

Interdepartmental Graduate Program in  
Plant Breeding, Genetics & Biotechnology  
Symposium 2016

*The Customer is Always Right:*

*Unraveling the  
Genetics of  
Quality  
Traits*

Friday, December 16, 2016  
Molecular Plant Sciences Building - Room 1200  
12:15 PM to 7 PM



MICHIGAN STATE UNIVERSITY

**Participation:**

The symposium is open to MSU faculty, staff, graduate students and undergraduates, as well as members of neighboring institutions and the community. There is no registration fee or requirement for preregistration.

**Roundtable discussions:**

We will be hosting four roundtable discussion sessions with the symposium speakers on the morning of the symposium. These sessions are available to students and faculty from any program who are interested in attending.

*Attending the sessions is highly recommended for PBGB students.*

There will be two sessions with two roundtables run concurrently, each with two of our speakers.

**The sessions have limited space so sign up as early as possible.**

**Reception and Poster Session:**

A poster session and open reception for the speakers will immediately follow the talks in the MPS atrium. Refreshments will be served. Those who wish to present a research poster (4'X 4') are invited to do so. Graduate students and faculty associated with PBGB are particularly encouraged to participate.

Please **register** for the Poster and/or Roundtable sessions using the QR-Code or at: <http://tiny.cc/PBGB2016-Reg>

**Sponsorship**

The PBGB program wishes to acknowledge support for the symposium from Dow AgroSciences and MSU AgBioResearch.

**Dr. Jim Olmstead**

Director of Global Blueberry Breeding – Driscoll's

***"Breeding for Consumer Quality Traits in Blueberry"***

Dr. James W. Olmstead is the Director of Global Blueberry Breeding for Driscoll's, Inc. in Watsonville, CA. In this role he directs breeding efforts to develop proprietary genetics for Driscoll's growers worldwide. He leads a team of blueberry breeders and variety development managers that breed and evaluate a full spectrum of blueberry selections designed to meet the needs for traditional and developing production regions. Prior to his position at Driscoll's, Dr. Olmstead was an Associate Professor in the Horticultural Sciences Department at the University of Florida, where he led the blueberry breeding and genetics program. His breeding program focused on development of low chill requirement southern highbush blueberries that are adapted to subtropical climates. Improving fruit quality characteristics and developing wider adaptation in blueberry cultivars were focus areas in his research and breeding efforts. His research program covered a broad range of topics ranging from understanding consumer preferences to implementing genomic selection in autopolyploid crop species. Dr. Olmstead received his B.S. (1997) and M.S. (1999) degrees in Horticulture from Washington State University where he worked at the Irrigated Agriculture Research and Extension Center in Prosser, WA studying disease resistance in sweet cherry. He received his Ph.D. at Michigan State University (2006) in Plant Breeding and Genetics, where he identified QTL associated with fruit quality traits in sweet and sour cherry. Dr. Olmstead has released seven blueberry cultivars, has three patents, has published 44 peer-reviewed manuscripts, and served as a committee member for 26 graduate students including 7 as chair or co-chair. He taught a graduate level course in Marker-Assisted Plant Breeding, and was a co-instructor in Advanced Genetics.

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## Schedule:

**11:45 – 12:15**

Pizza Lunch MPS atrium



**12:15 – 12:30**

Opening remarks – **Doug Buhler**

Director of MSU AgBioResearch

**12:30 – 1:30**

### Dr. Henry Thompson

Cancer Prevention Laboratory – Colorado State University

*“An Ancient Solution for 21st Century Global Challenges:*

*Pulse Crops in Health Promotion and Chronic Disease Interception”*

**1:30 – 2:30**

### Dr. Rocío Isabel Díaz de la Garza

Associate Professor – Tecnológico de Monterrey

*“Folate & One Carbon Metabolism: Genetic and Metabolic Variations Among Plants”*

**2:30 – 3:00**

Coffee Break

### Dr. Charles Goulet

Assistant Professor – Laval University

*“From Gene Discoveries to Plant Breeding: the Search for more Flavorful Tomatoes”*

**4:00 – 5:00**

### Dr. Jim Olmstead

Director of Global Blueberry Breeding – Driscoll’s

*“Breeding for Consumer Quality Traits in Blueberry”*

**5:00 – 7:00**

Reception and Poster Session – MPS Atrium

## Invited Speakers:

### Dr. Henry Thompson

Cancer Prevention Laboratory

Colorado State University

### *“An Ancient Solution for 21st Century Global Challenges: Pulse Crops in Health Promotion and Chronic Disease Interception”*

Henry J. Thompson, Ph.D. is professor in the College of Agricultural Sciences and director of the Cancer Prevention Laboratory at Colorado State University in Fort Collins, Colorado. From 1988 to 2002 he was the head of the Center for Nutrition in the Prevention of Disease at AMC Cancer Research Center, Denver, Colorado. Before joining AMC, Thompson was on the faculty of the University of New Hampshire where he was professor of Nutritional Sciences and director of the Human Nutrition Center. He served as a senior research nutritionist at IIT Research Institute in Chicago, IL from 1977 to 1979. Dr. Thompson earned his Ph.D. from Rutgers University in nutritional sciences with an emphasis in biochemistry. Following his doctoral work, Thompson received postdoctoral training in the Department of Molecular Medicine at the Mayo Clinic in Rochester, MN.

His current research deals with investigations of the health benefits of staple and specialty food crops. He has played a leadership role in defining the field of Biomedical Agriculture and in establishing the Crops for Health program at Colorado State University.

### Dr. Rocío Isabel Díaz de la Garza

Associate Professor – Tecnológico de Monterrey

### *“Folate & One Carbon Metabolism: Genetic and Metabolic Variations Among Plants”*

Currently, Dr. Diaz de la Garza’s group at the Technological Institute of Monterrey focuses on folate metabolism in plants, in order to biofortify plant foods through metabolic engineering, and vitamin metabolism during post-harvest processes. This line of research includes the evaluation of the bioavailability of nutrients in biofortified plant foods using animal models.

Dr. Diaz de la Garza’s research interests also include improving plant phenotypes of nutritional importance and performing metabolic engineering of functional phytochemicals with commercial interest to establish protocols of differential metabolomics. The ultimate goal of this body of work is to contribute to the improvement of nutrition using naturally existing folates through the generation of knowledge about its metabolism that allows the increase and stabilization of the vitamin in plant foods.

### Dr. Charles Goulet

Assistant Professor

Laval University

### *“From Gene Discoveries to Plant Breeding: the Search for more Flavorful Tomatoes”*

Plants synthesize a vast array of volatile organic compounds. Derived from primary and secondary metabolites, they contribute to functions as diverse as defense against herbivores and pathogens, plant to plant interactions, as well as attraction of pollinators and seed dispersers. From a human perspective, they are responsible for the complexity of flavor as well as the aroma of flower and spices that we enjoy. Despite the importance of plant volatiles, regulation of their synthesis still remains poorly understood. The long term aims of Dr. Goulet’s research program are to contribute to the discovery of genes implicated in synthesis and regulation of plant volatile production, to characterize biochemically the enzymes associated with the volatiles pathways, and to develop molecular tools to target flavor and aroma in the breeding of new cultivars.

Through various projects on tomatoes and on non-traditional species, Dr. Goulet’s team explores the intricate world of the metabolism of plant volatile compounds. The results allow a better understand the biology of the species studied, but also open the way to concrete applications. By knowing the identity of the genes involved in the production of volatile compounds, it is possible to better target them and select cultivars with a distinct aromatic profile or the lost flavor of heirlooms cultivars.