QUEST Center
for Responsible Research
who we are and how we support responsible research

Vision, Mission, Organisation

Daniel Strech, MD, PhD, Deputy Director of the BIH QUEST Center

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The BIH QUEST Center develops and implements new approaches to ensure the trustworthiness, usefulness, and ethics of biomedical research.
Improving the trustworthiness, usefulness, and ethics of biomedical research through an innovative and comprehensive institutional initiative

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2 Charité - Universitätsmedizin Berlin, Berlin, Germany
Meta-Research and Bioethics

Processes (context specific and fair, examples below)
- Randomization
- Blinding
- Power
- Replication/Confirmation
- Pre-registration
- Timely reporting
- Open data
- Open access
- Patient-relevant outcomes
- Patient engagement
- Risk-benefit analysis
- Informed Consent
- Data protection
- Replacement
- Reduction
- Refinement

Trustworthy
- robust and rigorous

Useful
- for scientists
- for society

Ethical
- for humans
- for animals

Responsible
- Advancement of knowledge
- for society

Principles
- Risk-benefit analysis
- Informed Consent
- Data protection

for scientists

Competence/Capability
- Electronic Labnotebook
- Support in open data and patient engagement

Motivation
- Awards/Incentives
- Support in hiring and performance

Opportunity
- oriented funding

Mission

Vision
Meta-Research and Bioethics

**Mission**

**Principles**
- **Responsible**: Advancement of knowledge
  - Trustworthy: robust and rigorous
  - Useful: for scientists transparent, for society relevant
  - Ethical: for humans, for animals

**Processes (context specific and fair, examples below)**
- Randomization
- Blinding
- Power
- Replication/Confirmation
- Preregistration
- Timely reporting
- Open data
- Open access
- Patient-relevant outcomes, Patient engagement
- Risk-benefit analysis, Informed Consent, Data protection
- Replacement Reduction Refinement

**Meta-Research and Bioethics**

**QUEST institutional services (context specific and fair, examples below)**
- Competence/Capability
  - Motivation
  - Opportunity
  - Awards/Incentives, Support in hiring and performance oriented funding
  - Electronic Labnotebook, Support in open data and patient engagement
QUEST Approaches

- **Quality assurance**: promote compliance of preclinical and clinical research with standards and guidelines on design, conduct, analysis and reporting.

- **Education**: develop and implement training and teaching resources on experimental and study design, methods to reduce bias, new modes of publishing, open science, etc.

- **Open Science**: improve the accessibility and transparency of BIH research and its results through Open access and Open data.

- **Rewards and incentives**: develop, implement, and assess the impact of novel indicators incentives and metrics for rewarding researchers, appropriating funding and awarding academic degrees.
**QUEST Approaches**

- **Stakeholder engagement**: develop, support, and evaluate patient and stakeholder engagement activities throughout the entire process of biomedical research.

- **Meta-Research**: identify opportunities for improving research practice and obtain evidence for the impact of its activities through ‘research on research’.

- **Bioethics of translation**: develop scientifically sound and practice-oriented recommendations on ethical requirements for research with humans, animals and sensitive data.

- **Think tank**: act as advisors to stakeholders in biomedicine from funders to politics.
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Research Groups and Project Teams
Berlin and beyond ...
QUEST Center
for Responsible Research
who we are and how we support responsible research

Activities and Services

Evgeny Bobrov, Project Leader Open Data & Research Data Management
at the BIH QUEST Center

10.5.2022
QUEST Structure

QUEST-Center
Founding Director: Prof. Ulrich Dirnagl

Research
- Transforming biomedical research
- Meta-research

Office
- Bioethics of translation
- Visiting fellows

Infrastructures & Services
- Projects
Main foci of QUEST

**Education and Training**
We develop and implement training and teaching resources on experimental and study design, methods to reduce bias, new modes of publishing, the digital footprint of academics, as well as open science.

**Incentives and reward systems**
We develop new incentive systems in research, e.g., by selecting appropriate novel indicators and metrics for the assessment of research performance of researchers and institutions.

**Quality assurance**
We promote compliance of preclinical as well as clinical research with standards and guidelines on design, conduct, analysis and reporting.

**Open Science**
We increase the accessibility and transparency of DH research through Open Data and promote research data management.

**Patient & Stakeholder Engagement**
We develop, support and evaluate Patient and Stakeholder Engagement activities throughout the entire process of biomedical research.

**Meta Research**
We identify opportunities for improving research practice and obtain evidence for the impact of its activities through ‘research on research’.
Quality assurance – *PREMIER QM*

The clickable PREMIER "House"

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<th>Policy</th>
<th>Planning of Experiments</th>
<th>Conducting Experiments</th>
<th>Evaluation</th>
<th>Reporting</th>
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<tr>
<td>Ethical Principles (GWP)· Mission · Aims · Visions</td>
<td>Hypothesis, Sample Size Calculation, Pre-registration...</td>
<td>SOPs, Generation of Data, Strategies for Reduction of Bias...</td>
<td>Statistics, Data-Analysis...</td>
<td>Publication, Repositories...</td>
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<th>Communication and Dissemination</th>
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<td>Meetings, Wiki, QM AGs, Education, Methods, Concepts</td>
<td>Legal Requirements / Guidelines GSP, 3Rs</td>
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<tr>
<th>Education / Training</th>
<th>Error Management</th>
<th>Laboratory Organization</th>
<th>Quality Assurance</th>
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<td>Introductions, Chemicals, Samples, Equipment...</td>
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<td>Audits, Evaluation, Key Performance Indicators, Accompanying Research...</td>
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Laboratory Critical Incidence Reporting (LabCIRS)

Development of a mature error culture...

