

# NFDI4Microbiota

## National Research Data Infrastructure for Microbiota Research

3rd NFDI4Microbiota Community Workshop, 2020-06-22 (online)

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# Plan for this session

Introduction to NFDI

Introduction to NFDI4Microbiota

Questionnaire

Feedback & questions

# RFII

- Council for Scientific Information Infrastructure (Rat für Informationsinfrastrukturen, RfII)
- Implemented in 2014 by the Joint Science Conference (Gemeinsame Wissenschaftskonferenz, GWK)
- A council with advisory function: Recommendation on systemic level, no implementation on operational level

## ENHANCING RESEARCH DATA MANAGEMENT: PERFORMANCE THROUGH DIVERSITY

Recommendations regarding structures, processes, and financing  
for research data management in Germany



# Recommendations of the RfII

- Building of a National Research Data Infrastructure (NFDI)
- Establishment of a Germany-wide network of competencies (driven by the scientific communities)
- Change of funding policies towards sustainable structures
- Development of new job profiles (Data Librarian, Data Scientist)
- Investment in „minds“ (Staff for development and operation of RDM services)
- Fundamental change of scientific culture
- Initiation of a transition process within the next 15 to 20 years

# Resolution of GWK

The joint science conference (GWK) decided to fund a National Research Data Infrastructure. NFDI will be funded with up to 90 Mio Euro per year until 2028, whereof 90% are provided by the federal German government and 10% by the German states. The program starts on 1st of January 2019. (GWK, 16.11.2018)

# Tasks of NFDI consortia

- Define common standards
- Develop new methods to evaluate data
- Enable subsequent use of data
- Identify demands for RDM
- Community building in research domain
- Form governance structures

# Selection and Evaluation

- Performed by the DFG
- Strictly science-driven process
- Final decision by the Joint Science Conference (GWK)
- Expert Committee, comprising scientists and members of scientific infrastructure facilities, accompany the selection process

# Funding

- Three application rounds: 2019, 2020 and 2021
- Funding of up to 30 consortia in total
- About 70 Mio. Euro project costs per year (final funding of 85 Mio., including 22% overhead)
- Between 2 and 5 Mio. Euro funding per consortium, including overhead costs
- Applications for funding period of five years
- Only applications with topical or methodical focus

# Funding Criteria

## 1. Readiness and Relevance of the Consortium

- Embedding of the consortium in the community of interest
- Structural significance to the NFDI and the academic research system
- Capacity to coordinate activities internationally

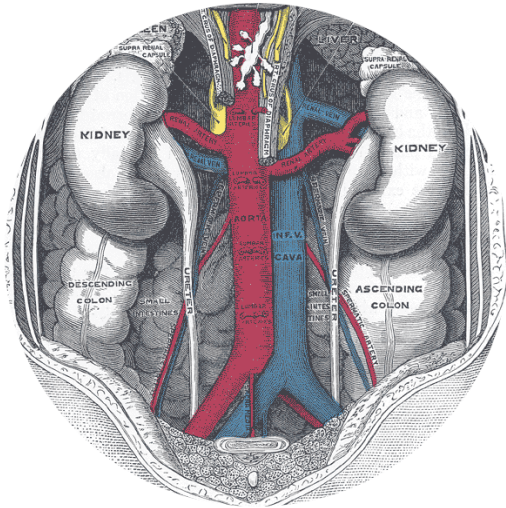
## 2. Research Data Management Strategy

- Scientific relevance and quality of existing and planned measures
- Strategy for data use, access, findability and reusability
- Added value achieved through the development of cross-disciplinary metadata standards
- Creation of scientifically reliable and durable services in the consortium

## 3. Consortium Structure and Viability

- Efficiency and longevity
- Operating model (including moderate user fees where applicable)

