

## Computational Biology Research

### Research:

Susan Bridges - Mississippi State University

We have developed the AgBase database ([www.agbase.msstate.edu](http://www.agbase.msstate.edu)) as a repository for functional genomics annotations (Gene Ontology annotations) of gene products from agricultural species. We are one of only 15 research groups world wide who can provide Gene Ontology annotations for the Gene Ontology Annotation database. These annotations are subsequently published in the Uniprot database. Our annotations address the needs for biologists who are working with economically important species rather than model organisms.

Fiona M. McCarthy, Susan M. Bridges, Nan Wang, G. Bryce Magee, W. Paul Williams, Dawn S. Luthe, and Shane C. Burgess, "AgBase: A unified resource for functional analysis in agriculture", 2006, *Nucleic Acids Research*, Jan; 35 (Database issue), D599-603

Fiona M. McCarthy, Susan M. Bridges, Nan Wang, G. Bryce Magee, Shane Burgess, "AgBase: A Functional Genomics Resource for Agriculture", 2006, *BMC Genomics*, Sep 8; 7(1), 229-242.

Shane Burgess – Mississippi State University

The research group led by Shane Burgess has developed the following tools:

Nanduri, B., E.A. Allen, R.A. Elliott, Burgess S.C. 2006. DDF Analysis Tool.

Nanduri, B., E.A. Allen, Burgess S.C. 2006. Multiple Output Compiler

Nanduri, B., E.A. Allen, Burgess S.C. 2006. Data Intersections Identifier.

Nanduri, B., E.A. Allen, R.A. Elliott, Burgess S.C. 2006. Xml 2 CSV tool.

Nanduri, B., E.A. Allen, J.J. Buza, Burgess S.C. 2006. Peptide distribution analysis tool.

### Curriculum Development and Enhancement:

As a result of the new computational biology emphasis, formal or informal curriculum innovations including new course proposals, new courses, and enrichment opportunities for postsecondary and/or K-12 level are taking place at Jackson State University. A new course, Introduction to Bioinformatics (CSC 410/BIO 410), has been proposed.

Enrichment of Existing Courses is occurring through a training workshop on genome databases and tools as part of Introductory Genetics Course (BIO 318) and a bioinformatics module for Advanced Microbiology Lab (BIOL 530). Informal curriculum includes the Digital Biology Learning Community.

At Mississippi State University, the following curriculum changes have been implemented:

CSE 4633/6633	Computational Biology
CSE 4613/66133	Bio-computing
BCH 4113/6113	Essentials of Molecular Genetics

Computational Biology Certificate Program—available to students in both the computational and life sciences.

Digital Biology Learning Community. Meets twice per month in Grisham Room of the Library. Average attendance 40-60 faculty and students from many different departments across campus.