

# Assessing Impact: Approaches and Considerations

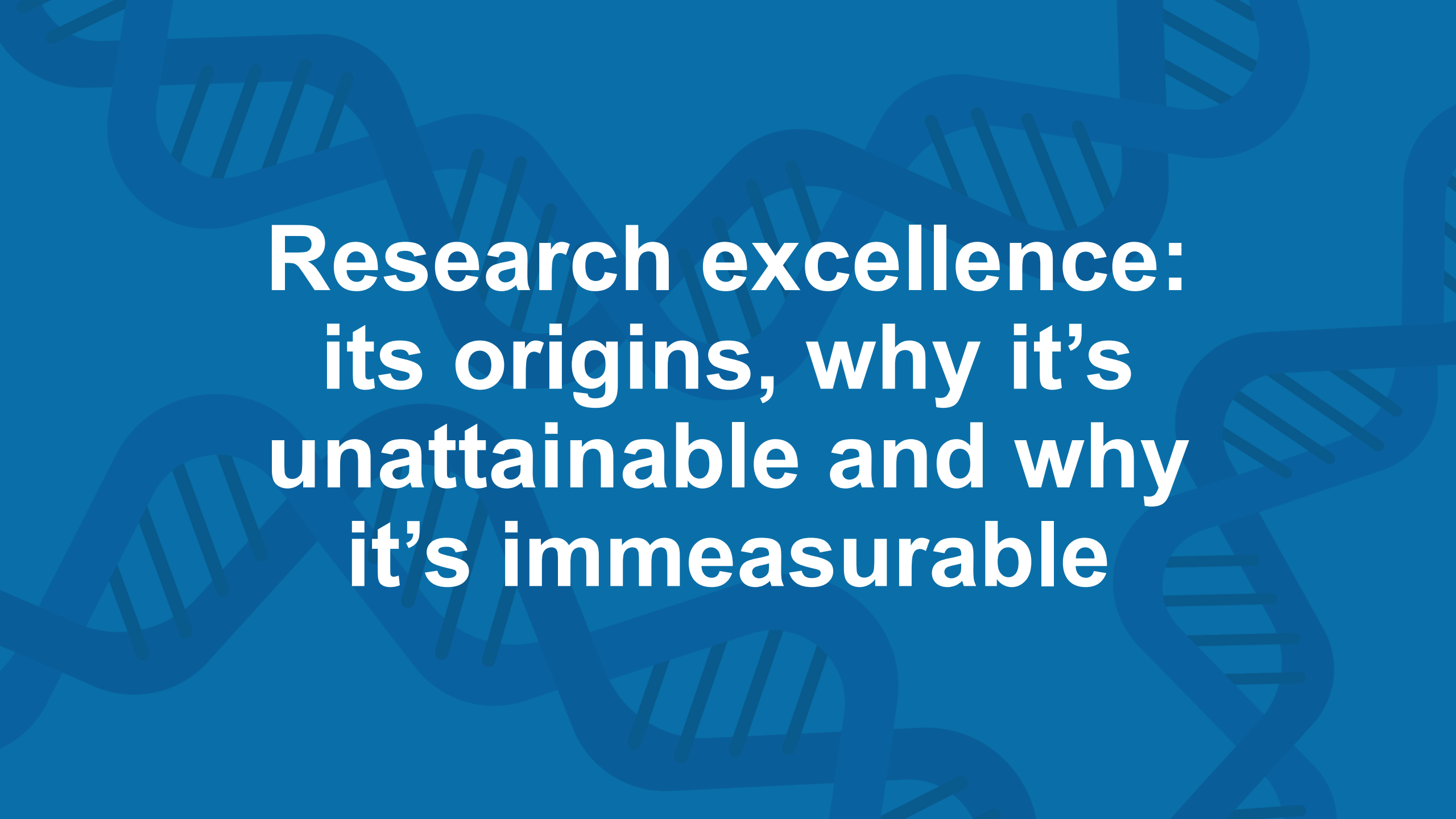
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March 22, 2023

