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## 1998

### Arthur Johnson

Next to being with his family, Art Johnson seems happiest when he is working with students or driving his Corvette.

Johnson was born and raised in Wheaton, Minnesota. His parents had a farm equipment store, where as a young boy, he spent a great deal of time working. When Johnson reached high school, he was awarded a scholarship to attend Phillips Exeter Academy. Some of his parents' friends were puzzled that they would send their son away to school, but the Johnsons saw an opportunity for Art to get ahead. Johnson says that Exeter was "an extraordinary educational opportunity," where the world of science was opened up to him. He remembers the particular influence of his chemistry teacher, who made him appreciate that "chemistry was a discipline where one could critically analyze a problem and come up with a solution," something that Johnson found "more satisfying than humanities, where opinions were argued, usually with no satisfying resolution."

Following high school, Johnson went to CalTech. After graduating in 1964, he became a science teacher at the Milton Academy outside Boston. For Johnson it was a "great experience" that enabled him to not only continue to work in chemistry and physics, but to enjoy other varied pursuits: as head football coach and assistant basketball coach, as well as counseling in the dorm. Johnson jokes that he is "probably the only ASCB member who has also been a member of the American Football Coaches Association." Anthony Garvan, one of Johnson's former Milton students who is now himself a prep. school teacher, remembers Johnson with fondness: "he was a great science teacher. He was intellectually stimulating and we were devoted to him. I remember his teaching, his coaching and his Corvette." Johnson also taught underprivileged students from the Boston neighborhood of Roxbury one summer.

Teaching at Milton affected Johnson profoundly: "if you can get high school students to understand physics and chemistry, you are teaching effectively," he observes. He also derived paternal satisfaction from his students' progress, remarking that, "it was very satisfying to see the tremendous changes in the abilities of the students over time."

When Johnson started graduate studies at the University of Oregon in 1969, he felt "natural apprehension because I would be competing with younger people fresh out of school." He soon realized he had one advantage over his fellow students: not only had he been teaching chemistry, but he also understood that "you needed to treat graduate school like a job, a job you have to work at." Having also taught physics, Johnson was drawn to Oregon because the Chemistry Department and Institute of Molecular Biology emphasized an interdisciplinary program that included chemistry, physics, and biology. Under John Menninger and Peter von Hippel, Johnson focused on physical biochemistry. Johnson feels that the combination of his chemistry and physical backgrounds allows him to visualize "issues and experiments from a chemical and physical perspective, which has been an advantage to me in thinking about how to solve biological problems."

Under Charles Cantor, Johnson learned how to use fluorescent probes to study protein synthesis during his postdoc at Columbia as a Helen Hay Whitney Fellow. Following his postdoc, Johnson and his wife, Linda Lee Johnson, left New York City to seek a more attractive place to raise their daughter and new twin sons, landing at the University of Oklahoma. He carried a large teaching load in the Chemistry Department, in addition to managing his lab, and received three awards for superior teaching. He worked on the interaction of tRNA with ribosomes and elongation factors and used fluorescence resonance energy transfer to determine the arrangement of two tRNAs bound to the ribosome. These studies later evolved into studies of membrane-bound ribosomes synthesizing secretory and membrane proteins. Johnson also began collaborating with a colleague at the Oklahoma Medical Research Foundation, Charles Esman, to investigate blood coagulation at the molecular level, bringing their fluorescent techniques to the study of very different processes.

Johnson preferred the lifestyle in Norman, Oklahoma to New York City: "living in Norman was much less of a hassle. I spent more time at my work and less time figuring out how to get there safely."

In 1994 Johnson moved to Texas A& M, leaving Esmon to bemoan the loss: "Our students would shuttle back and forth between the two labs so they could learn the biophysics from Art and the biochemistry from me." Esmon feels that Johnson made a "substantial contribution to the study of blood clotting."

Johnson notes that the move to Texas A& M "turned out to be a very positive move for many reasons," enabling him to expand his research while reducing his teaching load. One of Johnson's former postdocs, Christine McCallum, says, "Art teaches his lab members to be good, conscientious scientists. As a mentor he continuously motivates and challenges individuals to be their best, while always maintaining an approachable 'open-door' policy. I know I am a better scientist for having worked with

him.”

Texas A& M, Johnson says, “is an exciting place with a lot of really excellent scientists doing important research in a wide variety of areas and where there is a culture of sharing equipment and ideas.”

Currently Johnson and his colleagues are simply trying to avoid being vaporized as they battle their 30th straight day of 100- degree heat. But, having grown up in Minnesota, he still feels that “ this is a small price to pay for having mild winters.”

Johnson is currently investigating aspects of three different processes: the movement of proteins through and into membranes, blood coagulation, and the creation of holes in mammalian cell membranes by bacterial toxins. Johnson explains that “the molecular machinery involved in each of these complicated processes consists largely of multicomponent complexes of proteins.” Using various fluorescence techniques he is able to detect and characterize the molecular interactions and conformational changes involved in the assembly, function, and regulation of the complexes, as well as determine the topography of membrane- bound complexes. ASCB members are likely most familiar with Johnson’ s work on protein movement through and into membranes, translocation and integration at the ER translocon.

Johnson is still an interactive teacher in the mode of his Milton Academy days. He usually does not lecture in the traditional sense, instead establishing a “dialogue” where he calls on his students and asks them to articulate their understanding of a principle.

Johnson is a strong supporter of the ASCB Annual Meeting “not only because of timely and high quality symposia, but also because it is well- attended by PIs.” Thus the ASCB meetings give his students and postdocs a chance to hear, meet, and interact productively with established PIs, a valuable opportunity that occurs much less frequently at other big meetings.

Linda Lee Johnson is an accountant who traded in most of her clients for serious bird watching, which is special in Texas. The Johnsons’ daughter, Christine, who was recently married, has followed her mother’ s lead, studying accounting at the University of Oklahoma. The twins, Robert and Edward, seemed indifferent to their father’ s interest in science and math while in high school, but each went on to excel in both. Edward went to Williams College where he majored in math; Robert followed his father to CalTech, majoring in engineering. The twins determined to go to college on separate coasts, perhaps because friends started “calling our home and asking for ‘ Bob or Ed, ’ as if they were interchangeable” -- despite their heterozygosity.

Johnson acknowledges wistfully that he used to play sports, but now he spends more and more time in the lab. He even confesses that, “I have no hobbies.” His only frivolous indulgence is his Corvette, and he admits that he is “still infected with the Corvette disease.” His current car is a ‘ 98 ‘ Vette Coupe, barely broken in. Johnson enjoyed taking his previous ‘ 90 Vette out on the Texas World Speedway. He has yet to put his ‘ 98 through its paces, but looks forward to “seeing what it can do. It’ s great fun. Except when I scare myself.”