

# Galaxy: Enabling an active global research community

Dave Clements  
Galaxy Project  
Johns Hopkins University  
clements@galaxyproject.org

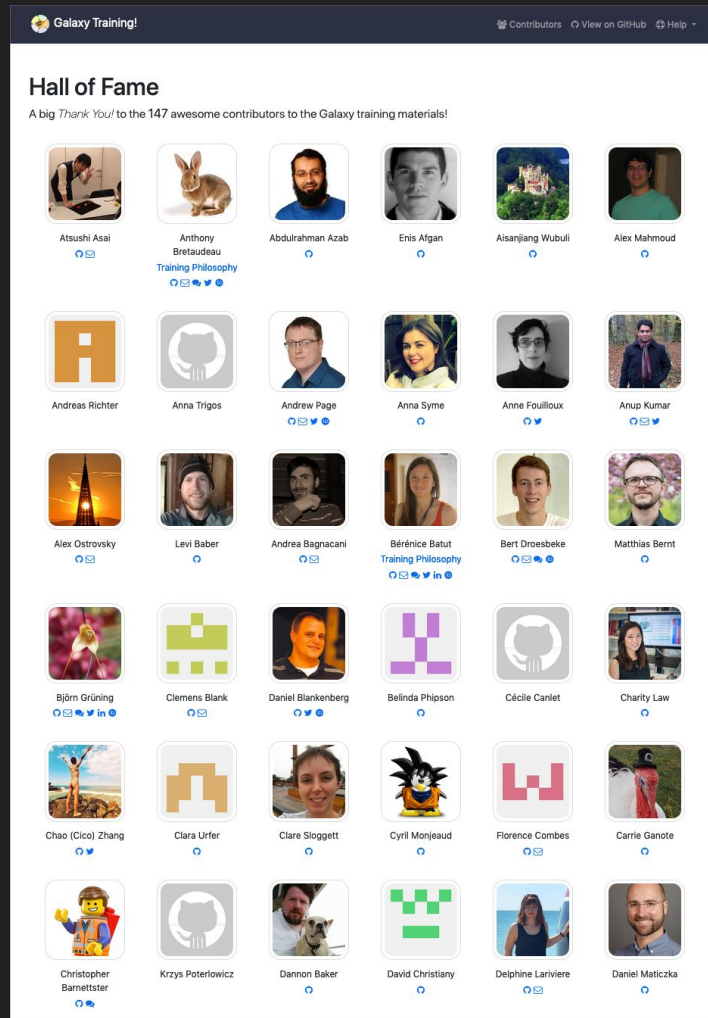
2020/05/13

@tnabtaf  
#usegalaxy  
@galaxyproject



# Galaxy has an **enormous and awesome** contributor community

- 1,050 Galaxy Help forum accounts in first 13 months of forum
- From BlackDuck Open Hub:
  - Over the past 12 months, 157 developers contributed new code to Galaxy ... This is one of the largest open-source teams in the world
- 147 contributors to GTN Library
- *ad infinitum*



# Agenda

- What is Galaxy
- Some history
- Outreach Big Picture
- Outreach Details
- Support
- Building and sustaining community, where we circle back to Outreach and Support
- Community in a time of crises

# What is Galaxy? Project's longstanding definition:

Galaxy is an open web-based platform for accessible, reproducible and transparent biomedical analysis.

Galaxy is software, and the gateways that use that software.

[galaxyproject.org](https://galaxyproject.org)

# What is Galaxy? Keith Bradnam's definition



“A web-based platform that provides a simplified interface to many popular Bioinformatics tools.”

from

13 Questions You May Have About Galaxy

[bit.ly/13questions](https://bit.ly/13questions)

# Missing a huge part of the picture



James Taylor, Galaxy PI,  
at the *2019 Galaxy Community Conference*:

"The most important thing about Galaxy  
is this community."

Also see [bit.ly/mohey-gcc2019](https://bit.ly/mohey-gcc2019)

And now a sorrowful detour ...

Missing a huge part of the picture



James Taylor, Galaxy PI,  
at the *2019 Galaxy Community Conference*:

"The most important thing about Galaxy  
is this community."

Also see [bit.ly/mohey-gcc2019](https://bit.ly/mohey-gcc2019)



# Galaxy Community Hub

We have just lost James Taylor (1979-2020).

His legacy — open, reproducible science — will continue.



[galaxyproject.org/jctx](https://galaxyproject.org/jctx)

## Community

And a small sample of what's been shared about James elsewhere online from his community:

James was a cornerstone of the department and of the scientific community. But most of all he was the exemplar of a colleague and just a wonderful human being

— Vincent J. Hilser, Chair, Department of Biology, Johns Hopkins

James Taylor was an amazing colleague, scientist, and friend. I love him very much and I will miss him very much.

— Bob Johnson, Johns Hopkins

James was a truly wonderful mentor, scientist, and human being. He was so brilliant, but so approachable. He was a giant in the field and I was so lucky to have the chance to work with him. He will be deeply missed.

— Nathan Roach, Johns Hopkins

I am in shock and saddened over the horrible news that James Taylor has passed away.

He was a cornerstone of the bioinformatics community, and with his leadership Galaxy grew to tremendous heights. So heartbreaking, a true loss. My sincerest condolences to his family and all his friends. He will be sorely missed.

— Silian Solland-Reyes, University of Manchester

Massive contributions to bioinformatics and an amazing person.

— Ben Busby, DINANexus

This is a such a tragic loss. Thank you, James, for being such a supportive mentor and friend. We will miss you.

