We invite you to join a distinguished group of speakers and participants at this inaugural symposium of an annual series to be hosted by the Department of Plant Sciences at the University of California, Davis. The symposium is also a USDA-CSREES Regional Research Project W-1168, “Environmental and Genetic Determinants of Seed Quality and Performance” activity.

Knowledge of seed biology is advancing rapidly, particularly in model systems that allow the integration of genetic, genomic, metabolic, molecular, and biophysical approaches. “Translational seed biology” is the effort to capitalize on this expanding fundamental knowledge to develop applications for the improvement of seeds as genetic delivery systems for crop production, as end products for food and diverse uses, and as storage materials for germplasm preservation.

The ability to modify seeds with specific developmental and compositional changes provides enormous potential to meet the growing global demand for food, fuel, and fiber, but only if those discoveries can be adapted to the biological requirements of seeds as propagules and the economic demands of the marketplace. This symposium brings together leading public- and private-sector scientists across all aspects of seed biology in a format that emphasizes the connections between fundamental discoveries and their applications in agriculture.

An objective of the symposium is to identify high priority challenges or opportunities that can be targeted by complementary research in model systems, crops and ecological settings. The central theme focuses on how our understanding of seed biology can be applied to improve crop seeds and agricultural systems to benefit producers, consumers and the environment.
Monday, September 17 - Opening Session

Keynote Speaker

• Role of seed improvement in global agriculture: Rob Horsch, Director, Agricultural Programs, Bill and Melinda Gates Foundation

Tuesday, September 18 - Morning Session

Seed Development

• Early embryo development: Robert Goldberg, UCLA, CA
• Embryo/endosperm relationships during development: Robert Fischer, UC Berkeley, CA
• Maternal/paternal ploidy balance—effects on seed size: Brian Dilkes, UC Davis, CA
• Genes for seed size enhancement: John Thompson, University of Waterloo, Canada and Senesco Technologies, New Brunswick, NJ
• Apomixis—state of the art and potential applications: Anna Koltunow, CSIRO and University of Adelaide, Australia
• Cell cycle regulation and seed size: Jay DeRocher, Targeted Growth, Seattle, WA
• Sugar and starch accumulation during seed development: Hans Weber, Institut für Pflanzenzüchtung und Kulturpflanzenfor- schung, Gatersleben, Germany
• Heat shock proteins and seed longevity: Juan Jordano, Instituto de Recursos Naturales y Agrobiología, Seville, Spain

Wednesday, September 19 - Morning Session

Desiccation Tolerance, Longevity and Vigor

• Biophysical mechanisms of seed longevity: Christina Walters, USDA, National Center for Genetic Resources Preservation, Ft. Collins, CO
• Induction and loss of desiccation tolerance: Olivier Leprince, University of Angers, Angers, France
• Antioxidants in seed longevity and vigor: Christophe Bailly, University Pierre and Marie Curie, Paris, France
• Functional analyses of seed vigor genes: Josh Armstrong, Mendel Biotechnology, Hayward, CA
• Genetics of seed vigor in Brassica: Bill Finch-Savage, Horticulture Research International, Warwick, UK

Wednesday, September 19 - Afternoon Session

Dormancy and Germination

• Genetics of seed dormancy: Maarten Koornneef, Max Planck Institute, Cologne, Germany and Wageningen University, Wageningen, The Netherlands
• Hormone synthesis and deactivation in seed dormancy and germination: Yuji Kamiya, RIKIN, Yokohama, Japan
• GA signaling in seed dormancy and germination: Camille Steber, USDA-ARS, Washington State University, Pullman, WA
• ABA signaling in seed germination: Ruth Finkelstein, UC Santa Barbara, CA
• Reserve mobilization and regulation of germination: Ian Graham, University of York, UK
• Ecological and physiological modeling of seed dormancy and germination: Roberto Benech-Arnold, University of Buenos Aires, Argentina

Wednesday, September 19 - Evening Session

Symposium Banquet

• Golden Rice and nutritional enhancement of seeds: Jorge Mayer, University of Freiburg, Germany

Thursday, September 20 - Morning Session

Translation to the Marketplace

• Commercialization path for nutritional seed traits: Toni Voelker, Calgene/Monsanto, Davis, CA
• Amylase inhibitor in legume seeds—post-translational modifications and allergenicity: TJ Higgins, CSIRO, Canberra, Australia
• Gene switch technologies for seed traits: Roger Beachy, Danforth Center, St. Louis, MO
• Vegetable seeds: potential pathogen sources, challenges for detection and market exposure: Samantha Thomas, Seminis Vegetable Seeds/Monsanto, Woodland, CA
• Novel hybrid seed production technologies: Howard Hershey, Pioneer/DuPont, Johnston, IA
• Hybrid seed production of shrunken-2 sweet corn: Curtis Hannah, University of Florida, Gainesville, FL

Thursday, September 20 - Afternoon

Optional Tour of Seed Production in the Sacramento Valley

www.plantsciences.ucdavis.edu/seedsymposium2007