One Tool, Many Topics

The Path from Galaxy Team

to Galaxy Community

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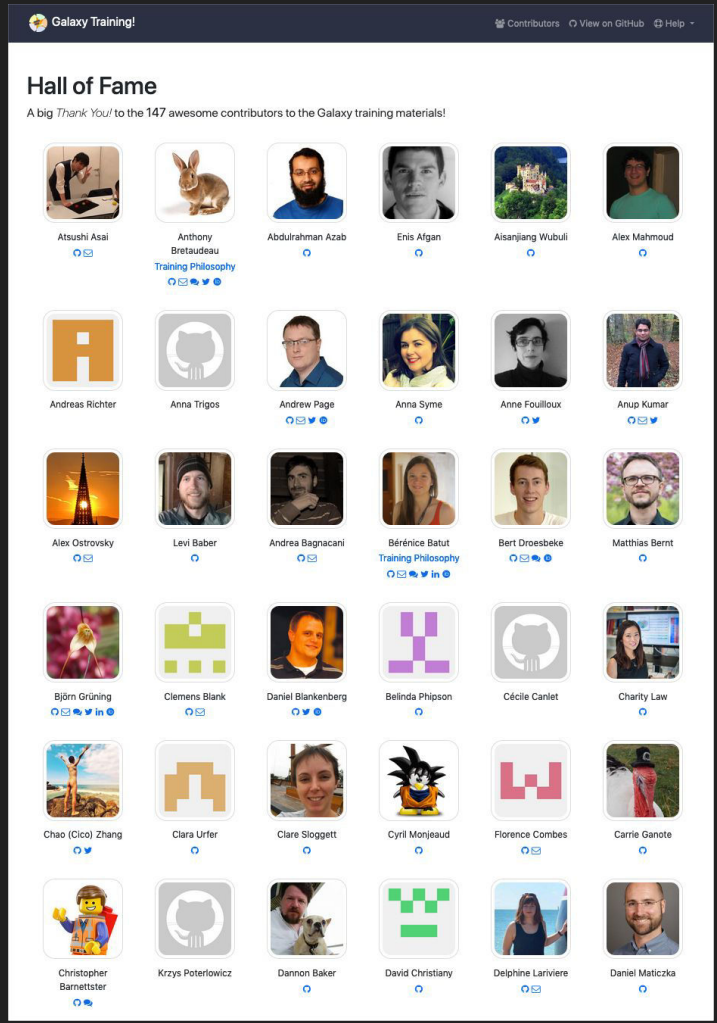
@tnabtaf
#usegalaxy
@galaxyproject

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*

How did we get here?



“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

“Galaxy Community”

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

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

Agenda

- What is Galaxy
- Some history
- Big Picture
- Outreach, with side trips in Training and Communication
- Support
- Building community, where we circle back to Outreach and Support,
- Examples: IUC, Committers, and Galaxy Training Network
- Let your community know how vital they are

What is Galaxy? The project's definition:

