

## de.NBI – German Network for Bioinformatics Infrastructure

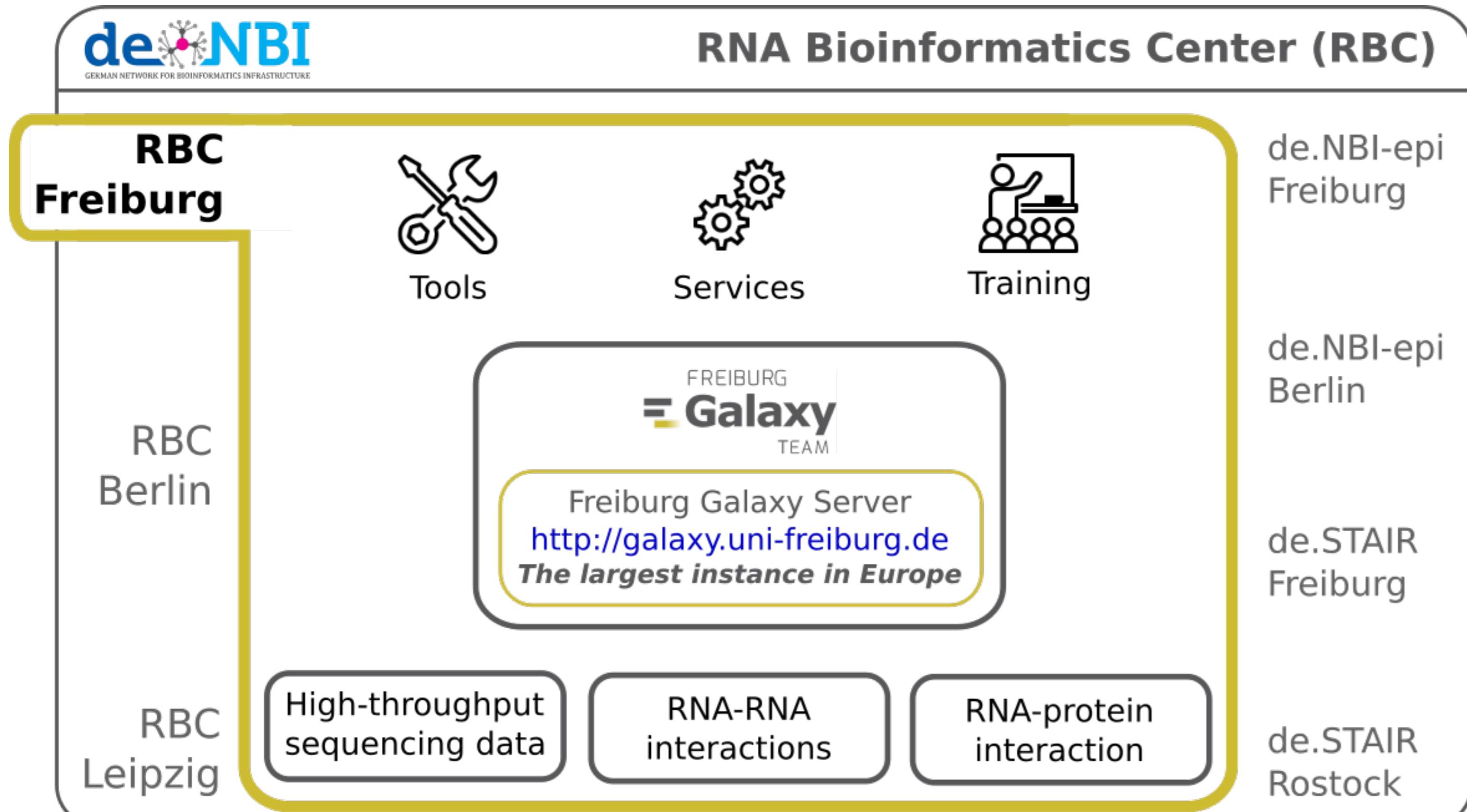
RBC

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

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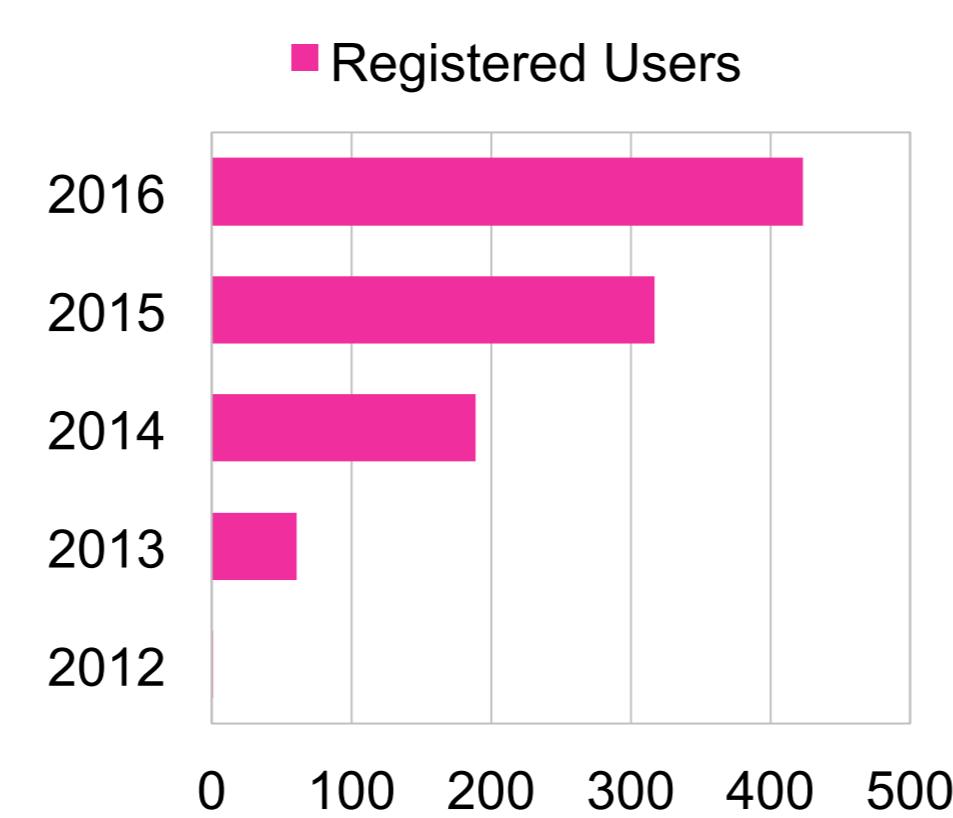
## Description of RBC Freiburg project



## 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>

