



POULTRY GENOME NEWSLETTER 2005

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Chicken Genome and Development Workshop

Dave Burt and **Olivier Pourquié** organized the (3rd annual) **Chicken Genomics and Development Workshop** held **May 8-11, 2005** at **Cold Spring Harbor Laboratory** just prior to the Cold Spring Harbor's The Biology of Genomes meeting. The Workshop was well attended, and a variety of excellent talks that utilized and extended the draft genome sequence were presented, along with fascinating insights into chicken developmental biology. A meeting review has been prepared by **Ed Smith, Dave** and **Olivier** that will appear in *Comparative and Functional Genomics*. Ed has provided access to a draft copy at http://filebox.vt.edu/users/esmith/Meeting_report_cfg_CSHL/CSHL%20chicken%20Mtg%20rpt_J_W_cfg.doc for anyone interested in more detail. (One brief non-science note: the facilities and food at CSHL were excellent, and, despite a little rain, this is a near ideal time to visit, so it's well worth the crowded commute from La Guardia or JFK to the Workshop.)

It was decided to hold the Workshop again next year at Cold Spring Harbor, again in May prior to The Biology of Genomes. Look for more information later in the year when Cold Spring Harbor posts its 2006 schedule at <http://meetings.cshl.edu/meetings.html>. Thereafter, meetings will alternate between North America (probably Cold Spring Harbor) and Europe, with program emphasis alternating between primarily genomics or mostly developmental biology. **Claudio Stern** will host the meeting in 2007 in Barcelona, Spain with a major focus on **Development, the Immune System and Evolutionary Biology of the Chicken**.

Chicken Genome Sequence Update

Wes Warren of the **Washington U. Genome Sequencing Center (WUGSC)** updated everyone on the chicken genome sequence at the Cold Spring Harbor Workshop. WUGSC has assembled a new draft as of 4/1/05, but this has not yet been released to the browsers at Ensembl, NCBI and UCSC (see previous issues for more information on browser sites). They aim to do ~200,000 additional fosmid/plasmid sequence runs with hopes to finish this month, after which a new assembly will be built and released to the browsers. They've also requested funds from the NHGRI at NIH to sequence 5000 additional chicken BACs (3 or 6X coverage on each), do ~100,000 fosmid/plasmid reads, and do manual curation of a much enhanced sequence assembly. As one example of some of the problems with the current assembly, Wes noted that although 87% of mRNAs align correctly, EST/cDNAs suggest 400 rearrangements may be needed among the sequence supercontigs. As was also noted by **Richard Crooijmans** (Wageningen U.), the situation is especially bad on the sex chromosomes, with only 30% of the Z (expected 100 Mb) and 2% of the W (expect 30 Mb) in the assembly. WUGSC has also developed a plan jointly with **David Page** (Broad Institute at MIT) to flow sort Z and W, make new BACs, and to do additional FISH and RH mapping to greatly improve the sex chromosome assemblies.

PAG XIV & NAGRP/NC-1008 Meeting

PAG-XIV will be held January 14-18, 2006 at the usual spot, the Town and Country Hotel, San Diego, CA. A draft program is already available at www.intl-pag.org/. The NC-1008 Multistate Research project committee and the National Animal Genome Research Program, NRSP-8, will again meet concurrently, beginning on Saturday morning (~9:00 am, Jan. 14 - this change is not yet reflected on the PAG website). **Chris Ashwell**, chair for NRSP8-Poultry, and **Doug Foster**, chair of NC-1008, will co-organize the Poultry Workshop. Follow the PAG website for more information on registration and abstract deadlines. **Coordinators will again have some funds to help with travel support for NAGRP members or their lab members.** In particular, students are encouraged to apply for the **Neal Jorgensen Travel Award** for poultry (see the website or contact dodgson@msu.edu or hcheng@msu.edu).

