



A Short Introduction to Galaxy

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Tip: press P to view the presenter notes

- What is Galaxy?
- Why should I use Galaxy?
- How do I use Galaxy?
- How can I connect with the Galaxy Community?

What is Galaxy?

= Galaxy

Data Intensive *analysis* for everyone

- **Data Analysis** platform
- Web-based
- **Easy** to use
- **Free** and Open Source
- Many tools (~8000)
- Popular (>10.000 [publications](#))
- Extensive [tutorials](#) available



Why use Galaxy?

- It is **easy!**
 - No installation, all you need is a browser.
 - No complex commands, just point and click!
- It is **reproducible**
 - Galaxy keeps track of all analysis details
- **Cross-domain:** bioinformatics, chemistry, ecology, climate science, ..



How do I use Galaxy?

Find a Galaxy server

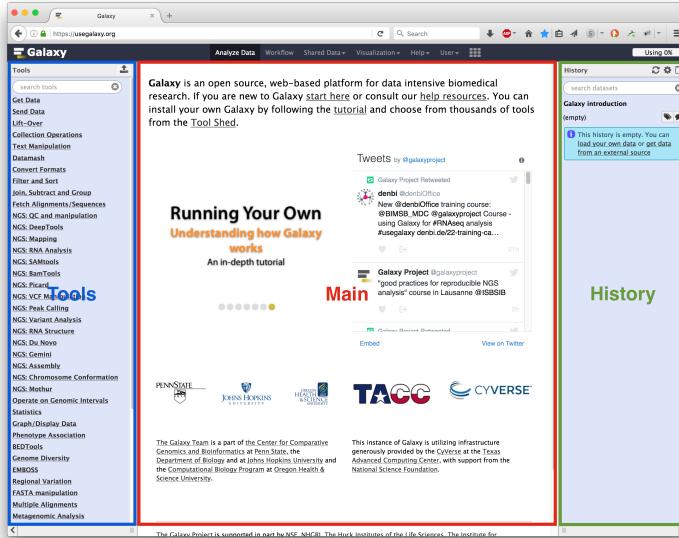
- **The Big Three:** Galaxy Main (usegalaxy.org), Galaxy Europe (usegalaxy.eu), Galaxy Australia (usegalaxy.org.au)



- Many other smaller, often domain-specific Galaxies available (125+)
 - List of all Galaxies: galaxyproject.org/use

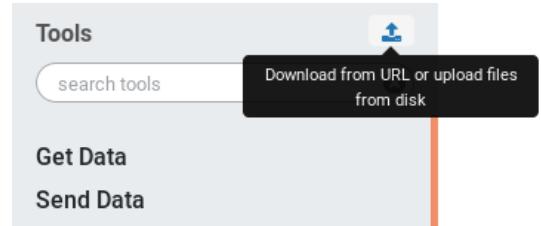
The Galaxy Interface

- Three main panels
 - **Left:** Available Tools
 - **Middle:** View your data and run tools
 - **Right:** Full record of your analysis **history**



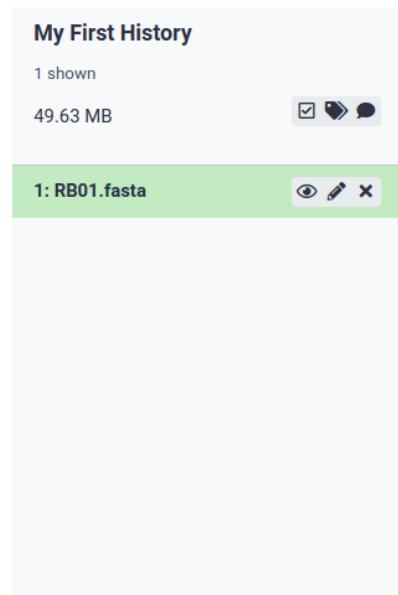
Uploading data

- Upload from **your computer**
- Import files **from URL**
- Import from **public data stores**
 - UCSC, NCBI, ENA, many more..



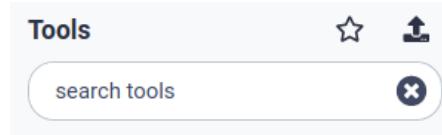
History

- Files appear in your **history**
- Three buttons
 - **View the file**
 - **Edit attributes**
 - e.g. change name
 - **Delete file**
- Click to **expand**
 - file information
 - format, size, ..
 - file preview
 - file options
 - download, visualize, ..



