

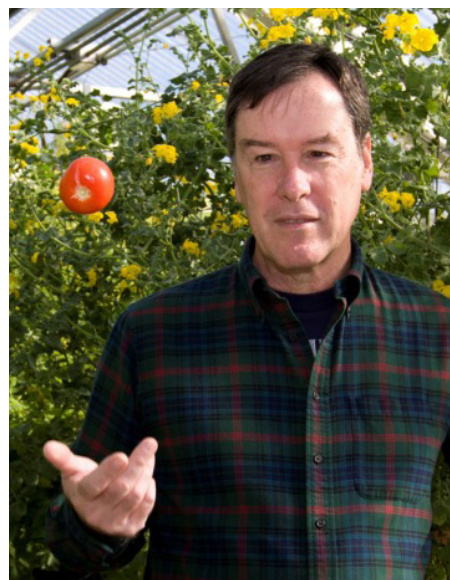
Harry Klee

How did you spend your career?

I started my life in science as a psychology major. Late in my undergraduate career, I became fascinated with how drugs, legal and illegal, alter peoples' perceptions of reality. I spent a summer working in a mental hospital and saw how powerful psychoactive drugs could make very sick people able to function again. I thought all that Freud stuff was complete crap, and I realized what chemistry could do. Consequently, I changed course and did a PhD in nucleic acid biochemistry, and I was lucky enough to be at the forefront of *E. coli* genetics, just when recombinant DNA was in its infancy.

I thought that agriculture could hugely benefit from genetic engineering. The only problem was that we didn't yet know how to make a transgenic plant. So I went to the University of Washington Department of Microbiology to work with Eugene Nester on *Agrobacterium tumefaciens*. My first real plant experience was killing them. I worked on the mechanism of T-DNA transfer into plants, but I also started working on how the bacterium can make tumors. That research turned out to be transformative for me. We figured out how *Agrobacterium* infection causes plants to make auxins and cytokinins.

Subsequently, when I was hired to work at Monsanto, they let me pursue my hormone research. There, by over- or underproducing auxins and cytokinins, I was able to create the first transgenic plants



with altered hormone homeostasis. As I tell students in my hormones class, if you understand how hormones work, you know nearly everything you need to know about plant biology. Transgenic plants were my entry into plant biology. Auxins led to ethylene, and ethylene led to tomato fruit ripening. Magically, my work on tomato fruit ripening led to a chance in 1995 for an endowed chair at the University of Florida, where I've been ever since. The ripening work was initially intended to allow farmers to harvest tomatoes when they're "riper," thus permitting more flavor development. But once I got to Florida, I thought, Well, that's just an indirect way to fix the real problem. Why don't we start to understand what is wrong with the flavor of commercial tomatoes? We need to understand the chemistry of flavor and discover the genetics to fix it.

Along the way, I realized that I have been very fortunate. At multiple points in my career I was in the

right place at the right time. I was in an *E. coli* genetics lab as recombinant DNA broke open. I worked on *Agrobacterium* when plant transformation broke open. I worked on ethylene when its receptors and signal transduction were elucidated. And I worked at a university where I could bring a diverse set of collaborators together to tackle the unique challenges associated with flavor.

Whether it was luck or foresight, I'll let others decide. Either way, I feel that I owe a lot to the scientific community that permitted me to have so much fun. I needed to give back. I always said yes when asked to serve on grant panels. And when Maarten Chrispeels asked me to be on the *Plant Physiology* editorial board, of course I said yes. That experience ultimately led me to be the second editor-in-chief of *The Plant Journal*, succeeding my dear friend Dianna Bowles, who showed great faith in my abilities. Eventually, that spirit of giving back culminated with Sally Mackenzie asking me to run for president-elect of ASPB in 2016. I was truly honored that she thought I was up for the job, though I was also a bit terrified that I wasn't. That job taught me much about the Society and the people who run it, and it was an amazing and gratifying three years. It was also a hell of a lot of work, and I'm glad it's behind me! But I wouldn't trade the experience for anything. So when *you* are asked to do something—anything—in the way of community service, do it. Science can't survive without a strong community.

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ASPB Legacy Society Founding Member

What do you consider to be your most important contributions to plant science?

I am lucky and fortunate enough that this is a tough question to answer. I guess I am proudest of my contributions to the field of biotechnology. Having broken into plant biology through expertise on *Agrobacterium*, I had a strong desire to do something to help the world. In 1984, that was transgenic plants. I went to Monsanto just after my good friend Rob Horsch had created the first transgenic plants. I worked on a team that leveraged my knowledge of transformation to make the first herbicide-resistant plants.

Today the technology we developed is deployed in plants that are grown each year on roughly 150 million acres worldwide. These plants have been enthusiastically embraced by farmers, and their use has had a huge positive impact on the environment—no matter what the Luddites say. They made no-till agriculture successful, and they are valuable tools that will allow us to feed the world. To fly over the Midwest and see the products of one's research planted as far as the eye can see is a special feeling that few will ever experience.

That said, I am equally proud of my more basic work on the chemistry and genetics of flavor-associated chemicals. Elucidating the chemistry of human flavor preferences and doing something to improve flavor is a huge challenge that has taken 20 years to accomplish, and it really excites the layperson. When I tell people that we're improving the flavor of fruits and vegetables, the enthusiasm I receive is truly

rewarding. This is a great way to teach people about genetics, plant breeding, biochemistry, and human psychology. We're going to change the way people eat, as we're finally close to major breakthroughs.

When did you become a member of ASPP/ASPB?

It was around 1985, when I had started working on plants at Monsanto. I figured I'd better learn something about plants, and integrating myself into a community of plant researchers seemed like a great way to immerse myself in the plant molecular biology culture. And it worked!

How did the Society impact your career, and what motivated you to become a Founding Member of the Legacy Society?

To be honest, I joined ASPP because I could get *Plant Physiology* (and later *The Plant Cell*) cheaply. In those days, plant molecular biology was in its infancy. You could know all the people and what they were doing. It was simple to keep up with everything going on in the entire field. Having a subscription meant I could take the journals home and read all the articles in the evening after the kids were in bed.

As an ex-president of ASPB, I now appreciate all of the tools we provide to early career folks. I didn't leverage any of that, since I actually came from a microbiology and molecular biology background. The first plants I worked on, I killed with *Agrobacterium*. As the years passed, I made friends with members and slowly integrated myself into the Society. Honestly, it wasn't until my election to the presidency that I got a crash course on

everything the Society does. Now the Society has a special place in my heart. In hindsight, I could have gotten way more out of it, and it's now my mission to make sure the next generation does just that.

What important advice would you give to individuals at the start of their career in plant science?

No matter what career path you end up taking, it's hard work to excel at it. You damned well better love the work. Do you want to spend 40 years doing something you aren't passionate about?

Assuming you are passionate and committed to be the very best, surround yourself with collaborators who are smarter than you and do things complementary to what you do. The best science is done at the interface of different disciplines. I collaborate with biochemists, geneticists, food scientists, agronomists, breeders, and even a psychologist. Those collaborations are what makes my work so exciting. I never know what I'm going to learn on any given day. When you get together with people with different skill sets and ways of thinking about a problem, you'll be amazed at what you can do. This is a philosophy I developed when I was in industry, and I've taken it to academia. I have reinvented myself multiple times through my career. That ability to follow what really interests you, no matter where it takes you, is what makes my job the best in the world.

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