



Pig Genome Update

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Build 10 of the pig genome sequence continues to be refined. The genome assembly (*Sus scrofa* 10 / Sscrofa10), on which the analysis and publication of a draft pig genome sequence will be based, has been submitted to the public database at NCBI. The NCBI team have worked together with Nizar Drou and Mario Caccamo to check the assembly. These important QC checks are now essentially complete. Over the next few days the assembly will be released through Genbank under the terms of the Toronto agreement on pre-publication data sharing. The annotation of this draft pig genome sequence can now be initiated (kindly provided by Alan Archibald). Additionally in the last week, Martien Groenen discussed the submission of companion papers of the pig genome paper to the BMC series with Elizabeth Moylan, Biology Editor of BMC. BMC showed a clear interest to actively work with the swine genome community to disseminate the results to a broad audience and they will appoint a main internal contact at BMC to keep track of all the companion papers. Upon submission, authors should clearly flag their paper as a companion paper to the pig genome paper (kind provided by Martien Groenen).

Progress in defining genetic resistance to porcine reproductive and respiratory syndrome (PRRS) continues. The PRRS Host Genetics Consortium (PHGC) is a national effort developed with input from PRRS researchers, NC1037/NRSP8 genome researchers, members of the National Pork Board (NPB) Swine Health and Animal Science Committees, veterinarians, AASV, producers, and commercial partners representing breeders, animal health, feed and diagnostic companies. The PHGC was funded first by NPB in December 2007. It uses a nursery pig model to assess pig responses to acute PRRSV infection and for the study of the relationship between host genes and the resistance/susceptibility of pigs to primary PRRSV infection and related growth effects. In the last 4 years the PHGC has tested the responses of 8 groups of 200 commercial crossbred pigs to infection with one PRRSV isolate using the BSL2 facilities at Kansas State Univ. Pigs were followed for 42 days post infection (dpi) collecting blood serum (virus, cytokines, antibodies) and Tempus (RNA) samples with weekly recording of weights to derive weight gain. All samples are catalogued and distributed to appropriate testing labs with data collected into a central PHGC relational database, housed at Iowa State Univ. All pigs became PRRSV infected with peak viremia from 4-21 dpi, although some have persistent infections. There is limited correlation of viral load with weight gain. Genomic DNA has been genotyped with the Porcine SNP60 SNPchip for genome wide association studies now underway at Iowa State University. Gene expression work is being led by Michigan State University and protein expression work by BARC. It is expected that the PHGC will provide producers and breeders with tools to identify pigs that are more resilient, that resist PRRSV infection and continue to grow well. It should provide animal health and vaccine companies with new targets to develop improved therapeutics and vaccines. The PHGC is funded by the NPB, USDA ARS, USDA NIFA PRRS CAP and functional genomic grants, Genome Alberta, NRSP8 Swine Genome and Bioinformatics Coordination programs, and private companies (kindly submitted by Joan Lunney, PHGC Coordinator, USDA ARS BARC).

Registration and abstract submission are OPEN for the Swine in Biomedical Research Conference 2011. It will take place from July 17th to 19th, at the Chicago Mart Plaza Holiday Inn. If you are interested in learning more about the utility of pigs as biomedical models, please plan to attend. Go to <http://www.dbs.illinois.edu/comparativegenomics/> for all the details on the meeting and to www.conferences.illinois.edu/sbr for registration and abstract submission. See you in Chicago.

The Immune Response Annotation Group (IRAG) which was formed soon after the 2009 Pig Genome Workshop in Hinxton continues to make progress. The purpose of IRAG is to annotate the pig genome sequence for genes and gene families known to be involved in the immune system and its response to pathogens. Our approach is to select a large list of genes and use gene sequence data to find and manually annotate the genome and predicted transcript structure of IR genes in regions predicted to contain these genes. We are using software Otterlace in collaboration with Jane Loveland and Jen Harrow at the Sanger Institute, and have provided annotations for over one thousand loci thus far. We are also providing evidence for changes in genome content (gene additions/loss) for immune response (IR) genes in the pig, and reported early results at the ISAG meeting in Edinburgh in 2010. To functionally validate these annotations, we are using global transcriptomics data. We have two companion papers being organized from our group; a paper on the IRAG gene list annotation and functional verifications, and a second paper on a meta-analysis of the porcine response to PRRS virus. If interested please contact Chris Tuggle (ISU) or Claire Rogel-Gaillard (INRA-Jouy-en-Josas) (kindly provided by Chris Tuggle).

A data repository was set up by the NRSP-8 Bioinformatics Team for the pig genome research community to share data. It can be seen at (<http://www.animalgenome.org/repository/pig/>). Currently available data sets are the Illumina 60K SNP locations for build 10 contributed by Martien Groenen. The data repository is part of the NAGRP Data File Sharing Tool, with which you can upload large files to share, either privately with your collaborators, OR with a community you designate. Please contact the Helpdesk for any problems or suggestions using the tool (<http://www.animalgenome.org/bioinfo/services/helpdesk.php>).

New publishing format for *Pig Genome Update*. Starting January 1, 2011 the *Pig Genome Update* are now published 4 times a year instead of 6. Your input and ideas are always welcome. Please contribute.

Upcoming meetings (see: <http://www.animalgenome.org/pigs/community/meetings.html>)

Advances in Reproductive Biology and Genetics Conference, University of Missouri, May 16th and 17th, 2011, for more information see <http://muconf.missouri.edu/reproductivebiology/index.html>

British Pig Breeders Roundtable 2011: 21-23 June 2011. For further details and to register, please visit: <https://ktn.innovateuk.org/web/british-pig-breeders-round-table>

American Society of Animal Science and American Dairy Science joint annual meeting, July 10-14, 2011, New Orleans, Louisiana. For details please see <http://adsa.asas.org/meetings/2011/>

Swine in Biomedical Research, July 17-19, 2011, Chicago IL, for details contact Larry Schook at schook@uiuc.edu

Plant & Animal Genome Conference, PAG XX, Jan. 14-18, 2012, Town & Country Hotel, San Diego, CA. Information available at <http://www.intl-pag.org/>.

Items for *Pig Genome Update 108* can be sent to me by no later than June 15 please.

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