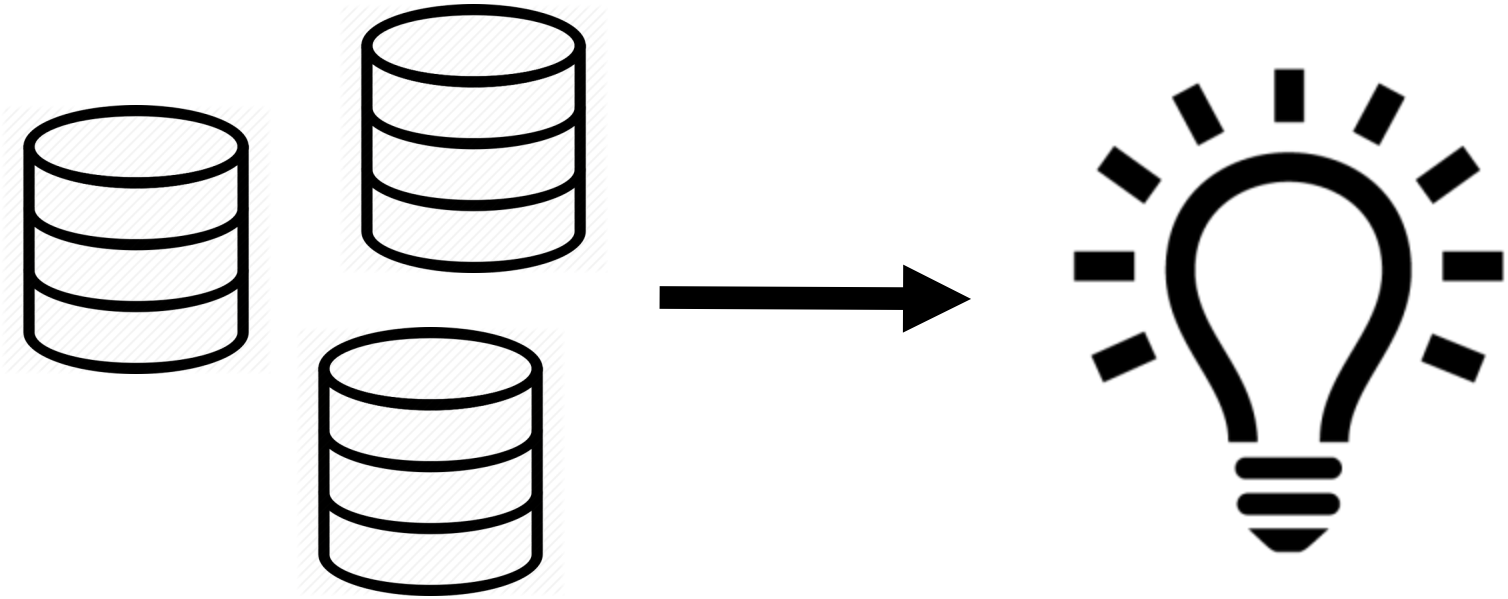
# NFDI4Microbiota











# Common challenges

- Bioinformatical expertise required
- Computational infrastructure required
- Lack of metadata standards
- Reuse of data limited

# Vision

Researchers with different scientific questions can easily translate omics data into a deep understanding of microbial species and their interactions.

# Mission

NFDI4Microbiota is the central hub and a one-stop shop for the microbiology community for providing access to data, analysis services, data/metadata standards and training in Germany.

# Community

Researchers working on omics data of bacterial, archaeal, fungal, viral and/or protozoal samples.

# We want to provide ...

## Bioinformatics Tools / Databases

(Multi-omics analyses, interaction modeling, semantical enrichment ...)

## Computational Infrastructure

(Workflows engines with web interfaces on top of VMs)

## Standards

(Standards regarding sampling, processing and metadata, FAIR principles)

## Training

(Concepts, good practices and computational skills)