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

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

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

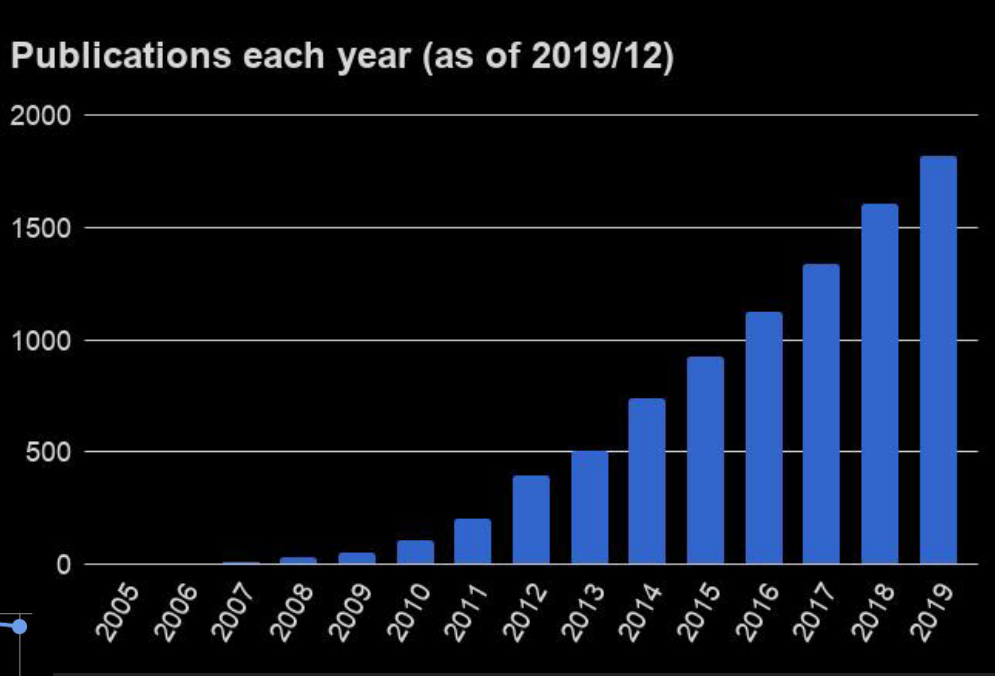
History

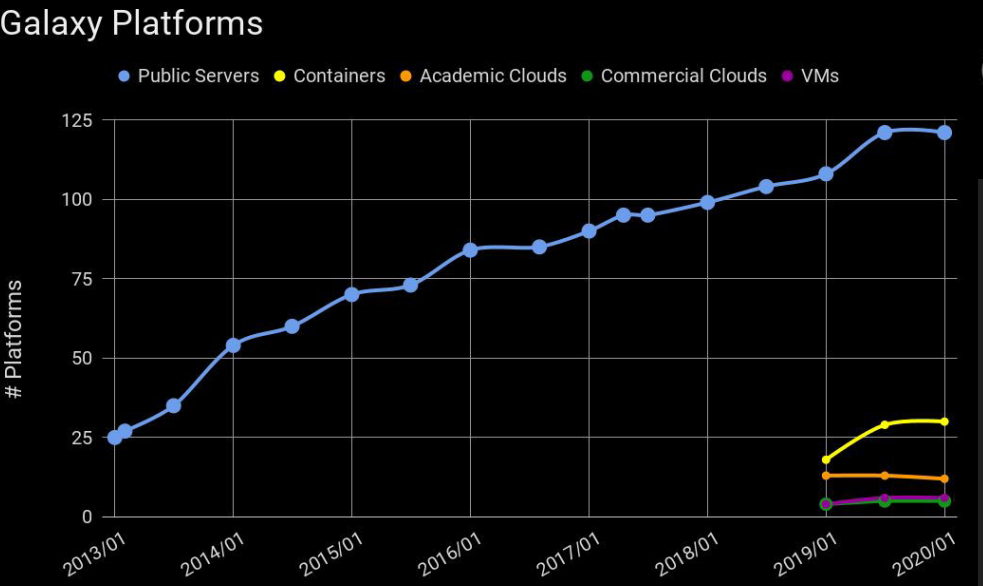
- Started in 2005 at Penn State, based on the earlier “Gala” project
  - Provided a public Galaxy server, and open source code
- Started promoting it for local installs and tool publishing
- Primary original funding: NSF
- Primary funding since 2011: NIH NHGRI

History: Galaxy Outreach

2007: Project aware of the value of being seen
2008: I started promoting Galaxy in my previous position with GMOD
2010: Hired a dedicated user support person, Jennifer Hillman-Jackson
2011: Hired a dedicated training and outreach person, me
2018: Hired a 2nd, part-time training and outreach person, Mo Heydarian

History: Growth





bit.ly/gxyStats

Big Picture

Big Picture

But first:

Q: How do you become *wildly* successful in outreach and training?

A:

Big Picture

But first:

Q: How do you become *wildly* successful in outreach and training?

A: Join a project that already has wildly successful training and outreach.