WASHINGTON FUNDING UPDATE:

Animal Genome Reagent & Tool Development Program: As reported last issue, **Dr. Anna Palmisano**, Deputy CSREES Administrator for Competitive Programs, responded to concerns expressed over the possible termination of the CSREES Animal Genome Reagent & Tool Development Program. At her invitation and with input from NRSP-8 members, the Species Coordinators submitted a justification for continuing this program with updated goals. Dr. Palmisano replied in an email that read, in part (my emphasis added): "Many thanks for your detailed response to our request for input regarding the future of the NRI 43.1 Animal Genome Reagent and Tool Development competitive grants program. **The program will continue to be offered (contingent upon the availability of funding). You will note, however, that the program description will be redesigned and refocused beginning with the FY 2006 NRI Request for Applications (RFA).**We realize that our understanding of the various animal genomes is at a different level for each species. **During the next six months, we would like to encourage each NRSP-8 Species Coordinator to work with the members of the species subcommittee to identify the top three priorities for genome reagents and tools for that species.**"

The various Species Coordinators are presently preparing a response, based on feedback received from committee members, on specific priorities for the various agricultural animal species. Send any comments ASAP to dodgson@msu.edu or hcheng@msu.edu

CHICKEN CHIPS

A 13K chicken spotted cDNA glass slide array is still available from the Array Facility at the Fred Hutchinson Cancer Research Center, FHCRC. A similar resource is available at **ARK-GENOMICS** at the Roslin Institute (<http://www.ark-genomics.org/resources/chicken.html>) for those outside the U.S. FHCRC arrays are available at \$150 per array. Email requests to genomics@fhcrc.org. **NAGRP Coordination funds have been used to make a small number of free test arrays available to NAGRP members. Additional sets have been secured; contact dodgson@msu.edu if interested. WE HAVE A FEW FREE SETS LEFT THAT WE ARE ANXIOUS TO GET DISTRIBUTED SOON: FIRST COME - FIRST SERVE.** See **Burnside et al., BMC Genomics** (<http://www.biomedcentral.com/bmcgenomics>) 6:13 (2005) for a detailed description of the development and use of this microarray.

Affymetrix, Inc. is now marketing their GeneChip® Chicken Genome Array. Their chip measures levels of 32,773 chicken transcripts and 684 chicken viral transcripts from 17 different avian viruses. These arrays are sold in sets of 2, 6 or 30. See <http://www.affymetrix.com/products/arrays/specific/chicken.affx> for additional info. and pricing.

CHICKEN SNPs

A consortium led by **Hans Cheng** with funding from USDA-ARS and -CSREES (Tools and Reagents), industry and other sources has contracted with **Illumina Corp** to generate ~3000 SNP genotypes each of a large number of individual birds of interest to consortium members. In keeping with our on-going efforts to provide new resources to the NAGRP Poultry Committee, we provided support to allow Committee members to piggyback on this project and add a limited number of their birds to the genotyping pool. **Thanks to everyone who responded to our invitational email.** We hope you'll find the results to be worthwhile. A requirement was that all such data be publicly available, so the whole community will benefit, regardless of whether they have birds among those that are used. Hans put a great deal of effort into organizing and assembling the final DNA panels, and we hope to have results by the end of the summer. We believe this will provide a unique insight into the genetic diversity and genome composition of commercial and experimental chickens.

Leif Andersson (Uppsala U.) is coordinating a parallel SNP typing effort, as he described at the CSHL Workshop. He plans to genotype approximately 10,000 SNPs in his Red Jungle Fowl x White Leghorn F2 cross, in **Paul Siegel's** divergently selected growth lines and in a "diversity panel" of a number of different breeds under study by the European **AvianDiv** consortium.

