

NFDI4Microbiota

First Community Workshop (2019-11-21)

Report

The first NFDI4Microbiota Community Workshop took place on November 21st, 2019 in Cologne. Members of the German microbial research community were informed about the NFDI4Microbiota consortium, discussed potential contributions and gave feedback about the weak points of the consortium, the missing parts of the consortium and the potential ways to involve the community.

Practical information

- **Date and time:** 2019-11-21 11:00-16:00
- **Place:** Forum (Medizinisches Dekanat), Joseph-Stelzmann-Str. 20, 50935 Cologne
- **Number of attendees:** 47
- **Number of institutions:** 36

Request to become a co-applicant or a partner

The NFDI4Microbiota consortium will submit its proposal in October 2020. As discussed during the 1st Community Workshop (2019-11-21), institutions that wish to become co-applicants or partners are now welcome to submit a request. The number of co-applicants is limited, and they will be asked for a strong commitment. Selected co-applicants will receive NFDI funds. Partners can contribute with expertise or commit to support/use NFDI4Microbiota. In practice, candidates should submit a two- to three-page request (link to the forms: <https://nfdi4microbiota.de/index.php/participate/>) by December 21st, 2019. Requests can be sent to contact@nfdi4microbiota.de, and will be evaluated by January 31st, 2020.

Introduction of NFDI

Nina Winter, Initiative for Research Data Management (fdm.nrw)

Slides on Zenodo: <https://zenodo.org/record/3552691>

Introduction of NFDI4Microbiota

Konrad Förstner, ZB MED – Information Centre for Life Sciences & TH Köln – University of Applied Sciences

Slides on Zenodo: <https://zenodo.org/record/3552257>

Unfiltered feedback from the World Café

What are the weak points?

Moderated by Thomas Gübitz, ZB MED – Information Centre for Life Sciences

Weak points of NFDI4Microbiota can be divided into (1) clarifications needed, (2) suggestions and (3) risks.

- (1) Several points need to be clarified: the meaning of ‘infrastructure’, the type of data concerned, the vision of the consortium, the unique selling point of the consortium, the requirements of the community (e.g., the requirements of depositing data), the handling of data security issues (i.e. personal data), the link of the consortium with other initiatives, the role of de.NBI (German Network for Bioinformatics Infrastructure), the community management, the implementation of ‘access’ and the outcomes of the consortium.
- (2) A few suggestions were made: giving advice about experimental design, defining and including use cases, making data FAIR (Findable, Accessible, Interoperable and Reusable), creating the analogue of a German Open Science Network, allowing for new standards while taking care of long term preservation and creating a workflow to deposit data into repositories.
- (3) A couple of risks should be taken into account: the risk of dual-use and the risk of additional needs in terms of hardware, computational resources or storage.

What are the missing parts?

Moderated by Boyke Bunk, Leibniz Institute DSMZ – German Collection of Microorganisms and Cell Cultures GmbH and Konrad Förstner

Missing parts can be divided into (1) scientific, (2) database and software and (3) data management aspects.

- (1) From a scientific standpoint cultivation and characterization of single isolates is still seen to be an important source of knowledge tightly connected with sophisticated biobanking of the collected resources. Characterization of those isolates require for standardized genome analysis. Additionally, “next-generation taxonomy”, especially with respect to new methods and uncultivated (e.g. Candidatus) taxa have to be driven by the consortium. Artificial communities, e.g. the Mouse Microbiome (Prof. Thomas Clavel, miBC collection provided by DSMZ) are providing a robust basis for interaction studies, not only *in silico*, but also *in vivo*, by mixture and application of distinct sets of isolated bacteria (e.g. Oligo-MM¹²). Microbiota should not only include bacteria, but also fungi, phages, viruses and possibly even genetically modified microbiomes.
- (2) For single isolates, but also more complex communities further omics, such as proteome, metabolome and even interactome studies are conducted. Spatial and temporal data has to be stored even in more complex Multi-Omics settings. Sometimes, unusual data (e.g. lung microbiome) is recorded. Often controls, e.g. the microbiome of a “healthy individual” are missing and should be collected in a central database. With respect to recommendation of certain software and analysis pipelines the consortium should search for the possibility of conducting benchmarks similarly to the CAMI challenge (Alice McHardy, HZI) or try to conduct ring trials, e.g. for RNA-seq experiments. For recommended software tools resource analyses with respect to CPU and RAM usage should be considered. With this respect the consortiums website could be organized as a Wiki in order to serve as a knowledgebase or a “matchmaking” platform for users searching for experts in their field and scientific advice.
- (3) For the data stored within the NFDI4Microbiota a robust data management is needed. The hardware architecture for data storage is still undescribed. If data is stored within different locations those have to be interlinked. Metadata as seen as most essential prerequisite for any data integration has to follow current standards, which ideally have to be enforced not only by the consortium itself, but also in the second step by journals, editors and funding agencies. Present standards should be applied or extended. Difficulties are seen with respect to data of surveys and privacy issues related to host or patient data. A distinction for application in diagnostics has to be made.

How can we involve the community?

Moderated by Justine Vandendorpe, ZB MED – Information Centre for Life Sciences

Community management can be divided into (1) getting to know the community, (2) informing the community, (3) training the community and (4) making sure the community members respect NFDI4Microbiota standards.

- (1) It is important to get to know the community (e.g., through a survey) to make sure that the consortium has an added value (maybe not everything needs to be started from scratch), and also to recruit people. It would also be good to make the community members choose for something (e.g., through a form) to really involve them.
- (2) It is important to inform the community about what is available/possible. This can be done by having a representative/task force in relevant institutions, by organizing conferences and community workshops, by having a comprehensive website (including blog posts and a newsletter), by going through journals/pre-print servers (e.g., bioRxiv), social media, specialized websites/forums and alerts. Additionally, guidelines could be set for research groups that wish to join the consortium in the future. Regarding community workshops, it is a good idea to organize them along with well-known conferences (e.g., German Conference on Bioinformatics (GCB)). Also, it would be a good idea to share a list of participants before the workshop, and to share it again after together with a report. It is important to get feedback on what is done (e.g., on the newsletter) to be sure that it is useful.
- (3) Guiding the community (both students and PIs) can be done by offering trainings (organized by the people who need the training, or tailored to participants' data), piecing together a tutorial (also tailored to participants' data) or organizing debates about new concepts (e.g., species concepts). It would also be good to take care of the international scope, for instance by involving The Carpentries.
- (4) To make sure the community members respect NFDI4Microbiota standards, we can both explain why it is important (e.g., through a webinar), and enforce it. The respect of the standards could be enforced by the sequencing centres and for all DFG-funded projects (the respect of standards could be marketed within a Data Management Plan as Data Management is a requirement of the DFG). The respect of the standards could also be a condition to use the tools developed within the NFDI4Microbiota consortium.

Community management is important and time consuming, two reasons why getting funds for a NFDI4Microbiota community manager might be a good idea.

Suggested resource: https://link.springer.com/chapter/10.1007/978-1-4612-5427-0_6