

de.NBI Quarterly Newsletter

EDITION NOVEMBER 2017

1) EDITORIAL

Dear de.NBI members, dear de.NBI followers,

Good news for de.NBI, the German Network for Bioinformatics Infrastructure: In September, de.NBI has passed successfully the midterm evaluation in Berlin, organized by Project Management Jülich on behalf of the German Federal Ministry of Education and Research (BMBF). The international evaluation panel stated that de.NBI is working successfully from the beginning and that it should be continued. Besides this, two points were emphasized: The integration of de.NBI in the European life science infrastructure ELIXIR was seen as an important achievement, and the additional financing of the de.NBI cloud by BMBF was considered a major and important step in the establishment phase of the network.

This new edition of the de.NBI Quarterly Newsletter provides you with the essentials on the recent developments and the future activities of the network. It also looks back at the 2nd International de.NBI Symposium “The Future Development of Bioinformatics in Germany and Europe” in Bielefeld and the 4th Plenary Meeting of the de.NBI members. The current status of the de.NBI cloud – a fully academic cloud where five cloud centers provide storage and computing resources – is briefly summarized, too. I am also happy to announce that in the course of preparing the midterm evaluation, the consortium has published the de.NBI Handbook and presented “Bioinformatics Solutions for Big Data Analysis in Life Sciences” in a special issue of the Journal of Biotechnology. And last but not least you will find a list at the end of this newsletter showing the training courses and workshops planned for the upcoming months.

I hope you enjoy reading this new edition of the de.NBI newsletter!



Yvonne Pfeiffenschneider

Yvonne Pfeiffenschneider
(Project Management Jülich)

CONTENT:

1) Editorial	1
2) Midterm evaluation of the de.NBI network	2
3) 2 nd International de.NBI symposium	2
4) 4 th de.NBI plenary meeting	3
5) News on the de.NBI cloud	3
6) de.NBI handbook	4
7) de.NBI roll-up displays and polo shirts	4
8) de.NBI Special Issue in Journal of Biotechnology Vol. 261	4
9) PLANT 2030 ACADEMY	5
10) de.NBI late summer school 2017 by RBC	5
11) de.NBI YOUTUBE CHANNEL	6
12) Upcoming events	6

2) MIDTERM EVALUATION OF THE de.NBI NETWORK

Of highest importance for the de.NBI network was its midterm evaluation that took place on 18 and 19 September 2017 in Berlin. The first day was reserved for a detailed presentation of different aspects of the network. During the second day, the reviewer panel discussed the achievements and decided on the future of de.NBI. Altogether, the evaluation panel was satisfied with the development of the network and gave the green light for its continuation until March 2020. All individual de.NBI projects have been confirmed without changing the financial support. The reviewer panel summarized the network as follows:

- de.NBI made a good start, is successful and should be continued.
- The network has been brought into an effective structure and operates in a unified fashion.
- The special interest groups are working well.
- The core network with the partner projects provides an extensive set of software tools and services covering a wide range of bioinformatics areas.
- The panel was impressed by the diversity and extend of training efforts.
- The integration of de.NBI in ELIXIR is an important achievement.
- The additional financing of the de.NBI cloud was a major and important step.

The reviewer panel also proposed a series of modifications for individual special interest groups and service centers which will play a role for the future de.NBI development. The CCU of the de.NBI network will now discuss how the recommendations of the reviewer panel can be implemented.

