



Foundation

Voice of Early Career Scientists Data Analysis

Monthly Foundation Joint
Discussion

July 17th 2024



Research on challenges and solutions perceived by early career researchers with AI-powered text analytics

Objective



Identify the needs, challenges, and pain points of early career scientists in STEM, life sciences, natural sciences, and related field.

Scope



Selected countries

- // Germany
- // Seven sub-saharan African countries

Methodology

Module 1: Online discussions and existing academic research

Academic articles and publicly available social media posts were collected and analyzed to identify various difficulties faced by early career scientists.

Module 2: Online Survey

Surveys with free-form text responses were designed and conducted to capture the authentic voice of early career scientists on different topics.

Module 3: In-depth Interviews

Structured interviews were conducted with young scientists in the selected countries of interest.

Social media discussion 64,000

Academic publications 1,700

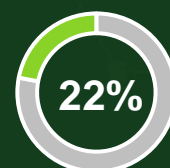
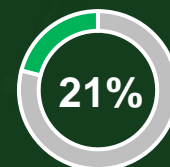
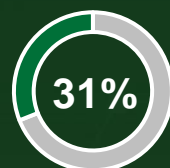
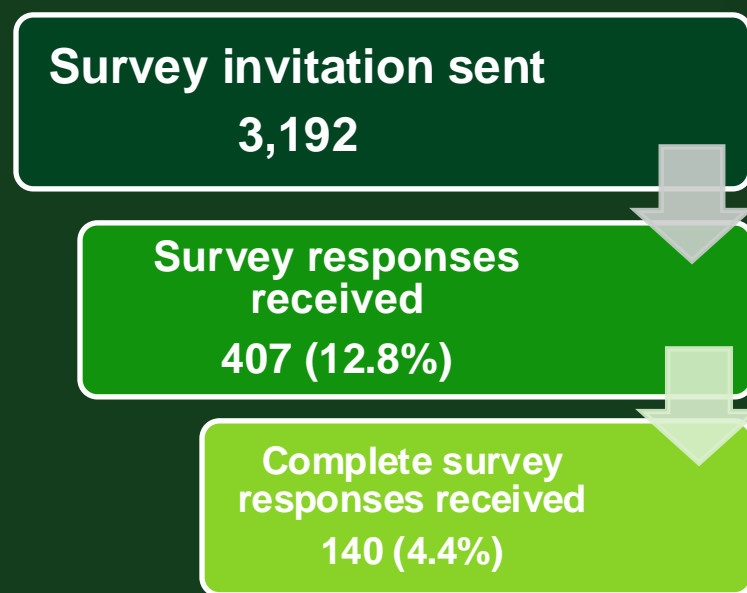
Survey Response 229

Interview 36

We tackled challenges in collecting survey data from female early career scientists and ensured inclusive representation



During the first round of data collection for the survey, female scientists were underrepresented in the data base.



More responses from female scientists were needed, to gain an **even gender distribution** of survey participants.

More female participants are identified and contacted, through:

- // research on universities' faculty/students pages
- // LinkedIn
- // external panel vendor

83 additional survey answers from female researchers were collected.

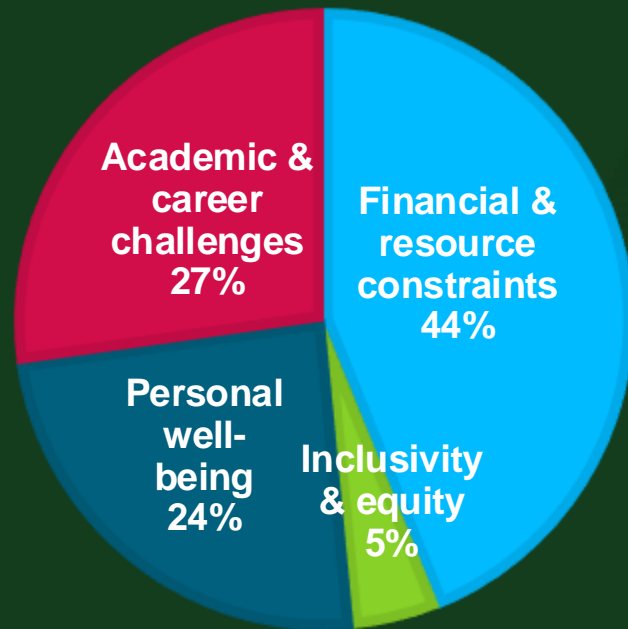
Final distribution of participants (male : female):
50% : 50% in African countries,
46% : 54% in Germany



Challenges faced by early career scientists at a glance

Challenges – Global findings

SURVEY (CHALLENGES)



// Fewer challenges were identified in the area of inclusivity & equity. Examples are, balancing parenthood and academic performance, and gender bias and cultural barriers.

