



# Pig Genome Update

## No. 70 January 1, 2005

*Happy Holidays and New Year to you, your families and colleagues!!*

**Iowa State University and National Swine Improvement Federation (NSIF) sponsored The Lauren Christian Symposium in honor of the deceased ISU scientist.** Former students presented updates on developments in the seed stock and swine industry both in the US and in other countries during the 2-day workshop on December 9-10 in Ames, Iowa. The meeting was well attended by over 90 producers, swine industry personnel, researchers and students. Thanks go to Dr. Ken Stalder, ISU, and Steve Moeller, OSU for all their efforts. Program papers can be found in the near future at <http://www.nusif.com>.

**PAG-XIII will be January 15-19, 2005 in warm, beautiful San Diego at the Town and Country Hotel.** See <http://www.intl-pag.org/> for a schedule and registration information. Registration is \$575 for those from non-profit organizations and \$750 for industry participants, with fees going up by \$100 on-site. Student registration is \$325 now and \$375 on site. A weekend rate (Fri.-Sun. only) is available at \$300 now or \$350 on site. Among others, Nobel Laureate Rich Roberts from New England Biolabs and Bill Haseltine from Human Genome Sciences are scheduled to give plenary lectures. The NRSP-8 Swine genome committee will meet. Joan Lunney is chairing the meeting and plans for an excellent program are underway. The meeting is scheduled to start at 8 am on Saturday, January 15. In addition, the Swine Genome Sequencing Committee will meet on Sunday from 12 noon – 2 pm. Both meetings are open to all interested participants. Limited partial travel assistance will be available for NRSP-8 swine committee members or members of their labs. Please contact the Coordinator, Max Rothschild, as soon as possible if interested.

**The 2005 NRI competitive grants program has been announced (<http://www.reeusda.gov/nri/>).** Deadline dates are now May 17, 2005, for Animal Growth and Nutrient Utilization; and June 15, 2005, for Animal Genomics, Animal Genome Reagent & Tool Development and Functional Genomics of Agriculturally Important Organisms. Total 2005 NRI funding remains was set at \$181M in the recently passed Consolidated Appropriations Act. As previously reported, the Animal Genome Reagent & Tool Development program that has been very successful is now scheduled to end after the 2005 year. In response to concerns expressed, Dr. Anna Palmisano, Deputy CSREES Administrator for Competitive Programs ([apalmisano@csrees.usda.gov](mailto:apalmisano@csrees.usda.gov)) responded at length on Oct. 1, including the following: "We have just begun the planning process for the FY2006 RFA. If the NRI Animal Genome Reagents and Tools program continues beyond FY 2005, we feel that the emphasis of the program will need to change considerably. Therefore, we would like to challenge the NRSP-8 committee, including all of the species subcommittees, to address priority areas for the NRI Animal Genome Reagents and Tools program at the NRSP-8 business meeting at the Plant & Animal Genome meetings in San Diego, CA. We request that the members of NRSP-8 present the NRI National Program Leaders with a list of 4 to 5 prioritized areas for possible inclusion in an FY 2006 NRI Animal Genome Reagents and Tools RFA, should the program be continued." Thanks to Dr. Palmisano for her prompt and thoughtful reply (kindly provided by Jerry Dodgson).

**A small number of pig oligo arrays still remain to be printed and released.** . Some individuals have failed to request a shipping date and need to do so. Cost is \$20/slide plus shipping. Slide orders will be on a first come first serve basis. **Please immediately contact Max Rothschild at [mfrothsc@iastate.edu](mailto:mfrothsc@iastate.edu).**

**A pig quantitative trait loci (QTL) database (PigQTLdb) has been created at the Iowa State University.** The database has gathered all pig QTL data published during the past 10+ years. The database and its peripheral tools were made to compare, confirm, and locate on pig chromosomes the most feasible location for a candidate gene responsible for quantitative trait(s) important to pig production. To date, 791 QTL from 73 publications have been curated into the database. Those QTL represent 219 different traits. The database can be reached at <http://www.animalgenome.org/QTLdb/>. The database content has also been submitted to the NCBI Gene and Map Viewer resources, where the information about markers are matched to marker records in NCBI's UniSTS database. Support from NAGRP and NCBI have made this possible.

