

A focus on the Bioconductor community and its CZI EOSS grant

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COMMUNITY OVERVIEW

Founded in 2001, Bioconductor is an open-source software project in the R statistical language that is widely used in bioinformatics and biomedical research. Its mission is to develop, support, and distribute free open-source software that facilitates rigorous and reproducible analysis of data from current and emerging biological assays. It is both a repository of R packages and the community who develops and uses them. ~2000 developers have contributed >2000 packages that are downloaded by academic and industrial users >1 million times per year. Bioconductor has been cited by more than 60000 scientific publications to date. Bioconductor is committed to building a diverse, collaborative, and welcoming global community of developers and data scientists.

► Website: <https://www.bioconductor.org/>

KEYWORDS

Disciplines / skills

- DATA SCIENCE
- SOFTWARE AND CODE
- BIOINFORMATICS
- Programming and goals**
- STANDARD SETTING
- SOFTWARE SUSTAINABILITY
- INFRASTRUCTURE DEVELOPMENT
- KNOWLEDGE GENERATION
- SKILLS DEVELOPMENT
- MENTORING
- DIVERSITY, EQUITY, AND INCLUSION
- OPEN SCIENCE

Stakeholder relationships

- MULTI-STAKEHOLDER

COMMUNITY BASICS

From 2022-24, Bioconductor's community priority was to increase accessibility, diversity, and global reach.



>10000 users interact with Bioconductor
>2000 members connect in Slack



Open - anyone can join



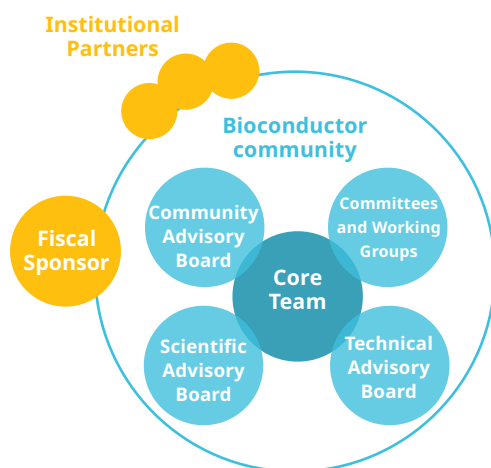
International - with regional nodes in USA, Europe, and Asia



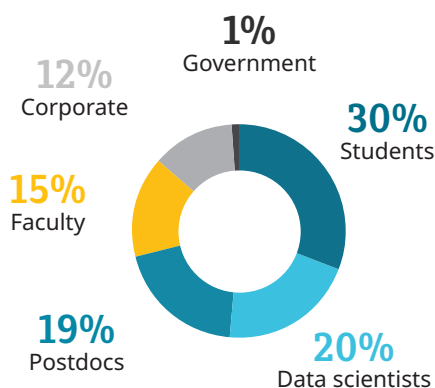
Equally online and offline

PROJECT STRUCTURE

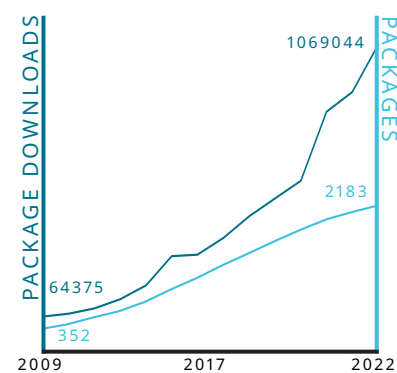
Organizational Structure



Community Members



Usage and Contributions

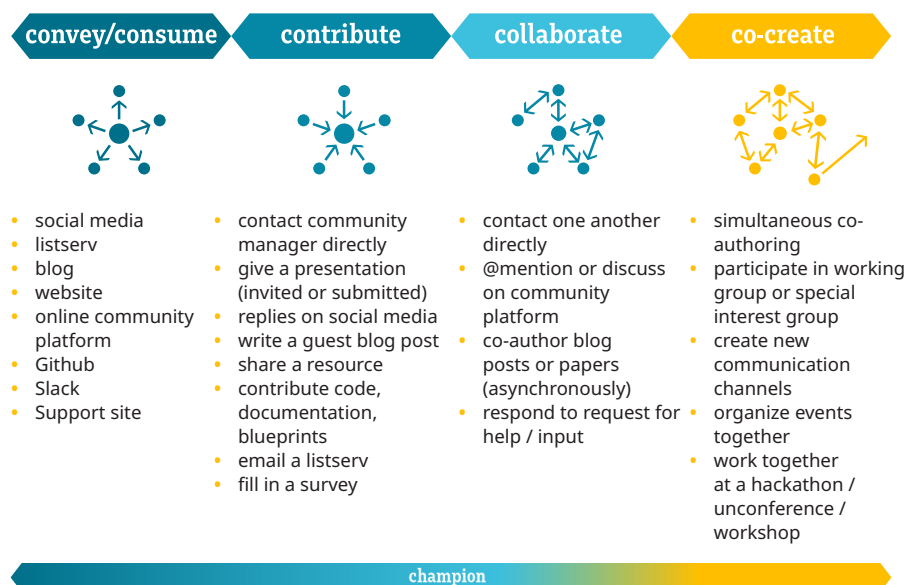


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PROGRAMMING

People can participate in Bioconductor activities in many ways - taking part in discussions in the Slack group; volunteering to become a package reviewer, a mentee/mentor via the new developer program or Outreachy, an instructor in the Carpentries training program; joining the Community Advisory Board or the Technical Advisory Board; joining a working group; helping host/organize one of the yearly conferences (BioC, EuroBioC, BioCAsia); organizing or participating in an event; answering questions in Slack, the support site, or the developer mailing list; writing a blog post; amplifying and sharing Bioconductor materials on social media and within their own networks.