Top 5 Representative challenges

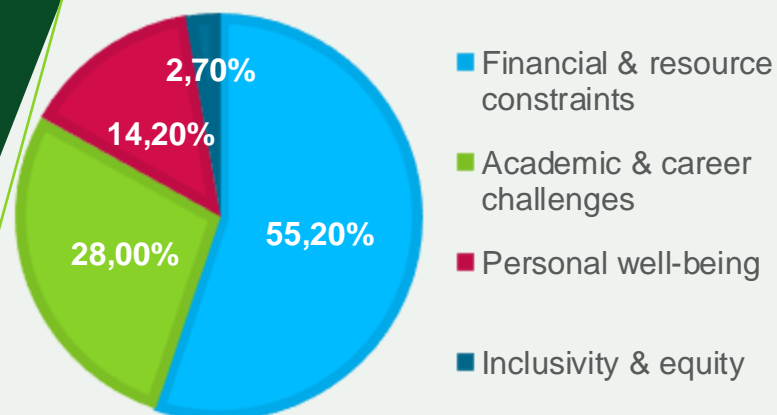


Different challenges are faced by scientists in different regions - Financial constraints in Africa vs. Academic & career prospects in Germany

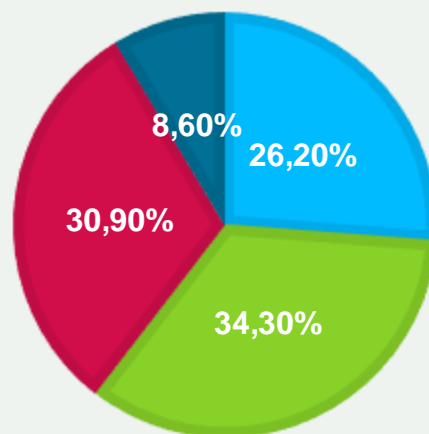
Challenges – Geographical comparison

Overview of challenges by region

Africa



Germany



Early career scientists in Africa experience more difficulties in:

- // securing **research funding**
- // **lack of equipment**, laboratory facilities and infrastructure
- // **poor technical resource management** and access



Early career researchers in Germany experience a greater struggle within:

- // **academia & career prospects**, such as:
 - // **unclear or negative career outlooks** and limited career progression
 - // **lack of information on career opportunities** outside of academia
- // **personal well-being**, such as:
 - // managing workload and work-life balance

Female researchers encounter much greater gender-related challenges

Challenges – Gender comparison



Gender discrimination in scientific leadership is **the most overrepresented challenge among female survey participants**, while this challenge is not as pronounced among male participants.

Sexual discrimination & lack of representation

2nd most prevalent challenges among female scientists



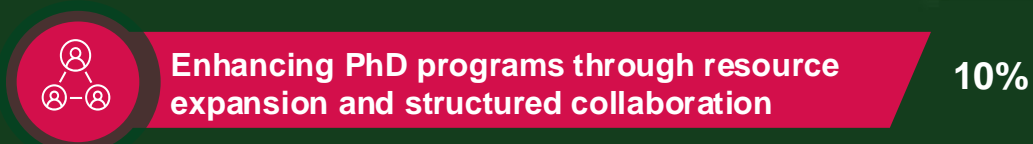
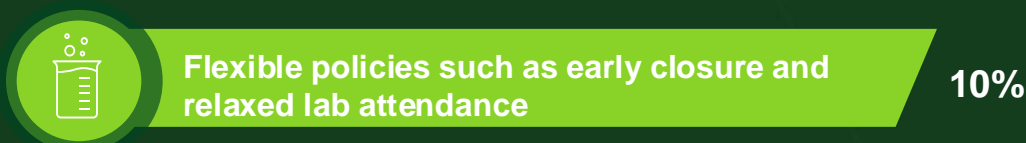
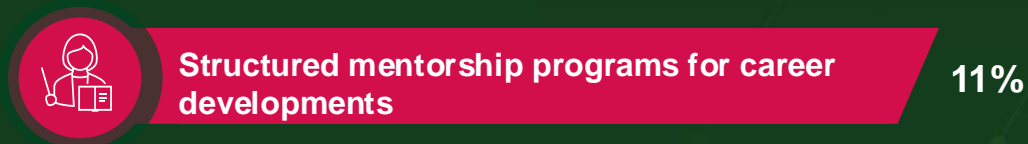
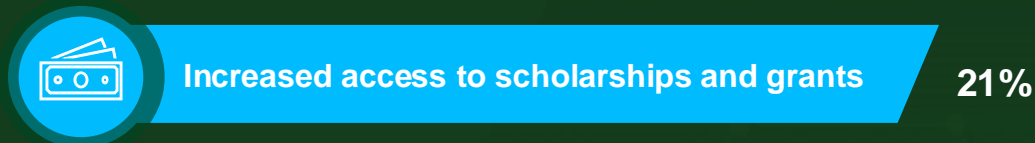
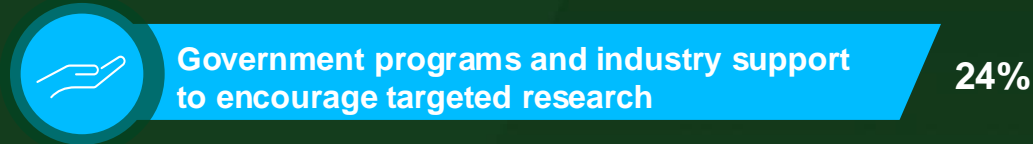
does not rank among the top 5 challenges for male scientists



