Introducing David S. Papermaster, the 2001 Recipient of the Friedenwald Award

It is my pleasure to introduce the 2001 Friedenwald Award recipient, David Papermaster. David is well known to the vision research community for his important and sustained contributions to vision research during the past 30 years. In presentation of the award, we celebrate his many scientific accomplishments and his additional roles as trusted friend and collaborator, talented teacher and mentor, valued administrator and organizer, innovative researcher, and caring husband and father. When I think of David, and call up his face from memory, I visualize a warm and generous smile.

David Papermaster was recruited by the Jewish community of North Dakota and sent there by Baron de Hirsch in 1890 to be the first rabbi in the state of North Dakota. This explains in part how, some 47 years later, in 1937, David was born in Fargo. It may also help us understand David as the quintessential midwesterner—honest as the day is long and extremely straightforward. Growing up in Fargo, he and his parents lived on the last block on a street near a swampy area that David spent long hours observing. His interest in science was fixed from an early age.

When it came time for college, he was off to the East coast, to Harvard. Although David pursued premedical studies, he wanted a well-rounded education, which explains his graduation with honors in history. His interest in and talent for history may explain why his children, to this day, call him Encyclopedia Dave.

He continued at Harvard for his medical training, and after his first year of medical school, he married his lovely wife Carole. David and Carole left Boston for David’s year of internship and then returned for his residency in pathology at Peter Bent Brigham Hospital and a research fellowship at Harvard Medical School and Massachusetts General Hospital. Meanwhile, the Papermaster family was blessed with a son, Daniel. During that time he was actively engaged in immunologic research that shaped his research career toward the study of cellular function and its pathology at the molecular level. David continued his postgraduate research with an American Cancer Society Fellowship in the laboratory of William Dreyer at the California Institute of Technology. In Dreyer’s laboratory, which concentrated on membrane proteins, he began work on a model membrane system, the retinal rod cell. It was there that I met David and began to work on this same model membrane system. We were soon joined by Hermann Kühn and Robert Molday—all of whom were destined to establish research careers centered on the study of the visual system. And it was at CalTech that David developed the rod cell preparation method that is basic to the methods in use by laboratories to this day. Their daughter Ellen joined their family while they lived in Pasadena.

David moved to a faculty position in the Pathology Department at Yale and soon was also directing the Electron Microscopy Service at West Haven Veterans Administration Medical Center. In this capacity, he trained residents and fellows in pathology at the same time that he conducted a vigorous research program investigating rhodopsin’s transport, its route, and the mechanisms of transport in the rod cell. As part of this work he described a new anatomic structure—the photoreceptor pericilliary ridge complex—developed new procedures and reagents for electron microscopy and membrane biology, and determined rhodopsin’s oligosaccharide structure. He made good use of a year’s sabbatical leave at the Weizmann Institute in Israel to show rhodopsin to be the first recorded membrane protein that did not have a leader sequence. It would take too long to describe his additional scientific achievements, some of which he will describe in his award lecture.

In 1986, David was attracted to the University of Texas at San Antonio to be Professor and Chairman of the Department of Pathology. This was a time of faculty recruitment—building a department—as well as developing innovative methods for teaching of medical students and diversifying and broadening his research program. Ten years later he was attracted back to the East coast to take a different chair: an endowed chair at the University of Connecticut Health Center (UCHC), The John and Florence Mattern Solomon Chair in Vision Biology and Eye Diseases. This move also allowed him to be only a 5-minute drive from his children: Daniel, now 37 years old and a successful lawyer with a growing family, and Ellen, 31, a guidance counselor in the very same high school where she had studied.

People who have worked with David are unanimous in their praise. He is the hardest working person they know. He is a consummate student, his mind constantly engaged, probing and searching to understand experimental results or to glean the most information from a recent paper. David clearly loves what he does. He has been incredibly inventive in his approach to laboratory problems, often expending considerable effort to develop new methods and materials to attack scientific questions. David is a hands-on experimentalist: always there and always involved. He closely follows the work of people in his laboratory, spending long hours discussing experiments and poring over notebooks. His laboratory meetings are legendary—some would say notorious—regularly lasting 3 to 4 hours and often longer. But the discussions are collegial, and every person in the laboratory is an equal partner in the business of discovery and problem solving. David has mentored many researchers on their way to independent careers, often generously declining to have his name on work that has been performed in his laboratory.

In addition to David’s mentoring, he is a gifted teacher. At San Antonio, he was course director for the Graduate Program in Molecular Medicine, and at UCHC he introduced the successful Cancer Basic Science Case-Study Approach. Within the vision research community he has served as course director for the summer Woods Hole course, Fundamental Aspects of Vision Research, since its inception in 1992. He is a much sought-after symposium speaker and lecturer for reasons that will become evident shortly.

Among his many related activities in the service to vision research he cochaired and coauthored the report on the Retina for the National Eye Institute Advisory Council’s 5-year plan in 1990. He currently serves on the National Institutes of Health Visual Sciences (NIH VIS-C) Study Section.

David continues to teach and vigorously pursue new research initiatives and his other interests. Those who know him best summarize his basic interests as science, faith, family, and food. And since he has not yet opened that delicatessen, there are still new frontiers to conquer. It is with great pleasure that I introduce to you David Papermaster, this year’s Friedenwald Award recipient.

Paul A. Hargrave