The Plant Breeding and Plant Genetics (PBPG) Center of Excellence at the University of Wisconsin–Madison leads the nation in the number of plant breeding programs and number of graduate students trained (Grunner and Wehner, 2003). The UW PBPG program leading to the Master of Science or the Doctor of Philosophy in Plant Breeding and Plant Genetics provides broad exposure in the various disciplines involved in plant breeding and plant genetics and also allows for specialization in a particular area of study. PBPG faculty have included five members of the National Academy of Sciences (Amasino, Doebley, Nelson, Peloquin, Sequeira), a number of endowed chair professors, recipients of the National Council of Plant Breeders ‘Genetic and Plant Breeding Award’, ASMS Excellence in Vegetable Breeding, a recipient of the Assinel Prize from the International Association of Plant Breeders among others.

The program is truly interdisciplinary, with membership from the Departments of Agronomy, Botany, Biochemistry, Forest Ecology and Management, Genetics, Horticulture, Plant Pathology, and Statistics. Research areas include biochemical and molecular genetics, biometry, quantitative genetics, cytogenetics and cytology, gene ecology, genetics, and plant breeding.

The 50-60 students majoring in plant breeding and plant genetics come from throughout the United States and all over the world. Graduates are found in responsible positions with academic institutions, research institutions, and private companies involved in molecular to cultivar development work. International students that have graduated from this program have returned to work for universities, governmental institutes and industries in their native countries. Several of our graduates are also working in international centers and institutes across the globe.

### History of Plant Breeding and Plant Genetics Group:
In the mid-1960s, a group of 20 faculty from the Departments of Agronomy, Botany, Forestry, Genetics, Horticulture and Plant Pathology organized the University of Wisconsin (UW) Plant Breeding and Plant Genetics (PBPG) Program. All members voted to elect the first chairman of this group for two-year terms. The executive committee is comprised of one member of each of the founding Departments. Members were appointed by the chairman of each of those six Departments.

The UW Graduate School and Board of Regents approved the proposal for a graduate program with M.S. and Ph.D. degrees in PBPG in 1968.

### PBPG Core Curriculum:

#### 1. Plant Breeding
Hort/Agron 501 - Principles of Plant Breeding (3 cr)
Hort/Agron 502 - Techniques of Plant Breeding (1 cr)
Forresty 640 - Forest Tree Genetics (2 cr)
Agron/Hort 850 - Advanced Plant Breeding (3 cr)

#### 2. Genetics and Cytogenetics
Hort/Agron 561 - Introductory Cytogenetics (3 cr)
Genetics 531 - Plant Genetics (3 cr)
Agron/Hort 861 - Chromosome Manipulation in Plants (2 cr)
Genetics 701 - Advanced Genetics (2 cr)

#### 3. Plants and Their Environment
Plant Path 505 - Plant-Microbe Interactions: Mol. & Ecol. Aspects (3 cr)
Plant Path 517 - Plant Disease Resistance (3 cr)
Plant Path 618 - Genetics of Plant Host-Parasite Interactions (2 cr)
Agron/Hort 875 – Evolution and Domestication (3 cr)
Botany 563 - Molecular Approaches in Plant Evolution & System. (3 cr)
Botany 828 - Evolutionary Plant Ecology (3 cr)

#### 4. Quantitative Genetics and Biometry
Agron 771 - Experimental Designs (1cr)
Agron 772 - Applications in ANOVA (1 cr)
Agron/Hort 811 - Biometrical Procedures in Plant Breeding (3 cr)
Agron/Hort 812 - Selection Theory for Quantitative Traits in Plants (3 cr)
Genetics 629 - Population Genetics (3 cr)

#### 5. Biochemical and Molecular Genetics
Hort 550 - Molecular Approaches for Potential Crop Improvement (3 cr)
Botany 840 - Regulatory Mechanisms in Plant Development (3 cr)
Agron/Hort 875 - Plant Physiology & Biochemical Genetics (2 cr)
Biochemistry 621 - Plant Biochemistry (3 cr)
Genetics 603 - Eukaryotic Molecular Biology (2 cr)