# Outline



- Research excellence
- Research impact
- Research culture & environment
- Lessons learned



**Research excellence:  
its origins, why it's  
unattainable and why  
it's immeasurable**

# Research excellence

*“A myopic focus on excellence isn't helpful. Excellence is not a quantifiable measure; rather, excellence is produced from diversity of thought.”*

– Dr. Patricia Kingori, Oxford University

# Prominence of 'excellence' in research



- North-American and Western-European **contexts of origin have shaped uses of excellence** and research on excellence initiatives
- Different uses of 'excellence' coexist and the vagueness surrounding notions of excellence has **performative effects**
- Imbalance between **intended and unintended consequences** of competition and concentration of resources
- Critiques on the excellence regime are as omnipresent as the notion itself; however, **alternatives are scarcely formulated** and there seems to be a tendency towards pluralizing or diversifying excellence
- Notions of excellence in research funding have been underexplored although considered to play a key role in the **institutionalization of excellence**

# Assessing research excellence

- **No consensus**, standard definition or reliable measure
- Highly subjective creating room for **bias and abuse**
- Opaqueness **undermines trust**
- Underpins **hyper-competition**
- Perpetuates **inequities**
- **Negatively influences** how research is conducted and evaluated

## ARTICLE

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OPEN

## “Excellence R Us”: university research and the fetishisation of excellence

Samuel Moore<sup>1</sup>, Cameron Neylon<sup>2</sup>, Martin Paul Eve<sup>3</sup>, Daniel Paul O’Donnell<sup>4</sup> and Damian Pattinson<sup>5</sup>

*Science and Public Policy*, 45(5), 2018, 731–741

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Article

OXFORD

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## Research excellence indicators: time to reimagine the ‘making of’?

Federico Ferretti<sup>1,\*</sup>, Ângela Guimarães Pereira<sup>1</sup>, Dániel Vértesy<sup>1</sup> and Sjoerd Hardeman<sup>2</sup>

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# Is meritocracy the answer?

EQUITY, DIVERSITY AND INCLUSION

## Racial inequity in grant funding from the US National Institutes of Health

**Abstract** Biomedical science and federal funding for scientific research are not immune to the systemic racism that pervades American society. A groundbreaking analysis of NIH grant success revealed in 2011 that grant applications submitted to the National Institutes of Health in the US by African-American or Black Principal Investigators (PIs) are less likely to be funded than applications submitted by white PIs, and efforts to narrow this funding gap have not been successful. A follow-up study in 2019 showed that this has not changed. Here, we review those original reports, as well as the response of the NIH to these issues, which we argue has been inadequate. We also make recommendations on how the NIH can address racial disparities in grant funding and call on scientists to advocate for equity in federal grant funding.

MICHAEL A TAFFE\* AND NICHOLAS W GILPIN\*

. DOI: <https://doi.org/10.7554/eLife.65697>

## Gender bias in scholarly peer review

**Abstract** Peer review is the cornerstone of scholarly publishing and it is essential that peer reviewers are appointed on the basis of their expertise alone. However, it is difficult to check for any bias in the peer-review process because the identity of peer reviewers generally remains confidential. Here, using public information about the identities of 9000 editors and 43000 reviewers from the Frontiers series of journals, we show that women are underrepresented in the peer-review process, that editors of both genders operate with substantial same-gender preference (homophily), and that the mechanisms of this homophily are gender-dependent. We also show that homophily will persist even if numerical parity between genders is reached, highlighting the need for increased efforts to combat subtler forms of gender bias in scholarly publishing.

