



Faculty Focus

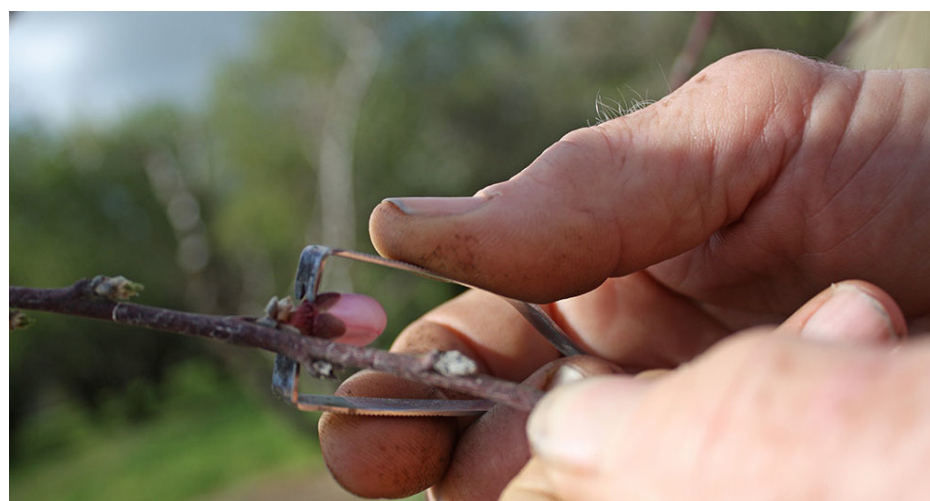
Professor Tom Gradziel

I grew up on a small farm in New England, getting my BS at UMass followed by both a Masters and a Ph.D. at Cornell. I took about 4 years off in between; first working as a Genetics Instructor at Cornell and then as a Peace Corps volunteer doing agroforestry work with a tribal group in the Philippines. In a strange twist of fate, one of my Cornell students showed up at my remote Nipa hut in the Mindoro Mountains.

Significantly, much of my Ph.D. research was done at the Geneva Experiment Station in the northern Finger Lakes region. While my main research involved transfer of virus resistance from wild relatives to tomato, the close-knit and integrated nature of the Geneva Station also encouraged involvement in the nearby apple, peach, and grape breeding projects, as well as utilizing my “extensive” munitions experience in a short postdoc working on the development of the Biolistic gene gun, (the “surge tank” was my idea). My experience in the Peace Corps - which included some training at IRRI - made clear to me the need for improved cultivars. The Cornell and Geneva experiences emphasized the truly exciting progress that could be achieved when combining available expertise from both the basic and applied sciences. UC Davis was already recognized as a world center for this type of integrated problem-solving, so it was an easy decision to join the faculty here. Focusing on peach and almond breeding also had its advantages, including UCD’s established expertise in physiology, development, and cultural management, as well as easy access to the nearby USDA germplasm collections. The biggest attraction, though, was that it was an applied breeding program with a primary

goal of developing cultivars solving both short- and long-term grower/industry problems, such as disease resistance and climate change issues, respectively. The long-term nature of tree cultivar development meant that public breeding programs were usually the main source of cultivars for industry. It also meant that most of your fellow breeders were in Europe and Central Asia.

Most of my early work involved incorporating new germplasm from related species, owing to the highly inbred nature of the traditional germplasm. The resulting genetic diversity has greatly facilitated the development of novel traits, for example the transfer of self-fruitfulness from wild peach to almond, as well as the development of effective molecular markers for characterizing these traits. What I find particularly exciting, however, is the cultivar improvement opportunities beyond the traditional “additive” gene approach currently encouraged by marker assisted selection. The interspecies origins of much of the germplasm I work with, combined with the ability, through clonal propagation, to capture and deploy very specific genetic/genomic/epigenetic interactions, provide a constant challenge that often involves disciplines that barely existed when I started. I suspect this is the source of my continued enthusiasm for plant breeding at UCD: the complexity constantly tests you, while the access to some very smart people across a range of disciplines simultaneously emboldens you.



On Student Success

When applying for positions you need to distinguish yourself from the other applicants. Usually this is done by demonstrating some level of expertise, which usually means a higher level of competence in a more focused area. Applied Plant Breeding, however, requires competence in a large number of disciplines, making this a challenge. In this way, plant breeding is more analogous to engineering than science. The emphasis is on utilizing a broad range of knowledge, however accessed, to solve real-world problems. It is, in a sense, genomic engineering, but involving a much larger concept of “genome” than traditionally used. Just as highly competent engineers are recognized as crucial to the success of any development project, multidisciplinary competence is increasingly being recognized as a crucial need for successful genetic improvement projects, and one which is increasingly in short supply. This requirement is well known by employers. Your challenge is to package your skill sets in such a way that they recognize its value.

