

Galaxy Overview



Matt Gitzendanner
magitz@ufl.edu

10/1/15



Information Technology
 Home of High-Performance Computing and **HiPerGator**







www.it.ufl.edu


UNIVERSITY OF FLORIDA'S 2015-2020 STRATEGIC GOALS FOR IT

One IT for the GatorGood

- ▶ Research Computing Strategic Goals
 - Expand HPC, data storage and research network capacity, performance and usability
 - Enhance and expand services that use HPC, data storage and network resources
 - Improve faculty awareness and access to use of Research Computing services



www.it.ufl.edu



HiPerGator 2.0

The University of Florida Supercomputer for Research




www.it.ufl.edu



HiPerGator


The University of Florida Supercomputer for Research

- 16,384 cores—total of about 21,000 cores today
- Infiniband interconnect
- >3PB fast, high-availability, storage
- **GPGPUs**
- Large memory (**512GB to 1TB of RAM**) nodes




Approaches



www.it.ufl.edu

UNIVERSITY OF FLORIDA | High-Performance Computing




HiPerGator

The University of Florida Supercomputer for Research

UF Information Technology www.it.ufl.edu

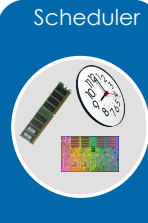
Cluster basics

User interaction



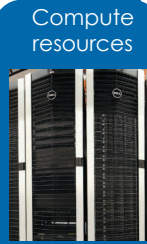
Login node (Head node)

Scheduler



Tell the scheduler what you want to do

Compute resources



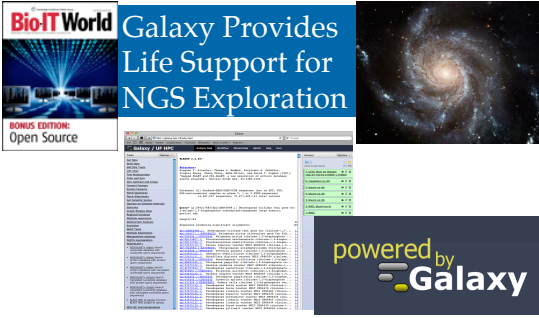
Your job runs on the cluster

UF Information Technology www.it.ufl.edu

What is Galaxy?

BioIT World Galaxy Provides Life Support for NGS Exploration

BONUS EDITION: Open Source



powered by Galaxy

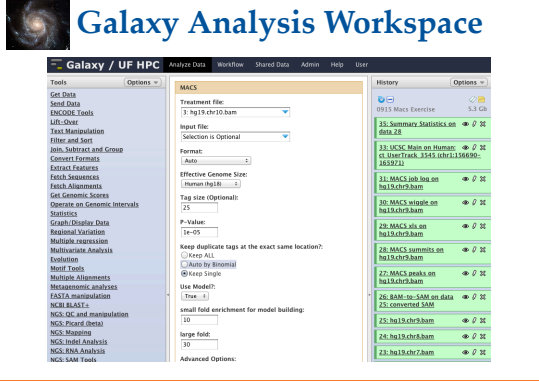
UF Information Technology www.it.ufl.edu

Galaxy: Data intensive biology for everyone

- ▶ Accessible, reproducible, transparent computational biology
- ▶ galaxy.rc.ufl.edu
 - Local instance of Galaxy
 - Faster access to storage, easier upload
 - Local compute resources
 - Local control

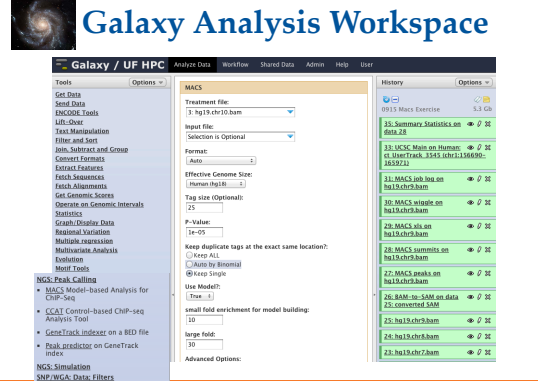
UF Information Technology www.it.ufl.edu

Galaxy Analysis Workspace



UF Information Technology www.it.ufl.edu

Galaxy Analysis Workspace



UF Information Technology www.it.ufl.edu

Getting Data into Galaxy

- Upload a file from your computer
 - Direct upload (<2GB)
 - For large files: scp or copy files to HPC
 - Load from within Galaxy
 - http://wiki.hpc.ufl.edu/index.php/Galaxy_Data_Import
- External data
 - UCSC table browser
 - Biomat
 - inferMine / modMine
 - EuPathDB
 - EncodeDB
 - EpiGRAPH
 - FlyMine
 - GrameneMart...