— Rajiv McCoy, Johns Hopkins

What a tragedy. He was a terrific researcher and an awesome human being. A huge loss for the world.

You were a hero James — we'll do our best to carry on your work. RIP, we will all miss you terribly!

— Dan Stancione, TACC

This is devastating news. James Taylor will be missed by our entire community and well beyond. All my condolences to his family

— Cedric Notredame, CRG

This is just such devastating news. I have known James for the best part of seven years, as we set up Galaxy in Australia and James, of course, immediately agreed to visit in 2013 to help make that happen. He was visionary, looking to create free, open platforms for global science.

He was also enormously good company, going out for beers and in depth discussions on any and all topics. I thoroughly enjoyed James' company in social and academic forums...but far more importantly than that, he both led and built software and data science communities that will define community-focussed global bioscience from here on.

Personally, it's crushing - I am so sorry for his family and friends, of which of course I count myself - but the loss to the world of science eclipses that. We are all the poorer for losing James. If it is any consolation, he accomplished so much - the world of science is changed because of James.

— Andrew Louis, University of Melbourne

I am in shock. James was a great scientist, great person, and a cornerstone of the Jetstream effort.

— Craig Stewart, Indiana University

I'm so very sorry to hear this news. A wonderful person and scientist who made awesome contributions to science. He will be greatly missed. Heartfelt wishes to his family, friends and all the Galaxy crew.

— Vivien Bonazzi, NIH

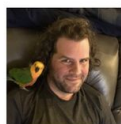
My condolences. The Galaxy project has grown such a supportive and positive community around it, and Dr. Taylor was right at the center of it.

— Dan Fornika, BCCDC

I am utterly shocked and terribly saddened to hear this. James has been a wonderful colleague, collaborator, and a great mentor to many students.

— Steven Salzberg, Johns Hopkins

— Karen Reddy, Johns Hopkins



bioinformatics community.

ch more than that. He was

dearly missed, especially by

nt and we are still

ate about bioinformatics,

not properly express my

positive impact on society

art of my PhD. I had the

'but also ultimately set me

is committee he was an

opportunity to work with him.

. We will miss you. Rest In

s. He was a great person to

riefly, making the world a

Y.

all. Was lucky to get to

em into a strong community. I

exceptional person in every

open science and

ll but met him many  
azing, awesome. I am so

aving a hole that

d of PhD programs

ing with James was easy

a colleague, he believed

a better place.

. His loss has left us

d friends. This loss is a

et him in Oslo in 2013

owed we shared beers,

he got in his eye

amazing.

Thoughts are with his

met the James Taylor I

time out to talk to me

o just a glance across a

its. The first memory

s in the fall. There were

d this news was

sed, but we were

s. The conversation was

is that made him a star,

ing who will be fondly

to continues his legacy

passion, and love.

ortive of her interest in

d supported me for years

isma. It really changed

ry much!

es, the Galaxy team and

many of us personally and on

Galaxy Project directly or

inity around good science,

o consume large

both straightforward

used for good. And he

ated his plans clearly

had been enabled by

rch community works

a joy to encounter and

is family for many years. Im

: was an honor working with

across the entire world at

and community that James

he world. The loss felt by all

aptured in words. Rest in

ormatics community,

terrible news.

ional colleague and a

puter science at Johns

ve profound impacts

cloud computing age

d. His impact on the

is. A very friendly &

years ago. Meant lots to

ose few moments

my heart heavy. Rest in

he made a huge impact on

witnessed strongly

t in peace dear fellow

ity. RIP



James over five years ago, though the Galaxy Community

being. Condolences

ng work will come from your

he had a mystique to

rsurer Galaxy courses

crazy to lose him so

Best we can do is to

h and his family. He will

person.

Galaxy Project. A visionary

e and do well, but we will all

he bioinformatics

ough I think it captures his

he early days was one of the

iller Park Boys at a happy

now the new season of TPB

d friends. This loss is a

s dead. I feel privileged

urse. I will miss his

h biking and he turned me on

not surprised at the lives he's

ing my academic career

left with us all.

teaching and building others

3 help. It was clear he was

possible and I suspect that

al of many of the available

u should use most of them

I rely on many tools while

him and carry with me as a

those who not only

ose individuals and his

d. I didn't know James super

community conference. He had a

dering how the world will

ries, and will continue to do

to his family, his friends

his commitment to reproducible science. I admired his drive

en though I didn't know

ity. RIP

ity. RIP

ing back it is clear that he and Anton convinced funders of

Galaxy Project funded and has continued to fund dedicated

ng work will come from your

he had a mystique to

rsurer Galaxy courses

crazy to lose him so

Best we can do is to

h and his family. He will

person.

Galaxy Project. A visionary

e and do well, but we will all

he bioinformatics

ough I think it captures his

he early days was one of the

iller Park Boys at a happy

now the new season of TPB

d friends. This loss is a

s dead. I feel privileged

urse. I will miss his

h biking and he turned me on

not surprised at the lives he's

ing my academic career

left with us all.

teaching and building others

3 help. It was clear he was

possible and I suspect that

al of many of the available

u should use most of them

I rely on many tools while

him and carry with me as a

those who not only

ose individuals and his

d. I didn't know James super

community conference. He had a

dering how the world will

ries, and will continue to do

to his family, his friends

his commitment to reproducible science. I admired his drive

en though I didn't know

ity. RIP

ity. RIP

ing back it is clear that he and Anton convinced funders of

Galaxy Project funded and has continued to fund dedicated

ng work will come from your

he had a mystique to

rsurer Galaxy courses

crazy to lose him so

Best we can do is to

h and his family. He will

person.