ChickGO: Where to GO for Chicken Gene Ontology

ChickGO is now online. The ChickGO project is part of the larger AgBase project. AgBase is a curated, open-source, Web-accessible resource for functional analysis of agricultural plant and animal gene products. Its long-term goal is to serve the needs of the research community by facilitating post-genome biology for both agriculture scientists and for those primarily using agricultural species as biomedical models. AgBase and ChickGO are located at:

<http://www.agbase.msstate.edu/>

The mission of ChickGO is to: 1. Provide and make freely available Gene Ontology functional annotations for chicken gene products, 2. Aid structural annotation of the chicken genome using proteomics approaches, and 3. Develop and support tools that support functional genomics and modeling, including tools for analysis of GO data and proteomics. ChickGO accepts annotations from the research community and will provide an intermediary service for agricultural researchers who wish to learn more about functional genomics and ontologies. In keeping with the GO consortium philosophy it aims to be an open access-open source database, and its administrators are open to any comments, feedback or collaborations.

AgBase has received financial support from: the Mississippi State University Office of Research, Division of Agriculture and Forestry, College of Veterinary Medicine, Bagley College of Engineering, Life Sciences and Biotechnology Institute as well as from the United States Department of Agriculture and National Science Foundation. [Thanks to **Shane Burgess** for the above announcement and his efforts in leading this ChickGO Project.]

VANISHING ANIMAL RESOURCES: RELEVANCE TO NIH AND USDA

Mary Delany sends the following: A white paper entitled "**Research on Agricultural Animals Jeopardized at Land Grant Institutions: Key Obstacles and Solutions**" is now available at <http://www.adsbm.msu.edu/>. This paper is the outcome of a workshop held at Michigan State U. last fall that included NIH and USDA administrators. The white paper articulates key issues surrounding experimental animal agriculture, resources, use of such as biomedical models, funding (breaking into funding opportunities), etc.

New CSREES Administrative Advisors for NC-1008, NRSP-8

Our former CSREES Administrative Advisor (AA) for both NC-1008 and NRSP-8, **Margaret (Gretel) Dentine**, recently retired. All the NC-1008 and NRSP-8 membership thank Gretel for the outstanding job she did and wish her the best for a long and happy retirement. NC-1008 welcomes **Yehia M. Saif** (Saif.1@osu.edu) of the OARDC Food Animal Health Research Program in Wooster, Ohio as its new CSREES AA. **Burt Stromberg** replaces Gretel as the NRSP-8 AA from the North Central Region, while **Colin Kaltenbach** (Western Region) will be the lead AA for NRSP-8. **Jerry Cherry** (Southern Region) continues as NRSP-8 AA for the Poultry Group.

ON THE ROAD AGAIN. UPCOMING MEETINGS:

IMPORTANT NOTE: Regularly updated poultry meeting information is now available at http://www.animalgenome.org/share/mtg_chic.html. Meeting organizers can enter their own meeting information on-line at www.animalgenome.org/cgi-bin/angenmap/mtg_new .

Third International Symposium on Genetics of Animal Health, July 13-15, 2005, Iowa State University, Ames, Iowa. See www.ans.iastate.edu/bis/events/gah/GAH2005.html

Poultry Science Association Annual Meeting, July 31-Aug 3, 2005, Auburn University, Auburn, Alabama. see <http://www.poultryscience.org/>

2005 UC Davis Transgenic Animal Conference, Aug. 14-18, 2005, Granlibakken Conference Center, Tahoe City, CA. See <http://conferences.ucdavis.edu/TGAC>

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 www.bb.iastate.edu/~gfst/homepg.html

The 16th Conference of the Association for the Advancement of Animal Breeding and Genetics, September 25-28, 2005, Noosa, Queensland, Australia. See www.aaabg.org.

Third European Poultry Genetics Symposium, October 6-8, 2005, Dubrovnik, Croatia. See: http://www.vef.hr/org/bolesti_peradi/wpsa-uzp/wpsa-uzp%20english.htm

Plant and Animal Genome XIV, joint with NC-1008 and NAGRP annual meetings, Jan. 14-18, 2006, Town & Country Convention Center, San Diego, CA. See www.intl-pag.org/.

