



Bioinformatics/Database Update

November, 2005

Development of Genetic/Genomics Software Database. In collaboration with Dr. Wentian Li, North Shore LIJ Research Institute, we have developed a database of more than 330 programs designed to analyze genetic/genomic data (<http://www.animalgenome.org/soft>). To improve the ease of finding available software, the database was designed so that it can be queried by keywords or browsed alphabetically. Please contact Zhiliang Hu (zhu@iastate.edu) with any suggested improvements or additional data to add to the database.

What is new with USDA grants in Washington, DC. The new USDA-NRI request for applications is available. You can access it at http://www.csrees.usda.gov/funding/rfas/nri_rfa.html. This year there is a specific call for bioinformatics proposals.

The Bioinformatics program requests applications for the development of bioinformatic tools that will assist in functional genomics, annotation and comparative genomics of agriculturally important animals. These tools need to be designed to integrate with existing data/databases (not create new ones), serve as tools for genome analysis, provide for practical applications of genomic data and have a biological framework.

FY 2006 Priorities for Research

- 1) Tools that integrate genome sequence, genome annotations and pedigree information with biological function and phenotypic information for a single species or across multiple species; and
- 2) Animal bioinformatics tools to efficiently and effectively handle and interpret the genomic/genetic data being generated to accelerate the knowledge discovery process. (Examples include technology platforms, computational resources and analytical tools for integrative and comparative research.)

The total amount of support available for the Bioinformatics program element will be approximately \$1.5 million. The program element plans to make 1 or 2 awards of up to \$1 million each (including indirect costs) for up to 4 years in duration.

The Online Mendelian Inheritance in Animals (OMIA) has been revamped and upgraded. The main change has been to move the master database to a MySQL platform at the Australian National Genomic Information Service (ANGIS). The results are: 1) a new web page (<http://omia.angis.org.au>) that dynamically queries the master database; 2) access to abstracts (and sometimes full papers) for papers with a pubmed ID; 3) far greater possibilities for reciprocal linking with other web sites and 4) on-line curation, which will enable input from colleagues with specialist knowledge; and which, in time, will give OMIA a life beyond that of its creator, Frank Nicholas. Another important development is that at the request of NCBI, OMIA has been integrated into NCBI's Entrez search interface at <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=OMIA>. This has given several new dimensions to OMIA, providing enhancements that are not available from the ANGIS site. The content of the NCBI version will be updated with regular dumps from the master database. These developments have been achieved through the sterling efforts of many people (see

<http://omia.angis.org.au/acknowledgements.html>). The new master database is still in its infancy. Input from interested colleagues to make OMIA continually better is encouraged. The efforts of Frank Nicholas are greatly appreciated (Kindly provided by Dr. Rothschild).

Generation of Comparative Maps. A graphic mapping presentation tool has been developed to generate comparative RH-linkage maps on the fly (<http://www.animalgenome.org/cattle/maps/RHMap3/>). The tool has been used for the online presentation of the data set from the recently published cattle RH maps (SIAG-SUNbRH maps, Itoh et al., Genomics, 85(4):413-24). We plan to develop the tool further to facilitate comparative mapping efforts.

Mouse Genome Informatics (MGI, <http://www.informatics.jax.org/>) is pleased to announce the release of Version 3.3 of the database. Version 3.3 integrates the data on mouse models of human disease and human disease etiology from OMIM with existing data for mouse genes and strains in MGI. This enhances the exploration of phenotypes, sequence, expression, orthology, and other related data. You can now use three of the MGI query forms (Phenotypes and Alleles, Genes and Markers, Mouse Sequence) to search for existing or potential mouse models of a particular human disease and all human diseases that a particular mouse (genotype plus strain background) can be used to model. Version 3.3 also incorporates data on mouse models sought without success, such as models free from particular confounding diseases or phenotypic traits. The database now links to Online Mendelian Inheritance in Man (OMIM) descriptions of human diseases, syndromes, and conditions. The updated query forms are for Phenotypes and Alleles is:

http://www.informatics.jax.org/searches/allele_form.shtml, for Genes and Markers:

http://www.informatics.jax.org/searches/marker_form.shtml; for Mouse Sequence:

http://www.informatics.jax.org/searches/sequence_form.shtml and Human Disease Vocabulary

Browser: <http://www.informatics.jax.org/javawi2/servlet/WIFetch?page=omimVocab&subset=A>
(kindly provided by David Shaw)

