





CAES and Plant Sciences

UC DAVIS
COLLEGE OF AGRICULTURAL
& ENVIRONMENTAL SCIENCES



College of Agricultural
and Environmental Sciences
21 Departments
400 Faculty
Broad expertise in agriculture
and extension



Department of Plant Sciences
Three Sections:
Agricultural Plant Biology
Crop and Ecosystem Sciences
Horticultural Sciences
90 Faculty and Extension Specialists



Research and Information Centers



University of California

Research and Information Centers



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about the centers



Agronomy



Dairy



Postharvest Technology



Vegetables



Weeds



Fruit & Nut



California Rangeland



Ornamental Horticulture



Seed Biotechnology



Consumer Research

University of California
Seed Biotechnology Center



Seed Biotechnology Center

- Established in 1999.
- Supported by UC Davis College of Agricultural & Environmental Sciences in partnership with the seed and plant biotechnology industries.
- The Seed Advisory Board representing the California seed industry contributes to operating costs.





Mission

To mobilize the research, educational and outreach resources of the University of California,

in partnership with the seed and plant biotechnology industries,

to facilitate discovery and commercialization of new germplasm and seed technologies for agricultural and consumer benefit.



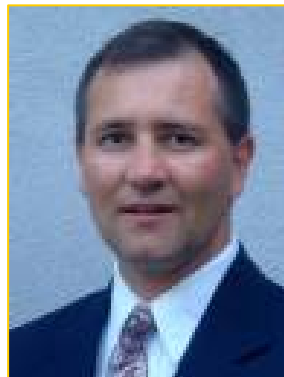


Seed Biotechnology Center

Kent Bradford
Academic
Director



Michael Campbell
Executive
Director



Allen Van Deynze
Research
Director



Susan DiTomaso
Analyst



Cathy Glaeser
Program
Representative





Plant Reproductive Biology Building



\$1.2 million raised in a capital campaign was invested in a new building.



The building is now shared with faculty in Plant Sciences, Nutritional Genomics, and the Public Intellectual Property Resource for Agriculture.





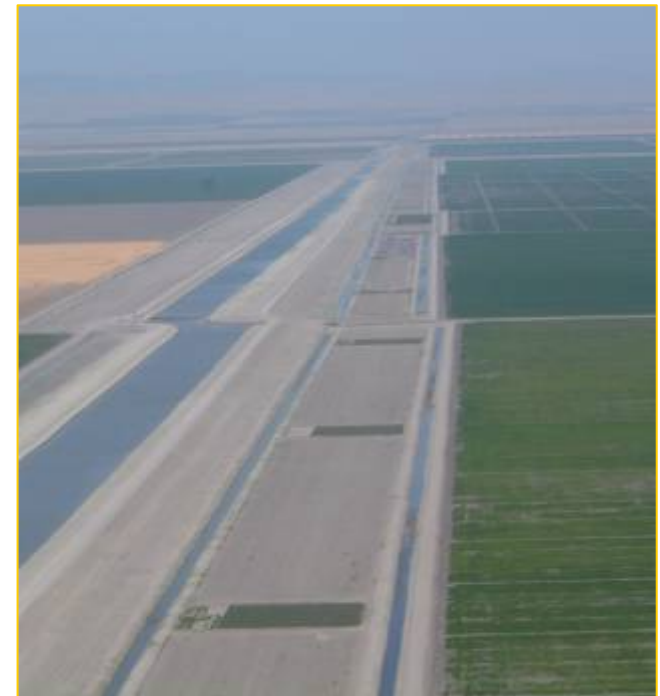
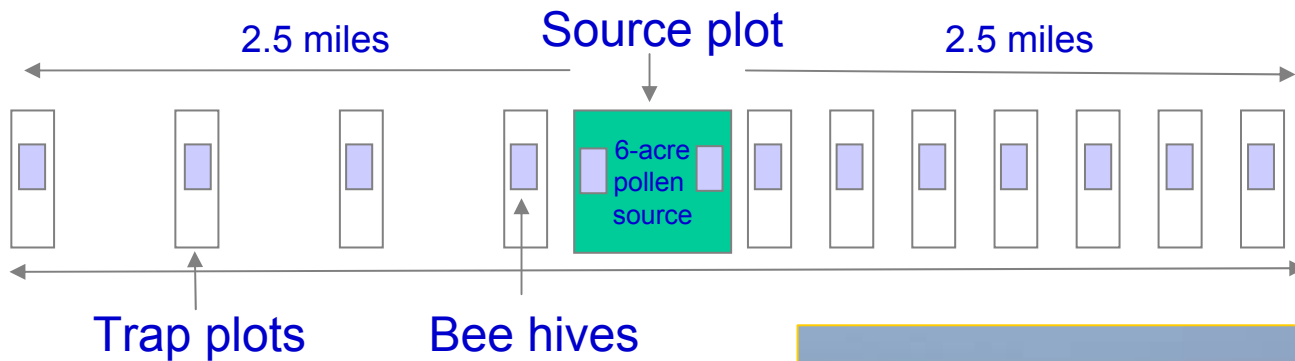
SBC Activities