Finding a tool

- Explore tool panel sections
- Enter name in **Tool search** box



- ☆ Star your favorite tools to make them easier to find



Running a tool

- Choose **input files**
 - Set tool **parameters**
 - **Execute**
- Below tool form:
 - Help information
 - Tool citation

Sort data in ascending or descending order (Galaxy Version 1.1.0) ★ Favorite ▾ Options

Sort Dataset []
1: RB01.fasta (as tabular) []

on column []

with flavor []

Numerical sort []

everything in []

Descending order []

Column selection + Insert Column selection

Number of header lines to skip []
0

characters are already considered as comments and kept

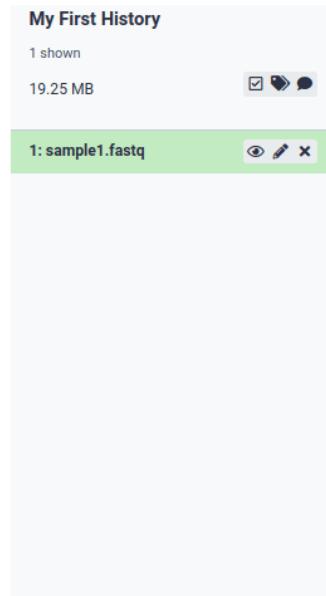
Email notification []
Yes No

Send an email notification when the job completes.

Execute

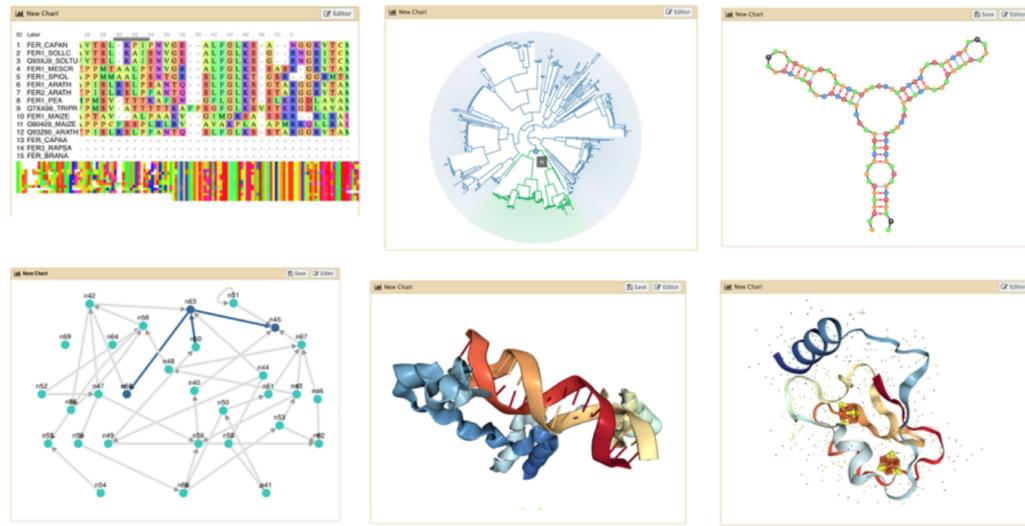
Analysis Results

- Tool outputs are added to history
- Different dataset states
 - waiting , running , success, failed
- Expand for more options
 - **Download** dataset
 - **Information** about tool run
 - **Reload** tool with the same parameters
 - **Visualize** dataset
- Red dataset?
 - Click Bug icon
 - view error message
 - submit error report