Galaxy Project. A visionary

e and do well, but we will all

he bioinformatics

ough I think it captures his

he early days was one of the

iller Park Boys at a happy

now the new season of TPB

d friends. This loss is a

s dead. I feel privileged

urse. I will miss his

h biking and he turned me on

not surprised at the lives he's

ing my academic career

left with us all.

teaching and building others

3 help. It was clear he was

possible and I suspect that

al of many of the available

u should use most of them

I rely on many tools while

him and carry with me as a

those who not only

ose individuals and his

d. I didn't know James super

community conference. He had a

dering how the world will

ries, and will continue to do

to his family, his friends

his commitment to reproducible science. I admired his drive

en though I didn't know

ity. RIP

ity. RIP



galaxyproject.org/jxtx

## JTech: Junior Training and Educational Connections Hotspot

### The James Taylor Foundation: Big shoes to fill

*The most important job of senior faculty is to mentor junior faculty and students. (@jtxt)*

These are the words that James Taylor (JT) said and lived by. This, he believed, was imperative to advance science, and in a way that facilitated diversity and inclusion. The mission of this foundation is to continue his legacy, through a multifaceted approach which will be unrolled across several stages.

In its early stages, JTech will provide support for graduate students to attend conferences in computational biology and data science, where they can present their work and form connections with other researchers in the field. Towards the goal of advancing mentorship, JTech will organize and host mentoring sessions between senior and junior faculty members at select high-profile meetings.

JTech will later expand its reach as a platform for academic mentorship. First, it will operate to spark mentoring relationships among the larger computational biology and data science community. As part of membership in JTech, faculty and students will have an opportunity to participate in periodic mentorship meetings (virtually). We expect an enthusiastic response to this opportunity, and will recruit additional team members to provide organizational structure if necessary.

In its later stages, JTech will sponsor in-person visits from students (high school or college age) to its hotspots, which currently include Johns Hopkins and Penn State. These visits are meant to attract new scholars to computational biology and data science, and in particular to form connections and opportunities for members of underrepresented minorities.

**Please consider contributing to continue James Taylor's legacy.**



Design by [Rebekka Paisner](#)

[Donate now](#)



# History

- Started in 2005 at Penn State, based on the earlier “Gala” project
  - Provided a public Galaxy server, and open source code
- Started promoting it for local installs and tool publishing
- Primary original funding: NSF
- Primary funding since 2011: NIH NHGRI

# History: Galaxy Outreach

2005: Project aware of the value of community and being seen

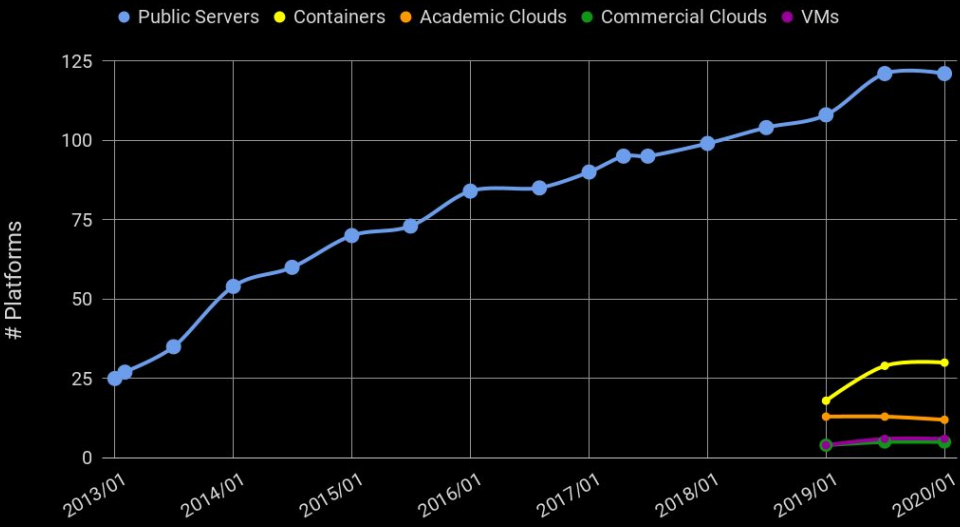
2008: I started promoting Galaxy in my previous position with GMOD

2011: Hired a dedicated training and outreach person, me

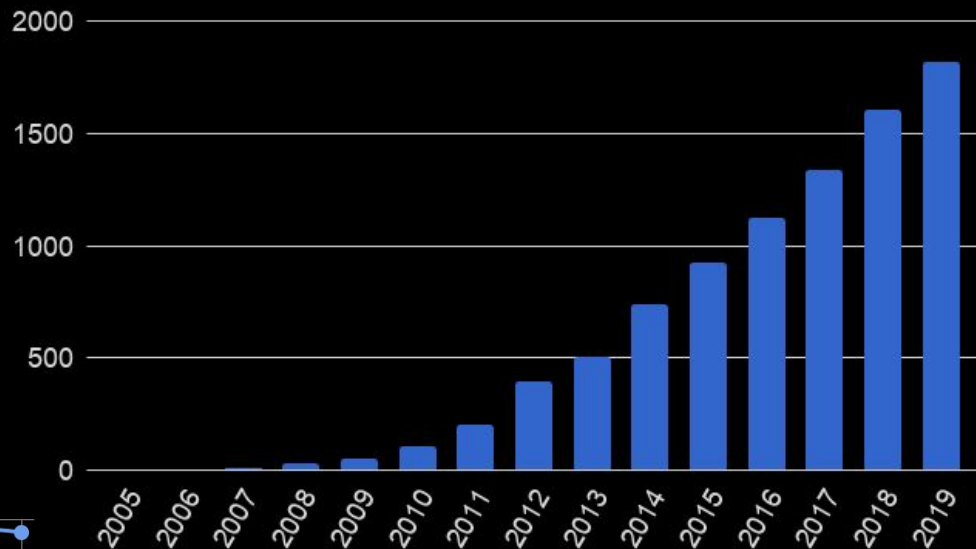
2018: Hired a 2nd, part-time training and outreach person, Mo Heydarian

