

de.NBI-epi RNA Bioinformatics Center

University of Freiburg

Chair of Bioinformatics

Fkz 031L0101C

Björn Grüning, Joachim Wolff
University of Freiburg, Germany

Description of de.NBI-epi

The de.NBI-epi project in Freiburg offers:

Visualization, normalization and quality assessment:

- Hi-C data analysis
- MethylC-Seq data analysis
- ChIP-Seq
- Bisulfite sequencing analysis pipelines

Training and user support:

- Galaxy HTS data analysis workshops
- Self learning material on training.galaxyproject.org
- Direct user support via gitter, GitHub or guest researcher

Available on:

- All in one Gateway: <https://galaxy.uni-freiburg.de>
- Your computer with virtualised and personalised instances

General information on the project

As part of the de.NBI-epi project in Freiburg, Joachim Wolff and Björn Grüning, are working closely with the RBC, de.NBI and ELIXIR to deliver high-class services for epigenetic research.

de.NBI services

Community based infrastructure

BIOCONDA

Bioconda is a conda channel which provides software for biomedical research.

- 14,475 commits on GitHub
- 287 contributors
- > 2,700 packages

Biocontainers

BioContainers provides system-agnostic executable environments for bioinformatics software.

- Based on Docker & rkt
- > 2,900 Images
- Automatic builds from Bioconda

Galaxy

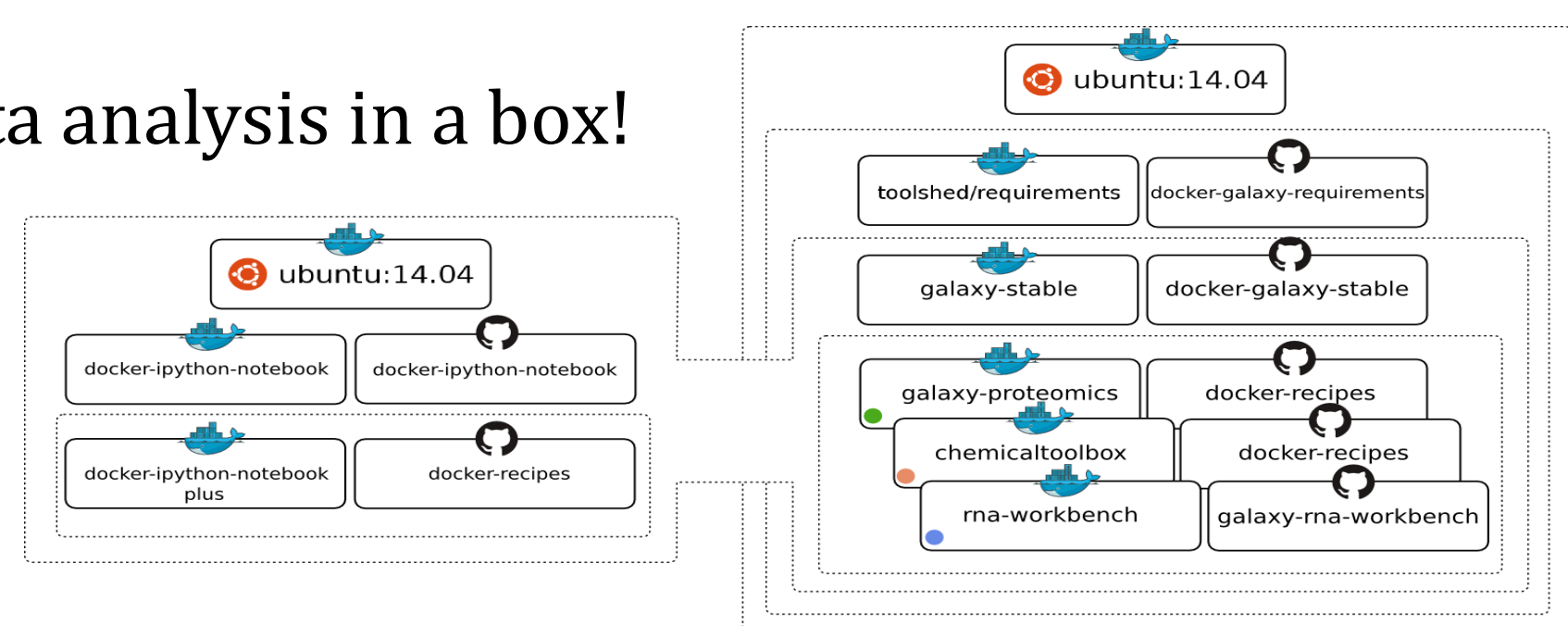
Galaxy is an open, web-based platform for data intensive research.

- 29,588 commits
- 163 contributors
- One of the biggest Galaxy instances available for de.NBI in Freiburg

The Galaxy Docker Project

The Galaxy Docker Image is an easy distributable full-fledged Galaxy installation, that can be used for testing, teaching and presenting new tools and features.