DOI: [10.7554/eLife.21718.001](https://doi.org/10.7554/eLife.21718.001)

MARKUS HELMER\*, MANUEL SCHOTTDORF, ANDREAS NEEF AND DEMIAN BATTAGLIA\*

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RESEARCH ARTICLE | SCIENTIFIC COMMUNITY



## Topic choice contributes to the lower rate of NIH awards to African-American/black scientists

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2,351 4



### Abstract

Despite efforts to promote diversity in the biomedical workforce, there remains a lower rate of funding of National Institutes of Health R01 applications submitted by African-American/black (AA/B) scientists relative to white scientists. To identify underlying causes of this funding gap, we analyzed six stages of the application process from 2011 to 2015 and found that disparate outcomes arise at three of the six: decision to discuss, impact score assignment, and a previously unstudied stage, topic choice. Notably, AA/B applicants tend to propose research on topics with lower award rates. These topics include research at the community and population level, as opposed to more fundamental and mechanistic investigations; the latter tend to have higher award rates. Topic choice alone accounts for over 20% of the funding gap after controlling for multiple variables, including the applicant's prior achievements. Our findings can be used to inform interventions designed to close the funding gap.



# Limitations and benefits of peer review



## Limitations:

- Machine-learning models able to “predict” funding outcomes: predictors were factors *not* related to research impact, but narrow quantitative metrics (e.g., journal impact factors, H-index scores, and university rankings).
- *“Perceived expert’s ability to make judgements about a probabilistic outcome is poor, and is not at all correlated to age, number of publications, experience, years in field, or status.”* - Mark Burgman, Imperial College London

## Benefits (OECD, 2018):

- increase the quality and relevance of research project proposals
- ensure that research awards meet a minimum standard of quality
- provide researchers with an opportunity to test their ideas among peers
- build trust in the community that awards are made fairly



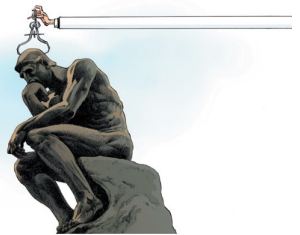
# Moving beyond excellence

- **Patching existing frameworks** – abandonment of journal impact factors in favor of more responsible uses of metrics to mitigate the overreliance on bibliometrics (*e.g. DORA, 2012; Leiden Manifesto, 2015; The Metric Tide, 2015*)
- **Pluralizing excellence** - move beyond the emphasis on published outputs by including narratives of impact inclusive of more than academic impact (*e.g. UK REF*); inclusive of impact defined by local contexts (*Tijssen & Kraemer-Mbula, 2018*) and EDI (coined ‘*inclusive excellence*’ by *Williams, 2005*)
- **Transforming the research ecosystem** – from abandonment of the ‘*assessment of excellence*’ (*Halfman & Radder, 2015*) or the ‘*notion of excellence*’ altogether (*Neylon, 2020*), to the replacement of a singular view of performance with an understanding that research is anchored in an ‘*open, extended, complex system of with a range of competing (and legitimate) perceptions of performance*’ (*Rafols, et. al 2012*)

Signatory of



**DORA**



The Leiden Manifesto  
for research metrics

Jong, Lisette; Franssen, Thomas; Pinfield, Stephen (2021): ‘Excellence’ in the Research Ecosystem: A Literature Review. <https://doi.org/10.6084/m9.figshare.16669834.v1>

The background of the slide is a solid blue color with a repeating pattern of white DNA double helix structures. The helices are oriented diagonally and overlap each other, creating a sense of depth and movement. The text is centered in the middle of the slide.

# **Research impact: a portfolio analysis**

# Research impact

*“[M]is-application of narrow criteria and indicators of research quality or impact, in ways that distort incentives, create unsustainable pressures on researchers, and exacerbate problems with research integrity and reproducibility.”*

– Global Research Council

# Portfolio analysis



- **Goals:**
  - Give **organization-wide picture** of activities, results and outcomes
  - Provide assurance that funding **programs are collectively effective**
  - Indicate whether **resources are allocated appropriately** across all funding programs and activities
  - Apply a **balanced portfolio approach** – holistically assess varying degrees of program maturity, risk, investment, and impact
- **Methods:** bibliometric analyses, linear regression models, outcome mapping, case studies, validate with secondary and independent sources