# History: Growth

## Galaxy Platforms



## Publications each year (as of 2019/12)



[bit.ly/gxyStats](https://bit.ly/gxyStats)

# Outreach Big Picture



# Guiding principles

1. Recognize and value your community and their contributions
2. Promote your community and their contributions
3. Provide contribution and connection opportunities
4. ...

## 4. Recognize that contributions are not just code

- Code matters a lot, but so do
  - Events, talks, posters, training
  - Tutorial and training dataset creation
  - Answering, and asking, questions
  - Documentation
  - Papers that use your software
  - Deployments
  - Bug reports, testing, ...

# Outreach: Details

# Let the community know how vital they are

galaxyproject.org

←

→

↺

🏠

galaxyproject.org

★

Galaxy

COMMUNITY HUB

Use

Learn ▾

Community ▾

Deploy & Develop ▾

Support ▾

Search Galaxy

🔍

Edit













# Galaxy Community Hub













Galaxy is an open, web-based platform for accessible, reproducible, and transparent computational biomedical research.

- **Accessible:** Users without programming experience can easily specify parameters and run tools and workflows.
- **Reproducible:** Galaxy captures information so that any user can repeat and understand a complete computational analysis.
- **Transparent:** Users share and publish analyses via the web and create Pages, interactive, web-based documents that describe a complete analysis.

Welcome to the Galaxy Community Hub, where you'll find community curated documentation of all things Galaxy.

## Viva contributors!





Thank you for contributing to Galaxy [IUC tools](#).

### News

[UseGalaxy.eu](#): 12,000 users - 6,900,000 jobs - 13,300,000 datasets - 8300 jobs per day, 350 jobs per hour, 6 per minute: every 11 seconds finishes one job in Galaxy

[Get Access to Laniakea@ReCaS](#) - ELIXIR-ITALY Laniakea@ReCaS offers access to Cloud resources to be used for on-demand

### Events


[Galaxy Training Network day - \(online\) CoFest and community call](#)

[Applied Bioinformatics in Life Sciences](#) - See who wins the Galaxy Poster Prize...

[NGS Platforms: how data generation impacts bioinformatics analysis](#) - A hands-on

### @galaxyproject

Galaxy Project Retweeted

 **F. Zambelli**  
@MarmadukeChuffy

ELIXIR-IT Galaxy on-demand service Laniakea@ReCaS officially launched. Learn more at [laniakea-elixir-it.github.io](#) @elixir\_it @ELIXIREurope @galaxyproject @Recas

OPEN CHAT

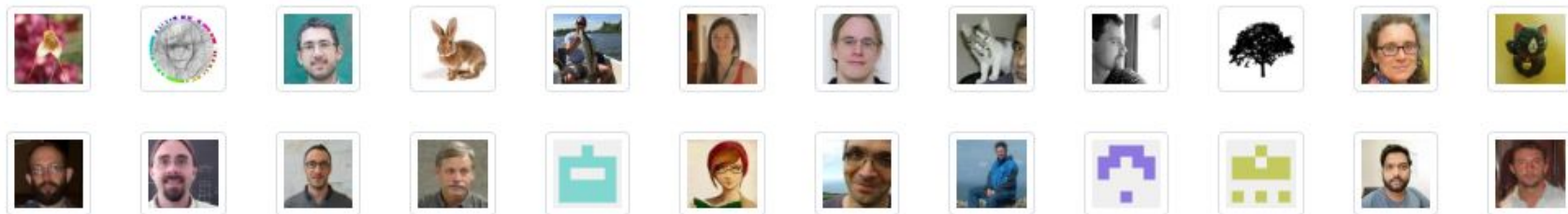
# Galaxy Community Hub

Galaxy is an open, web-based platform for accessible, reproducible, and transparent computational biomedical research.

- **Accessible:** Users without programming experience can easily specify parameters and run tools and workflows.
- **Reproducible:** Galaxy captures information so that any user can repeat and understand a complete computational analysis.
- **Transparent:** Users share and publish analyses via the web and create Pages, interactive, web-based documents that describe a complete analysis.

Welcome to the Galaxy Community Hub, where you'll find **community** curated documentation of all things Galaxy.

## Viva contributors!



Thank you for contributing to Galaxy [IUC tools](#).

# Contribute!

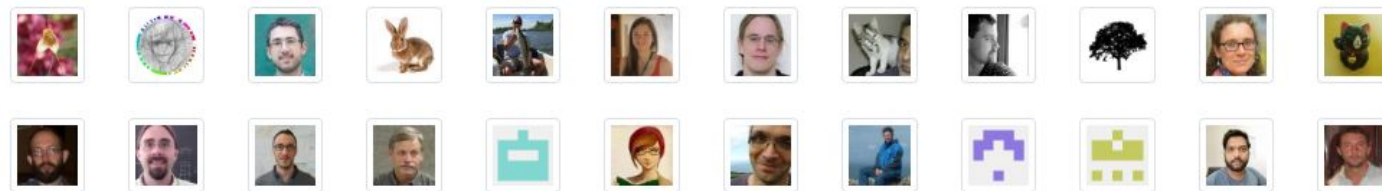
## Galaxy Community Hub

Galaxy is an open, web-based platform for accessible, reproducible, and transparent computational biomedical research.