### Faculty *(ARS-USDA faculty)*:

**Department of Agronomy**
Jean-Michel Ane; Michael D. Casler*; James G. Coors; Natalia de Leon; Molly Jahn; Heidi Kaeppler; Shawn Kaeppler; William F. Tracy

**Department of Biochemistry**
Richard Amasino; Michael R. Sussman

**Department of Botany**
David A. Baum; Donald M. Waller

**Department of Forest Ecology and Management**
Raymond Guries

**Department of Genetics**
John Doebley; Patrick H. Masson; Richard Vierstra

**Department of Horticulture**
John B. Bamberg*; Johanne Brunet*; Irwin L. Goldman; Michael J. Havry*; Jiming Jiang; Shelley Jansky*; Richard Lower; James Nienhuis; Sara Patterson; Philipp Simon*; David M. Spooner*; Jack E. Staub*; Dennis Stirmert.

**Department of Plant Pathology**
Andrew F. Bent; Craig R. Grau; Dennis Halterman*; Sally A. Leong*; Douglas I. Rouse

**Department of Statistics**
Brian S. Yandell

### Breeding effort by crop

<table>
<thead>
<tr>
<th>Crop</th>
<th>Released in the past 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>alfalfa</td>
<td></td>
</tr>
<tr>
<td>barley</td>
<td></td>
</tr>
<tr>
<td>bean</td>
<td></td>
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<tr>
<td>canola</td>
<td></td>
</tr>
<tr>
<td>cabbage</td>
<td></td>
</tr>
<tr>
<td>carrots</td>
<td></td>
</tr>
<tr>
<td>corn</td>
<td></td>
</tr>
<tr>
<td>green</td>
<td></td>
</tr>
<tr>
<td>hemp</td>
<td></td>
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<tr>
<td>sweet</td>
<td></td>
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<tr>
<td>potato</td>
<td></td>
</tr>
<tr>
<td>poplar</td>
<td></td>
</tr>
<tr>
<td>onion</td>
<td></td>
</tr>
<tr>
<td>oat</td>
<td></td>
</tr>
<tr>
<td>melon</td>
<td></td>
</tr>
<tr>
<td>liatris</td>
<td></td>
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<tr>
<td>leek</td>
<td></td>
</tr>
<tr>
<td>garlic</td>
<td></td>
</tr>
<tr>
<td>forage grasses</td>
<td></td>
</tr>
<tr>
<td>elm</td>
<td></td>
</tr>
<tr>
<td>cucumber</td>
<td></td>
</tr>
<tr>
<td>cranberries</td>
<td></td>
</tr>
<tr>
<td>carrot</td>
<td></td>
</tr>
<tr>
<td>beet</td>
<td></td>
</tr>
<tr>
<td>bean</td>
<td></td>
</tr>
<tr>
<td>alfalfa</td>
<td></td>
</tr>
</tbody>
</table>
| Crop PY* Germplasm Cultivars
- inciates no releases in last five years
- wheat
- turfgrass
- switchgrass
- swiss chard
- sweet corn
- squash
- snapdragon
- rice
- pumpkin
- potato
- poplar
- onion
- oat
- melon
- liatris
- leek
- garlic
- forage grasses
- elm
- cucumber
- cranberries
- carrot
- beet
- bean
- alfalfa

### Statistics:

- **Current number of students** = 57
  - 16 MS
  - 41 PhD

- **Number of students 2000-2006** = 76
  - 24 MS
  - 46 PhD

- **Gender of current students** (No.)
  - 26 female
  - 31 male

- **Origin of current students** (No.)
  - 24 international
  - 33 domestic

### Job Placement of Recent Graduates (2000 – 2006):

- **Public sector**:
  - Post-docs and PhD students
  - 10

- **Private sector**:
  - Post-docs and PhD students
  - 24

- **International**:
  - Post-docs and PhD students
  - 12