Portable data analysis in a box!



Based on the main Galaxy Docker virtualisation, a dedicated flavor for epigenetics was developed: github.com/bgruening/docker-galaxy-epigenetic

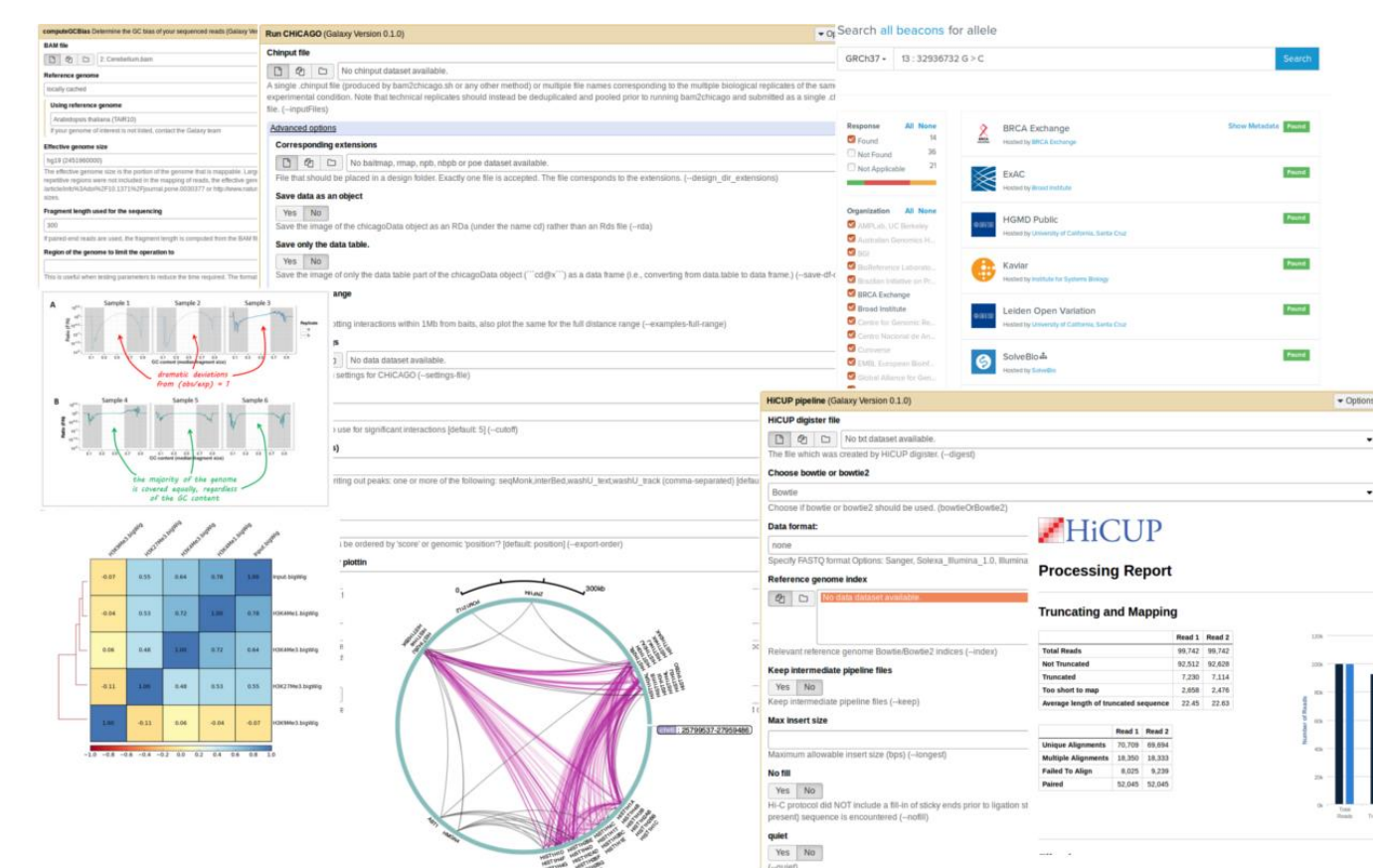
Publications

- High-resolution TADs reveal DNA sequences underlying genome organization in flies.
doi: 10.1101/115063
- Jupyter and Galaxy: Easing entry barriers into complex data analyses for biomedical researchers.
doi: 10.1371/journal.pcbi.1005425
- The RNA workbench: best practices for RNA and high-throughput sequencing bioinformatics in Galaxy
doi: 10.1093/nar/gkx409
- BioContainers: an open-source and community-driven framework for software standardization
doi: 10.1093/bioinformatics/btx192

de.NBI services

Maintenance, development and integration of software into Galaxy to provide easy access for epigenetic analysis software:

