

John B. “Jack” Hanson

Jack Hanson’s major contributions to plant biology were in the areas of the herbicidal effect of the synthetic auxin 2,4-D, the properties of plant mitochondria, and the energetics of ion uptake and calcium signaling by roots, as well as in the training of countless graduate students and postdocs in whom he instilled a love of plant physiology research and teaching. He died October 23, 2006.

Jack’s Formative Years in the West

Jack was born March 24, 1918, in Denver, the first child of immigrant parents who settled in the tiny town of Hereford on the western wind-swept plains of Colorado. His coming of age during the Depression in poor farming country left its mark: He believed in hard work and loved cowboy songs of the West. After finishing high school in 1935, he enrolled at the University of Colorado at Boulder, having been awarded a full academic scholarship and helped by a \$50 loan from a well-to-do rancher. The Depression came, the money ran out, and Jack had to interrupt his studies after one year.

In 1940 he joined the U.S. Army, barely passing the physical because he was so scrawny. In 1943 he married Becky Hanson, his life-long companion, just before being shipped overseas. He saw action in North Africa and Sicily and was cited for bravery.

Like many of his contemporaries, he used the GI Bill to continue his studies and reentered the



Jack Hanson as a young professor in the laboratory in Davenport Hall.

University of Colorado in 1945 as a sophomore at age 26. Life was tough, and he and Becky did menial jobs to make ends meet. A significant event at this time was his purchase of a guitar. Finally Jack could start strumming the cowboy songs he so loved. Subsequently he obtained his master’s and PhD degrees with Orlin Biddulph at the State College of Washington (now WSU) in Pullman on ion uptake by roots and then in 1952–1953 did postdoc work with James Bonner at Caltech with an NRC postdoctoral fellowship.

At the Department of Agronomy of the University of Illinois

A year of research at Caltech, one of the few places in the country where plant biology was considered to be “hot,” landed him a job in the Department of Agronomy at the University of Illinois (at Urbana–Champaign [UIUC], as it is now called). The head of that department was unusually forward look-

ing and wanted to hire a few faculty not just “to grow (crop) plants” but to study “how plants grow.” In 1953, Jack was 35 and already had a family, and this was his first real job. The West still tugged at his heartstrings, but he stayed in Urbana. His guitar kept him company and was his link to his youth in the West. That same year, Richard “Dick” Hageman was hired to study how crops grow. Jack and Dick were given one very large lab to share in Davenport Hall. The first order of business was to clean out the lab, paint the walls and the benches, build a plant growth chamber, and get ready for research. (Start-up funds? You must be kidding!)

But what to work on? How do plants grow, and what determines their growth? In 1953 Millerd and Bonner had isolated active plant mitochondria for the first time, and the biochemistry and activities of mitochondria remained a major research strand in Jack’s lab for many years. The problems of isolating mitochondria active in oxidative phosphorylation from various plant organs (roots, shoots, scutellum) bedeviled many a graduate student. Jack gained a strong reputation in understanding how ion uptake is coupled with oxidative phosphorylation, and his lab produced several mitochondriacs. In 1980, Jack and David Day, who had come from Australia to work with Jack, wrote the chapter on plant mitochondria for the eight-volume *The Biochemistry of Plants*, published by Academic Press.

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Auxin and its role in plant growth was, of course, the hot topic at Caltech when Jack was there as a postdoc. That nucleic acids may play a role in auxin action was being hinted at in the late 1950s and early 1960s, and this became a major subject in Jack's lab. Being in an agronomy department, he focused on the herbicide 2,4-D, a synthetic auxin. He showed that 2,4-D had a differential effect on meristematic and more mature tissues and that it induced RNA accumulation and the machinery for RNA synthesis, major contributions from this research strand. Jack also had an interest in cell growth (without 2,4-D), and I worked with him on changes in organelles during cell elongation.

Department of Botany at UIUC and Research on Calcium Signaling

In 1967 Jack moved across the street to become the head of the Department of Botany, later renamed Plant Biology, where his infectious enthusiasm and measured approach brought renewal. He remained head until 1975. As faculty retired, he hired new faculty, including Charles Arntzen, John Boyer, Fred Meins, Larry Vanderhoef, and Carol Shearer, the first female faculty member in the Botany Department. In 10 years, Jack built an excellent plant biochemistry and physiology group while keeping traditional botany disciplines strong.

His research interest turned more toward the energetics of ion

uptake by roots and specifically the role of calcium. Because of his work on mitochondria and his familiarity with the Mitchell hypothesis, Jack was one of the first to understand and work on the role of an electron motive force in the uptake of ions by roots. Jack's lab found that physical stress or mild injury of a root dramatically decreased its capacity for ion uptake caused by the collapse of the proton pump. The roots became leaky as a result of the opening of ion channels. However, upon incubation, the roots recovered. Shock, they found, caused a rapid influx of calcium. How all these events are linked in the cell became the focus of Jack's work.

In 1980 he published a widely used review on plant mineral nutrition with David Clarkson in the *Annual Review of Plant Physiology*. In his 32 years at UIUC, Jack trained 27 PhD students and 17 postdocs; his lab also hosted nine visiting professors.

Recognition by and Service to ASPP

Jack was highly committed to plant physiology, the discipline he loved, and to serving it. He served ASPP in different capacities, including as president-elect in 1972–1973 and as president in 1973–1974. In 1980 he received the Charles Reid Barnes Life Membership Award and in 1989 the Adolph E. Gude Award with an unusual citation: "for contributing time, expertise, and wisdom to ASPP." While serving as president, Jack noticed that the (more sensible) practices at headquarters did not conform to the bylaws. What

to do? Jack, being a practical man, decided to rewrite the bylaws and shepherd their adoption through the appropriate committees and the membership. When the Society found itself without an executive director in 1985, Jack took up the challenge, and immediately after his retirement from UIUC, he moved to Gaithersburg, Maryland, for six months to become the interim executive director. While there, he realized the gap in our knowledge about the history of ASPP and took it upon himself to document this history, helped enormously by his wife Becky. The resulting 277-page book was published by ASPP in 1989. He interviewed numerous people and was able to document the entire history starting in 1923–1924. Going to Washington DC for 6 months on behalf of the ASPP came easily to the Hansons, because they were no strangers to the Capital. Earlier in Jack's career, he had made time to spend a year there, working for the Atomic Energy Commission, which was then undergoing its transformation to the Energy Research and Development Administration, later becoming the Department of Energy.

Boundless Love for Teaching and Research

When asked what Jack contributed to their careers, his numerous former associates are quite unanimous: his love of science, his enthusiasm for the next experiment, his focus on asking the right question, his love of teaching (always by

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example), and his setting of clear standards. You always knew when you measured up and when you didn't. All, especially those from abroad, remembered fondly being made part of the Hanson family and experiencing the warm hospitality Jack, Becky, and their three daughters provided.

Jack was an active collector of antique clocks, and his house was full of them. In retirement he continued to tinker with his

clocks, and he also continued his singing "career." For 15 years he and Becky led singalongs at the Urbana County nursing home. He composed songs as well—one of them for Dick Hageman's retirement on the subject of nitrogen—and published two books of children's songs.

Jack was an optimist who worked hard and was persistent. He had to be, considering the conditions where he started in Colorado. Those of us who worked with him

remember the parties organized by Becky. Invariably Jack could be convinced to take out his guitar and sing "Old Dan Tucker," "I Wish I Was Single Again," and other melancholy cowboy ballads. Jack represents plant biology in a different age: more gentle, less competitive, but not less demanding of excellence. We remember him fondly.

Maarten J. Chrispeels
La Jolla, California