Electronic Laboratory Notebook (eLN)

• Onboarding
• Training
• Support
• > 2000 registered users at Charité/MDC
• Evaluation
Education

OVERVIEW ON REPEATING COURSE PROGRAM

- Advanced Reproducible Research with R
- Fortbildungsinitiative Fakultät: Statistik
- Fortbildungsinitiative Fakultät: Qualitätssicherung
- Introduction to Reproducible Research with R
- Introduction to electronic labbooks
- Open Data Workshop
- Presentation of QUEST activities to research groups
- QUEST criteria information
- Statistical Literacy for Everyday Clinical Practice
- PhD course on best practice in preclinical animal research models to improve translation from bench to bedside.

Oxford | Berlin Summer School on Open Research 2020

WILL be conducted ONLINE

Background

Transparency and reproducibility of research methods and results are important hallmarks of high-quality research in areas from biomedical to social and physical sciences. In the last five years, many novel, open web-based tools...
Charité Responsible Metrics Dashboard

This dashboard gives an overview of several metrics of open and responsible research at the Charité. For more detailed information on the methods used to calculate those metrics, see the dataset underlying the metrics, or for resources to improve your own research practices, click one of the following buttons.

This dashboard is a pilot that is still under development. More metrics will be added in the future.

Open Science

- **55%** of publications are Open Access in 2019
- **7%** of publications mention sharing of data in 2019
- **2%** of publications mention sharing of code in 2019
- **132** preprints published in 2019
Charité Responsible Metrics Dashboard – FAIR data

Data Reusability (FAIR data)

Good data management is a key factor in generating, reproducing, and reusing scientific knowledge. The FAIR principles provide guidance to increase the findability, accessibility, interoperability, and reusability of research data objects. As a result of the increase in volume, complexity, and creation speed of data the FAIR principles emphasize the machine-actionability of data reuse.

The FAIR data metrics in this dashboard indicate how well research data objects shared by Charité researchers and the repositories used to deposit them conform with the FAIR principles.

It is important that the FAIR metrics are not to be understood as evaluations, but rather as assistance. This is true at the repository level and even more so at the publication level. Individual researchers have limited influence on the FAIRness of research data objects, which is primarily determined by the data repositories.

FAIR assessment

Select repository type or repository

FAIR assessment by F-Ur

27%

The average FAIR score of research data objects in all repositories.

Dr. Jan Taubitz
Open Science: QUEST Toolbox - Fiddle
Where and how to publish null / neutral results


http://s-quest.bihealth.org/fiddle/
Open Data LOM (performance-oriented funding)

Semi-automated detection of articles with Open Data (article screening + manual check)

→ Reward of ca. 1000 € performance-oriented funding for first/last author

As of 2020, ca. 7% Open Data for Charité publication record
The QUEST 1,000 € Patient & Stakeholder Engagement Award
Foster the involvement of patients and other stakeholders in the research process!

The QUEST 1,000 € Open Data Reuse Award
Make use of Open Data!

The QUEST 1,000 € Preregistration Award
Preregister your preclinical studies challenge – Increase the credibility of your results and get early credit for your ideas!

The QUEST 1,000 € NULL Results And Replication Study Award
Publish your NULL results – Fight the negative publication bias!
Publish your Replication Study – Fight the replication crises!
'QUEST' Criteria

- Priority setting / Scientific Premise
- Strategies for establishing scientific rigor
- Transparency and dissemination of results
- Stakeholder engagement (where applicable)
“The Charité attaches great importance to transparent, replicable research and supports the objectives of Open Science (Open Access, Open Data). This includes the registration of studies in registries (clinicaltrials.gov, DRKS, etc.), the preregistration of studies, and the publication of negative and zero results. How have you been pursuing these goals so far and what are your plans for the future?”
Patient & Stakeholder Engagement

**Patient-led research #WeAreNotWaiting:** „Do-it-Yourself Artificial Pancreas“-Systems

**Trainings:**
- Digital research workshop „Patient & Stakeholder Engagement @Charité“
- Implementation of a national Training Programm

**Goals:**
- PSE as 'natural' element of the research process
- QUEST PSE connects researchers and patients
Meta-research

Do German university medical centres promote robust and transparent research? A cross-sectional study of institutional policies

M. R. Holst, A. Faust and D. Strech

Exact replication: Foundation of science or game of chance?

Sophie K. Piper, Ulrike Gritzner, Andre Reis, Nico Riedel, Felix Fischer, Robert Nador, Bob Segerman, Ulrich Dornage

Refining Humane Endpoints in Mouse Models of Disease by Systematic Review and Machine Learning-Based Endpoint Definition

Jie Mei, Stefanie Bareseke, Janet Lipe, Melanie T. C. Kipp, Christian J. Hoffmann, Ulrich Dornage, Matthias Enders, Christoph Horns and Julius V. Eimerich
You are from the Charité/BIH?

We would like to visit YOUR team!

Presentations on the QUEST foci of your choice

your format, your duration, your location (or online)

So far approx. 40 visits – a lot of helpful exchange for us – and hopefully everybody!
www.bihealth.org/de/quest
Thank you for your interest!

QUEST Seminar on Responsible Research

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