2007: Project aware of the value of being seen since at least this year

Big Picture: Guiding principles

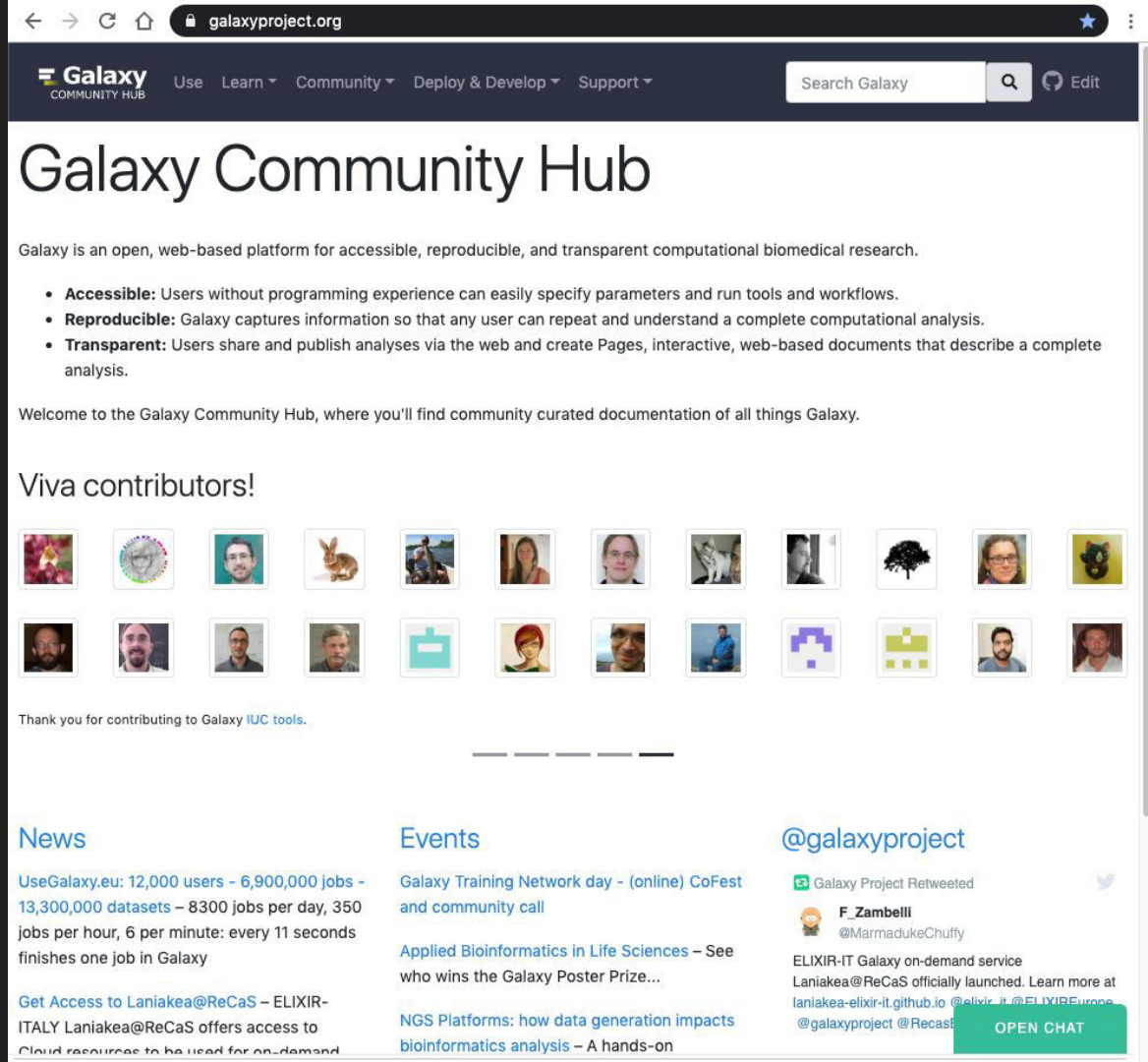
- Recognize and value your community and their contributions
- Promote your community and their contributions
- Provide contribution and connection opportunities

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, …

Let your community know how vital they are

galaxyproject.org



Community!