- **Accessible:** Users without programming experience can easily specify parameters and run tools and workflows.
- **Reproducible:** Galaxy captures information so that any user can repeat and understand a complete computational analysis.
- **Transparent:** Users share and publish analyses via the web and create Pages, interactive, web-based documents that describe a complete analysis.

Welcome to the Galaxy Community Hub, where you'll find **community curated** documentation of all things Galaxy.

### Viva **contributors!**



Thank you for **contributing to** Galaxy IUC tools.

### News

UseGalaxy.eu: 12,000 users - 6,900,000 jobs -  
13,300,000 datasets - 8300 jobs per day, 350

### Events

**Galaxy Training Network day - (online) CoFest  
and community call**

### @galaxyproject

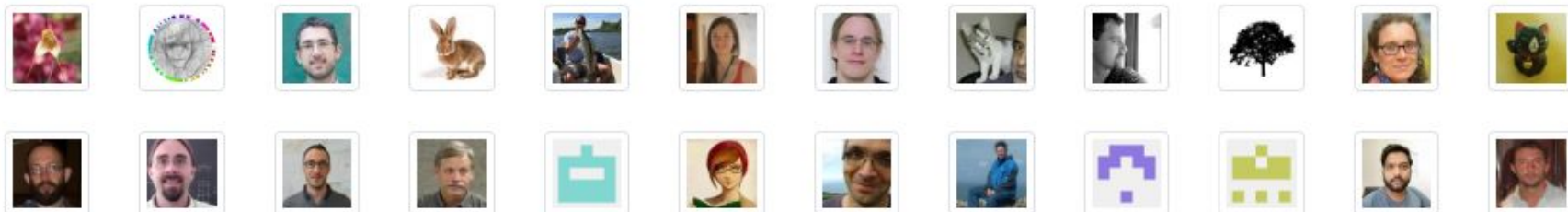
Galaxy Project Retweeted

F. Zambelli

OPEN CHAT

Welcome to the Galaxy Community Hub, where you'll find community curated documentation of all things Galaxy.

## Viva contributors!



Thank you for contributing to Galaxy [IUC tools](#).



## News

[UseGalaxy.eu](#): 12,000 users - 6,900,000 jobs - 13,300,000 datasets - 8300 jobs per day, 350 jobs per hour, 6 per minute: every 11 seconds finishes one job in Galaxy

[Get Access to Laniakea@ReCaS](#) - ELIXIR-ITALY Laniakea@ReCaS offers access to Cloud resources to be used for on-demand

## Events

[Galaxy Training Network day - \(online\) CoFest and community call](#)

[Applied Bioinformatics in Life Sciences](#) - See who wins the Galaxy Poster Prize...

[NGS Platforms: how data generation impacts bioinformatics analysis](#) - A hands-on

## @galaxyproject

 Galaxy Project Retweeted



**F\_Zambelli**

@MarmadukeChuffy

ELIXIR-IT Galaxy on-demand service Laniakea@ReCaS officially launched. Learn more at [laniakea-elixir-it.github.io](#) @elixir\_it @ELIXIREurope @galaxyproject @Recast

OPEN CHAT

# Get your gateway in front of people

Present Galaxy at conferences in talks, posters, and workshops:

- In 2019: PAG, Genome Informatics, ISEGB, SACNAS, ASHG, AISES, Gateways, INCOB, ACM BCB, ASM CUE, GCC, BoG, BioIT World
- Encourage and enable your community to present your gateway at events they go to, and communities they are in.



## Wait a minute...

- *In 2019: PAG, Genome Informatics, ISEGB, SACNAS, ASHG, AISES, Gateways, INCOB, ACM BCB, ASM CUE, GCC, BoG, BioIT World (13 meetings)*
- ***Encourage and enable your community** to present your gateway at events they go to, and communities they are in.*

Top statement is true, but is absolutely wrong – because of the second statement

- In 2019, the **Galaxy Community** presented Galaxy at **47 meetings**, participated in **10 hackathons/CollaborationFests**, ran **81 training workshops/events**, and **hosted 67 Galaxy-centric events**

[galaxyproject.org/events](https://galaxyproject.org/events)

# Training

- Training is entwined with outreach
- It is key to getting your gateway used
  - First user training at ASHG 2009
  - First admin training at GMOD Summer School 2010

# Galaxy Training Network



2014: Started as a public directory of trainers & training materials

Trainer directory a success! But not the rest

2016: Community members completely revamped GTN

**New GTN has infinitely more impact than the original**

This group did something that I didn't have the vision to do

Transformation was possible because we had established a  
**culture of contribution and recognition in the preceding years**

[training.galaxyproject.org](https://training.galaxyproject.org)

# Communicate: Project News

Make it easy for people to get **big news**  
and/or **all news** about your project