- Research
 - Co-existence and stewardship
 - Trait identification and integration
 - Novel traits and new crops
- Public Service
 - Extension bulletins
 - Regulatory issues
- Education
 - Professional courses
 - Plant Breeding Academy





Research – Co-existence and Stewardship

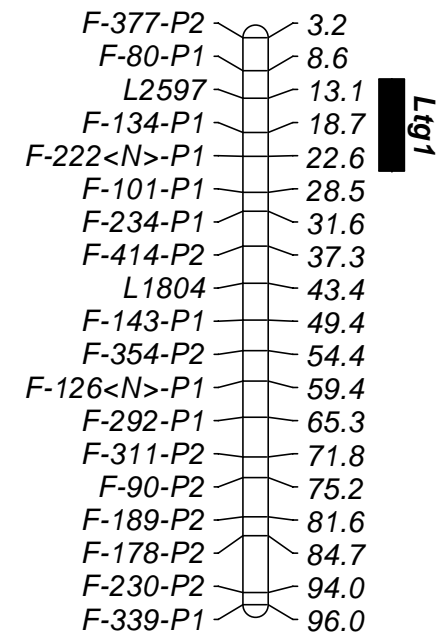
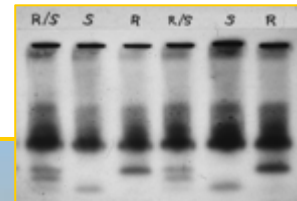
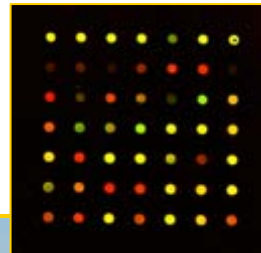


In collaboration with Monsanto, Forage Genetics, J.G. Boswell, UC Davis Agronomy Dept, UC Cooperative Extension.



Research – Trait Identification and Integration

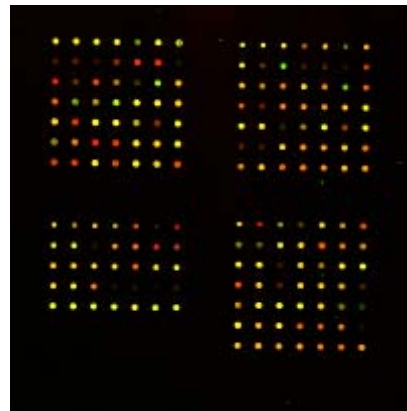
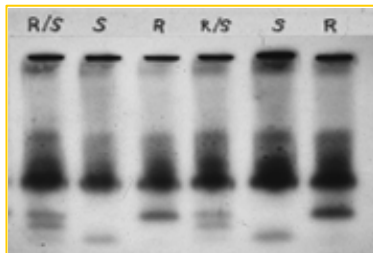
- National Science Foundation, UC Biostar and private partner
 - Genotyping lettuce genetic lines to identify molecular markers for disease resistance and seed germination traits.
- USDA
 - Identifying molecular markers in tomato breeding germplasm.





Bioinformatics to Identify Markers for Fiber Quality

- G. hirsutum*
 - G. barbadense*
 - G. tomentosum*
 - G. mustelinum*
 - G. darwinii*
 - G. arboreum*
 - G. herbaceum*
 - G. raimondii*
 - G. longicalyx*
- X *G. hirsutum*



Identify genetic markers associated with fiber quality to facilitate introduction of improved traits from diverse germplasm.

