Friedenwald Award

Sidney Futterman
On the presentation of the Friedenwald Award in Ophthalmology to Dr. Sidney Futterman

To have been asked to introduce Sidney Futterman as the recipient of the Friedenwald Award for 1978 is an honor of the highest order. Sid and I have been members of the same faculty for more than 10 years. In that time, and especially while I have been chairman of the Department, his dedication to hard work and his personal integrity have made Sid my closest confidant and most trusted counselor on matters scientific and academic. These qualities, together with a consistent record of original investigation and service to the scientific world, combine to make Sidney Futterman an outstanding choice for the Friedenwald Award.

The son of a pharmacist, Sid grew up in Baltimore and enrolled in prepharmacy at George Washington University. He soon found the portion of the curriculum relating to chemistry most to his liking and managed to concentrate his efforts there while at first still under the guise of pharmacy education. He received the Ph.D. degree in 1954 and began studying folic acid metabolism at the National Institutes of Health.

While at NIH Sid studied job advertisements, indicating that things are not so different now than then. One of these advertisements was from Leona Zacharias of Boston for an investigator in retrolental fibroplasia. It occurred to Sid that oxygen effects might be mediated through folic acid. He applied and was accepted for the position.

Shortly after arriving in Boston Sid began active collaboration with Jin Kinoshita, David Cogan, and Toichiro Kuwabara. He has been dedicated to eye research ever since, rapidly evolving his own research program in retinal metabolism.

Sid’s research accomplishments are legion. His early studies addressed the integration of carbohydrate and lipid metabolism with the metabolism of vitamin A, the essential cofactor of the visual process. This initial focus has provided the main thematic element in a research career which weaves basic science with clinical medicine. His early studies led to the realization that glucose metabolism in the retina via the hexose monophosphate shunt was closely coupled to the bleaching of the visual pigment by the involvement of pyridine nucleotides in both processes.

Sid’s subsequent studies on the esterification of vitamin A in the retina were models of thorough scientific investigation which remain the definitive works in this area and have served as points of departure for other investigators. Later studies on the metabolism of vitamin A have been directed toward an understanding of the process of regeneration of bleached visual pigment. Although the exact mechanism of the isomerization of all-trans-retinal to 11-cis-retinal has eluded him (and all other investigators as well), his studies have demonstrated the potential of dihydroflavins and other nucleophiles as catalysts for this reaction. More recently his interest in vitamin A has led him to a description and characterization of cellular proteins in the retina which bind vitamin A, alcohol, aldehyde, and acid.

Sid’s interest in lipid chemistry led him to an early and accurate description of the unusual fatty acid composition of retinal lipids...
and later to an examination of the effects of essential fatty acid deficiency or experimental diabetes on this composition. Recognizing the epidemiologic significance of the proliferative vascular retinopathies, he recently has initiated studies of retinal vascular cell cycling.

In 1966 Sid was recruited by Carl Kupfer to a newly created Department of Ophthalmology at the University of Washington in Seattle. Sid’s letter in our files accepting this position is characteristically exact and direct: “I wish to accept your invitation to join the Department of Ophthalmology of the University of Washington Medical School for the purpose of developing a program of research and teaching in biochemistry of the ocular tissues.” Typically understated, this letter prefaced the entry into our department of what I consider the embodiment of the ideal scientist for a clinical setting. A scholar of great breadth, Sid displays an amazing knowledge of the chemistry of ocular and nonocular human disease and finds clinical relevance a welcome challenge rather than a burden. Whenever there are alternative directions for his personal research, Sid chooses the path that leads closer to the eye and clinical medicine.

Sid serves others selflessly. At home he is never too busy to discuss the problems of residents or students, and he has been responsible for the entry of several of these into careers in vision and ophthalmology. On the national scene he has served the National Institutes of Health in many capacities, including the Board of Scientific Counselors of the National Eye Institute. Editorial responsibilities have included *Investigative Ophthalmology & Visual Science*, *Vision Research*, and *Experimental Eye Research*. He has served as a trustee of the Association which honors him here today. In all these functions Sid has earned a reputation for incisive criticism combined with fairness and good judgment.

This recitation of academic achievement threatens to present an unbalanced picture of Sid Futterman. This is a man devoted not only to science but also to his family and to literature, music, and the outdoors. He is an avid reader, always ready to express a well-considered opinion on a wide variety of political and social issues. Although a transplanted Easterner, he rapidly developed an appetite for the Northwest which led to assaults on Mount Rainier and many other lesser peaks, including a daily climb of the nine flights of stairs to his laboratory carrying a loaded briefcase and scorn ing other mortals who chose the nearby elevator.

Original, direct, decisive, honest—all these can be used to describe Sid. The Friedenwald heritage is well served by the selection of Sidney Futterman as the Awardee for 1978.

The pleasure I experience today is tempered by Sid’s inability to travel from Seattle to accept this award and to deliver the lecture which has been traditional. I can assure you that Sid has greater love and respect for this scientific body than for any other and he has asked me to deliver to ARVO the message following.

Robert E. Kalina