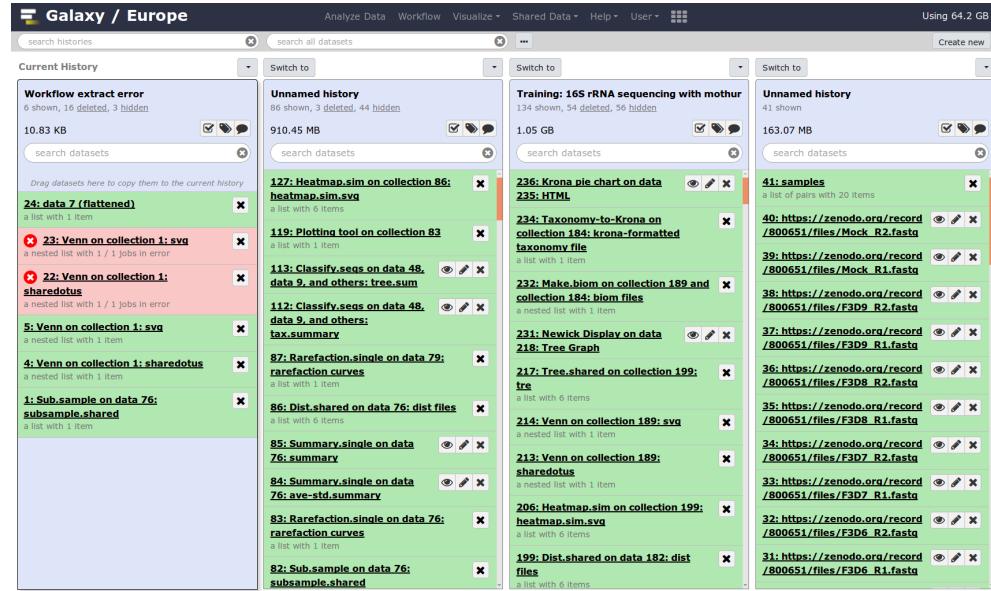
Visualisations

- Galaxy has many options to visualize data



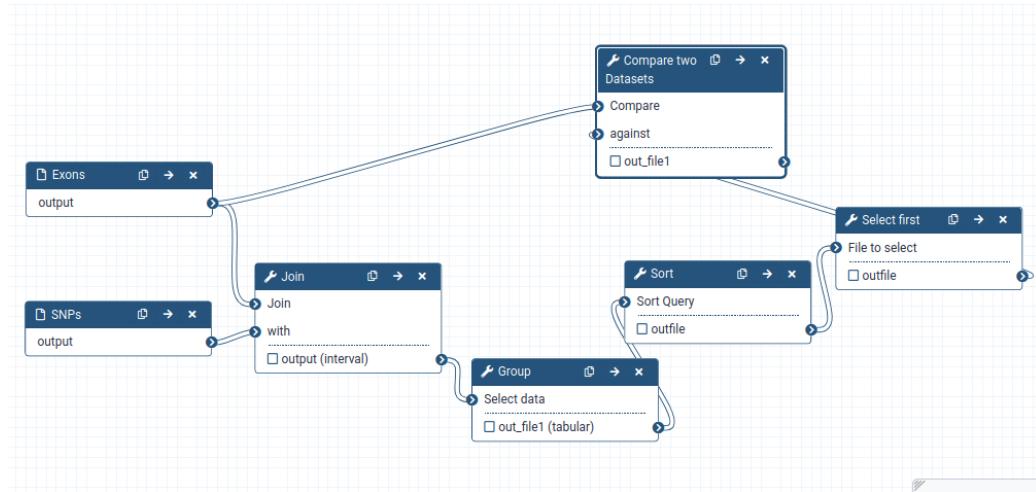
Multiple Analyses

- Starting a new analysis? Create a new history +
- You can have as many histories as you want
- You can switch back and forth between histories □
- Giving your histories good names will help to keep track of your analyses



Workflows

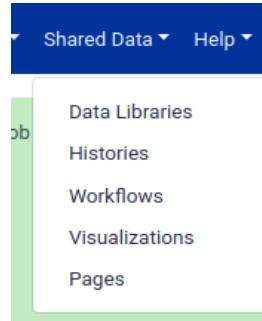
- Run **end-to-end analyses** with one click



- Extract from a history
- Build manually with workflow editor
- Import a shared workflow