Funded by Cotton, Inc.



Tools for Large-scale Genetic Mapping

Lettuce Microarray Consortium

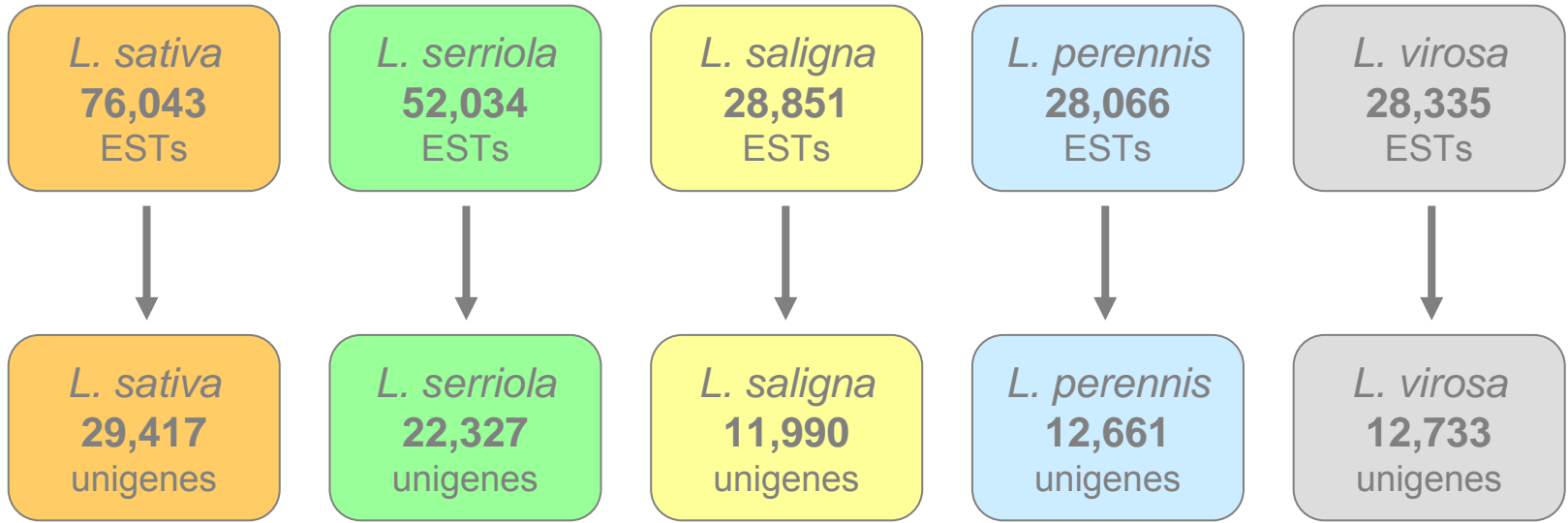


AFFYMETRIX





Lettuce GeneChip®



- Affymetrix platform: 6.6 million 5 µm features
- Average of 350 bp/unigene in 2 bp overlapping tiling path
- Average of 173 probes/unigene



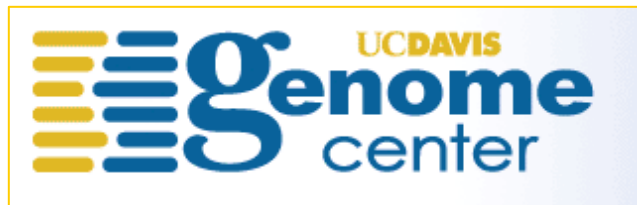
35,747
Loaded on chip

- Marker identification
- Genetic mapping
- Gene expression



Pepper GeneChip®

Pepper Microarray Consortium Allen Van Deynze, Alex Kozik and Jim Prince



University of California
Seed Biotechnology Center



Research: Novel traits

- UC BioStar project with Ceres, Inc. to test the function of specific genes identified in model systems
 - Potential improvement in yield, drought tolerance, nutrient uptake and utilization