Galaxy COMMUNITY HUB | Use | Learn | Community | Deploy & Develop | Support | Search Galaxy | Edit

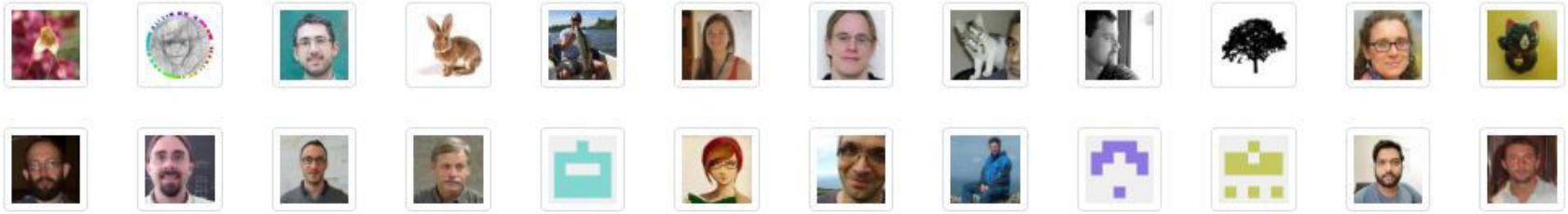
Galaxy Community Hub

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.

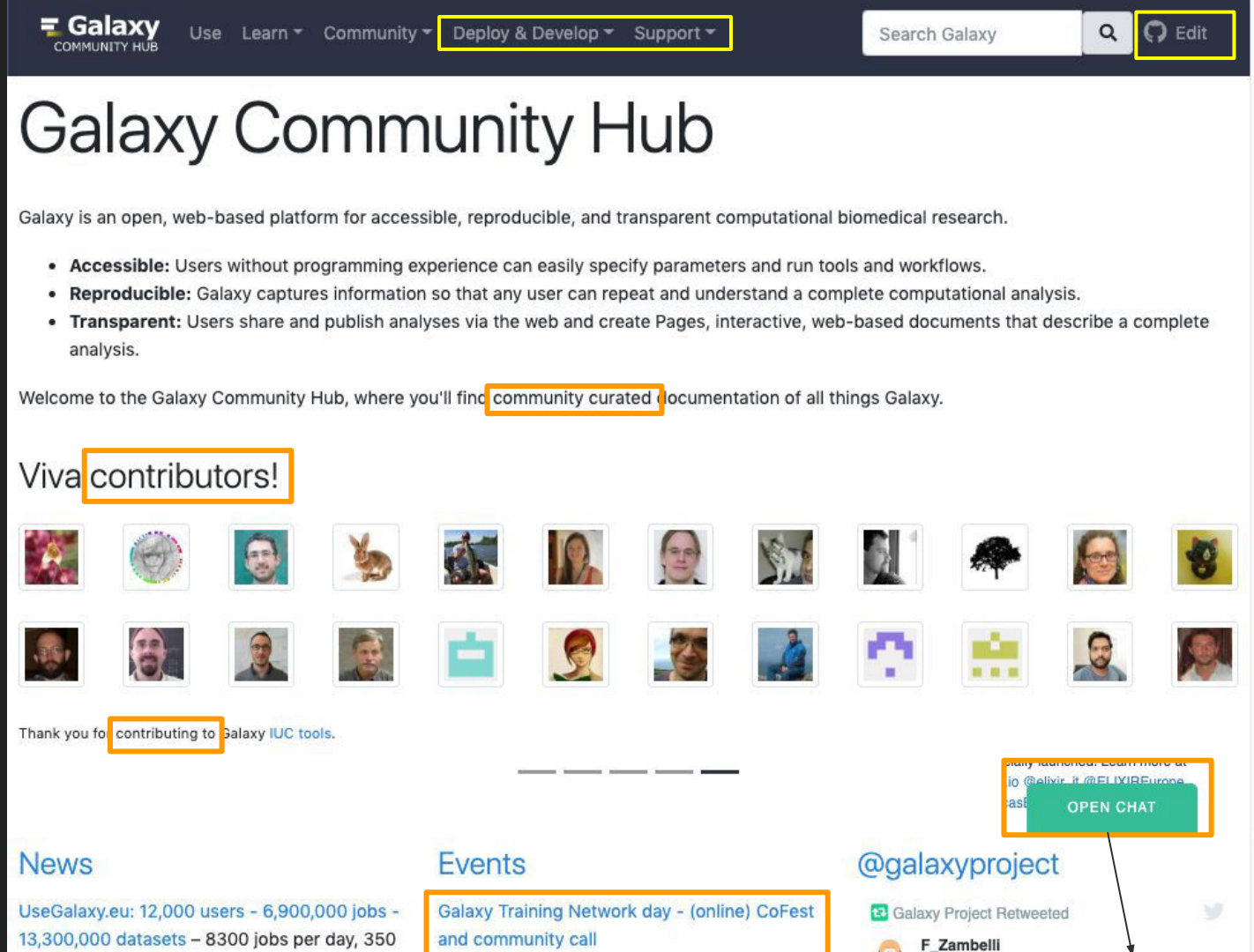
Welcome to the Galaxy Community Hub, where you'll find community curated documentation of all things Galaxy.