# Portfolio insights



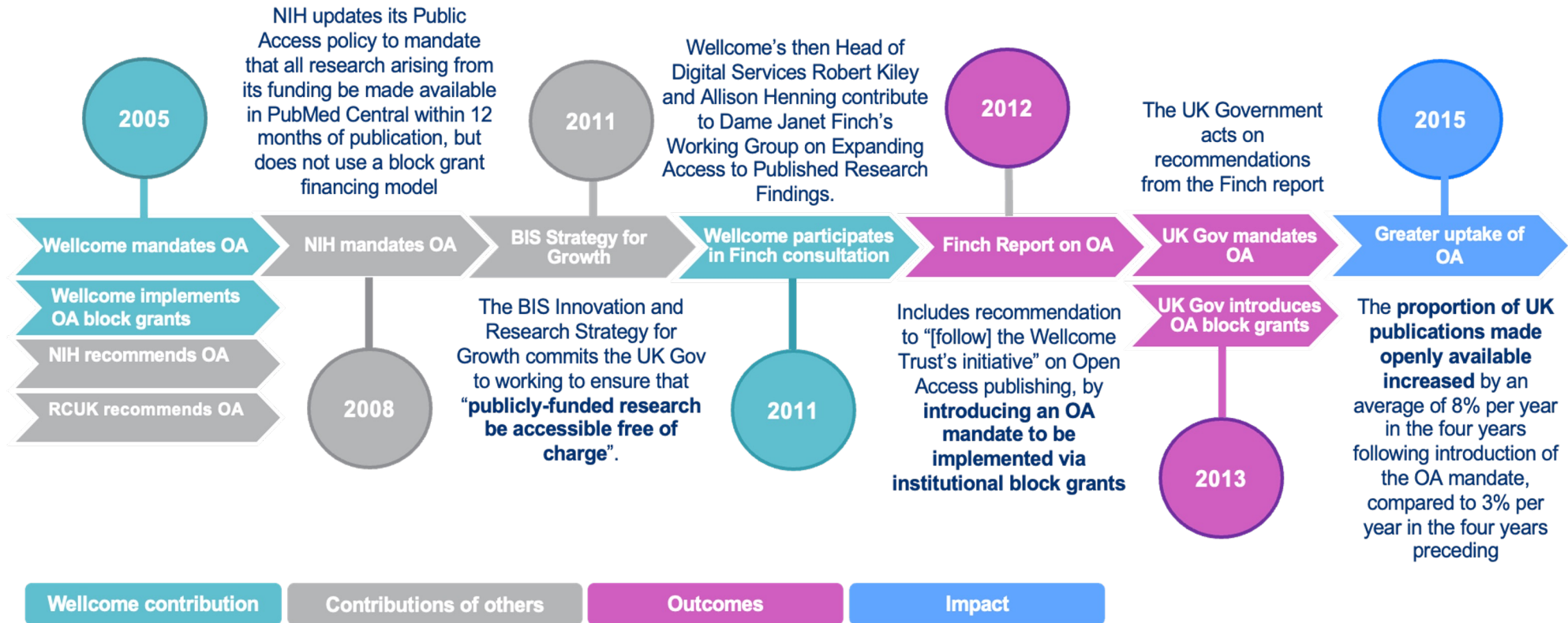
Research projects that demonstrated the greatest reach and citation impact:

- International research collaborations
- Inter/transdisciplinary team collaborations
- New technologies and resources, including multi-site population studies

The background of the image consists of several overlapping, semi-transparent blue DNA double helix structures. These structures are rendered in a stylized, graphic manner, with the two strands of each helix connected by short, parallel lines representing base pairs. The helices are oriented in various directions, creating a sense of depth and movement across the frame. The overall color palette is a monochromatic range of blues, from a deep, dark blue to a lighter, medium blue.