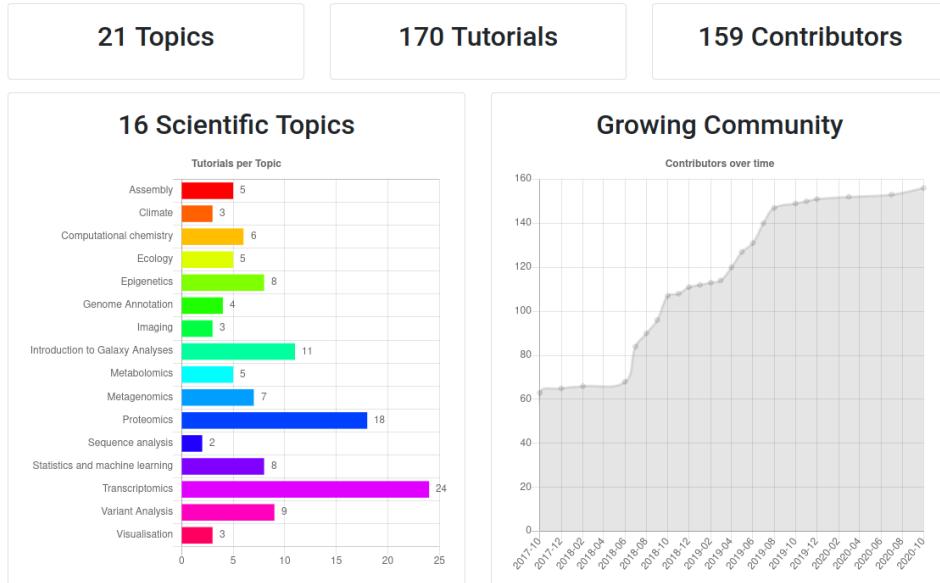
Sharing

- You can share everything you do in Galaxy
 - Histories, Workflows, Visualizations
- Sharing options
 - Share with specific users
 - Share via link
 - *Publish* to make it visible to everybody



Learning Galaxy

- Galaxy Training Materials (training.galaxyproject.org)



Getting Help

- **Help Forum (help.galaxyproject.org)**

The screenshot shows the Galaxy Help forum interface. At the top, there's a navigation bar with links for 'Sign Up', 'Log In', and a menu icon. Below the header, there are buttons for 'all categories', 'all tags', 'Latest' (which is highlighted in red), 'Top', and 'Categories'. A search bar is positioned above the main content area. The main content area displays two topics:

- Troubleshooting resources for errors or unexpected results**: This topic is categorized under 'usegalaxy.org support' and has 1 reply, 85 views, and was posted 7d ago. It includes a brief description and a link to 'read more'.
- Welcome to Galaxy Community Help**: This topic is categorized under 'usegalaxy.org support' and has 1 reply, 75 views, and was posted 15d ago. It includes a brief description and a note: 'For assistance with a specific Galaxy server please post into appropriate category.'

- **Gitter Chat**
 - [Main Chat](#)
 - [Galaxy Training Chat](#)
 - Many more channels (scientific domains, developers, admins)

Join an event

- Many Galaxy events across the globe
- Event Horizon: galaxyproject.org/events

Date	Topic/Event	Venue/Location	Contact
October 29th 2020	Galaxy Developer Roundtable	Online	 Dannon Baker, John Chilton, Marius van den Beek
October 29th 2020	Next Generation Sequencing (NGS) Introduction	Germantown, Maryland, United States	 Sijung Yun
October 28th 2020	مقدمه ای در تجزیه و تحلیل نوالی آر-ان-آ انسان و مونش با استفاده از نرم افزار گالکسی	University of Isfahan, Isfahan, Iran	 Maryam Kay, Fariba Dehghanian, Alireza Khanteymoori 
October 27th 2020	GWAS Analysis with Galaxy on the Analysis Visualization Integrated Lab-space (AnVIL)	ASHG 2020, Online	 Dave Clements, Alex Ostrovsky 
October 26th 2020	Functionally Assembled Terrestrial Ecosystem Simulator (FATES)	Norway, Online	 Anne Fouilloux 
October 26th 2020	Machine Learning in Bioinformatics using Galaxy	ISCB-LA SolBio BioNetMX 2020, Mexico, Online	 Alireza Khanteymoori, Björn Grüning, Anup Kumar 
October 21st 2020	Galaxy Paper Cuts Day	Global, online	 Community

- Galaxy lets you perform complex data analysis right from your browser
- These analyses are *reproducible*; Galaxy keeps track of all the details of your analysis
- Galaxy has a very large and active user community
- There are many training materials available to learn Galaxy

Thank you!

This material is the result of a collaborative work. Thanks to the [Galaxy Training Network](#) and all the contributors!

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