3) 2ND INTERNATIONAL de.NBI SYMPOSIUM “THE FUTURE DEVELOPMENT OF BIOINFORMATICS IN GERMANY AND EUROPE”

Prospects and challenges for the future development of bioinformatics in Germany and Europe was the theme of the 2nd International de.NBI Symposium, which took place at Bielefeld University from 23 - 25 October 2017. This symposium is part of a series of international conferences organized by de.NBI. The scientific committee assembled an interesting program and invited 23 internationally outstanding speakers

to share their expertise on technical and strategic developments as well as use case studies in the fields of cloud computing, RNA bioinformatics, data resources, data management and plant, human and microbial bioinformatics. The special focus was on the cooperation between the de.NBI and ELIXIR networks. ELIXIR Director Niklas Blomberg (Hinxton, UK) opened the symposium with his lecture on the topic “ELIXIR: European infrastructure for biological information”. The scientific program was completed by 28 talks and a poster session. Renowned experts such as Christoph Steinbeck (Jena, DE), Juan A. Vizcaino (Hinxton, UK), Jörn Kalinowski (Bielefeld, DE), Peter Belmann (Bielefeld, DE), Ola Spjuth (Uppsala, SE), Trinad Chakraborty (Gießen, DE), Markus Göker (Braunschweig, DE), Alex Mitchell (Hinxton, UK), Paul Kersey (Hinxton, UK), Matthew Clark (Norwich, UK), Pascal Falter-Braun (Munich, DE), Susheel Varma (Hinxton, UK), Stein Aerts (Leuven, BE), Jörn Walter (Saarbrücken, DE), Guy Cochrane (Hinxton, UK), Amos Bairoch (Geneva, CH), Sameer Velankar (Hinxton, UK), Ivo Hofacker (Vienna,



AT), Jan Gorodkin (Copenhagen, DK), and Rolf Backofen, (Freiburg, DE) gave keynote presentations. In addition, a distinguished lecture held by Barend Mons (Leiden, NL) focused on “The Internet of FAIR data and services” and as such, addressed a topic of utmost importance.

4) 4TH de.NBI PLENARY MEETING

Following the 2nd International de.NBI Symposium in Bielefeld, the annual plenary meeting took place on 25th October 2017. The de.NBI coordinator Alf Pühler recapitulated the goals achieved in the year 2017. Another key point was the presentation by Pt Jülich reporting on the results of the midterm evaluation and providing recommendations for the upcoming applications for funding until 2020. In general, the reviewer comments were very positive. The network was praised for its good structure and operation in a unified fashion. Furthermore, the core network with the partner projects provides an extensive set of software tools and services covering a wide range of bioinformatics areas. Moreover, the panel was impressed by the diversity and extend of training efforts. However, the experts gave the network also recommendations for further development. Presence and visibility of de.NBI at conferences and in research consortia in life sciences should be improved. There is also a need for indicators such as definition of different classes of services and measurement of the KPIs across all centers, which reflect the successful implementation of the network. Finally, a long-term concept – a roadmap – towards an institutional legal entity and viable financial sustainability has to be developed for the future.

The third part of the plenary meeting introduced two associated de.NBI partners, namely, the Christian-Albrechts-University Kiel and the Friedrich-Schiller-University Jena, to the de.NBI consortium. Marc Höppner and Christoph Steinbeck, respectively, presented short talks on their scientific background the tools and trainings intended within de.NBI. A key focus in Kiel is the provision of practical support for complex but routine bioinformatics projects in the wider field of genomics. The working group for cheminformatics and computational metabolomics at the Friedrich-Schiller-University is dedicated to research into the structure elucidation of natural products, compound identification in the context of metabolomics and algorithm development in cheminformatics.

5) NEWS ON THE de.NBI CLOUD

The de.NBI cloud at five locations is functional since August 2017 and first users are welcome to use this computing facility. The cloud can be accessed per request at <http://www.denbi.de/cloud-access>.

A new Cloud Portal, which represents the central access point for cloud users, will go online soon and can be reached through <https://cloud.denbi.de>. It will allow all users to manage their projects, resource allocations and project members. Further features like starting and stopping of virtual machines are also in progress.

A cloud flyer is available at <http://www.denbi.de/news/462-cloudflyer>.