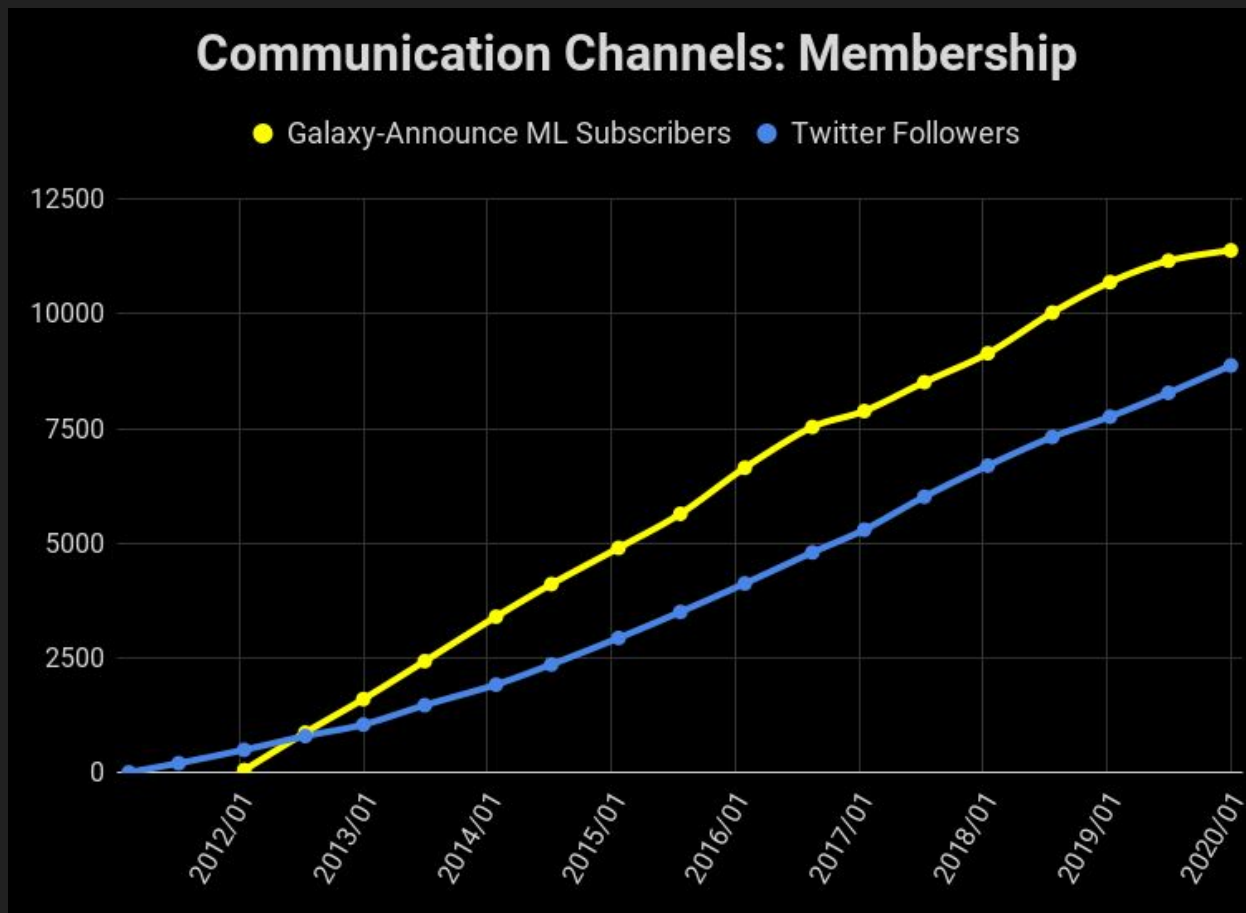
# Big News: Releases

- This may have been the first big feedback Galaxy got from our community (at the first Galaxy conference in 2010)
- Initially, we did not have clear or well documented releases
- Now have 3 releases per year
- Come with separate admin-centric and user-centric release notes

[docs.galaxyproject.org/en/master/releases/](https://docs.galaxyproject.org/en/master/releases/)

# Big News: Galaxy-Announce Mailing List

- Launched in 2012
- Low volume, announcement only list
- Complemented two already existing, high-volume, support lists



# All News: Twitter



- (Re)Launched in 2011
- Anything of **possible** interest to the community can get tweeted
- Mixture of original content and retweets
- Attach an image whenever possible
- Follow anyone who is saying things that are relevant to the community
- Use TweetDeck to schedule tweets, and to search tweets
- Multiple people can send tweets, including several community members

@galaxyproject    #UseGalaxy


# Galaxy Newsletter

- Launched in 2011
- Big and *medium* news
- Advertised on every outreach channel
- Upcoming events, significant publications, public platform news, blog posts, open jobs, releases, and other news
- It's a lot of work

galaxyproject.org/news/

## Upcoming Events

The coronavirus outbreak has impacted BCC2020, and just about every other event for the rest of the year too. Most events through the end of August have been postponed or moved online. We have updated our [list of events](#) to reflect what we know. Some highlights:



**Galaxy-ELIXIR webinar series**

**FAIR data and Open Infrastructures to tackle the COVID-19 pandemic**

This [webinar series](#) demonstrates how open access and open science are fundamental for fast and efficient response to public health crises. The focus will be on research reproducibility and transparency, using exclusively open source tools and the Galaxy platform.

The first session was held on 30 April. Subsequent sessions are

- **Genomics/Variant Calling**, 7 May, Anton Nekrutenko and Wolfgang Maier
- **Cheminformatics: Screening of the main protease**, 14 May, TBA
- **Evolution of the Virus**, 20 May, Sergel Pond
- **Behind the scenes: Global Open Infrastructures at work**, 28 May, TBA




**Science Gateways Community Institute**

**Galaxy on SGCI Webinars**

Want to learn the Galaxy community and platform big picture? Attend the next two [Scientific Gateways Community Institute webinars](#):

- **Galaxy Project: Enabling an active global research community**, May 13, Dave Clements
- **Overview of the Galaxy Project platform**, June 10, Nate Coraor



**Upcoming Events**

There are

- **25 upcoming events** (most of them virtual)
- covering COVID-19 (5 events), single-cell, variant detection, assembly, RNA-Seq and more.