CHICKEN: THE SEQUEL

As previewed in our last issue, “**Second Report on Chicken Genes and Chromosomes 2005**”, by **M. Schmid, I. Nanda and D.W. Burt** and the sequel to the very successful “**First Report**” (Schmid et al., *Cytogenetics and Cell Genetics* 90:169-218 (2000)) is now in print: *Cytogenetic and Genome Research* 109(4):415-479 (2005).

POULTRY MICROSATELLITES

Microsatellite primer kits: Information on chicken microsatellite primer pairs is at <http://poultry.mph.msu.edu/resources/microkits.htm>. A framework primer kit (147 well-spaced microsatellite primer pairs) called the "Comprehensive Mapping Kit #7" is available. Only this and the Population Tester Kit, designed for the rapid testing of the suitability of populations and/or chicken microsatellites for a given application, are still available. New Population Tester Kit primers have been obtained, so we now have these both fluorescent labeled or not. If interested, contact: hcheng@msu.edu or dodgson@msu.edu, describing your intended use.

THE BAC PAGE!

The **chicken BAC library** constructed at Texas A&M consists of over 115,000 BACs (~39,400 each in three sublibraries with *Bam*HI, *Eco*RI and *Hind*III partial digest inserts, called TAM31, TAM32, and TAM33, respectively; Lee et al., *Animal Genetics* 34: 151; Ren et al., *Genome Research* 13: 2754). Filter sets with 36,864 BACs from the *Bam*HI and *Hind*III sub-libraries are available, email dodgson@msu.edu. **Pieter de Jong** (Children's Hospital of Oakland Research Institute) has made a chicken BAC library with ~195 kb inserts (CHORI-261: ~73,700 BACs for ~12x haploid genome coverage). Pieter has also generated a **turkey BAC library (CHORI-260)** using DNA from an inbred Nicholas Turkey Breeding Farms bird. If interested in either library, see www.chori.org/bacpac/. **Coordination funds have been used to purchase several sets of CHORI-261 chicken BAC filter arrays and a set can be provided on request while supplies last. A limited number of the turkey CHORI-260 arrays have also been purchased are available on request.**

BAC Contig Physical Map; ChickFPC and ChickAce. The Washington U. Genome Sequencing Center BAC contig physical map, based on over 130,000 BAC fingerprints, is comprised of about 260 contigs, nearly 80% of which have been anchored to the genetic linkage/chromosome map (Wallis et al., *Nature* 432:761-764, 2004). As described above, the **ChickFPC** browser at <http://www.bioinformatics.nl/gbrowse/cgi-bin/gbrowse/ChickFPC> allows one to search the map using a known gene, marker, or BAC. BAC locations denoted by BAC end sequences can also be found on other sequence browsers mentioned above. At ChickFPC, BACs from the TAMU libraries have the prefix JB, JE, or JH for the *Bam*HI, *Eco*RI and *Hind*III insert libraries, respectively. CHORI-261 BACs have the prefix JA. White Leghorn BACs from the Crooijmans et al. library (*Mammalian Genome* 11: 360-363, 2000) have the prefix bW.

Poultry Genome Newsletter Archive

Poultry Genome Newsletters are distributed electronically through Angenmap, the Animal Genome Discussion Group (<http://www.animalgenome.org/community/discuss.html>) and by hard copy to those on our mailing list on a quarterly basis. If you wish to be added or subtracted from the hard copy mail list, please email dodgson@msu.edu. All previous newsletters are archived at <http://poultry.mph.msu.edu/newsletters/newsletters.htm>. This newsletter archive can be a good place to find that URL or other useful genome-related resource or factoid that you can't quite recall.

PLEASE PROVIDE YOUR INPUT

The Poultry Coordinators are always glad to hear from NRSP-8 members and other readers about ways that we can improve the coordination effort or resources that are needed and with which we may be able to help. Also, let us know if you have items of general interest to the poultry genetics community that we can include in this Newsletter. Please email your Newsletter contributions to us by September 15 for the next issue.

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