Pre-configured VMs

- Workflows for sequence analysis, including Illumina and Oxford Nanopore data
- Fully established software packages and workflow systems
- BeeGFS and Demand (BeeOND) as shared file-system between multiple VMs (including Cloudflyer Volumes)

Specialized Hardware

- High memory nodes (up to 4TB RAM) for e.g. assembly of metagenomes and eukaryotic genomes
- GPU nodes for e.g. machine learning
- Field-Programmable Gate Arrays (FPGA) for e.g. high-performance genome alignments

Big Data Analysis

- Local access to public data resources: NCBI GenBank, RefSeq, PRIDE (Proteomics IDentifications), CPTAC (mass spectrometry), ICGC (International Cancer Genome Consortium, etc.)
- Hadoop and Spark: based solutions for big data analysis

Research Environments

- Containerized galaxy environment for reproducible research
- Container technologies (Singularity, Docker)
- Jupyter Notebooks

Large-scale distributed workflows

- Easy setup of cloud based computing clusters (e.g. BiBGrid, Butler)
- Ready-made and proven workflows for e.g. genomics/metagenomics, metabolomics and epigenetics
- TNCORE, Arvados

The de.NBI Cloud administrators are going to present multiple demos and an oral presentation at the e:Med conference, 21-23 Nov 2017 in Göttingen. e:Med is a large-scale BMBF research program on systems medicine and topics as big data and cloud computing are relevant for the conference participants.

6) de.NBI HANDBOOK

Right in time for the midterm review the de.NBI Handbook 'Big Data Exploitation in Life Sciences' has been published. The de.NBI Handbook acknowledges the two and a half years' accomplishments of the network. All partners present their research topic and a general chapter informs about the organization and structure of de.NBI. The handbook is intended as PR material for distribution to the scientific public.

Directly off the printers the de.NBI office sent out a first 100 copies of the new de.NBI Handbook to coordinators of the eight de.NBI service centers. Now, the AO has delivered another 25 issues to all of the 29 remaining locations all over Germany.

The digital PDF version can be picked up here:

<http://www.denbi.de/news/430-de-nbi-handbook-ready-for-download>



7) de.NBI ROLL-UP DISPLAYS AND POLO SHIRTS



de.NBI training coordinator Daniel Wibberg presenting the roll-up and the trainer shirt

The de.NBI Symposium 2017 in Bielefeld proved to be the perfect occasion to unveil both the new de.NBI roll-up displays as well as polo shirts for the de.NBI training staff. Both products are an effort of the SIG 1 and de.NBI Office to increase the outreach and visibility of the network.

The roll-up displays are lightweight and very portable. When packed up, they require less space than the standard poster-roll most of you are familiar with. So they can be easily carried to any conference or training event. Each service center has received a display to emphasize their affiliation with the network.

The de.NBI Office was also pleased to receive very positive feedback for the stitched polo shirts. These were distributed at the beginning of the Plenary Meeting and they, too, were well appreciated by the training personnel: Of the 200 pieces that came in both women and unisex cut only 45 remained in Bielefeld. If you missed the opportunity to pick up a shirt, you can contact the de.NBI Office.

8) de.NBI SPECIAL ISSUE IN JOURNAL OF BIOTECHNOLOGY VOL. 261

As already announced in the last Quarterly Newsletter, the network produced a Special Issue describing in 27 papers, most of which are review articles, the scientific background of de.NBI tools. The Special Issue is entitled 'Bioinformatics Solutions for Big Data Analysis in Life Sciences presented by the German Network for Bioinformatics Infrastructure'.

The articles will assist researchers in the life science area in selecting the appropriate tools and services to analyze huge experimental data sets. The tool descriptions are intended to support applicants in understanding the structure of the tools and services offered by the network, and also help to properly interpret the results obtained following their analyses. According to the different focuses of the de.NBI service centers, the articles of the special issue deal with (1.) Bioinformatics analysis of data produced for microorgan-



isms, plants and humans, (2.) Bioinformatics analysis of data produced by RNA sequencing and proteomics, and by integrative bioinformatics, and (3.) The role of databases and data management in bioinformatics.

The special issue was published as Volume 261 in the Journal of Biotechnology and is now available 'open access' via ScienceDirect (<http://www.sciencedirect.com/science/journal/01681656/261?sdc=2>).