# The consortium



Thomas Clavel



Jens Stoye  
Alexander Sczyrba



Jörg Overmann



Peer Bork



Alexander Goesmann



Alice McHardy



Manja Marz



Anke Becher

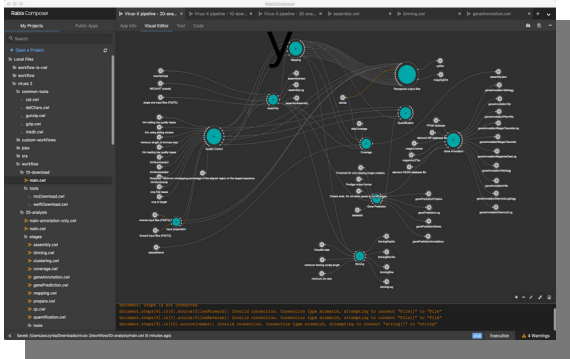


Ulisses Nunes da Rocha



Konrad Förstner





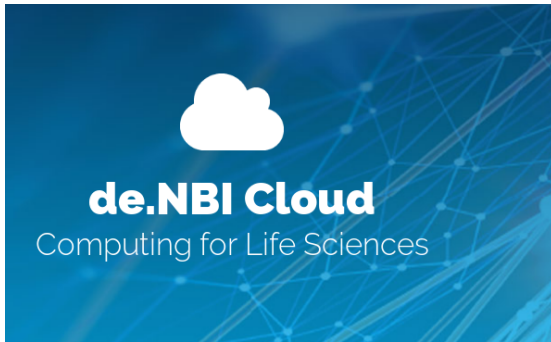
Workflow engines



Standard development

The BacDive logo is a stylized starburst or flower-like shape composed of multiple colored segments (green, blue, red, black). Below the logo, the text 'The Bacterial Diversity Metadatabase' is displayed. A search bar contains the text 'species name, culture col. no., sequence no.' and a magnifying glass icon. Below the search bar, it says 'for a comprehensive search use our [Advanced Search](#)'. At the bottom, it says 'Member of:' followed by the logos for de.NBI and elixir.

Databases



Cloud infrastructure

The LIVIVO search portal interface shows the 'LIVIVO The Search Portal for Life Sciences' logo at the top. Below the logo is a search bar with the text 'Enter your search terms here' and a magnifying glass icon. To the right of the search bar are icons for 'Advanced search', a mail icon, and a question mark icon. Below the search bar, there is a list of search categories including 'Animal Protection', 'Biodiversity', 'Brain Cancer', 'Cardiogenics', 'Climate Change', 'Colony Collapse Disorder', 'Crispr Cas', 'Dementia', 'Ecosystem Services', 'Food Allergy', 'Glycobiology', 'Hospital Hygiene', 'HPV Vaccination', 'Influenza', 'Interleukin-23', 'Jumping Gene', 'Malaria', 'Microplastics', 'Nanomedicine', 'Nuclear Disaster', 'Nanogenomics', 'Oncogenes', 'Organ Donation Organs', 'Painkillers', 'Parasites', 'Public Health', 'Tissue Impacts', 'Viral Genes', 'Zika', 'Zoonosis', and 'Zoster'. At the bottom, there is a 'ZB MED' logo.

Discovery Systems

# Supporting research societies



Vereinigung für  
Allgemeine und  
Angewandte  
Mikrobiologie



# Participants

- Research institutes, services units
- Potentially receive flexible NFDI funds
- Can contribute by
  - Suggesting measures
  - Designing standards
  - Provide data and software
  - Use and promote NFDI4Microbiota within their local research community
  - Join the User Council and/or the Scientific Advisory Board
  - Give general feedback

