The Center

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The Center is a quarterly newsletter compiled by WRRC to alert potential partners of technology transfer opportunities.

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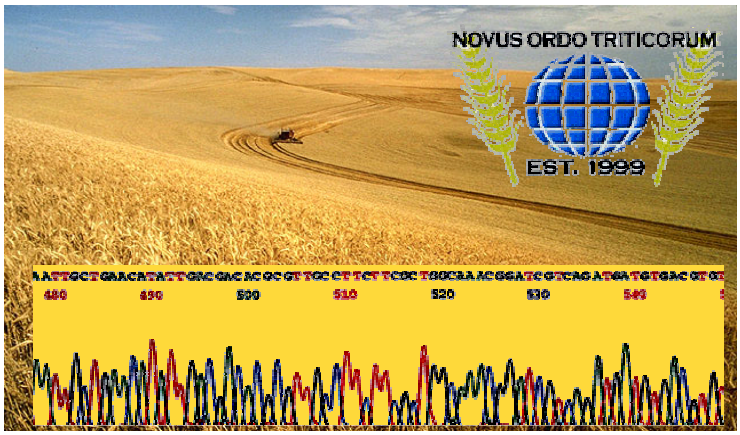
Wheat Genes Galore!

The wheat genome project at the WRRC has reached a milestone. To date, the project has sequenced nearly 40,000 expressed sequence tags (ESTs). These clones identify specific genes from bread wheat. The sequencing of the ESTs is the result of an ARS-funded effort to "deep-sequence" genes expressed in wheat seed and an NSF project funded to determine "The Structure and Function of the Expressed Portion of the Wheat Genomes." The WRRC project also serves as the central data collection point for an International Triticeae (wheat and barley) EST Cooperative (ITEC), which to date has generated 16,000 wheat and 6,000 barley ESTs. The collaborating institutions in the NSF project are University of California at Davis, University of California at Riverside, Cornell University, University of Missouri, Texas Tech University, University of Nebraska, North Dakota State University, University of Minnesota, Kansas State University, Colorado State University, Washington State University and ARS in Pullman, Washington and Columbia, Missouri.



DNA sequence "traces," like the one above superimposed on a wheat field, are currently being generated for 100,000 wheat genes. This sequence information provided by The Wheat Genome Project promises to greatly enhance wheat research and improvement in the U.S.

In mid-July all these ESTs were included in a public release of approximately 44,000 wheat and 6,000 barley gene sequences. This represents a major step forward for wheat genome efforts. Prior to this public release, only 8 ESTs for wheat were available to the public. A genomics effort of this magnitude requires a high-throughput capability. To facilitate this, WRRC alongside with it's sister lab, the Plant Gene Expression Center (PGEC), have developed a genomics center which is equipped with DNA sequencers and robotics and a team of scientists, technicians and bioinformaticists needed for modern genomics level projects.

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WRRC Patent Activity

May - August 2000

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U.S. Patents Allowed:

April 26, 2000;
Serial No. 08/706,391
Altering Wheat Dough Viscoelasticity with Modified Glutenins
Inventor: Olin Anderson

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How Do Businesses Get Access to These Technologies

WRRC is seeking private companies interested in licensing technologies which have been patented or for which a patent application has been filed. We are also looking for companies interested in becoming our partners in Cooperative Research and Development Agreements (CRADAs). CRADA partners have the first right to negotiate an exclusive license for each invention which is made as part of the CRADA. We encourage small and minority-owned business to take part in our technology transfer programs.

Wheat Genes Galore! (continued from front page)

To remain productive agriculture requires continuous improvement of crops. Recent advances in plant genetics and genomics offer unprecedented opportunities for wheat improvement, but only if the information is available to all breeders. Thus, the WRRC public release of the ESTs is critical to the future of public wheat breeding programs.

Sequence data from the projects are currently available to the public via the ITEC web page (http://wheat.pw.usda.gov/genome), the NSF project web page (http://wheat.pw.usda.gov/NSF) and GrainGenes, the ARS sponsored database for wheat and barley at http://wheat.pw.usda.gov.

With all of this sequence data at hand, the next step is to identify 10,000 "singletons" defined as nonduplicated ESTs representing unique genes. These singletons will be mapped on chromosome deletion stocks, which are an important tool for rapid mapping available in wheat. The mapped ESTs will also be assembled onto DNA microarrays and distributed among collaborators on the NSF project and other laboratories to further characterize gene function. The goal is to better understand wheat reproduction from flowering signals through seed development and germination. Such knowledge will represent a quantum leap forward in our ability to understand and improve wheat.

For more information contact:

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Symposium and Exposition
"Meeting 21st Century Challenges Through Agricultural Research"
September 8, 2000 --- 9:00 am - 4:00 pm

Plans are in place for the big event at WRRC. We are expecting approximately 150 invited guests who will participate in the symposium and tour the Center. Guided laboratory tours will give visitors a first-hand look at selected research projects and a special poster session will provide an overview of center research. If you would like to attend, and haven't yet responded to your invitation, please RSVP to Monta Whitehurst, Phone: 510.559-5600, Email: mbw@pw.usda.gov.