9) PLANT 2030 ACADEMY



PLANT 2030 ACADEMY
Professional and personal development of doctoral students and early stage PostDocs involved in the BMBF funding initiative *Plant Breeding Research for the Bioeconomy*.

Apply now for the Summer School 2017:
BBB – Basic Bioinformatics training for Biologists
September 25 – 27, 2017 - IPK Gatersleben

- hands-on introduction to useful bioinformatic tools
- computer-based user training with interspersed lectures
- for biologists with little or no previous knowledge
- processing of own small and large datasets
- R and Linux based methods

Application
Deadline for application: May 31st
Selection of candidates: June 15th
Participants will be selected based on a short application and are requested to self-study four online courses before the training.

More information about the summer school and the application process
www.plant2030.de/academy

In collaboration with:
German Crop Bioinformatics Network (SCBN - de.NBI)

Funded by:
Federal Ministry of Education and Research



During the PLANT 2030 Summer School, 25 young plant scientists gained insights into bioinformatics and statistics in plant sciences. The Summer School was organized in collaboration with the German Network for Bioinformatics Infrastructure (de.NBI) and took place in Gatersleben, 25-27 September 2017.

The course provided hands-on introduction to useful bioinformatics tools for biologists with little or no previous knowledge. The training enabled them to process their own small and large datasets using R and Linux based methods and was entirely computer-based with interspersed lectures: Introduction into Linux and R (Andrea Bräutigam); Sequence analysis using Blast and simple phylogenies (Uwe Scholz); Data processing with Linux tools (Martin Mascher); Introduction to databases (Matthias Lange); Statistics and figures (Yusheng Zhao).

10) de.NBI LATE SUMMER SCHOOL 2017 BY RBC



The RNA Bioinformatics Center (RBC) organized the third de.NBI Late Summer School on “**Computational genomics and RNA biology**” 25 - 29 September 2017 at the Max Delbrück Center for Molecular Medicine in Berlin. The RBC unit of de.NBI is specialized in RNA bioinformatics and is well-known for

its tools for transcriptome analysis, RNA structure analysis, prediction of ncRNA targets, definition and classification of RNA transcripts and tools for the analysis of protein-RNA interactions.

During the summer school, 20 participants from Germany and other European countries were instructed in the usage of Galaxy-based RNA analysis tools and gained understanding of the possibilities and limitations of RNA analyses. The course covered different interesting lectures and hands-on sessions by de.NBI speakers and renowned European experts in the RNA field, e. g. Mark Robinson (University of Zurich), Irmtraud Meyer (Max Delbrück Center Berlin), Jernej Ule (University College London), Rolf Backofen (University of Freiburg), Uwe Ohler and Nikolaus Rajewsky (Max Delbrück Center Berlin) and Peter Stadler (Leipzig University).

de.NBI will continue its successful training program with the late winter school on Metabolomics in March 2018.

11) de.NBI YOUTUBE CHANNEL



For the online-provision of training films, a de.NBI YouTube channel has been launched in September 2017 at

<https://www.youtube.com/channel/UCgZ5PU3CyD4c8yxxzJi130g>

In a first effort eight videos have been added to the channel. Six films feature the recordings of the keynote lectures at the de.NBI Cloud Summer School 2017 in Gießen. Two teaching videos introduce into the functions of SABIO-RK, the biochemical reaction kinetics database curated by de.NBI-SysBio at HITS Heidelberg. <http://sabio.h-its.org/>

de.NBI films currently available on YouTube channel:

- Cloud for Life Sciences by Francois Jeanmougin
- The first steps of EBI-EMBL in the Cloud World by Dario Vianello
- Biosphere – French Infrastructure for Multi Cloud Deployment by Christophe Blanchet
- Cloud & Storage – Best Friends or forced Marriage by Christian Keil
- Delivering ICT for biomedical research by Tommi Nyrönen
- Large-scale Cancer Genomics Analysis in the Cloud by Sergei Iakhnin
- SABIO RK search for models
- SABIO RK search options

Further training videos are welcome to be included into the library.

