



## IMGS 2011 Bioinformatics Tutorial: Next Generation Sequence Analysis Using Galaxy

Mouse Genetics 2011

June 22, 2011; 9 am – Noon

Omni Shoreham Hotel, Washington, D.C.

Organizers: Carol Bult (The Jackson Laboratory) and Deanna Church (NCBI)

Tutorial web site: [http://www.ncbi.nlm.nih.gov/staff/church/MG2011\\_tutorial/](http://www.ncbi.nlm.nih.gov/staff/church/MG2011_tutorial/)

The goal of this tutorial is to demonstrate analysis of next generation sequence data using publicly available tools such as Galaxy; a freely available web-based data analysis framework that contains analysis “modules” which can be linked together in a re-usable (and shareable) workflow. Galaxy makes state of the art sequence analysis tools accessible to the research community without the need for expert knowledge in bioinformatics!

The tutorial will focus on two analysis topics: **variation calling** and analysis of **RNASeq data**. In addition to demonstrating how to perform these analyses we will discuss how issues concerning the reference assembly affect interpretation. What will **YOU** need to bring? Just yourself and a laptop capable of connecting to a wireless network.

Topics for the tutorial will include:

1. How to access and create an account in Galaxy
2. How to build and share data analysis workflows in Galaxy
3. Example sequence data sets which can be accessed after the workshop is over
4. Explanation of the analysis modules that are used for variation calling
5. Step by step instructions for how to combine modules into a workflow in Galaxy for variation calling
6. Examples of workflows for variation calling which can be used by participants even after the workshop is over
7. Explanation of the analysis modules that are used for RNA Seq data
8. Step by step instructions for how to combine modules into a workflow in Galaxy for RNA Seq Analysis
9. Examples of workflows for RNA Seq analysis which can be used by participants even after the workshop is over
10. An overview for how to combine variation calling results and RNA Seq analysis results with data in NCBI, MGI, and Genome Viewing tools.
11. Using Galaxy on the Cloud

References/Resources:

Galaxy: <http://galaxy.psu.edu/>

NCBI: <http://www.ncbi.nlm.nih.gov/>

Mouse Genome Informatics: <http://www.informatics.jax.org>

Genome Reference Consortium: <http://genomereference.org/>

SeqAnswers: <http://seqanswers.com/>