# Participants



Universitätsklinikum  
Erlangen



**GFZ**  
Helmholtz Centre  
**POTS DAM**

GOETHE  
UNIVERSITÄT  
FRANKFURT AM MAIN



ROBERT KOCH INSTITUT



**UKM**  
Universitätsklinikum  
Münster



Julius-Maximilians-  
**UNIVERSITÄT  
WÜRZBURG**

**IGB**  
Leibniz-Institute of  
Freshwater Ecology  
and Inland Fisheries



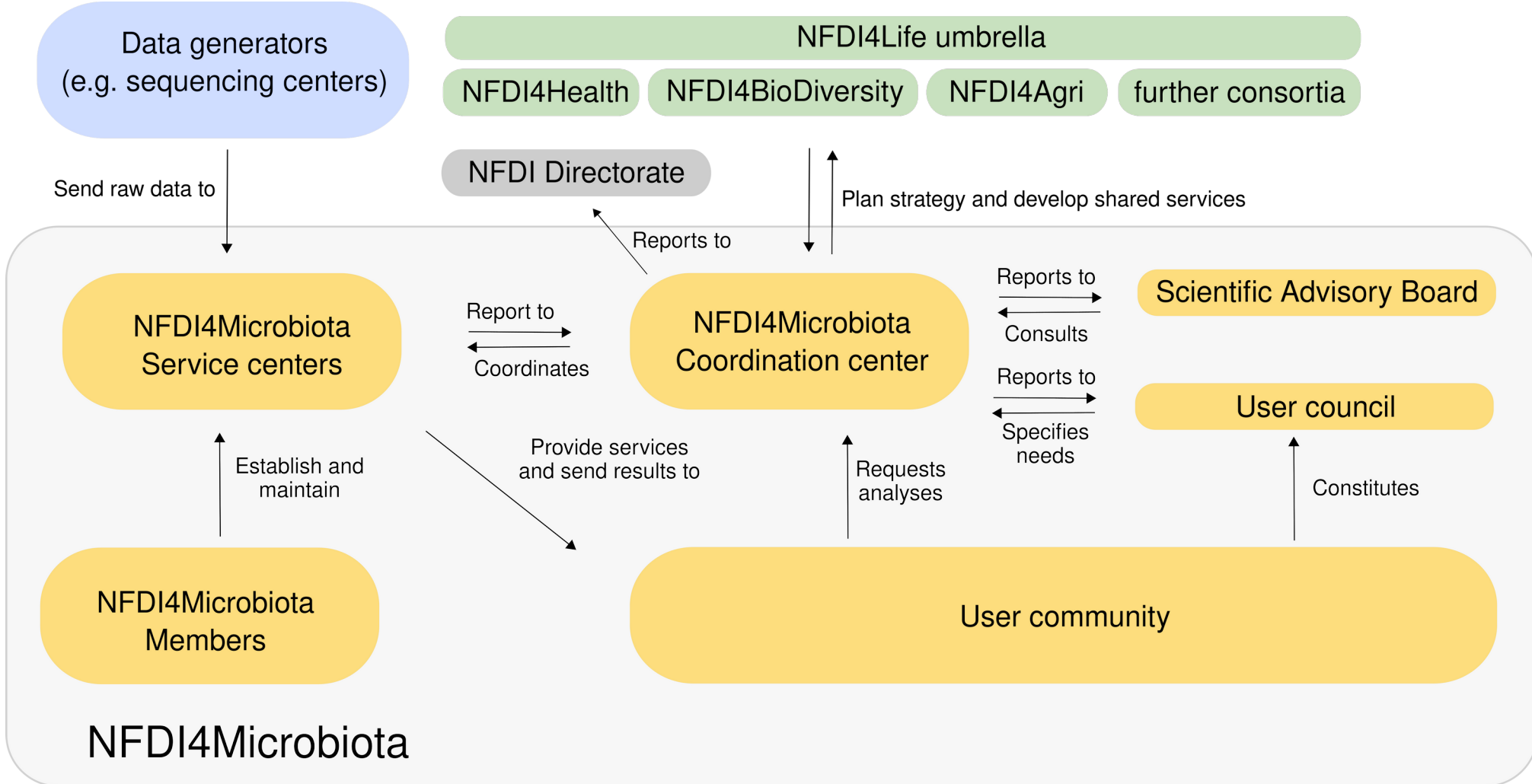
**TUM**



Leibniz Institute on Aging -  
Fritz Lipmann Institute

NFDI4  
Microbiota

# Organization, governance and interactions



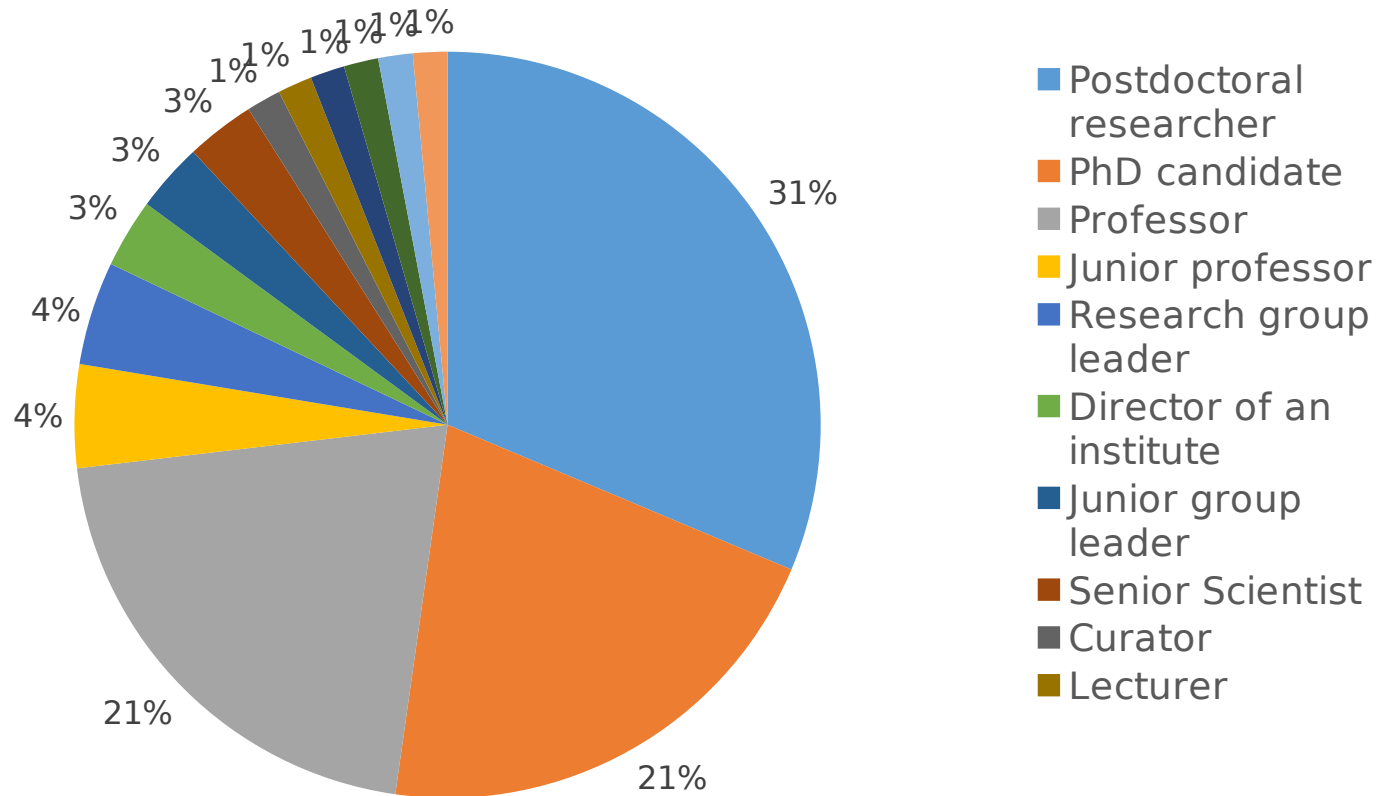
# Interacting consortia

- NFDI4Health
- NFDI4BioDiversity
- NFDI4Agri
- GHGA
- DataPLANT
- NFDI4AIRR
- NFDI4RSE