Besides this, the **Online training & Media library** (<http://www.denbi.de/media-library>) is constantly growing and already comprises 33 units of training material.

12) UPCOMING EVENTS

The calendar lists a number of events scheduled for the next months. All offers are accessible via the de.NBI homepage (<http://www.denbi.de/>). The de.NBI training program is continuously updated. Currently 7 courses are in the pipeline for the remainder of 2017 and already 4 are scheduled until beginning of March 2018.

MAJOR DE.NBI EVENTS — SAVE THE DATES

➤ **de.NBI Day** on ELIXIR Use Cases at the **12th CeBiTec Symposium “Big Data in Medicine and Biotechnology”**, **19-21 March 2018 in Bielefeld**. The conference will take place at the Center for Interdisciplinary Research (ZiF) at Bielefeld University.



OVERVIEW OF UPCOMING de.NBI EVENTS

Date	Event	City	Organizer
➤ 22-23 Nov 2017	FAIRDOM - LiSyM - de.NBI Data Structuring Course	Hünfeld	de.NBI-SysBio
➤ 22-24 Nov 2017	de.NBI - CeBiTec Nanopore Best Practice Workshop	Bielefeld	BiGi, GCBN, CAU
➤ 27-29 Nov 2017	3rd de.NBI Bioimage Analysis Workshop	Heidelberg	HD-HuB
➤ 28 Nov 2017	OpenStack Cloud Hands-On	Gießen	BiGi
➤ 30 Nov-01 Dec 2017	DNA Methylation: Design to Discovery	Saarbrücken	HD-HuB
➤ 03-16 Dec 2017	Hackathon – Fiji, ImageJ, and KNIME development 2017	Dresden	CIBI, DAIS
➤ 07 Dec 2017	Tool-Training for Proteomics	Bochum	BioInfra.Prot
➤ 08-12 Jan 2018	European Galaxy Administrator Workshop 2018	Oslo	RBC
➤ 10 Jan 2018	13. CCU-Meeting	Dortmund	CAU, BioInfra.Prot
➤ 09-12 Jan 2018	Developer training: Third-party tool integration and method development in OpenMS - EuBIC 2018 developer's meeting	Ghent	CIBI
➤ 26 Feb-02 Mar 2018	5th Galaxy high-throughput sequencing (HTS) data analysis workshop	Freiburg	RBC
➤ 05 Mar 2018	Eukaryote genome annotation	Kiel	Assoc. Partner Kiel
➤ 19-21 Mar 2018	de.NBI day at 12. CeBiTec Symposium "Big Data in Medicine and Biotechnology"	Bielefeld	CAU
➤ 03-07 Sep 2018	de.NBI Summer School 2018	Braunschweig	BioData, GCBN

IMPRESSUM:

Responsible for contents:

A. Pühler
A. Tauch
T. Dammann-Kalinowski

de.NBI - German Network for Bioinformatics Infrastructure
c/o Center for Biotechnology (CeBiTec)
Bielefeld University
33594 Bielefeld
Germany
Phone: +49-(0)521-106-8750
Fax: +49-(0)521-106-89046
email: puehler@cebitec.uni-bielefeld.de
web: <http://www.denbi.de>
email: contact@denbi.de
 twitter: #denbi, @denbiOffice

de.NBI Quarterly Newsletter is an exclusive service of de.NBI – German Network for Bioinformatics Infrastructure for members, partners and interested public.
For questions and remarks please address to contact@denbi.de
The de.NBI is supported by BMBF grants FKZ 031A532-031A540

SUBSCRIPTION

If you are interested in receiving regular updates on de.NBI – German Network of Bioinformatics Infrastructure, please subscribe to the de.NBI Quarterly Newsletter at: <http://goo.gl/forms/RDHwQiPR2>. To unsubscribe from the de.NBI Quarterly Newsletter, please use the same link.
Subscription/unsubscription is also available at: <http://www.denbi.de>