kris also turned to the dark side. That is the study of retinoid metabolism, how all-trans retinal cycles between the photoreceptors and the pigment epithelium, the steps involved in its various conversions, and how abnormalities in different dehydrogenases and isomerases could lead to visual impairment. A good deal of this work was done in collaboration with Jack Saari. In collaboration with Sam Jacobson, Bill Hauswirth, and others, these interests also led Kris to animal models of human disease and the discovery of potential treatments. In the case of a mouse model of Leber's congenital amaurosis, Kris astutely postulated that oral delivery of 9-cis retinal could bypass the mutation in the \textit{RPE65} gene, and thereby maintain photoreceptor structure and restore visual function. The utility of 9-cis retinal for the treatment of Leber’s is now being assessed in clinical trials.

During this period in Seattle, along with Yoshi Imanishi, Kris developed an interest in multiphoton imaging as a means to study retinal function noninvasively, initially examining endogenous fluorophores, like the retinoids. With such methods, it should be possible to identify functional abnormalities in the retina before they result in structural changes, and thereby stratify patients for earlier and more individualized treatment.

In 2005, Kris reached the decision that he wanted to build something larger than his own laboratory and accepted the position of Chair of the Department of Pharmacology at Case Western Reserve University. He’s worked tirelessly to build a great department through the recruitment of very talented young faculty, by contributing to cross-campus institutes and initiatives, and by providing a role model for translational research. All the while, he continued to expand his own research program.

While continuing his studies of calcium-binding proteins, guanylate cyclase, rhodopsin, dehydrogenases, isomerases, 9-cis retinal treatment of ocular diseases, and noninvasive imaging of the eye, Kris pursued his interests in molecular structure, now the \textit{RPE65} gene product, as well as other members of the phototransduction enzymatic cascade.

He also began studies of the photoreceptor-specific ATP-binding cassette transporter 4, which as part of a double-knockout produces a mouse model with features resembling Stargardt’s disease and age-related macular degeneration. Kris and his colleagues then demonstrated that certain amine-containing Food and Drug Administration (FDA)-approved drugs could scavenge excess all-trans-retinal generated in these animals, and thereby protect their vision.

You’ll learn more about Kris’ recent research activities in Cleveland in his lecture.

It’s a daunting task to weigh through Kris’ curriculum vitae (CV), so I’ve chosen a few highlights. Kris has published over 400 peer-reviewed articles in the best of journals. These studies have now been cited more than 24,000 times. He’s also edited several books and journals. He is the principal investigator (PI) of five active R01 grants, an R24, and Co-investigator or contractor on two R01 grants. He’s also been the recipient of grants from numerous private foundations. He is responsible for at least 22 patents.

Kris has been the recipient of many awards—a Jules and Doris Stein RPB Professorship, an Alcon Award, and one that I know is especially important to him, the Knight’s Cross of the Order of Merit, which was presented to him in person by the President of Poland. I also take note of the Cogan Award from ARVO, given to a promising young investigator. I know I’ll be corrected if I’m wrong, but I believe Kris is the first Cogan recipient to later receive either a Friedenwald or Proctor Award for significant research contributions as an established investigator.

Of all of his accomplishments, the most important, and to me the most remarkable, was his ability to somehow convince a young Grazyna Szafert to become Grazyna Palczewska in what has been his longest collaboration and certainly his most productive, resulting in two very fine sons, Michael and Gregory, who are with us today. Not to pass up an opportunity to collaborate with talented people, if you already didn’t notice, Grazyna, a very accomplished engineer, is the first author on the \textit{Nature} papers describing two-photon imaging of the eye. Michael is an accomplished computer scientist and Gregory is an aspiring biochemist, so I anticipate in the near future a paper by Palczewska, Palczewski, Palczewski, and Palczewski.

In the time afforded to me I couldn’t begin to do justice to the many important collaborators with whom Kris has worked. I apologize for any omissions and know that Kris is truly grateful to each of them. Finally, my heartfelt congratulations to Kris as this year’s recipient of the Freidenwald Award!