

Annual Awards Banquet  
Tuesday 01 May 2018

# WHEAT GLUTEN

## Intriguing Biopolymer with a Big Target Bullet

Patricia Rayas Duarte

*Robert M Kerr Food & Agricultural Products Center and  
the Department of Biochemistry & Molecular Biology  
Oklahoma State University, Stillwater, OK*



Cereal grains were among the first domesticated crops that supplied energy to our sedentary ancestors. Wheat and barley have enjoyed favorable celebrity status until diet related diseases, celiac disease, and gluten sensitivities appeared and changed the script. Wheat gluten biopolymer is one of the largest biopolymers in nature with unique mechanical properties responsible for chewiness in bread and pasta as well as fluffiness in cakes. The useful mechanical properties of gluten present challenges and opportunities in several fronts. In this presentation, a quick description of the three genomes in bread wheat vs the two genomes in durum wheat (used mainly for pasta) will be discussed along with the origin of the wheat classes in the U.S. and the world. Also, the differences of world wheats based in terms of gluten strength will be described. I will then contrast with the more recent views that modern breeding has created quite a different wheat than what our ancestors ate. A description of the peptides of the  $\alpha$ -gliadin proteins in gluten responsible for its immunogenicity will be contrasted with their real and perceived effects. As well, a tour of what is coming soon and what is needed in the future gluten world will be provided.

**6:00 pm Social Half Hour**

**6:30 pm Dinner**

**7:15 pm Awards**

**7:30 pm Presentation**

**Hilton Garden Inn & Edmond Conference Center**

2833 Conference Drive (Covell & I-35), Edmond, Oklahoma, 73034, USA

### Menu

Statler chicken: boneless chicken breast with  
drumette attached served with citrus pepper sauce  
house salad: Spring mix and mixed vegetables in  
our house balsamic or ranch  
roasted rosemary red bliss potatoes  
NY-style cheesecake with raspberry coulis  
bread & butter, served with water and iced tea

### Cost

\$25 members  
\$10 students

### RSVP Deadline

Monday, Apr 30<sup>th</sup>, noon

Contact: Allen Apblett

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Hilton Garden-Edmond  
Directions & Map

### Patricia Rayas-Duarte Biographical Sketch

Dr. Patricia Rayas-Duarte is a professor and cereal chemist in the department of Biochemistry and Molecular Biology with duties at the Robert M. Kerr Food & Agricultural Products Center at Oklahoma State University, where she explores the basic biochemical principles that govern functionality of grains in industrial applications and more recently the microbial ecology of fermented grains and probiotics. Dr. Rayas' research focus is in evaluating specialized biochemical and rheological properties of gluten proteins and their role in key processing quality parameters of interest to the baking industry. She is also

interested in the improvement of methodology for the interpretation and prediction of processing properties relevant to present demands of customers and processors. Dr. Rayas' most recent projects are focused in the discovery of probiotics from fermented grains and testing their efficacy in animal models. A most recent multiyear project with the Pawnee Nation College has steered her interest into Native Crops. She is a graduate from University of Nebraska-Lincoln (M.Sc. and Ph.D. in Food Science & Technology) and the Universidad de Sonora, Mexico (B.Sc.).