Viva contributors!



Thank you for contributing to Galaxy IUC tools.

Contribute!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OPEN CHAT
News
Events
@galaxyproject
UseGalaxy.eu: 12,000 users - 6,900,000 jobs - 13,300,000 datasets – 8300 jobs per day, 350
Galaxy Training Network day - (online) CoFest and community call
Galaxy Project Retweeted
F_Zambelli

Recognize and promote!

analysis.

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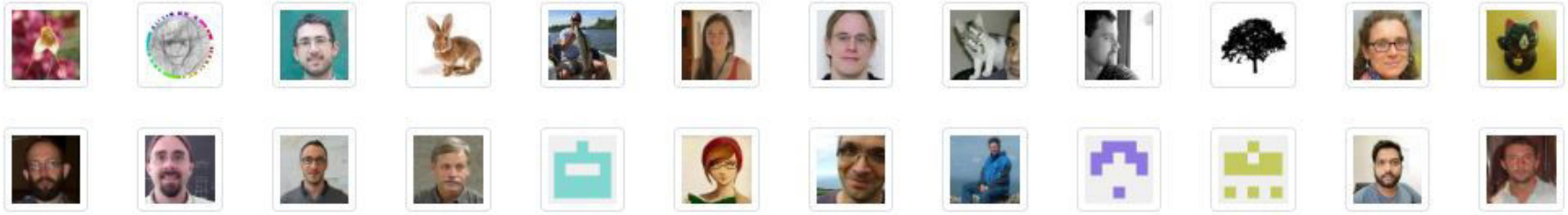

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News

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 @RecasB

OPEN CHAT

Outreach

Outreach

Get your platform / software in front of people

- Present Galaxy at conferences in talks, posters, and workshops
- In the past year: 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 platform / software at events they go to, and communities they are in.

Outreach: *(wait a minute…)*

- *In the past year: 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 platform / software 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

Training

- Training is entwined with outreach
- It is key to getting your platform / software used
  - First user training at ASHG 2009
  - First admin training at GMOD Summer School 2010
- (A lot) More on training in a few slides…

