

APPROPRIATIONS REQUEST FORM OREGON HOUSE DELEGATION FISCAL YEAR 2010

DEADLINE FOR SUBMISSION: FEBRUARY 20, 2009

PLEASE NOTE: As required by the House Appropriations Committee, all requests will be made public on the requesting Member's website.

- 1. Project Title:** Enhancing Barley Through Genomics
- 2. Organization Name and address:** Oregon State University, Corvallis, Oregon 97331-4501
- 3. Primary Contact name, phone number, mobile phone number, fax number and email:**
- 4. Project Location Address (if different from Organization):** Corvallis, OR and all cereal growing counties and in Minnesota, North Dakota, Wisconsin and Washington states
- 5. Please describe the requesting organization's main activities, and whether it is a public, private non-profit, or private for-profit entity:**
Public University. Oregon State University is one of only two U.S. universities designated a land grant, sea grant, space grant and sun grant institution. Its more than 20,300 students come from all 50 states and more than 80 countries. OSU programs touch every county within Oregon, and its faculty teach and conduct research on issues of national and global significance.

6. Briefly describe the activity or project for which funding is requested (please keep to 500 words or less.)

Barley is facing a crisis. Acreage has declined to historically low levels and the US is in danger of conceding domestic and world markets for barley, and its value-added products, to competitors from Australia, Canada, and Europe. This will have a substantial negative impact on the US economy and federal, state, and local tax revenue. Throughout the US, climate change is resulting in increased abiotic (e.g., drought, cold) and biotic (e.g., disease, insect) stresses on all crops. Barley is among the most stress tolerant crops, and judicious investment in biotechnology will allow scientists to enhance this innate tolerance in order to maximize productivity, quality, and economic returns.

The Regional Barley Gene Mapping Project, which supported a directed competitive grant program, funded individual projects throughout the US that provided for significant advances in genomic science, but did not provide a coordinated approach to meet this crisis. Advances in genomic research provided by the previous special grant, and other efforts, provide a unique opportunity to address this crisis through a new special grant.

Researchers in Minnesota, North Dakota, Oregon, Washington, and Wisconsin have developed a coordinated research plan to apply genomics tools to four research areas that have the greatest potential for success to increase barley production – winter hardiness; drought tolerance; disease resistance; and quality. We propose an \$800,000 annual appropriation (\$160,000 per state) for three years to support research in the five states. Most of this funding can be provided through an offset by using the current funding for the Regional Barley Gene Mapping Project.

Barley is a cornerstone of American agriculture. It is the most stress tolerant of cereals, producing grain essential for the malting and brewing industries. Barley is a heart-healthy grain that will be a key ingredient in strategies to reduce obesity and Type II diabetes. Barley provides superior forage and feed for ruminant and non-ruminant animals. Barley provides farmers with an option to increase genetic diversity, use less irrigation water, and to be more profitable.

Genomics is an umbrella term defining the study of naturally occurring genetic variation using the latest tools of biotechnology. Barley is unique in that in addition to its economic importance as a crop, it is also a model genetic system. A vigorous public sector research community, in cooperation with the private sector, has developed a robust set of genomics and molecular breeding tools. These discoveries in basic biology can be extended to practical applications and to other crops.

This research will be supported by a tight and coordinated network of Land Grant University and ARS scientists with linkages to the private sector. These researchers are currently supported by Federal, State, and local government agencies, grower self-assessment, and industry grants. A recurring base of funds, over three years, is necessary to ensure the timely and effective application of currently available tools. There is not sufficient competitive grant funding for this type of applied molecular plant breeding and variety development. Grower and industry support is constrained by declining acreage.

7. Has this project received federal appropriations funding in past fiscal years?

Yes

7a. If yes, please provide fiscal year, Department, Account, and funding amount of any previous funding.

FY 2006 Level of Funding:	\$630,319
FY 2007 Level of Funding:	\$0
FY 2008 Level of Funding:	\$468,551
FY 2009 Level of funding:	pending

8. Federal agency and account from which funds are requested (Please be specific –e.g. Department of Housing and Urban Development, Economic Development Initiatives account):
USDA CSREES

9. What is the purpose of the project? Why is it a valuable use of taxpayer funds? How will the project support efforts to improve the economy and create jobs in Oregon?

The purpose of this project is to stimulate economic activity and improve human health and welfare by using the tools of genomics to develop improved barley varieties. These varieties will be more tolerant of stresses caused by diseases, insects, and climate change. Enhanced tolerance will lead to greater productivity with fewer inputs. Varieties will be developed that have distinct end uses. For example, superior malting quality will net a premium for barley growers and provide more jobs in the US malting and brewing industries. Varieties with higher levels of beta glucan will be a key component of dietary strategies to reduce obesity. Locally-grown barley feeds and forages will provide new options for decentralized livestock and dairy industries.

Barley varieties are developed by public sector research organizations, such as Land Grant Universities and the USDA-ARS. Public sector research delivers varieties to farmers at lower cost and these varieties are designed to produce more with fewer inputs, rather than requiring additional inputs and royalty payments. Without federal investment in this and other public sector barley

research projects, we will be conceding our competitive edge and ultimately our domestic and export markets for barley and its value-added products to our competitors in Australia, Canada, and Europe. That would have a substantial negative impact on the US economic activity, jobs, federal, state, and local tax revenue.

The project will develop varieties that will provide needed crop diversity for Eastern Oregon wheat farmers: including barley in rotations leads to lower disease incidence and higher yields. In western Oregon, barley varieties with unique quality profiles will be a cornerstone of farm diversification and development of local value-added products such as craft beers, heart-healthy foods, natural meats, and artisan dairy products.

10. Have you requested funding for this project from other Members of Congress?

If so, who? Support is being sought from the entire Oregon Congressional Delegation

11. Funding Details:

a. Total project cost (all funding sources and all years):

Funding is requested one year at a time: the FY2010 request is \$800,000

b. Amount being requested for this project in Fiscal Year 2010:

\$800,000

c. What other funding sources (local, regional, state) are contributing to this project or activity? (Please provide specific dollar amount or percentage.)

In nearly all cases, principal investigator salary and benefits are not paid through grants provided under this program and therefore represent an in-kind match of state dollars to funded research and extension programs. The program does not allow payment of graduate student tuition but will allow payment of student stipends. The partner universities provide tuition payment through state funds. This grant program does not allow partner universities to charge overhead expenses, hence the universities are covering facilities maintenance, operations, repair and upgrading expenses as well as administrative operational expenses through other funding sources. In most instances, principal investigators have secured funding for parallel research through state commodity organizations or other state agencies.

d. Do you expect to request federal funding in future years for this project? Yes

e. Breakdown/budget of the amount you are requesting for this project in FY 2010.

(e.g. salary \$40,000; computer \$3,000):

The total for Oregon is \$160,000:

\$112,000 Salary and OPE for two full time (1.0) FTE Faculty Research Assistants

\$10,000 for two undergraduate research interns (hourly wage)

\$33,000 Materials and supplies (includes OSU facilities rentals for farms and greenhouses)

\$5,000 Travel (4,000 in-state for field work; 1,000 domestic out-state for conference)

f. Please list public or private organizations that have supported/endorsed this project:

American Malting Barley Association, Oregon Barley Commission, Oregon Wheat League, National Barley Improvement Committee, National Barley Growers Association, North Dakota Barley Council, Minnesota Barley Research and Promotion Council, Washington Grain Alliance.

g. Is this project scalable? (i.e. if partial funding is awarded, will the organization be able to use the funds in FY 2010?): Yes