**Swine Genome Sequencing Project (SGSP) makes significant progress.** During 2004, multiple planning sessions occurred between researchers, the USDA, swine industry representatives, and the Alliance for Animal Genome Research. These activities have provided an important context for developing and implementing a plan to sequence the swine genome. Several prevailing themes emerged. These included the need: (1) to focus on an integrated and universally accepted (high priority) scientific plan; (2) to capture cost savings associated with technological advances in DNA sequencing; (3) to garner industry support to ensure full utility of the sequence information; and (4) to demonstrate matching funds towards a USDA led initiative. Additional collaborative research efforts have led to the identification of an animal to sequence, creation of swine BAC libraries (funded by USDA-NRI), completion of a physical map, identification of a minimal tiling path (consisting of ~20,000 BAC contigs) for sequencing, and creation and distribution of small insert libraries for whole genome shotgun sequencing. Thus the necessary reagents are available to begin sequencing the swine genome in 2005. The cost of DNA sequencing has decreased significantly. These costs have been captured in the proposed SGSP. The cost of the cattle sequencing project (6X coverage, cDNAs, and SNPs) was approximately \$53M. As a result of on-going collaborations between the Sanger Institute, INRA and UIUC researchers, an effective hybrid for launching the SGSP has been developed. Currently, we estimate that approximately \$30M will be needed to conduct this hybrid sequencing approach that includes a BAC contig skim (3X) and whole genome shotgun (3X) sequencing to generate an approximate 6X working draft. During 2004, SGSP representatives met with the National Pork Board (NPB) and industry representatives from Iowa and North Carolina. The scope of the plan and the need to develop a global network (including the potential to conduct sequencing outside the USA) was discussed. The SGSP was reviewed in the respective research committees and has been recommended for approval by these associations. To date, the NPB has approved \$750,000 (available in 2005 and 2006) and the Iowa Pork Producers have also agreed to provide \$100,000. Additional support from Iowa State University, University of Illinois and other state pork agencies is likely to exceed \$300,000 to provide a total of approximately \$1.2M in matching funds (beginning in 2005). Equally important, is the recommendation of the research committees to provide future funding to support utilization of the sequencing information. Recently, as a result of discussions with the Alliance, the Wellcome Trust Sanger Institute has expressed their willingness to provide matching funds towards completion of the proposed 6X hybrid pig genome sequencing model. Our success in securing industry support, reducing the cost of sequencing by over 40% and the identification of matching funds address the issues expressed by the USDA leadership during our discussions.

In mid-December, USDA Under Secretary Jen met with Alliance executive director, Eversole, and with the Interagency Working Group secretary, Green, to discuss the consortium's request for USDA to provide \$15 million over the next 2-3 years to support the SGSP. Under Secretary Jen confirmed that USDA will continue its leadership role and that, at a minimum, there would be \$10 million provided from the NRI (\$5 million per year for FY 05 and 06) and that \$5 million could be available for FY 07 if that were necessary. In addition, we discussed the possibility of getting \$1 million from ARS (equivalent to the amount that was committed by ARS for both the swine and chicken projects). It is hoped that the USDA will announce the RFA at the beginning of the new year so that sequencing could start by June 1, 2005. (kindly provided by Larry Schook, Jon Beever, Joe Cassady, Kellye Eversole, Gary Rohrer, Jane Rogers and Max Rothschild).

**The 3rd International Symposium on Genetics of Animal Health (formerly, Candidate Genes for Animal Health) will convene on July 13-15, 2005, in Ames, Iowa, USA.** The meeting will feature several invited speakers, contributed presentations and poster sessions and should be an exciting continuation of past meetings. Please note the dates on your calendar, and bookmark the GAH2005 web home page: <http://www.ans.iastate.edu/GAH2005.html>. More information will follow!

**Upcoming meetings (see: <http://www.genome.iastate.edu/community/meetings.html>)**

Plant, Animal and Microbial Genome XIII, joint with the NAGRP annual meetings, Jan. 15-19, 2005, Town & Country Convention Center, San Diego, CA. Please see <http://www.intl-pag.org/> for information.

Swine in Biomedical Research Conference, January 27-29, 2005, Chicago Illinois; Please see <http://www.conferences.uiuc.edu/conferences/conference.asp?id=333> or contact Larry Schook for details.

Advances in Genome Biology & Technology and Automation in Mapping & DNA Sequencing, Feb. 9-12, 2005, Marco Island, Florida. See <http://www.agbt.org>.

Gordon Conference on Quantitative Genetics and Genomics, Feb. 20-25, 2005, Ventura Beach Marriott, Ventura, California. See <http://www.grc.org/programs/2005/quantgen.htm>

The Biology of Genomes, May 11-15, 2005, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY. See <http://meetings.cshl.edu/meetings/genome05.shtml> for more information.

3rd International Symposium on Genetics of Animal Health, July 13- 15, 2005, in Ames, Iowa, USA, Please see: <http://www.ans.iastate.edu/GAH2005.html>

Symposium on Integration of Structural and Functional Genomics (14th Annual Growth Factor and Signal Transduction Conference), September 22-25, 2005, Iowa State University, Ames, Iowa. See <http://www.bb.iastate.edu/~gfst/homepg.html>

**A special thanks to all of you who have helped to make my job a bit easier and move our efforts forward.** Please take some time and enjoy this holiday season and may the new year bring good health, happiness and success. Happy Holidays.

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cc: Muquarrab A. Qureshi, CSREES and Caird Rexroad II, ARS  
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**Items for Pig Genome Update 71** can be sent to me by no later than February 15 please.