

## de.NBI – German Network for Bioinformatics Infrastructure

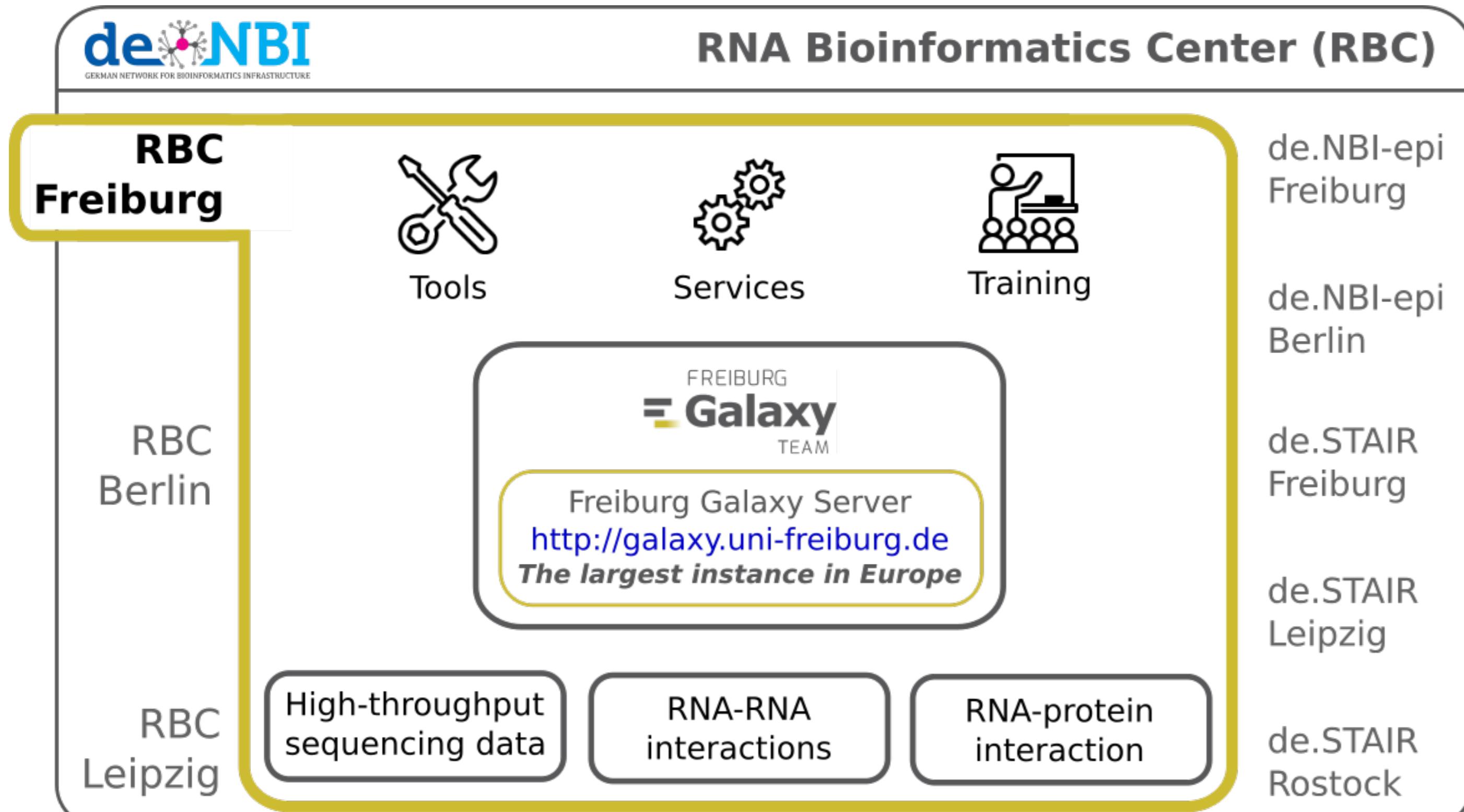
RBC

# RNA Bioinformatics Center University of Freiburg Chair of Prof. Rolf Backofen

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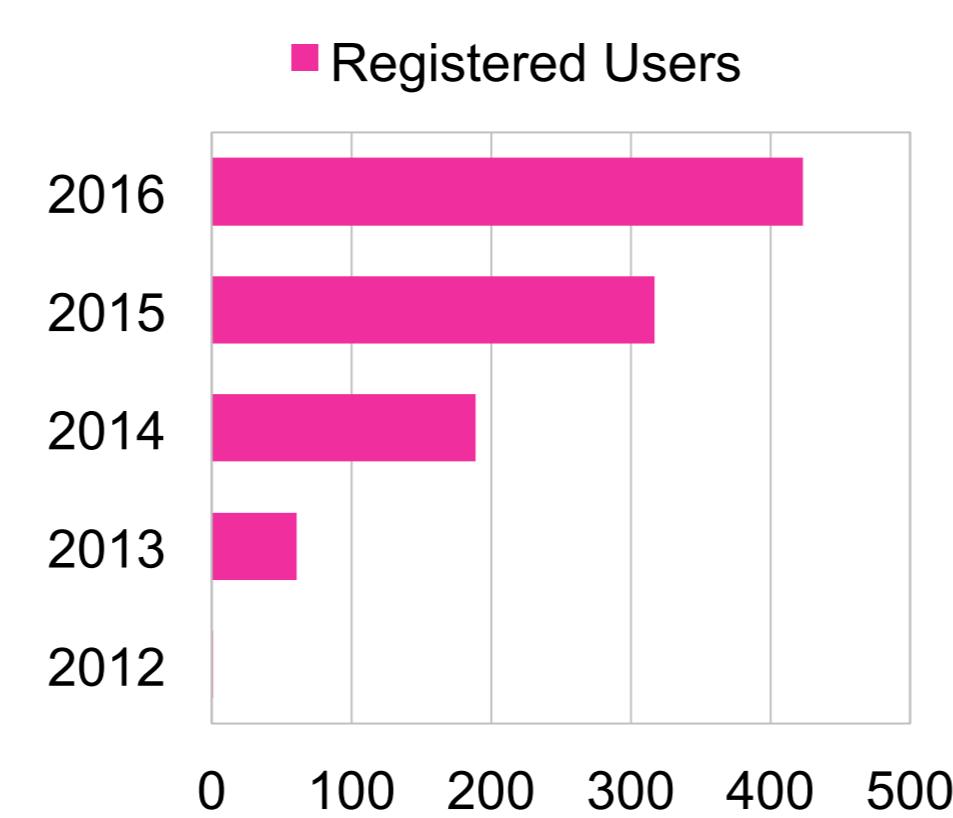
## Description of RBC Freiburg project



## de.NBI services



The Freiburg Galaxy Server (<http://galaxy.uni-freiburg.de>) enables scientists to perform accessible, reproducible and transparent research of biomedical data. As part of the de.NBI cloud, the Freiburg Galaxy server will be available for all German research facilities in the beginning of 2017.



The RBC Freiburg is actively involved in making software user-accessible. Tools relevant for HTS data analysis, RNA-protein interaction analysis (e.g. CLIP experiments), RNA-RNA interaction analysis are made available through distribution channels such as BioConda.



The RNA workbench (<http://rna.informatik.uni-freiburg.de>) is a server for a series of RNA research tools:

- Sequence-structure alignments: LocARNA, CARNA, MARNA
- Clustering: ExpaRNA
- Interaction prediction: IntaRNA, CopraRNA
- Homolog identification: GLASSgo
- Sequence design: AntaRNA, INFORNA, SECISDesign
- CRISPR repeat analyses: CRISPRmap



Analysis frameworks for specific tasks are made available as Docker images. They incorporate a Galaxy web server with seamlessly included tools, SOP analysis pipelines, training material, a Galaxy interactive tour, and help pages.