Communicate: Project News

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

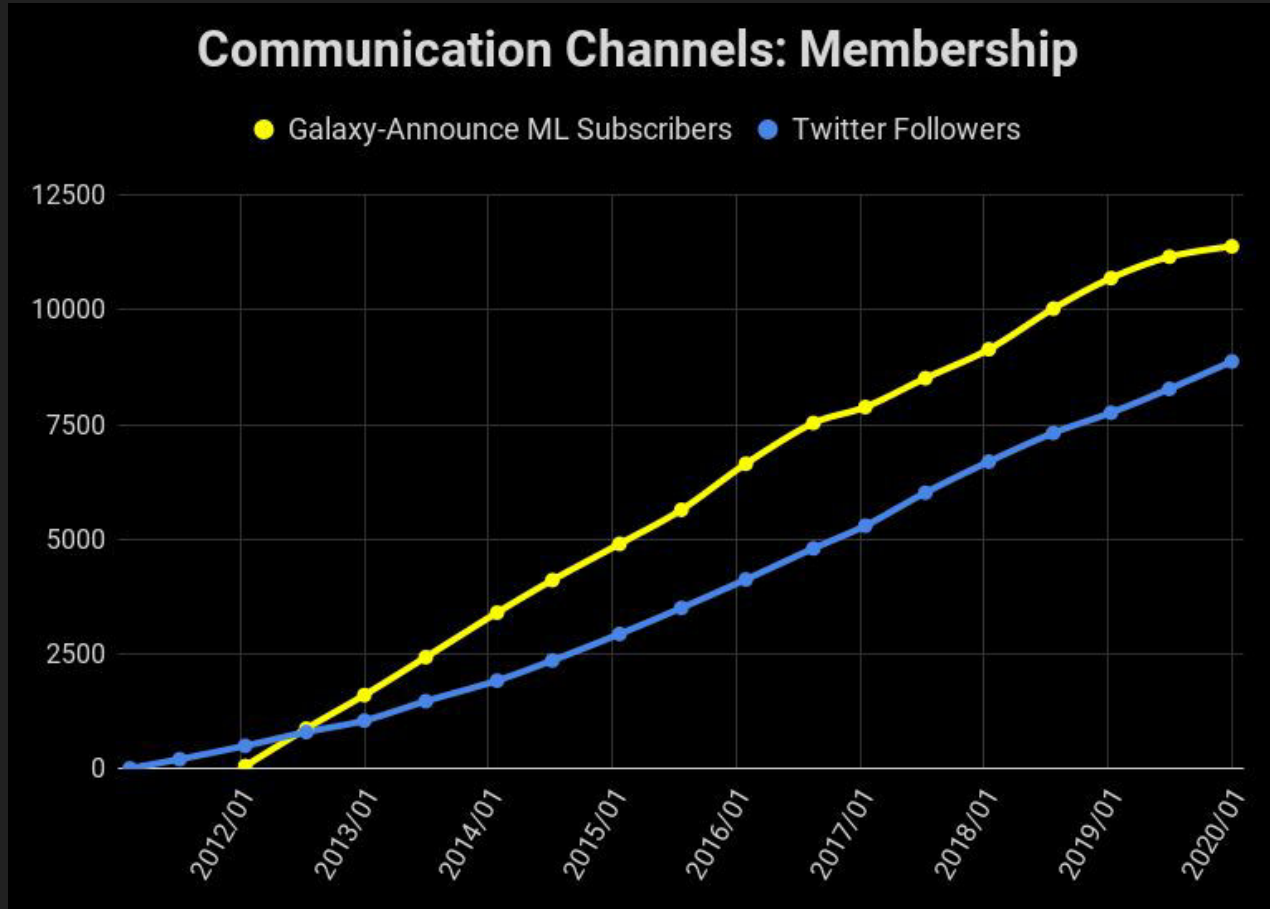
Big News: Releases

- 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/

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

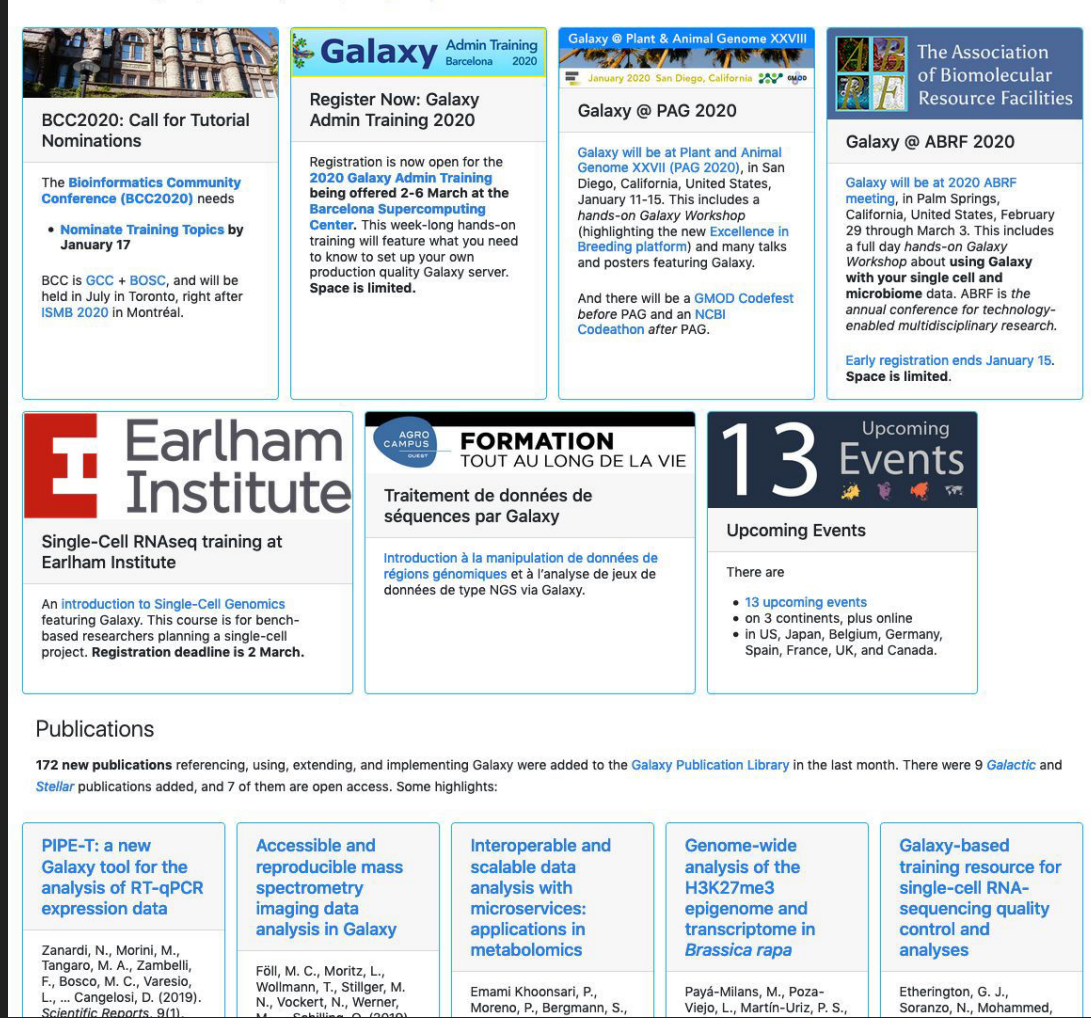
- (Re)Launched in 2011
- Anything of possible interest to the community can get tweeted
- Mixture of original content and retweets
- Attach an image whenever possible
- Follow anyone who is saying things that are relevant to the community
- Use TweetDeck to schedule tweets, and to search tweets
- Multiple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



BCC2020: Call for Tutorial Nominations

The **Bioinformatics Community Conference (BCC2020)** needs

- **Nominate Training Topics by January 17**

BCC is GCC + BOSC, and will be held in July in Toronto, right after ISMB 2020 in Montréal.

Galaxy Admin Training Barcelona 2020

Register Now: Galaxy Admin Training 2020

Registration is now open for the **2020 Galaxy Admin Training being offered 2-6 March at the Barcelona Supercomputing Center.** This week-long hands-on training will feature what you need to know to set up your own production quality Galaxy server. **Space is limited.**

Galaxy @ Plant & Animal Genome XXVIII

January 2020 San Diego, California

Galaxy @ PAG 2020

Galaxy will be at Plant and Animal Genome XXVII (PAG 2020), in San Diego, California, United States, January 11-15. This includes a *hands-on Galaxy Workshop* (highlighting the new Excellence in Breeding platform) and many talks and posters featuring Galaxy.

And there will be a GMOD Codefest *before* PAG and an NCBI Codeathon *after* PAG.

