

## de.NBI – German Network for Bioinformatics Infrastructure

## RNA Bioinformatics Center

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## Non-coding RNAs Everywhere

Genome-wide sequencing revealed pervasive transcription, where the majority of the DNA encodes non-coding RNAs. Non-coding RNAs and RNA-protein interactions play a fundamental role in cellular regulation; consequently they have received increasing attention over the past decade. Recent advances in high-throughput sequencing as well as in the genome-wide identification of miRNAs and RNA-protein interactions have shown that the complexity of post-transcriptional gene regulation is equivalent to that of transcriptional gene regulation. For example, the human genome encodes thousands of miRNAs and approximately 800 RNA binding proteins. As such, many human diseases can already be linked to post-transcriptional gene regulation.

Docker, Galaxy, and RNA:  
Tool Integration and Deployment

## RNA analysis workbench

The RNA workbench is a ready-to-run Docker based Galaxy instance, bundled with a variety of RNA analysis tools, sample data and teaching material. This image has already been proven to be useful as a platform for training users in Galaxy driven bioinformatics analysis.

## Updated and new RNA Tools

Tools that are important for RNA bioinformatics and related fields of research are perpetually integrated and updated in the RNA workbench.

## Extension

The [rna-workbench-extra](#) image extends the base image with: utilities to fetch and index specified reference genomes at build time, tool test and example data and additional documentation in the form of Galaxy pages.



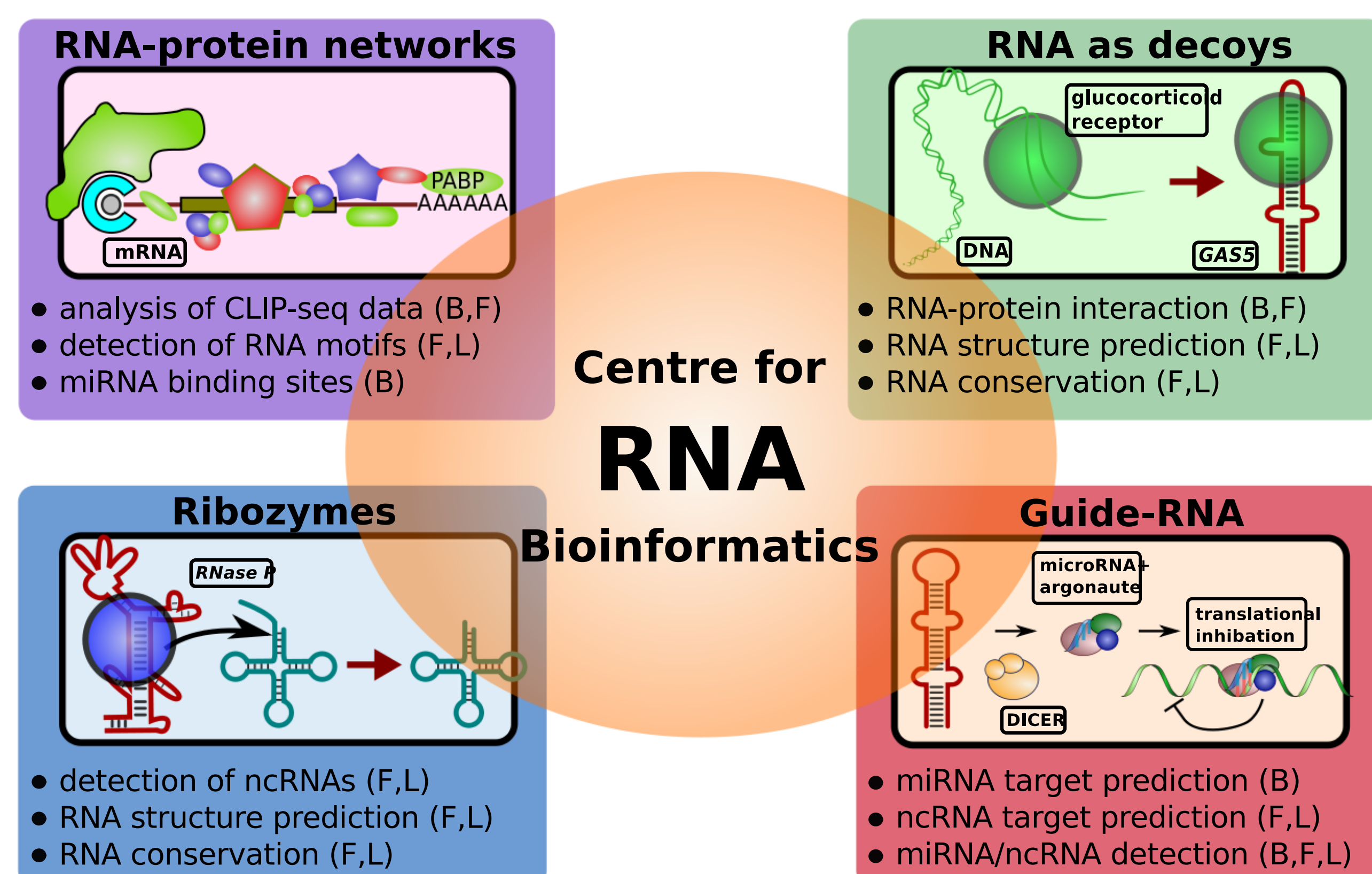
## Community Driven R&amp;D

The RNA bioinformatics center places an emphasis on supporting community driven research and development. Tool wrappers, utilities and documentation are open-hosted on github, participation in development is encouraged and user feedback eagerly sought. We have the goal that the community should drive the growth of our analysis platform. Accordingly, the RBC holds regular workshops both for life scientists wanting to use Galaxy more effectively and developers looking to integrate their own tools.

Join us!  
and together we can rule the galaxy

## RBC's Mission

The recently launched German Network for Bioinformatics Infrastructure aims to provide comprehensive bioinformatics services to users in life sciences research, industry and medicine. Within this network, the RNA Bioinformatics Center (RBC) is responsible for supporting RNA related research in Germany, such as the detection of noncoding RNAs and RNA structure prediction.



## Towards RNA bioinformatics in Galaxy

**Tool/Database Integration:** Important tools for RNA bioinformatics research are integrated in Galaxy such that they can readily be used in workflows. The RBC aims to bridge the gap between RNA research and related fields such as NGS, imaging and proteomics. The integration of databases storing RNA data is eased with the help of examples and support by the RBC.

**Visualizations:** RNA secondary structure can be visualized in many different ways. The RBC integrates existing and develops new visualizations that give intuitive understanding of RNA sec. structures.

**Interactive Environments:** Customized reproducible research in Galaxy can be achieved with the newly integrated interactive environments. Visualizations that are more flexible and interactive are integrated with this framework.