- deepTools
- Bismark
- HiCUP
- CHiCAGO
- Methyldackel
- Methtools
- HiCExplorer



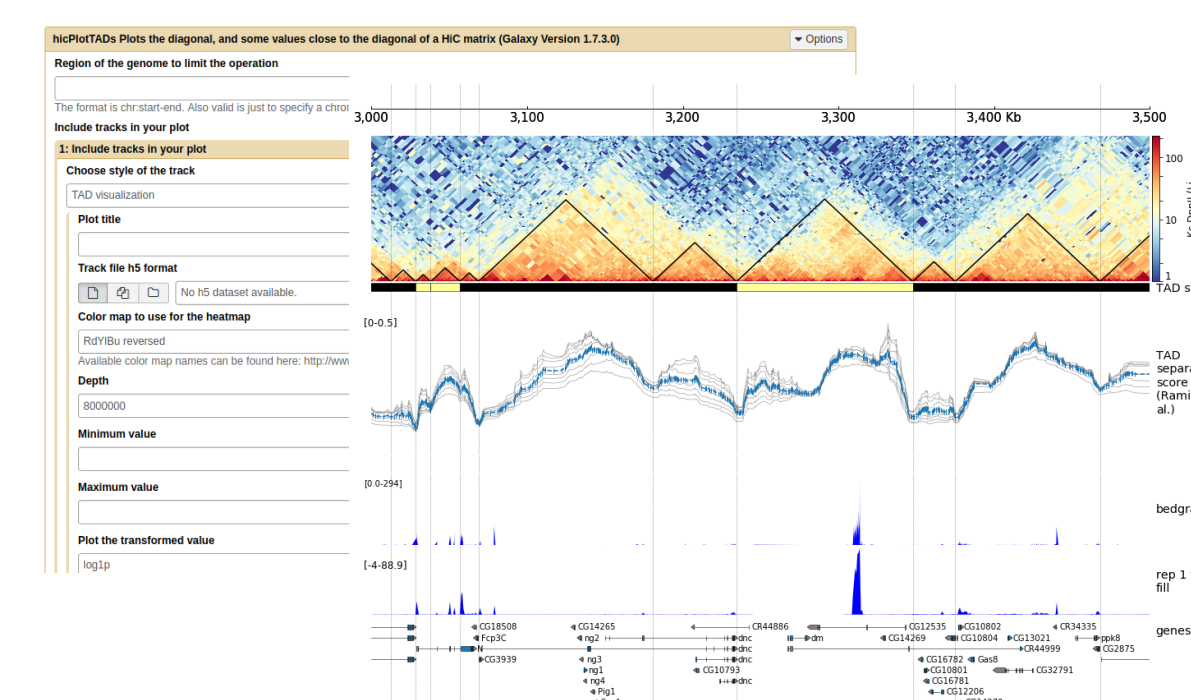
- Galaxy
- Container: Docker, rkt, Singularity

Progress report

Development and maintenance of software for Hi-C data analysis.

HiCExplorer:

- Interaction matrix creation 3x faster
- Improved training material: hicexplorer.readthedocs.io
- New Galaxy wrappers for a better user experience
- Docker integration
- Release 2.0 will have:
 - Python 3 support
 - 'Cool' format support
 - A/B compartments
 - Improved visualization



de.NBI training and education

Hands-on training material for self-study available on training.galaxyproject.org

- Introduction to HTS
- RNA-Seq
- ChIP-Seq
- Proteomics
- MethylC-Seq
- ...and many more!



2016 / 2017 past events

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|--|------------------------------------|------------|
| 15 th – 16 th Dec 2016 | Galaxy RNA-Seq analysis workshop | Freiburg |
| 09 th – 10 th Jan 2017 | Online contribution fest QIIME | |
| 16 th – 19 th Jan 2017 | European Galaxy Developer workshop | Strasbourg |
| 06 th – 09 th Feb 2017 | Galaxy Admin workshop | Melbourne |
| 13 th – 17 th Feb 2017 | Galaxy HTS data analysis workshop | Freiburg |
| 04 th – 05 th Apr 2017 | ELIXIR – de.NBI AAI workshop | Freiburg |
| 22 nd – 24 th May 2017 | ELIXIR – training hackathon | Cambridge |
| 18 th – 22 nd Sep 2017 | Galaxy HTS data analysis workshop | Freiburg |

2017 / 2018 planned events

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|--|-----------------------------------|----------|
| 06 th – 07 th Nov 2017 | VFU based on containers | Freiburg |
| 08 th – 12 th Jan 2018 | Galaxy Admin workshop | Oslo |
| 19 th – 23 rd Feb 2018 | Galaxy HTS data analysis workshop | Freiburg |
| Jan 2018 | Freiburg Galaxy user meeting | Freiburg |
| Mid 2018 | Hi-C and epigenetics workshop | Freiburg |