Proctor Award and Lecture

Denis A. Baylor
It is my great pleasure and honor to introduce this year’s Proctor Medalist, Dr. Denis Baylor. I have had the privilege of knowing Denis as a colleague and friend for the past 10 years, and what I hope to do here is to give you a glimpse of him and his scientific career.

Denis, the oldest of three children in the family, grew up in the small town of Galesburg, Illinois. According to his brother Steve, Galesburg in those days had only two dominant forms of entertainment for a youngster, both of which, fortunately, Denis totally enjoyed. The first was sports, which Denis apparently spent untold hours doing, and the second was, well, simply hell-raising. As a youngster, Denis apparently did not care much for study, though when sufficiently stimulated he would throw himself “whole hog”—to use a Midwestern expression—into a subject. In hindsight, of course, this ability of having an unusual degree of enthusiasm and focus was an early sign of future success.

After high school he entered Knox College, where both his parents taught (his father in music, and his mother in French), and he graduated magna cum laude in chemistry. He then enrolled in Yale Medical School, where he was elected to Alpha Omega Alpha and graduated cum laude in 1965. His early aspiration in medical school was to become a surgeon, but after doing some experiments in Dr. Robert Galambos’ laboratory at Yale he became very interested in neurophysiology. Upon graduation he decided on a career in research, and he joined the laboratory of John Nicholls, a Yale neurophysiologist. In the next 3 years, Denis and John did some very interesting work together, taking advantage of the simple central nervous system of the leech. Denis’ work with John Nicholls was on mechanosensory neurons in the leech ganglion, and he thought a reasonable extension of that work would be a study of photoreceptors in the same animal. With that in mind, he joined Michael Fuortes’ laboratory at NIH.

Fuortes was a very well-respected neurophysiologist, and was at the time just completing a pioneering study of photoreception in the Limulus eye. Soon after arrival at NIH, however, Denis shifted his interest to turtle rods and cones when Arnaldo Lasansky told him that these cells might be ideal for electrophysiological study. The ensuing 2 years saw some exciting advances in vision research emerging from Fuortes’ laboratory, including the discovery of receptor coupling, the discovery of negative feedback from horizontal cells to receptors, and the hypothesis that an internal transmitter is involved in phototransduction. In all these developments, Denis played a central role. I should also add that not only did the science go well at NIH, but Fuortes’ great humanity also left a deep impression on Denis.

By this time, Denis was already a well-established investigator, but at Fuortes’ urging he decided to further his training by going to work with Alan Hodgkin, no doubt the greatest physiologist around. Fuortes was a close acquaintance of Hodgkin and an admirer of his supreme intellect. It was, therefore, natural for him to send his prized young collaborator to train with the great man. Denis spent the next 2 years soaking up the English rain, but more so the wisdom of the Cambridge school of physiology. He and Hodgkin worked very well together, and their collaboration resulted in a meticulous study of the light response in turtle rods and cones. Their work represented a tour de force in both experimentation and theoretical analysis, and has profoundly influenced the thinking on photoreception ever since.

After Cambridge, Denis became an associate professor of physiology at the University of Colorado School of Medicine. Two years later, he moved to Stanford, where he has been Professor of Neurobiology since 1978. During the 14 years since setting up his own laboratory, Denis has continued to make one fundamental discovery after another on photoreception in the retina. I shall not attempt to go into his numerous contributions here, because you will get an overview from his lecture to follow. It is fair to say, however, that his laboratory literally charted the development of the field in the past decade. In recognition of his research accomplishments, Denis was awarded the Mathilde Solowey Award in the Neurosciences in 1978 and the Rank Prize in Optoelectronics in 1980.
Denis’ attitude to science has been strongly influenced by his association with Fuortes and Hodgkin. Fuortes taught Denis the importance of being dispassionate in science, while Hodgkin greatly stimulated Denis’ intellectual curiosity and also showed by example that dedication and perfection have no limits in science. Like Hodgkin, Denis believes that the only way to understand a problem is to go deeply into it without diversion. Such a single-minded drive for depth and thoroughness is a hallmark of his research, and no wonder his publications are mostly classics in the field.

Denis’ first love remains the experiments themselves, of which he is a great master. He has been running a small laboratory all these years, so that he can have the joy of personally doing the experiments. Besides being a superb experimentalist, Denis is also an extremely effective speaker. His research seminars, as well as his lectures to students, are always exceptionally clear and inspiring. I often tease him that this talent probably comes from his Irish heritage, but deep down I know that, as a true professional, he does not rely on talent alone.

Given Denis’ dedication to experimental research, he often has little time for much else. He is, however, an avid reader of detective novels, and at any time can quote passages from a Dashiel Hammett or Raymond Chandler classic. He is also a serious furniture-maker, and around his home one can spot many elegant pieces which he has built with the same kind of care and meticulousness that he applies to his scientific research. He enjoys jogging, and for occasional relaxation, he and his wife, Eileen, like the peace and quiet of a beautiful natural resort, such as Mendocino in northern California. Finally, it will not be fair to Denis if I do not mention his zest for the Stanford football team.

For all of us who have had the privilege of working with Denis, he has been, and remains, a source of inspiration. We have all learned a tremendous amount from him, and we all appreciate his humility, his dedication, his insights, his humor, his great stories, and, above all, his friendship.

Well, Denis, on behalf of the ARVO trustees I would like to present you with the Proctor Medal.