News from the Bioconductor Project

by Bioconductor Core Team

Bioconductor provides tools for the analysis and comprehension of high-throughput genomic data. Bioconductor 3.14 was released on 27 October, 2021. It is compatible with R 4.1.0 and consists of 2083 software packages, 408 experiment data packages, 904 up-to-date annotation packages, and 29 workflows.

The project has developed, over the last several years, the 'AnnotationHub' and 'ExperimentHub' resources for serving and managing genome-scale annotation data, e.g., from the TCGA, NCBI, and Ensembl. At the time of release there were 60134 records in the AnnotationHub, and 6075 ExperimentHub records. See the WaldronLab shiny app to get an overview of the AnnotationHub.

Book production continues in this release. Books are built regularly from source and therefore fully reproducible; an example is the community-developed Orchestrating Single-Cell Analysis with Bioconductor.

The Bioconductor 3.14 release announcement includes descriptions of 89 new software packages, and updates to NEWS files for many additional packages. Start using Bioconductor by installing the most recent version of R and evaluating the commands

```
if (!requireNamespace("BiocManager", quietly = TRUE))
    install.packages("BiocManager")
BiocManager::install()
```

Install additional packages and dependencies, e.g., **SingleCellExperiment**, with

```
BiocManager::install("SingleCellExperiment")
```

Docker images provide a very effective on-ramp for power users to rapidly obtain access to standardized and scalable computing environments.

Key learning resources include:

- bioconductor.org to install, learn, use, and develop Bioconductor packages.

- A list of available software, linking to pages describing each package.

- A question-and-answer style user support site and developer-oriented mailing list.

- A community slack (sign up) for extended technical discussion.

- The F1000Research Bioconductor channel for peer-reviewed Bioconductor work flows.

- The Bioconductor YouTube channel includes recordings of keynote and talks from recent conferences including Bioc2021 and BiocAsia2021, in addition to video recordings of training courses.

- Our package submission repository for open technical review of new packages.

The 2021 Bioconductor conference was held in a virtual format August 4-6, 2021.

In conjunction with the Mexican Bioinformatics Network and the Nodo Nacional de Bioinformática CCG UNAM, the Comunidad de Desarrolladores de Software en Bioinformática held two week-long online workshops addressing development of workflows with RStudio and shiny and analysis of single-cell RNA-seq experiments, August 9-13, 2021.

BiocAsia 2021 was held November 1-4 2021 as a virtual event. The Biopackathon project has many points of contact with Bioconductor and recurs monthly.

The National Human Genome Research Institute's Analysis and Visualization Laboratory (AnVIL) is developing with contributions from Bioconductor core team members. Extensive background material includes a series of recorded workshops.

The Bioconductor project continues to mature as a community. The Technical and Community Advisory Boards provide guidance to ensure that the project addresses leading-edge biological problems with advanced technical approaches, and adopts practices (such as a project-wide Code of Conduct) that encourages all to participate. We look forward to welcoming you!

Bioconductor Core Team
Department of Data Science
Dana Farber Cancer Institute, Boston, MA
maintainer@bioconductor.org