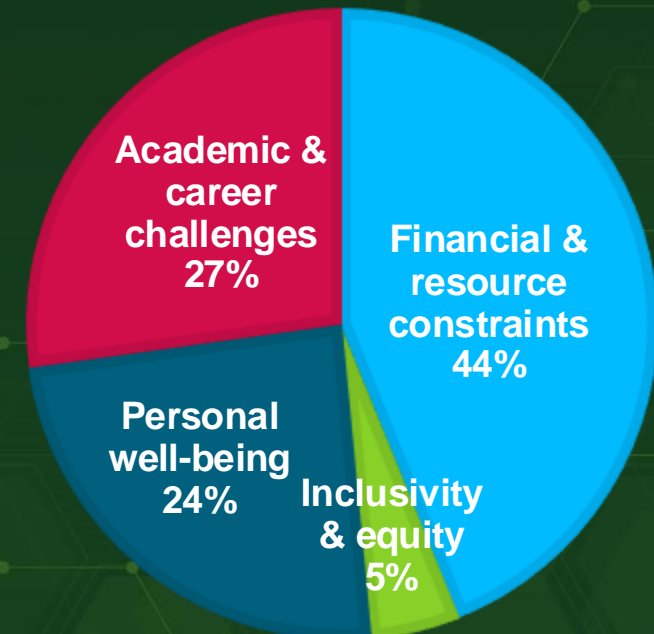
Solutions suggested by early career researchers align with main challenges they encountered

Solutions – Global findings

Top 5 selected solutions



SURVEY (CHALLENGES)



Fewer solutions were identified in the area of personal well-being. Examples are, importance of family support while working in academia, and addressing social isolation and cultural barriers.

Solutions proposed showed regional differences



Geographical differences:

Researchers in **Africa** prefer:

- // **Government programs and industry support for targeted research.**
- // **Resource sharing through collaborations and partnerships with other laboratories and institutions.**

Researchers in **Germany** prefer:

- // **Increased access to scholarships and grants.**
- // **Assigning supervisors and mentors for oversight and feedback.**

Enhancing the impact of Science as basis of societal progression

Recap of Bayer Foundation activities - Strategic Focus of Science Portfolio



Advancing Breakthrough Science

- // Honoring **outstanding scientists** as role models
 - // Hansen Family & Otto Bayer Award
 - // Early Excellence in Science Awards
 - // Virchow Prize for Global Health
- // Fostering interdisciplinary **exchange**
 - // Fellowships for young professionals
 - // Symposia on cutting-edge science
- // Enhancing trust in science by inclusive **STEM education**
 - // Science @ School
 - // Humboldt Explorers



Increasing Equity in Science

- // Building **scientific capacity** in Africa
 - // Alexander von Humboldt Foundation with fellowships & research hub
- // Fostering **gender equality**
 - // Falling Walls “Female Science Talents”
 - // Central African “Women in Science Award”
 - // Christiane-Nüsslein-Volhard fellowships

Bayer Foundation's activities match with the solutions mentioned by early career scientists



Bayer Foundation's offering



Honoring **outstanding scientists** with **Awards**

Solution #1

- ❖ Increased availability of **scholarships and fellowships**



Bayer
**Science
FELLOWS**

Annual Scientific Fellowships for PhDs, Master and Medical students

Collaboration with **CERID Research Hub** and **Alexander von Humboldt Foundation**



Solution #2

- ❖ Interinstitutional and international **collaboration**



Boundary-Breaking Science Lectures & Symposium

Solution #3

- ❖ Increased access to **online resources**



Recommendations for academic institutions

Suggestions from early career scientists

Flexible work arrangements and benefits

Promote and implement **remote work options**, flexible hours, less strict lab attendance, compressed workweeks, as well as offering **parental leave** and childcare support.

