

de.NBI – German Network for Bioinformatics Infrastructure

RBC

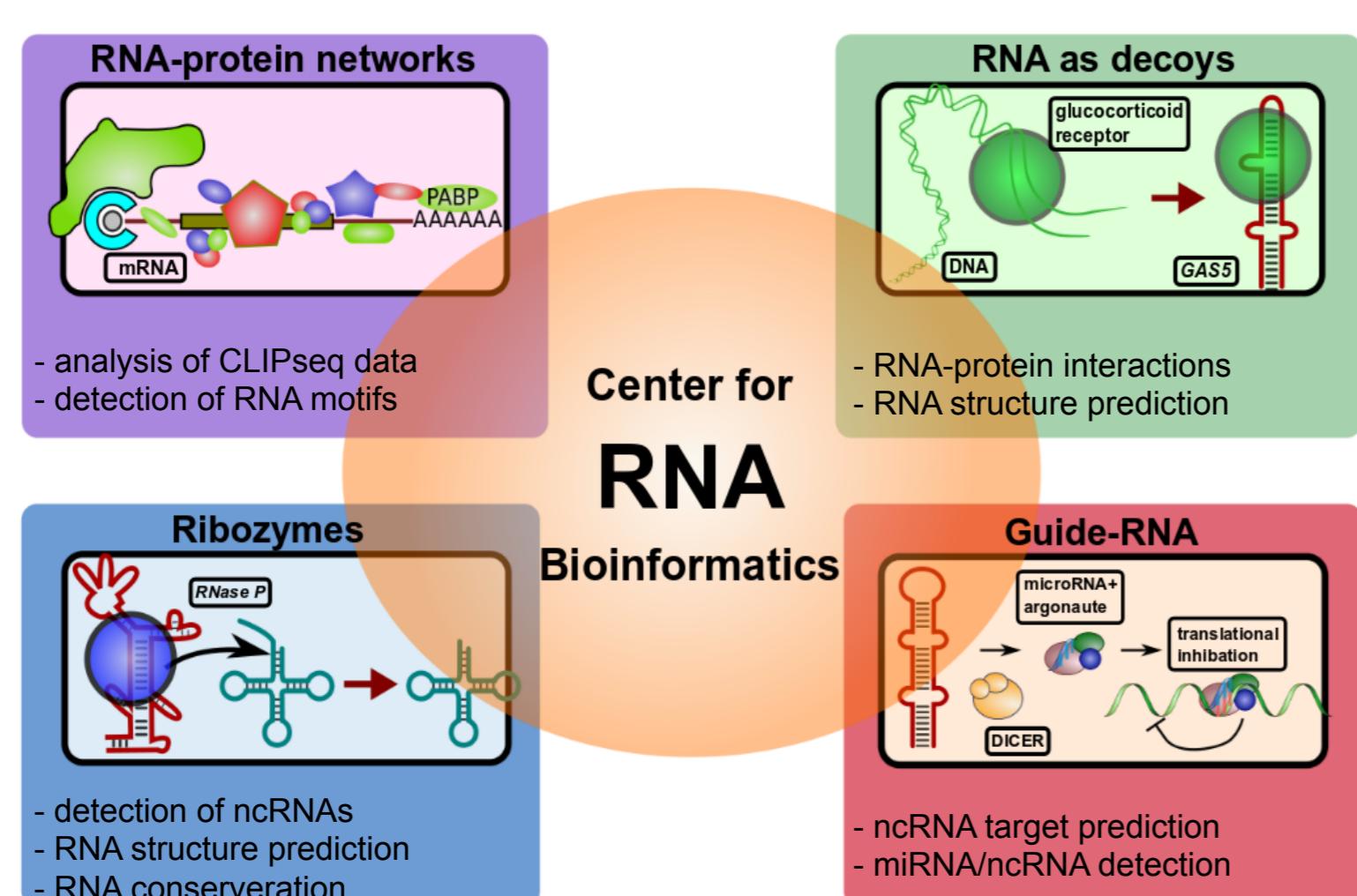
RNA Bioinformatics Center University of Freiburg Chair of Prof. Rolf Backofen