And material from some recent past events is now available:

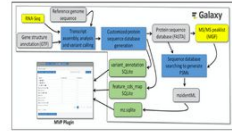
- **Galaxy: much more than a workflow management system**: Video
- **Galaxy @ PAG 2020**: Slides and posters
- **Development of BioCompute Objects for integration into Galaxy in a Cloud Computing Environment**: on video
- **Intro to CircoS, its applications & use within Galaxy Australia**: on video
- **Galaxy-based Multi-omic Informatics Hub for Cancer Researchers**: on video

## Galactic Blog Activity

**Multi-omics Visualization Platform: An extensible Galaxy plug-in for multi-omics data visualization and exploration**

By Björn Grüning.


A visualization plug-in that extends Galaxy-P's advantages into the visualization of large, complex datasets.



**Galaxy Admin 2020 and beyond**

By Michael Thompson.

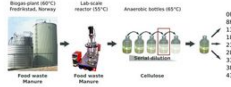
Michael Thompson of Kwame Nkrumah University of Science and Technology (K.N.U.S.T.) describes his experience at the 2020 Galaxy Admin Training in Barcelona.



**Integrative meta-omics analysis**

By Magnus Ø. Arntzen.

Adaption of a repertoire of commonly used omics tools spanning metagenomics, -transcriptomics and -proteomics into the Galaxy framework, in order to generate a user-accessible, scalable and robust analytical pipeline for integrated meta-omics analysis.





Support

# Support: Building an online support community

2006: Started Galaxy-User mailing list

2008: Added Galaxy-Dev mailing list

2010: Hired dedicated support person Jennifer Hillman-Jackson

2011: Galaxy IRC chat goes live

2014: Galaxy-User moved to Galaxy Biostar online forum

2017: Galaxy Gitter chat goes live

2018: Biostar moved to Galaxy Help, a Discourse based online forum

Support channels have become more engaging and interactive.

Always communicated expectation of community support.

[help.galaxyproject.org](https://help.galaxyproject.org)



[gitter.im/galaxyproject/](https://gitter.im/galaxyproject/)

# Building and Sustaining Community:

These online spaces and interactions are opportunities to  
contribute and connect.

Outreach, communication, training and support  
all help build community.

# Gathering Community: Galaxy Events

Get your community together and provide them with opportunities to share their accomplishments and challenges, and to collaborate.

# Hackathons / CollaborationFests

- An excellent way to grow your contributor community
- But, **Hackathon** implies code only, and has negative connotations for many

## Galaxy CollaborationFests

- **Not** the goal: produce code during event
- Are about growing the community of future contributors and collaborators, for all types of contribution, and
- Establishing and strengthening connections

# Sub-communities and Regional Events

- Galaxy Africa, Galaxy-UK, GalaxyNL, Galaxy Belgium, Galaxy Japan, Galaxy Arabic communities all started by those communities, and all are supported
- Galaxy Europe and Galaxy Australia are thriving and big
- Galaxy ASEAN, Galaxy India and Galaxy Korea will arrive in 2020
- Galaxy-UK, Galaxy Australia, Galaxy Arabic, and Galaxy India all have jointly managed Twitter accounts.
- Most of these have had regional Galaxy events, which the US team supports by promoting and sending people

# Galaxy Community Conference

- Yearly global community gathering since 2010
- 200-230 participants since 2012
- Alternate between North America and Europe (so far)
- Make and strengthen connections that are harder to make and maintain over distances

# BCC2020, July 18-25, Toronto

Training	Conference	CoFest: Core	CoFest: Encore
July 18	July 19-21	July 22-23	July 24-25
Multi-track training sessions, each 2.5 hours long  Topics nominated and voted on by the community	Talks & Lightning Talks Joint & parallel sessions Posters & Demos Birds of a Feather More training Sponsors Conference Dinner Lots of networking time	2 days of collaborative work, covering all possible aspects of contribution.  Focus on <b>newcomers</b> & growing your community of <b>future</b> collaborators & contributors.	Where everyone, even the newcomers, are now established members of the community



Canada!

Bioinformatics Community Conference, our 2nd joint meeting with BOSC

But...



# Community in a time of Crises

# BCC2020 will be Online, Global, Affordable, and Accessible

Adapt, maybe even expand



## BOSC + GCC = BCC2020

The **2020 Bioinformatics Community Conference (BCC2020)** brings together the **Bioinformatics Open Source Conference (BOSC)** and **Galaxy Community Conference**. If you are working in data intensive life science research then there is no better event for sharing your work, and learning from other researchers addressing the challenges of modern data driven biology. **BCC2020 will be held July 17-26**, and offer 2 days of training, a 3 day meeting, and a 4 day CollaborationFest.



## BCC2020 is Online

All BCC2020 events **will be held online**. Training will be live and interactive. The meeting will feature keynotes, accepted talks, lightning talks, posters, demos, and birds-of-a-feather and other networking opportunities. Talks (with the possible exception of keynotes) will be pre-recorded. Posters, demos, and BoFs will be live and interactive. The CoFest will also be live and interactive.