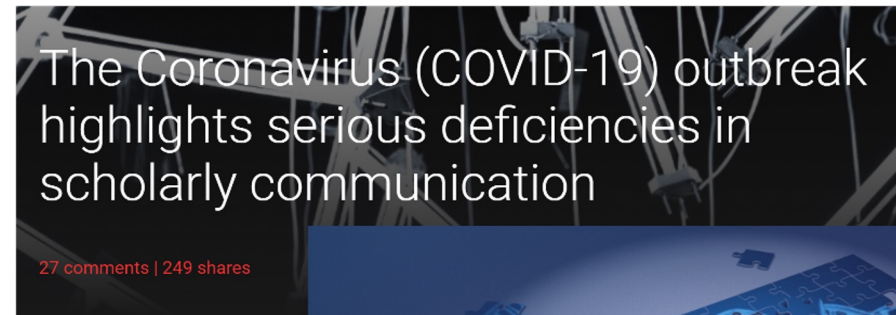
**A story of impact**

# Contributions to open access policy



# Societal impact of open access

- **Democratize knowledge**
- **Increase efficiency** of scientific outputs
- **Increase accountability** of the research enterprise
- **Accelerate innovation** and impact
- **Reduce research waste**



Commentary | [Open Access](#) | [Published: 05 June 2021](#)

## Open science saves lives: lessons from the COVID-19 pandemic

[Lonni Besançon](#) , [Nathan Peiffer-Smadja](#), [Corentin Segalas](#), [Haiting Jiang](#), [Paola Masuzzo](#), [Cooper Smout](#), [Eric Billy](#), [Maxime Deforet](#) & [Clémence Leyrat](#)

*BMC Medical Research Methodology* **21**, Article number: 117 (2021) | [Cite this article](#)



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# **Research culture and environment**

# Research culture

*“Research assessment shapes research culture. What funders value and measure will influence what is valued in the research ecosystem.”*

– Global Research Council

# Research environment is linked to culture



**Research environment** - which includes the institutional strategies, infrastructure, facilities, processes, and management systems - is **inextricably linked to research culture**.

“**Research culture** encompasses the **behaviors, values, expectations, attitudes and norms** of our research communities. It influences researchers’ career paths and determines the way that research is conducted and communicated”<sup>1</sup>.

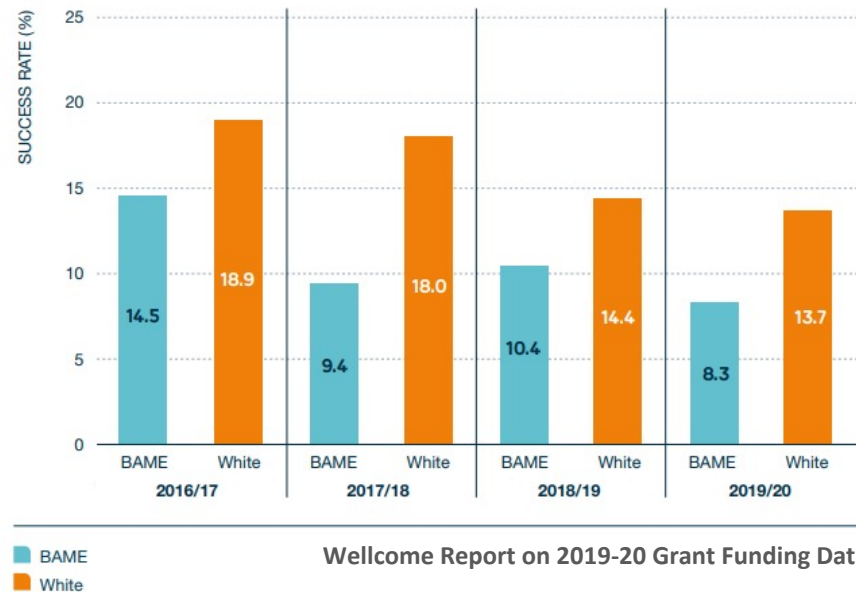
<sup>1</sup>Royal Society <https://royalsociety.org/topics-policy/projects/research-culture/>

# Diversity, Equity AND inclusion



## Success rates for BAME applicants remain lower than for White applicants

### Award rate by ethnicity



- Success rates are lower for BAME applicants (10.3%) than for White applicants (16.1%). Success rates are similar for BAME men and women. Success rates are lowest for Black applicants (8.6%).