## Publications

- Tools and data services registry: a community effort to document bioinformatics resources. 2015.  
doi: 10.1093/nar/gkv1116
- The Galaxy platform for accessible, reproducible and collaborative biomedical analyses: 2016 update. 2016.  
doi: 10.1093/nar/gkw343
- Enhancing pre-defined workflows with ad hoc analytics using Galaxy, Docker and Jupyter. 2016.  
doi: 10.1101/075457
- Global RNA recognition patterns of post-transcriptional regulators Hfq and CsrA revealed by UV crosslinking in vivo. 2016.  
doi: 10.15252/embj.201593360
- RC3H1 post-transcriptionally regulates A20 mRNA and modulates the activity of the IKK/NF-kappaB pathway. 2016.  
doi: 10.1038/ncomms8367

## Progress report

### Training and education

- Organisation of
  - 6 training courses to teach users common HTS techniques, tool development, and Galaxy implementation
  - Contribution fests to make software more readily available
- Migration of our training material and analysis workflow documentation to online repositories for easier collaboration
- Ongoing curation and development of training material for newer versions of tools and new emerging techniques requested by users
- Active participation in the BioStars forum to answer user questions

### Services

- Ongoing evaluation of new analysis techniques, methods and software for RNA-RNA and RNA-protein interactions
- Development and maintenance of standard analysis pipelines and definition of SOPs

Close cooperation and knowledge exchange with ELIXIR

## de.NBI training and education

The RBC Freiburg offers biannual full-day hands-on Galaxy training weeks on HTS data analysis: >220 participants in the last 3 years.



Freiburg Galaxy HTS data analysis workshops February (left) and September 2016 (right)

We also offered Galaxy developer workshops in cooperation with ELIXIR and we organised several contribution fests.

### 2016 past and planned events

|   |                                       |                  |
|---|---------------------------------------|------------------|
| 19 <sup>th</sup> – 20 <sup>th</sup> Jan     | ELIXIR EDAM codefest                  | Freiburg         |
| 22 <sup>nd</sup> – 26 <sup>th</sup> Feb     | Galaxy HTS data analysis workshop     | Freiburg         |
| 07 <sup>th</sup> – 08 <sup>th</sup> Mar     | RAD-Seq tools and workflows codefest  | Online           |
| 04 <sup>th</sup> Apr                        | Conda codefest                        | Online           |
| 06 <sup>th</sup> – 07 <sup>th</sup> Apr     | Galaxy DevOps workshop                | Heidelberg       |
| 27 <sup>th</sup> – 29 <sup>th</sup> Apr     | HPC workshop                          | Oslo, Norway     |
| 25 <sup>th</sup> – 29 <sup>th</sup> Jun     | Galaxy Community Conference workshop  | Indiana          |
| 27 <sup>th</sup> Jul                        | RBC Kick-Off meeting                  | Freiburg         |
| 19 <sup>th</sup> – 23 <sup>rd</sup> Sep     | Galaxy HTS data analysis workshop     | Freiburg         |
| 27 <sup>th</sup> – 28 <sup>th</sup> Sep     | GalaxyP codefest                      | Online           |
| 06 <sup>th</sup> – 07 <sup>th</sup> Oct     | Galaxy training material codefest     | Online           |
| 20 <sup>th</sup> – 21 <sup>st</sup> Oct     | Swiss German Galaxy workshop          | Freiburg         |
| 24 <sup>th</sup> – 26 <sup>th</sup> Oct     | NETTAB hackathon                      | Rom, Italy       |
| 02 <sup>nd</sup> – 03 <sup>rd</sup> Nov     | BioConda codefest                     | Online           |
| 30 <sup>th</sup> Nov – 01 <sup>st</sup> Dec | Galaxy Docker workshop                | Barcelona, Spain |
| 01 <sup>st</sup> – 02 <sup>nd</sup> Dec     | FAIRDOM/de.NBI Foundry workshop       | Frankfurt        |
| 15 <sup>th</sup> – 16 <sup>th</sup> Dec     | Galaxy RNA-seq data analysis workshop | Freiburg         |

### 2017 planned events

|   |                                    |                    |
|---|------------------------------------|--------------------|
| 09 <sup>th</sup> – 10 <sup>th</sup> Jan | Galaxy QIIME codefest              | Online             |
| 16 <sup>th</sup> – 19 <sup>th</sup> Jan | European Galaxy developer workshop | Strasbourg, France |
| 26 <sup>th</sup> – 27 <sup>th</sup> Jan | Galaxy RNA Seq & admin workshop    | Mainz              |
| 13 <sup>th</sup> – 17 <sup>th</sup> Feb | Galaxy HTS data analysis workshop  | Freiburg           |

**Hands-on training material for self-study available:**  
<http://bgruening.github.io/training-material>