Research: New Crops

- UC BioStar project with Ceres, Inc. to test the biological properties and potential for invasiveness of switchgrass, which is of interest for biofuel production
 - J. DiTomaso, E. Blumwald, A. Van Deynze





Public Service: Extension Bulletins

University of California
Seed Biotechnology Center

PUBLICATION 8153



Roundup Ready Alfalfa: An Emerging Technology

ALLEN VAN DEYNZE, Biotechnology Specialist, Seed Biotechnology Center, University of California, Davis; **DANIEL H. PUTNAM**, University of California Cooperative Extension Alfalfa Specialist, University of California, Davis; **STEVE ORLOFF**, University of California Cooperative Extension Farm Advisor and County Director, Siskiyou County; **TOM LANINI**, Cooperative Extension Weed Specialist, University of California, Davis; **MICK CAPEVARI**, University of California Cooperative Extension Farm Advisor and County Director, San Joaquin County; **RON VARGAS**, University of California Cooperative Extension Farm Advisor and County Director, Madera and Merced Counties; **KURT HEMBREE**, University of California Cooperative Extension Farm Advisor, Fresno County; **SHANNON MUELLER**, University of California Cooperative Extension Farm Advisor, Fresno County; **LARRY TEUBER**, Professor, University of California, Davis

UNIVERSITY OF CALIFORNIA
Division of Agriculture and Natural Resources
<http://anrcatalog.ucdavis.edu>




AGRICULTURAL BIOTECHNOLOGY IN CALIFORNIA SERIES Publication 0043



Biotechnology Provides New Tools for Plant Breeding

TREVOR V. SUSLOW, Cooperative Extension Specialist, Department of Vegetable Crops, UC Davis; **BRUCE R. THOMAS**, Technical Director, Seed Biotechnology Center, UC Davis; **KENT J. BRADFORD**, Professor of Vegetable Crops and Director, Seed Biotechnology Center, UC Davis

PUBLICATION 8077




Identity Preservation of Agricultural Commodities

F. J. SUNDSTROM, Executive Director, University of California Foundation Seed Program and California Crop Improvement Association; **JACK WILLIAMS**, University of California Cooperative Extension County Director and Farm Advisor, Sutter and Yuba Counties; **ALLEN VAN DEYNZE**, Biotechnology Specialist, Seed Biotechnology Center, University of California, Davis; **KENT J. BRADFORD**, Professor of Vegetable Crops and Director, Seed Biotechnology Center, University of California, Davis

UNIVERSITY OF CALIFORNIA

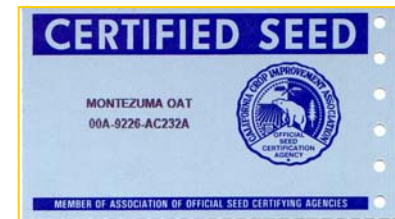


AGRICULTURAL BIOTECHNOLOGY IN CALIFORNIA SERIES PUBLICATION 8189



GENETIC ENGINEERING PRODUCER FACT SHEET 2 Methods to Maintain Genetic Purity of Seed Stocks

KENT J. BRADFORD, Professor, Department of Plant Sciences, University of California, Davis



<http://sbc.ucdavis.edu>



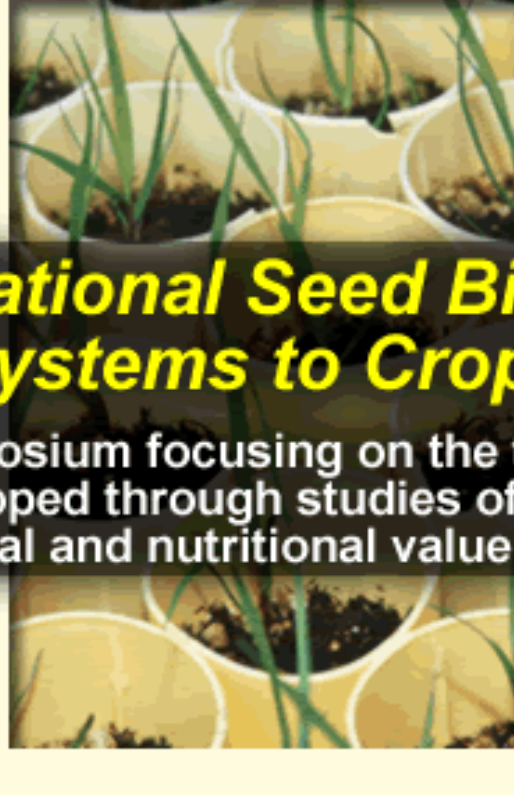
Public Service: Regulatory Issues

We are working at the State, National and International levels to support regulatory systems that allow the commercialization of biotechnology while ensuring safety.





