

ASPB Pioneer Member

Daniel Bush

I started college at Humboldt State University in California as an art major, but as part of my general education program I met a biology professor, Dan Brant, and this changed the course of my life. Brant lived a life of inquiry. He had an enormous curiosity about everything: how concrete is poured in a new highway, how ion channels work, what was the most efficient way to move water to his garden from a nearby spring, how to wire electricity in the house he was building with his own hands, and what is the physiological basis of learning and memory. I spent a summer building a house with him and shortly thereafter became a biology major!

I applied to graduate school because I was inspired by biology, especially plant biology. I did my PhD with Louis Jacobson at UC Berkeley. Dr. Jacobson was a senior scientist from the school of "let your graduate students find their own way". While I learned a lot as I navigated my way through a PhD project, I realized I was not well prepared for a life in science. For a postdoc, I contacted Heven Sze, who was leading plant research in membrane transport, and I was lucky enough to join her lab. WHAT AN AWAKENING!!

Heven is the epitome of a question driven scientist. Why did you do a given experiment? What did the results tell you? How do your data lead to the next experiment that reveals the nature of the question you are exploring? WOW, this is how



you do science! While in Heven's lab I also learned the power of using purified membrane vesicles to describe the properties of transport proteins.

When I joined the Agricultural Research Service and the Plant Biology department at the University of Illinois, my first achievements were describing the properties of proton-coupled sucrose and amino acid transporters using purified plasma membrane vesicles with imposed proton electrochemical potential differences. My lab then pioneered cloning of plant amino acid transporters by complementing yeast transport mutants with plant cDNA expression libraries. We discovered sucrose is a signaling molecule that controls expression of the phloem sucrose symporter and, ultimately, controls assimilate partitioning in the plant. While I consider these and many other discoveries to be important contributions to plant science, I believe my most important contributions have been in the training of many PhD and postdoctoral students. I am exceedingly proud of their successes and contributions to basic understanding of plant biology.

ASPB had a profound impact on my career and development as a plant biologist. I attended my first meeting in 1983 as a graduate student and was awestruck by the diversity of plant science presented at the meeting (by coincidence, the meeting was at Colorado State University, an institution I joined many years later as Chair of the Biology Department). The Society played a central role in my career. In addition to participating in and helping organize annual meetings, I was on the Editorial Board of *Plant Physiology*, I served as Chair of the Midwest Section of the Society, I was Elected Secretary of ASPB, I moved to Presidential leadership of the Society (2002-2004), and I served on and was Chair of the Board of Trustees. ASPB had a profoundly positive impact on the discipline, and I am proud of my service to the Society.

My advice to young plant biologists is to make sure you have a passion for the field. It requires a deep commitment to succeed and many times the rewards are primarily internal. I would also note there are many pathways to pursue your interest. In addition to research intensive universities, there are research opportunities with government agencies, private industry and NGOs. Moreover, there are teaching opportunities at liberal arts colleges and community colleges. Plant biology still has many unsolved mysteries and is a great place to spend a career.