The Association of Biomolecular Resource Facilities

Galaxy @ ABRF 2020

Galaxy will be at 2020 ABRF meeting, in Palm Springs, California, United States, February 29 through March 3. This includes a full day *hands-on Galaxy Workshop* about **using Galaxy with your single cell and microbiome** data. ABRF is *the annual conference for technology-enabled multidisciplinary research.*

Early registration ends January 15. **Space is limited.**

Earlham Institute

Single-Cell RNAseq training at Earlham Institute

An introduction to Single-Cell Genomics featuring Galaxy. This course is for bench-based researchers planning a single-cell project. **Registration deadline is 2 March.**

AGRO CAMPUS OUEST

FORMATION TOUT AU LONG DE LA VIE

Traitement de données de séquences par Galaxy

Introduction à la manipulation de données de régions génomiques et à l'analyse de jeux de données de type NGS via Galaxy.

13 Upcoming Events

Upcoming Events

There are

- 13 upcoming events
- on 3 continents, plus online
- in US, Japan, Belgium, Germany, Spain, France, UK, and Canada.

Publications

172 new publications referencing, using, extending, and implementing Galaxy were added to the Galaxy Publication Library in the last month. There were 9 *Galactic* and *Stellar* publications added, and 7 of them are open access. Some highlights:

PIPE-T: a new Galaxy tool for the analysis of RT-qPCR expression data

Zanardi, N., Morini, M., Tangaro, M. A., Zambelli, F., Bosco, M. C., Varesio, L., ... Cangelosi, D. (2019). *Scientific Reports*, 9(1).

Accessible and reproducible mass spectrometry imaging data analysis in Galaxy

Föll, M. C., Moritz, L., Wollmann, T., Stillger, M. N., Vockert, N., Werner,

Interoperable and scalable data analysis with microservices: applications in metabolomics

Emami Khoonsari, P., Moreno, P., Bergmann, S.,

Genome-wide analysis of the H3K27me3 epigenome and transcriptome in *Brassica rapa*

Payá-Milans, M., Poza-Viejo, L., Martín-Uriz, P. S.,

Galaxy-based training resource for single-cell RNA-sequencing quality control and analyses

Etherington, G. J., Soranzo, N., Mohammed,

January 2020 Newsletter excerpt

Support

Support: Building an online support community

2006: Started Galaxy-User mailing list
2008: Added Galaxy-Dev mailing list
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

Always communicated expectation of community support.
Over time, support channels have become more engaging and interactive.
Some gameficaiton in Biostar and Discourse.

help.galaxyproject.org

gitter.im/galaxyproject/

Building Community:

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

Building Community:

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.

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 (State of the art!)

Training	Conference	CoFest: Core	CoFest: Encore
Day 1	Days 2-4	Days 5-6	Days 7-8
Multi-track training sessions, each 2.5 hours long Topics nominated and voted on by the community	Talks & Lightning Talks Joint and parallel sessions Posters & Demos Birds of a Feather (BoFs) More training Sponsors Conference Dinner and Copious networking time and opportunities	2 days of collaborative work, covering all possible aspects of contribution. Focus on **newcomers** and growing your community of **future** collaborators and contributors.	Where everyone, even the newcomers, are now established members of the community

Bioinformatics Community Conference, our 2nd joint meeting with BOSC

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
- Building 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

Specific Examples: IUC, Committers, and GTN

Intergalactic Utilities Commission (!)

- Galaxy makes tools accessible to researchers (over 7500 of them)
- Tool wrappers define tools to Galaxy
- Wrappers published via the Galaxy Toolshed
- Toolshed is open to anyone, and quality is all over the board
- IUC created in 2013 to:
  - establish best practices for wrapping and testing tools
  - create gold-standard wrappers for widely used tools
- IUC a mix of “team” and “community” from the start
- And it was a success from the start, emboldening our next step...

Committers

- We have been open source from the start, but weren't particularly encouraging to potential contributors:
  - You might fork the code, add a feature, and then submit a pull request
  - And the team might or might not get back to you about your work
  - Which was bad
- In 2015 we defined code governance policies and added our first 3 community members to the Committers group
- 9* of our top 20 core code contributors are not US team members

* Ok, actually 8, starting last month, but only because we just hired one of them

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

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

David Hanauer, Juli Klemm

NCI ITCR

You