Plant Sciences Symposium 2007



Translational Seed Biology: From Model Systems to Crop Improvement

An international symposium focusing on the transfer of knowledge of seed biology developed through studies of model systems to improve the agricultural and nutritional value of crops.

September 17 - 20, 2007 • University of California, Davis

www.plantsciences.ucdavis.edu/seedsymposium2007

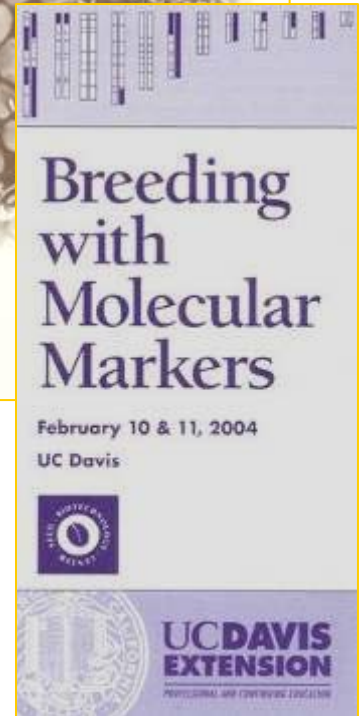
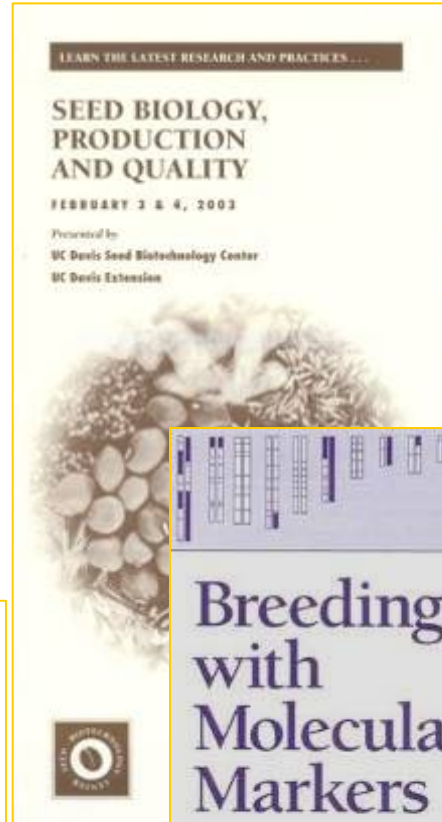
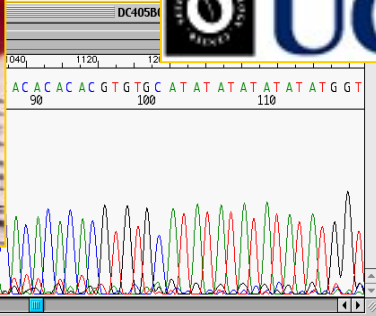


Education: Courses

Seed Biology, Production & Quality

Breeding with Molecular Markers

Plant Breeding Academy



University of California
Seed Biotechnology Center



Plant Breeding Academy



University of California
Seed Biotechnology Center

 *Plant Breeding
Academy*

<http://sbc.ucdavis.edu>

 **UC DAVIS**



Plant Breeding Academy

- Reduced numbers of academic plant breeding programs
- Fewer trained plant breeders
- Provide opportunity for professionals in the seed industry to increase their knowledge and skills and become plant breeders
- Six one-week sessions at UC Davis over two years
- Receive certificate and 19 units of university course credit





Possible Chile-California Collaborations

- Professional education courses
 - Seed biology and quality
 - Molecular markers
 - Plant Breeding
 - Postharvest technology
- Student exchanges
 - Graduate student training for advanced degrees
- Research collaborations
 - Counter-season production
 - Mutually beneficial joint projects