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Short description of the project

The RBC Freiburg offers tools, services and training for the analysis of:

- High-throughput sequencing (HTS) data
- RNA-RNA interactions
- RNA-protein interactions

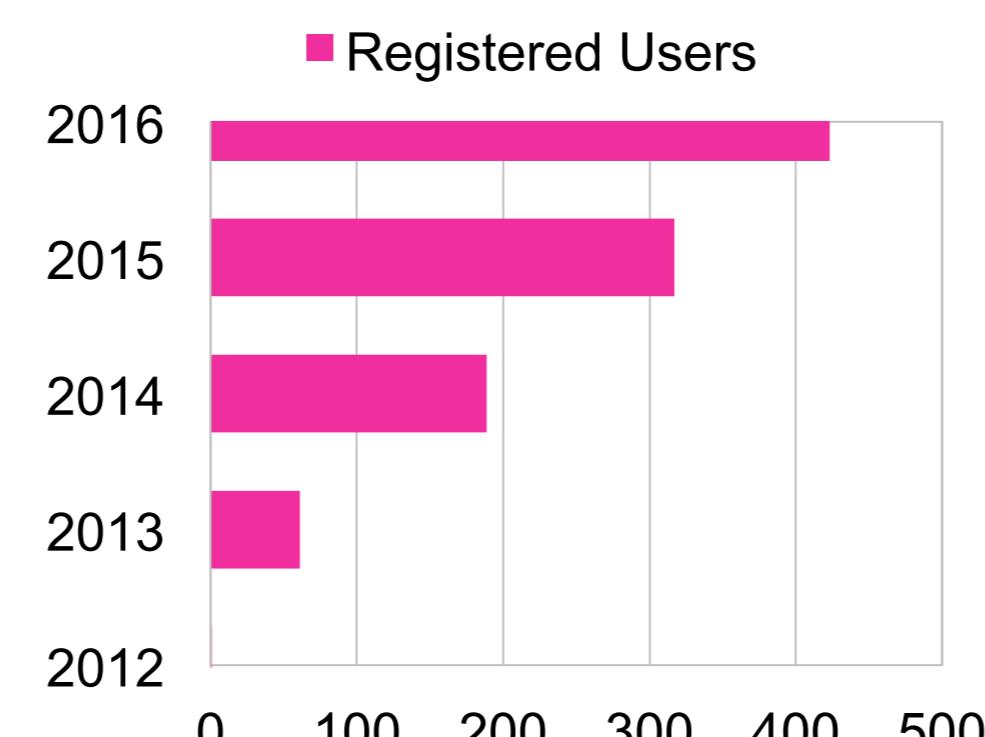


The RBC Freiburg develops and maintains the **Freiburg Galaxy server** (<http://galaxy.uni-freiburg.de>), the largest instance in Europe.

de.NBI services



The Freiburg Galaxy server (<http://galaxy.uni-freiburg.de>) enables scientists for 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.



BIOCONDA

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 with for e.g.:

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

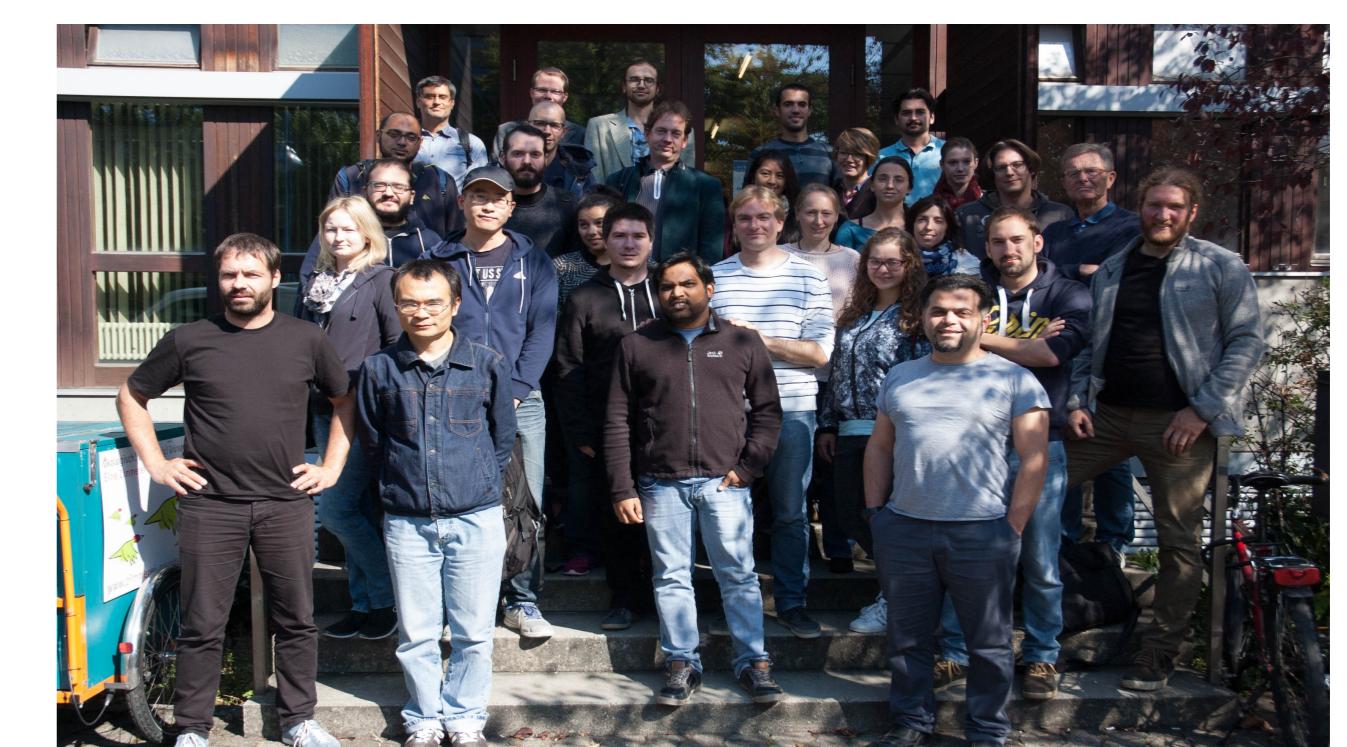
Services

- 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 week 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 developers workshops in cooperation with ELIXIR and we organized several Contribution Fests.

2016 past and planned events

19 th – 20 th Jan	ELIXIR EDAM Codefest	Freiburg
22 nd – 26 th Feb	Galaxy HTS data analysis workshop	Freiburg
07 th – 08 th Mar	RAD-Seq Tools and Workflows Codefest	Online
4 th Apr	Conda Codefest	Online
06 th – 07 th Apr	Galaxy DevOps workshop	Heidelberg
27 th – 29 th Apr	HPC Workshop	Norway
25 th – 29 th Jun	Galaxy Community Conference workshop	Indiana
27 th July	RBC Kick-Off meeting	Freiburg
19 th – 23 rd Sep	Galaxy HTS data analysis workshop	Freiburg
27 th – 28 th Sep	GalaxyP Codefest	Online
06 th – 07 th Oct	Galaxy Training Material Codefest	Online
20 th – 21 st Oct	Swiss German Galaxy workshop	Freiburg
24 th – 26 th Oct	NETTAB Hackathon	Rom
02 nd – 03 rd Nov	BioConda	Online
30 th Nov – 1 st Dec	FAIRDOM/de.NBI Foundry workshop	Barcelona
1 st – 2 nd Dec	Galaxy RNA-seq data analysis workshop	Frankfurt
15 th – 16 th Dec	Galaxy HTS data analysis workshop	Freiburg

2017 planned events

9 th – 10 th Jan	Galaxy QIIME Codefest	Online
16 th – 19 th Jan	European Galaxy Developer workshop	Strasbourg
26 th – 27 th Jan	Galaxy RNA Seq & Admin workshop	Mainz
13 th – 17 th Feb	Galaxy HTS data analysis workshop	Freiburg

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