Data libraries

Data Library "GMS 6001 MACS Exercise"

| Name | Message | Uploaded By | Date | File Size |
|----------------------------------|---------|----------------|------------|-----------|
| 2010-12-14 2:19:10.gz.sorted.bam | | omphos@ufl.edu | 2011-09-13 | 1.9 Gb |
| 2010-12-14 2:19:10.gz.sorted.bam | | omphos@ufl.edu | 2011-09-13 | 1.9 Gb |
| hg19.chr10.bam | | omphos@ufl.edu | 2011-09-14 | 80.8 Mb |
| hg19.chr11.bam | | omphos@ufl.edu | 2011-09-14 | 82.5 Mb |
| hg19.chr12.bam | | omphos@ufl.edu | 2011-09-14 | 76.9 Mb |
| hg19.chr13.bam | | omphos@ufl.edu | 2011-09-14 | 50.9 Mb |
| hg19.chr14.bam | | omphos@ufl.edu | 2011-09-14 | 36.1 Mb |
| hg19.chr15.bam | | omphos@ufl.edu | 2011-09-14 | 48.1 Mb |
| hg19.chr16.bam | | omphos@ufl.edu | 2011-09-14 | 55.9 Mb |
| hg19.chr17.bam | | omphos@ufl.edu | 2011-09-14 | 64.5 Mb |
| hg19.chr18.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr19.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr20.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr21.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr22.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr23.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr24.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr25.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr26.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr27.bam | | omphos@ufl.edu | 2011-09-14 | 106.1 Mb |
| hg19.chr9.bam | | omphos@ufl.edu | 2011-09-14 | 64.8 Mb |

Sharing and publishing

Share or Publish History 'LANA ChIP peaks on hg19'

Making History Accessible via Link and Publishing It

This history is currently restricted so that only you and the users listed below can access it. You can:

- Make History Accessible via Link**
Generates a web link that you can share with other people so that they can view and import the history.
- Make History Accessible and Publish**
Makes the history accessible via link (see above) and publishes the history to Galaxy's **Published Histories** section, where it is publicly listed and searchable.

Sharing History with Specific Users

You have not shared this history with any users.

Share with a user

[Back to Histories List](#)

UF Information Technology www.it.ufl.edu

Sharing and publishing

Share or Publish History 'LANA ChIP peaks on hg19'

Making History Accessible via Link and Publishing It

This history is currently accessible via link and published.

Anyone can view and import this history by visiting the following URL:
<http://galaxy.rc.ufl.edu/u/moskalevsk/h/ana-chip-peaks-on-hg19/>

This history is publicly listed and searchable in Galaxy's **Published Histories** section.

You can:

- Unpublish History**
Removes this history from Galaxy's **Published Histories** section so that it is not publicly listed or searchable.
- Disable Access to History via Link and Unpublish**
Disables this history's link so that it is not accessible and removes history from Galaxy's **Published Histories** section so that it is not publicly listed or searchable.

Sharing History with Specific Users

The following users will see this history in their history list and will be able to view, import, and run it.

Email
magitz@ufl.edu

Share with another user

UF Information Technology www.it.ufl.edu

Summary

- ▶ Analyze data without the CLI
- ▶ Visualize the results
- ▶ Publish histories, workflows, and annotated pages
- ▶ Add new tools, get support @ HPC
- ▶ Focus on your science, not minutiae
- ▶ **UF Galaxy** – coming to a browser near you!

UF Information Technology www.it.ufl.edu

Demo

UF Information Technology www.it.ufl.edu

Galaxy demo

<http://galaxy.rc.ufl.edu>

UF Information Technology www.it.ufl.edu

UF Research Computing

- ▶ Help and Support
 - <https://my.it.ufl.edu>
 - For any kind of question or help requests
 - <http://wiki.rc.ufl.edu>
 - Documents on hardware and software resources
 - Various user guides
 - Many sample submission scripts
 - <http://rc.ufl.edu>
 - Frequently Asked Questions
 - Account set up and maintenance

UF Information Technology www.it.ufl.edu