19%
Africa

23%
Germany

Average share of voice related to **mental health, work-life balance and overwork culture**

Comprehensive mentorship programs

Develop **mentorship matching programs** targeting the need for professional guidance, with experienced mentors guiding young scientists with **fixed hours** rather than “open-door” schedule.

6%
Africa

7%
Germany

Average share of voice related to a **lack of mentorship and supervision for professional development**

Career guidance and training programs

Collaborate with **industry** or other institutions to provide guidance, resources, or exchange programs to navigate **career options within and outside of academia**.

5%
Africa

11%
Germany

Average share of voice related to a **lack of information on career opportunities outside of academia**

Data regarding related challenges

Recommendations for policymakers and governments

Suggestions from early career scientists

Improved government funding and resource allocation

Allocate **more government funding and targeted grant programs** to support research initiatives, tackling issues related to funding, resource constraints, and lack of laboratory facilities for scientists under a specific age.

22%
Africa

14%
Germany

Average share of voice related to **securing funding and research grants**

Foster positive mental health and work-life balance

Implement and subsidize widespread policies that support mental health, work-life balance, flexible leave, and parental support services **through legislation** such as enforcing a maximum number of working hours or publications produced for researchers.

19%
Africa

23%
Germany

Average share of voice related to **mental health, work-life balance and overwork culture**

Promote inclusivity and equal opportunities

Develop and enforce policies that combat gender, and other **systemic discrimination** to ensure **equal opportunities** for all researchers, such as legislation on reporting wage disparities or student demographics.

6%
Africa

7%
Germany

Average share of voice related to **gender bias, discrimination, and cultural barriers**

Data regarding related challenges

Recommendations for industry

Suggestions from early career scientists

Promote and enhance research funding

Partner with academic institutions to identify high-demand research areas and allocate additional resources to fund these projects. Ensure financial support for young scientists by co-funding doctoral programs.

22%
Africa

14%
Germany

Average share of voice related to **securing funding and research grants**

Increase structured internships, long-term placements, and fellowships

Offer **paid industry-led research internships**, fellowships, or long-term training programs tailored to developing **practical skills** for young scientists, **easing financial burdens** for students in the process.

13%
Africa

6%
Germany

Average share of voice related to a **lack of equipment, laboratory facilities, and infrastructure to conduct research**

Establish mentorship programs

Create **industry-focused mentorship opportunities**, programs, or conferences where industry professionals can guide young scientists, aiding in career development and advancement.

6%
Africa

14%
Germany

Average share of voice related to **negative career outlooks and limited career progression**

Data regarding related challenges

Recommendations for professional associations and foundations

Suggestions from early career scientists

Implement professional development programs

Introduce short-term training programs that focus on soft skills such as **public speaking, leadership, project management, and technical skills such as programming**, as well as diverse mentorship initiatives featuring experienced international researchers.

11%
Africa

1%
Germany

Average share of voice related to poor **technical resource management and access**

Develop and fund outreach and networking programs

Create and support **larger outreach initiatives, networking events**, conferences, and platforms for collaboration among young scientists, NGOs, and other stakeholders to foster connections and address societal challenges.

6%
Africa

7%
Germany

Average share of voice related to **limited mentorship and supervision for professional development**

Advocate for equitable policies

Advocate for policies among other key decision makers that enhance research funding, career development, work-life balance, equity, and inclusivity, **ensuring diverse representation and gender equality** in the scientific community.

6%
Africa

7%
Germany

Average share of voice related to **gender bias, discrimination, and cultural barriers**

Data regarding related challenges

Recommendations for senior researchers and mentors

Suggestions from early career scientists

Advocacy for work-life balance and culture shift

Foster a supportive and inclusive academic culture by **role-modeling healthy work-life balance** practices and promoting diversity and inclusion to **influence policy reforms**.

19%
Africa

23%
Germany

Average share of voice related to **mental health, work-life balance and overwork culture**

More engagement in mentorship programs and roles

Actively participate in mentoring programs to provide guidance and enhance the professional development of next-generation scientists through **community-oriented research culture**.

6%
Africa

7%
Germany

Average share of voice related to **limited mentorship and supervision for professional development**

Encourage collaborative research projects involving early career scientists

Encourage collaborative projects that **integrate young scientists**, helping them gain exposure and experience by contributing to senior researchers' papers, thereby **reducing the pressure to publish** individually and fostering a more collaborative environment.

11%
Africa

7%
Germany

Average share of voice related to **academic publishing challenges and pressure to publish high-quality papers**

Data regarding related challenges