

Dr. Ho has been at Purdue University for almost 30 years and has received numerous honors and awards for her groundbreaking work. She has expertise relevant to this program in the following areas:

- Genetic engineering of *Saccharomyces* (baker's) yeast to convert all sugars from cellulosic biomass into ethanol. The resulting modified yeast is known as Ho-Purdue yeast.
- Screening for better yeasts to engineer for industrial cellulosic ethanol production, and continued genetic engineering of Ho-Purdue yeast.

#### **Qualification Highlights**

- **Leadership in the International Scientific Community**
- **Genetic Engineering**
- **Cellulosic Ethanol Research and Development**

#### **Education:**

B.S., Chemical Engineering National Taiwan University 1957

M.A., Organic Chemistry Temple University 1960

Ph.D., Molecular Biology Purdue University 1968

#### **Synergistic Activities:**

- Was invited to attend President Bush's State of the Union Address in honor of her work with cellulosic ethanol. Also received a letter from President Bush thanking her for her commitment to fostering the development of renewable sources of energy.
- Named by Senator Dick Lugar as an Energy Patriot:  
[http://lugar.senate.gov/energy/links/patriot/02\\_ho.html](http://lugar.senate.gov/energy/links/patriot/02_ho.html)
- Contributed, as one of 60 individuals selected worldwide, to the recently published volume, "The Way we will be 50 years from today." This book was edited by Mike Wallace and published by Thomas Nelson (2008).
- Honored by Discover Magazine as developing one of the 27 most important technological innovations of 1999.
- Invited to give the keynote speech at World Congress of ibio-2008, a focused event for industrial biotechnology and bioenergy, in Hangzhou, China. The title of her talk was "Building a Partnership on Cellulosic Ethanol Production," (2008).

#### **Professional Experience:**

**School of Chemical Engineering, College of Engineering, Purdue University 2007 - Present**  
**Research Professor**

- Established the Molecular Genetics Group at Purdue's Laboratory of Renewable Resources Engineering (LORRE), and has served as Senior Research Scientist and Group Leader since its inception in 1980.

**Department of Foods and Nutrition, Purdue University 1982 - Present**

#### **Graduate Faculty**

Established Green Tech America, Inc. in March 2006 to facilitate the development of the cellulosic ethanol industry in the US. Key milestones for the development of the Ho-Purdue yeast included:

- Successfully developed the technology to genetically engineer industrial *Saccharomyces* (baker's) yeast to effectively co-ferment glucose and xylose into ethanol.
- Successfully developed stable engineered yeast with cloned genes integrated into the yeast chromosome, which has made it possible for the engineered yeast to sustain long-term industrial cellulosic ethanol production.
- Conducted large-scale screening for better yeasts to engineer, with no legal constraints, for industrial cellulosic ethanol production; one such yeast is Ho-Purdue yeast 424A (LNH-ST).

- Continuing further genetic engineering of 424A (LNH-ST) to improve its xylose fermentation and to make it ferment two other minor sugars effectively. Successfully demonstrated that this yeast can be further engineered to produce high-value co-products during ethanol production.

**Patents:**

- Ho, N. W. Y. and G. T. Tsao, Recombinant Yeasts for Effective Fermentation of Glucose and Xylose, PCT Patent No. W095/13362, (1995), U.S. patent No. 5,789,210 (1998).
- Ho, N. W. Y. and Chen, Z. D., Stable Recombinant Yeasts Capable of Effective Fermentation of Both Glucose and Xylose, Patent Application #60/016, 865 (1996), PCT Patent No. WO97/42307, (1997), this application has been allowed in Australia, the U.S., and most other countries.
- Ho, N. W. Y. and M. Sedlak, Development of Stable Genetically Engineered Yeast for Industrial Conversion of Sugars from Glucose-Based and Glucose-Xylose- Based Feedstocks to Lactic Acid, patent pending.