BAME researchers make up a smaller proportion of applicants and awardees for more senior awards and those with higher financial value.

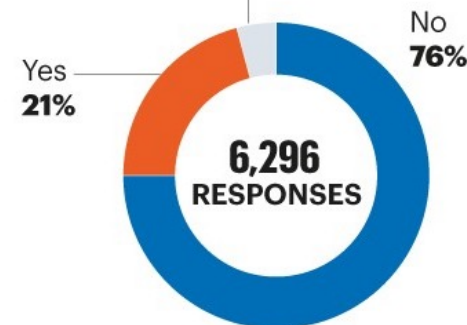
If international schemes and awards to non-UK based organisations are included, over the past four years 28.6% of applicants and 19.3% of awardees are BAME. Award rates are 9.6% for BAME applicants and 15.3% for White applicants.

## BAD BEHAVIOUR

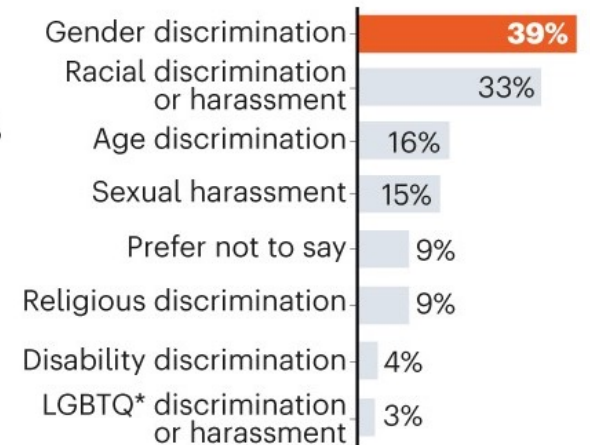
Instances of harassment and gender or racial discrimination remain distressingly commonplace. The most frequently reported perpetrators are supervisors.

### Q: Have you experienced discrimination or harassment in your PhD programme?

Prefer not to say 4%



### Q: If yes, which of the following have you experienced?



\*People from sexual and gender minorities.

©nature

Source: Nature PhD Survey 2019

# Open science



## Features:

- Promote openness, transparency of research and the research process
- Value activities associated with openness (e.g., open access, data sharing, open tools and platforms)
- Value outputs associated with openness (e.g., preprints, FAIR datasets, open software, open code)

# Inter/transdisciplinary research environments

## Features:

- Shared purpose, strong leadership
- Culture of openness, creative & bold thinking, respect across disciplines
- Core infrastructure and spaces to facilitate inter/trans-disciplinary collaborations
- Competitive talent packages
- Career paths and competitive remuneration for career scientists, technologists and project managers



**Lessons learned**

# Lessons learned



**1. Evaluate the outcomes (or impact) of research relative to where it sits on a continuum.**

**Action:** Deploy a range of mixed methods to assess effectiveness of funding strategies.

**2. Research is not static and predictable; neither should evaluation frameworks be static and predictable.**

**Action:** Adopt agile evaluation and learning frameworks where the primary driver is learning.

**3. Funders must take on more direct responsibility for achieving impact.**

**Action:** Invite external, independent evaluation that looks at both the effectiveness and impacts of a program, as well as the funder's strategies and policies. Assess both the funder's direct and indirect contributions to impact.

**4. Funders should seek evidence to inform and transform their own practice.**

**Action:** Make processes and decisions transparent. Share not only funder data but implicit drivers of funder practice and policies with others to promote shared learning.



# Decolonizing knowledge



*"The ways in which research quality and research impact are defined and measured are deeply embedded in practices and concepts derived from the Global North. [A] fundamental shift is required that understands the value of research – and the institutions producing it – according to the contexts in which knowledge is needed, produced and used."*

- John Harle, 2021

LSE Blog Series: ["We won't get to a more equitable knowledge ecosystem if we don't have more equitable ways to assess research and knowledge."](#)



**Thank you**