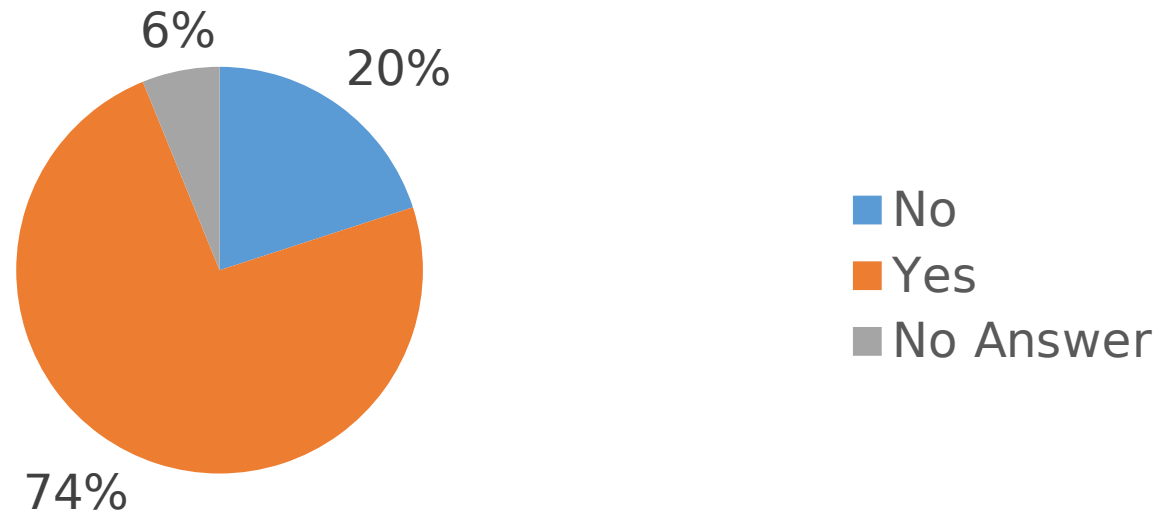
# Questionnaire results



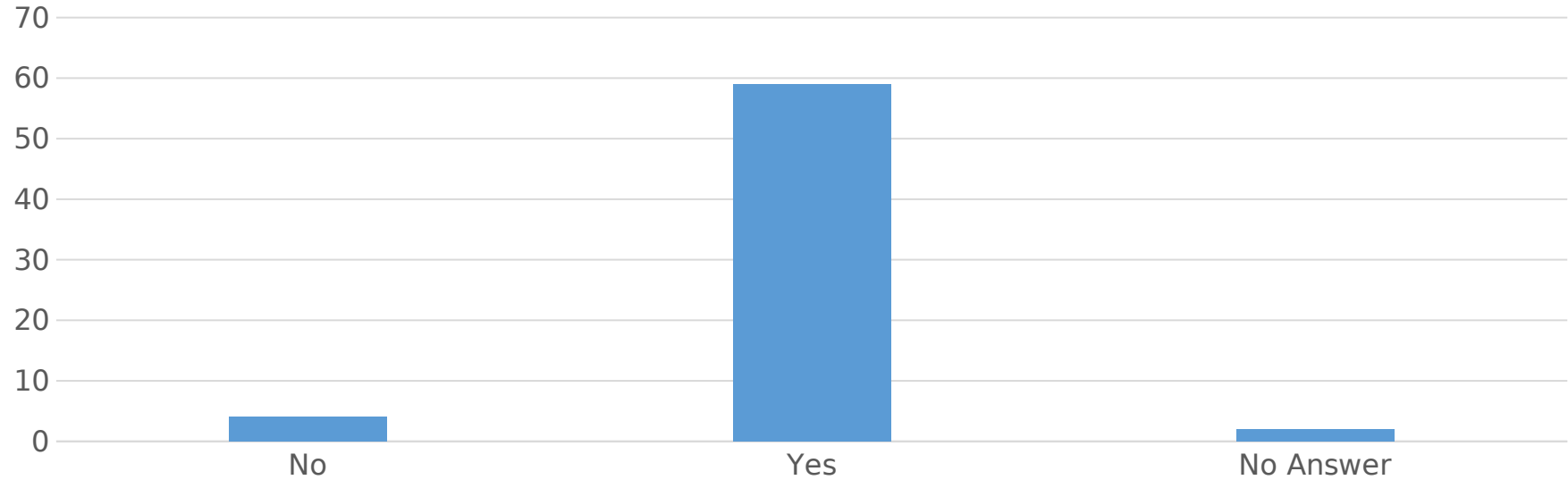
# What is your career stage?



Would you find it convenient to have an automated bioinformatics analysis pipeline flowing from sequencing centers to data repositories?



# Do you think more integration of public data into your research would be beneficial?



# Further results

Broad spectrum of omics technologies used

High interest in Electronic Lab Notebooks (ELNs)

Publication mostly classic in journal, not yet  
data and code

High interest in data  
annotation/reviewing platform

# Many thanks for your attention

Contact: [contact@nfdi4microbiota.de](mailto:contact@nfdi4microbiota.de)

<https://nfdi4microbiota.de>

@nfdi4microbiota

What are your questions?

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