-Tom Gradziel

UC DAVIS NEWS

WINNERS OF SYNGENTA AGRICULTURAL SCHOLARSHIP ESSAY CONTEST ANNOUNCED -SeedQuest

Last spring, Syngenta called for essays from students pursuing degrees in crop-related disciplines at U.S. land grant universities with accredited agriculture programs. Applicants were asked to describe their proposed approaches to implementing one of the six commitments comprising The Good Growth Plan, a measurable, global effort by Syngenta to improve crop productivity while also preserving natural resources.

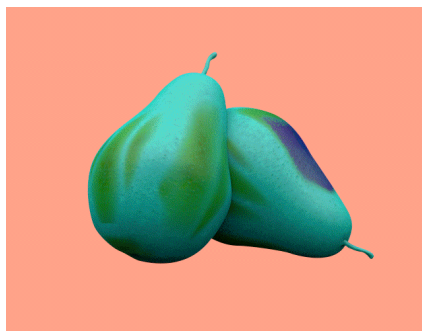
Six additional students were each awarded a \$1,000 regional scholarship prize. Recipients [include] Stephanie Smolenski Zullo (UC Davis).

[>>>read more](#)

RELATED NEWS

HOW TO TELL IF FOOD IS SAFE TO EAT - Lucky Peach

From the moment it's harvested, extracted, or slaughtered, food begins a journey of decomposition. Natural enzymes in plants are still active after harvest and cause the color, flavor, and texture to change. Some products, such as corn and peas, will lose their sweetness. Broccoli will instead begin to toughen, and lettuce will lose water and become limp. Fruit may continue to ripen and get sweeter after harvest but will eventually begin to rot. Different types of food age in their own ways...



[>>>read more](#)

Q&A: ELLIOTT CAMPBELL, UNIVERSITY OF CALIFORNIA RESEARCHER - UCFOODOBSERVER

There was a great deal of buzz last spring when a farmland mapping project by a UC Merced professor indicated that “most areas of the country could feed between 80 percent and 100 percent of their populations with food grown or raised within 50 miles.”

That researcher was Elliott Campbell. His research study – “The Large Potential of Local Croplands to Meet Food Demand in the United States” – appeared as the cover story of *Frontiers in Ecology and the Environment*, the journal of the Ecological Society of America[...]The study immediately generated comment, including positive accolades from author and influencer Michael Pollan (also a UC professor). Many have noted the importance of the study in filling a research gap about local food.

[>>>read more](#)

OPPORTUNITIES AND EVENTS

THIRD THURSDAY PROFESSOR TOM GORDON MARCH 17TH, 2016 103 HUTCHISON HALL UC DAVIS

This month we'll meet with Professor Tom Gordon in Plant Pathology, who will host a talk titled, “Genetic resistance to wilt diseases.” After the discussion, we will tour his lab and the controlled environment facility in 280 Hutchison Hall. To register, click [here](#).

UC DAVIS PLANT BREEDING SYMPOSIUM APRIL 18TH, 2016 8AM-5PM UC DAVIS CONFERENCE CENTER

The UC Davis Plant Breeding Symposium is an annual student-organized event which brings together researchers in academia, industry, and the non-profit sector to discuss the latest advances in the field of plant breeding. This year's theme is “Breeding for Stress Resilience” and we have invited speakers from around the world to present on this highly relevant and important topic. Register [here](#).

5TH INTERNATIONAL CONFERENCE ON QUANTITATIVE GENETICS JUNE 12-17, 2016 MADISON, WISCONSIN

For more information, or to register, click [here](#).

POPULATION, EVOLUTIONARY, & QUANTITATIVE GENETICS MEETING (PEQG) JULY 13-17, 2016 ORLANDO WORLD CENTER MARRIOTT, FL

The meeting will be held in conjunction with The Allied Genetics Conference (TAGC) and offers a unique opportunity to network with other researchers from various fields of genetics and share findings. For more information, click [here](#).

PLANT BREEDING CENTER:

Director - [Charlie Brummer](#) - ecbrummer@ucdavis.edu
Associate Director - [Allen Van Deynze](#) - avandeynze@ucdavis.edu
Program Representative - [Amanda Pietras](#) - ampietras@ucdavis.edu
Student Assistant - [Candice Tandiono](#) - cmtandiono@ucdavis.edu



UC Davis Plant Breeding Center



@UCDplantbreeding