## BCC2020 is Global

**BCC2020 events will be held twice:** once in the **originally scheduled Toronto time zone (BCC West/Americas)**, and then **again 12 hours later in the Eastern hemisphere (BCC East/Asia-Australia)**. Training will differ between East and West, with enrollment open to all, regardless of where you are. The main conference content will be presented in both East and West. We are striving to have the CoFest run continuously, with participants from every part of the world.

	Early (July 19-21)	Standard (July 22-24)	Late (July 25-27)
Students / Academic / Non-profit	\$12	\$12	\$12
Industry	\$36	\$36	\$36

## BCC2020 is Affordable

We have slashed **registration rates for BCC2020**, and are offering even larger discounts to participants based in low and lower-middle income countries. Pricing starts at US\$3 per training session, and \$12 for the 3 day meeting. The CoFest is free.



## BCC2020 is Accessible

Going online and global, combined with the low registration rates this enables, **makes this the most accessible Galaxy or BOSC conference ever**. If you work in

moz://a



## Keynotes Announced

We are pleased to announce that **Abigail Cabunoc Mayes** of the Mozilla Foundation, and **Lincoln Stein** of OICR will be keynote speakers at BCC2020.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9

## Abstracts due May 8

BCC2020 is seeking oral presentations, lightning talks, posters, and demos, from researchers working in

[Register Now](#)

## Save 50% with Early Registration Now

BCC2020 registration is **now open**. Registering early saves 50% off of the full rates and starts \$3 per

# Engage, Help,

## Galaxy COVID-19 Response

A wide variety of Galaxy community member organizations are contributing and collaborating to help address the coronavirus pandemic.

### UseGalaxy.\* COVID-19 Efforts



### Additional Efforts

And there are many additional efforts and posts about COVID-19 research using Galaxy:



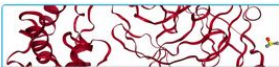
#### COVID-19 Analysis Performed With Galaxy Bioinformatics Platform

The Texas Advanced Computing Center (TACC) provides large-scale compute infrastructure for the analysis of thousands of genomes, including Galaxy's work on SARS-CoV-2.



#### MRC CLIMB supports COG-UK efforts

The MRC CLIMB project has been providing compute and storage for the COVID-19 Genomics UK Consortium (COG-UK). (See below for more CLIMB news.)



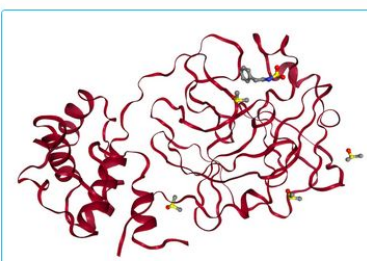
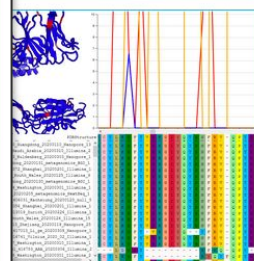
#### Virtual screening of the SARS-CoV-2 main protease with rDock and pose scoring

This new Galaxy Training Network tutorial from Simon Bray is a companion tutorial for the cheminformatics work described above that performs virtual screening on candidate ligands for the SARS-CoV-2 main protease (MPro).



#### Unicycler assembly of SARS-CoV-2 genome with preprocessing to remove human genome reads

This new Galaxy Training Network tutorial from Wolfgang Maier guides you through the preprocessing of sequencing data of bronchoalveolar lavage fluid (BALF) samples obtained from early COVID-19 patients in China. Since such samples are expected to be contaminated significantly with human sequenced reads, the goal is to enrich the data for SARS-CoV-2 reads by identifying and discarding reads of human origin before trying to assemble the viral genome sequence.



#### Cheminformatics

Computational analyses using protein-ligand docking to identify potentially inhibitory compounds that can bind to MPro and can be used to control viral proliferation. This work analyzed over 40,000 compounds considered to be likely to bind, which were chosen based on recently published X-ray crystal structures, and identified 500 high scoring compounds.



#### Laniakea SARS-CoV-2 flavour available

A Galaxy Covid-19 flavour is now available in Laniakea, as a Docker Container. It is based on the GalaxyProject covid-19 analysis and it is continuously updated. Due to the current Covid-19 outbreak, the flavour is made available to Laniakea users without the usual test routine.



#### Galaxy Australia on Nimbus Cloud

Galaxy Australia relies on distributed deployments using Pulsar to increase the range and number of jobs that can be run on the service. The team has been allocated resources on the Nimbus cloud to deploy a dedicated COVID-19 Pulsar as part of Galaxy Australia at the Pawsey Centre that allows Galaxy users to rapidly analyse their data on published tools/workflows to further research into SARS-CoV-2.

# and Recognize

# Cope

- Galaxy is a tight and supportive community.
- When everyone went home in March, Galaxians were already on Gitter, Twitter, and Galaxy Help, and we stayed on them for support and conversation.

# Summing up

## Used to be “Galaxy Team”

- Initially referred to the funded group at Penn State
- Came to refer to groups funded by the primary Galaxy grants at Penn State, Johns Hopkins, OHSU, and Cleveland Clinic

## Now “Galaxy Community”

- Worldwide community of Galaxy users and contributors, including other funded groups in the US and other countries

This distinction is no longer meaningful,  
and hasn't been for years.



# Thank you

Bérénice Batut, GCC2019



## Galaxy Community

The literally thousands of people who have contributed Tools, Doc, Support, Training, Resources, Code, Issue Reporting, Testing ... over the past 15 years

**Katherine Lawrence, Nayiri Mullinix**

**SGCI**

**NIH, NHGRI, NSF**

**You**