Update on the Pig QTL database. The pig quantitative trait loci (QTL) database (PigQTLdb) (<http://www.animalgenome.org/QTLdb/>) has been recently published (<http://dx.doi.org/10.1007/s00335-005-0060-9>). On average about 11,000 web hits per month have been made to PigQTLdb in the last few months. Several hundreds of new QTL data have been added to the database. Stay tuned for next release soon. Please contact Zhiliang Hu (zhu@iastate.edu) with any suggested improvements or additional data to add to the database. We are currently also working with the Aquaculture community to expand the utility of this resource. In addition, we are working to incorporate the RH map and BAC end sequence information as well.

The livestock sequence Blast server. A NAGRP Blast Server is now in service (<http://www.animalgenome.org/blast/>). This blast server uses a local copy of NCBI blast suite, which includes bl2seq, blastall, megablast, blastpgp, blastclust, netblast, etc. The local sequence data sets include all non-human, non-mouse EST sequences from the Genbank, Whole Genome Shotgun (WGS) sequence assemblies for different organisms from Genbank. These data sets are updated from Genbank every night. The local sequence data sets also include TIGR Gene Indices for Cattle, Chicken, Pig, Salmon, Catfish, and Rainbow Trout. The TIGR Indices are updated weekly (done every Saturday night). Currently users can use the web server for their blast. Links to the blast server are included on each of the species pages under resources.

New projects: As always if you have suggestions about what needs to be developed/improved or how we can help please do not hesitate to contact us. Jreecy@iastate.edu

UPCOMING BIOINFORMATICS MEETINGS

November 9-12, 2005. 8th Annual Conference on Computational Genomics

Location: Cambridge, Massachusetts, USA

Web: <http://www.jax.org/courses/events/coursedetails.do?id=137>

November 14-15, 2005. Computational Intelligence in Bioinformatics and Computational Biology

Location: San Diego, CA, USA

Web: <http://ieee-cis.org/cibcb2005/>

December 8-11, 2005. 1st International Biocurator Meeting

Location: Pacific Grove, CA, USA

Web: <http://tesuque.stanford.edu/biocurator.org/intnlbiocurator.html>

January 3-7, 2006. PSB 2006 - Pacific Symposium on Biocomputing

Location: Hawaii, USA

Web: <http://psb.stanford.edu/>

January 21-25 2006. Lan Automation 2006

Location: Palm Springs, CA, USA

Web: <http://labautomation.org/LA/LA06/>

March 5-10, 2006. Systems Biology: Integrating Biology, Technology, and Computation

Location: Taos, NM, USA

Web: <http://www.keystonesymposia.org/Meetings/ViewMeetings.cfm?MeetingID=789>

April 2-5, 2006. 10th Annual International Conference on Research in Computational Molecular Biology

Location: Venice, Italy

Web: <http://recomb06.dei.unipd.it/>

April 3-7, 2006. ICDE 2006 - International Conference on Data Engineering

Location: Atlanta, GA, USA

Web: <http://icde06.cc.gatech.edu/index.html>

June 6-8, 2006. International Conference On Computing & Informatics

Location: Kuala Lumpur, Malaysia

Web: <http://www.conferencealerts.com/seeconf.mv?q=ca1a03h3>

April 12-15, 2006. International Conference on Database Systems for Advanced Applications

Location: Hilton Hotel, Singapore

Web: <http://www.comp.nus.edu.sg/~dasfaa06/>

June 15-18, 2006. The 8th international bioinformatics meeting

Location: Aarhus, Denmark

Web: <http://www.birc.au.dk/bioinformatics2006/>

July 2-7, 2006. Information Processing and Management of Uncertainty in Knowledge-Based Systems

Location: Paris, France

Web: <http://ipmu2006.lip6.fr/>

August 6-10, 2006. The 14th Annual International conference on Intelligent Systems for Molecular Biology. Location: Fortaleza, Brazil

Web: http://ismb_2006.cbi.cnptia.embrapa.br/

Items for the next update can be sent to me by no later than **January 15** please.

James Reecy

U.S. Database/Bioinformatics Coordinator

2255 Kildee Hall

Department of Animal Science

Iowa State University

Ames, Iowa 50011-3150

Phone: 515-294-9269

Fax: 515-294-2401

Jreecy@iastate.edu

<http://www.genome.iastate.edu>