COMMUNITY CHAMPIONS

Volunteers serve on Bioconductor's Technical and Community Advisory Boards; and Code of Conduct, Teaching, and Conference Committees. Additionally, members can participate in The Carpentries training to become a Bioconductor instructor. Ways in which members act as champions include:



MAINTAIN

- code review / maintainer roles
- serve on code of conduct committee
- review and update documentation



GROW

- reshare resources
- recruit new members
- represent the community at events
- reshare community opportunities
- organize events



EVOLVE

- serve on an advisory board, committee or working group

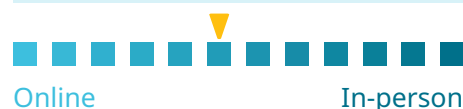


CHAMPIONS take on additional activities to support or advance the community. They are sometimes described as emergent leaders.

THE COMMUNITY PARTICIPATION MODEL

The CSCCE Community Participation Model describes four modes of member engagement that can occur within a community – CONVEY/CONSUME, CONTRIBUTE, COLLABORATE, and CO-CREATE – and one that can occur both inside and outside of it: CHAMPION. All modes may be present at once, with some members interacting in multiple modes – or a community may have member engagement that falls into only some of the modes described. The model enables the mapping of community member behaviors to programming and other infrastructural support that the community manager, convening organization, or funder may provide to the community.

► For more information, see the [CSCCE community participation model](#).



COMMUNITY TOOLBOX

Communications

Email	Mastodon
Slack	Zoom
Blog	GitHub
X	LinkedIn

Productivity

GitHub	Home-grown platform
Slack	

Community platform

R	Google Drive tools
Maze	



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FOCUS ON CZI EOSS 4 FUNDING (YEAR 1) IMPACT

- Funding award: <https://chanzuckerberg.com/eoss/proposals/bioconductor-high-quality-training-and-support-for-a-worldwide-community/>

Bioconductor received a grant from the Chan Zuckerberg Initiative's (CZI) Essential Open Source Software (EOSS) program (Cycle 4) to improve the accessibility, diversity, and global reach of the project. Over the last year, this funding has supported:



Re-development of the Bioconductor website

- 558 community members from 56 countries gave feedback in a survey distributed online
- 16 community members contributed to the project by participating in 6 working group meetings
- Re-development of the website improved accessibility by focusing on color-blindness, screenreader compatibility, mobile responsiveness, and raising the visibility of evergreen resources and active projects

Successes

- Preview of the new website released in September 2023



Instructor Training via The Carpentries

- Bioconductor partnered with The Carpentries to train a diverse pool of instructors from around the world

Successes

- 18 community members participated in Year 1 of the program
- 13 countries were represented across 6 continents
- 4 workshops, delivered by newly-training instructors, took place in North America, Europe, and Asia alongside the BioC conferences, to a combined total of 144 registrants



Focus on Community Engagement with CSCCE

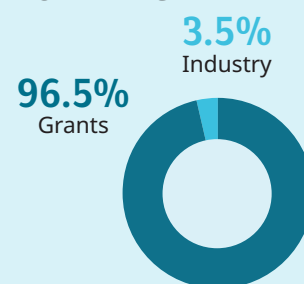
- Funds were used to develop community management capacity and strategy, and invest in diversifying community engagement efforts

Successes

- New community manager (CM) hired in 2022
- CM trained via CSCCE's Scientific Community Engagement Fundamentals course
- Additional CM training included CZI workshops on UX design, communication, community support, and the University of Limerick's Principles of Project Management course
- Made a community playbook documenting the new champions program and engagement strategy, with CSCCE
- Focus on DEI included new activities for the CAB and TAB, the Outreachy program, establishment of a multilingual working group, and translation of an increasing number of community resources

► CSCCE Community Profile

TOTAL PROJECT FUNDING



Funding Streams

- 96.5% of funding for Bioconductor comes from grants from several agencies, including the US National Institutes of Health (NIH), the US National Cancer Institute (NCI), the Chan Zuckerberg Initiative (CZI), and the European Union.
- 3.5% comes from industry sponsorship for conferences

*Bioconductor offers **caregiver, student, and developer travel stipends** for members to attend its annual conferences in North America, Europe and Asia.*

ABOUT THIS PROFILE

This profile is part of a research project conducted by the Center for Scientific Collaboration and Community Engagement (CSCCE). You can find out more about the project, and view more community profiles, [on our website](#).

Information for this profile was submitted by Bioconductor's Maria Doyle and Aedin Culhane.

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