

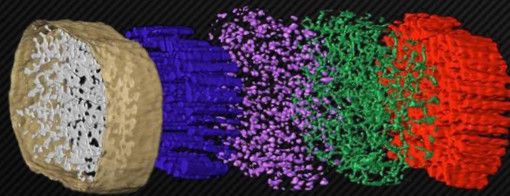
Minorities in STEM: Barriers they face in academia & pathways to allyship

Izzy Jayasinghe (*she/her*)

UKRI Future Leader Fellow | Senior Lecturer

Dept. of Molecular Biology & Biotechnology | The University of Sheffield

appliedbiophotonics.org | i.jayasinghe@sheffield.ac.uk | [@i_jayas](https://twitter.com/i_jayas) 

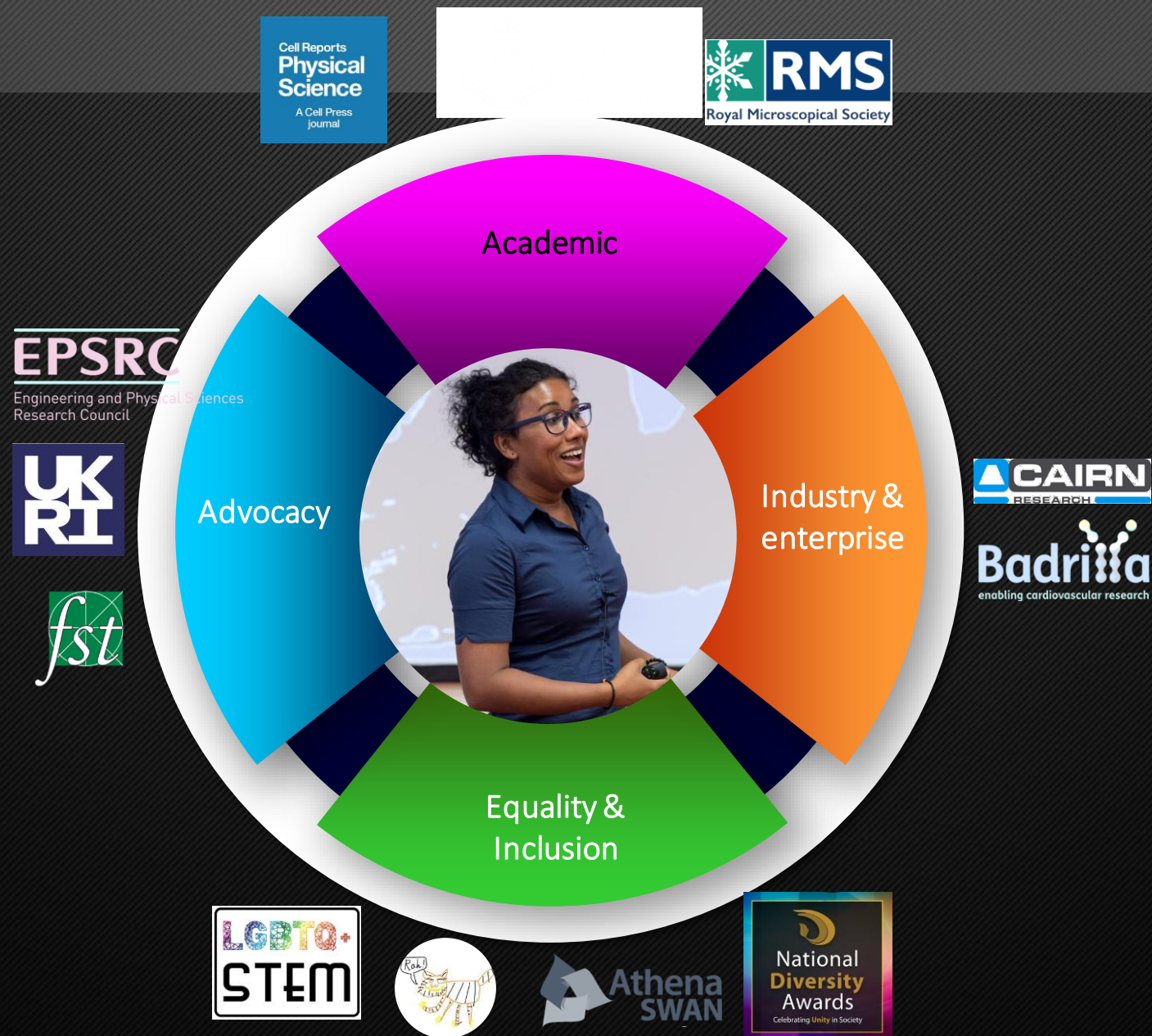


APPLIED BIOPHOTONICS GROUP

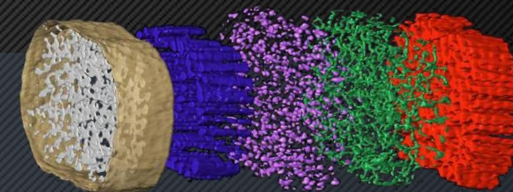


The
University
Of
Sheffield.

Izzy Jayasinghe

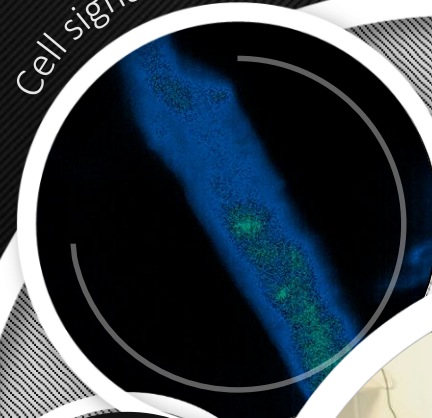


Applied Biophotonics Group

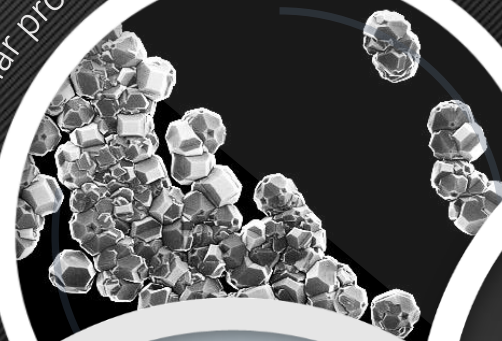


APPLIED BIOPHOTONICS GROUP

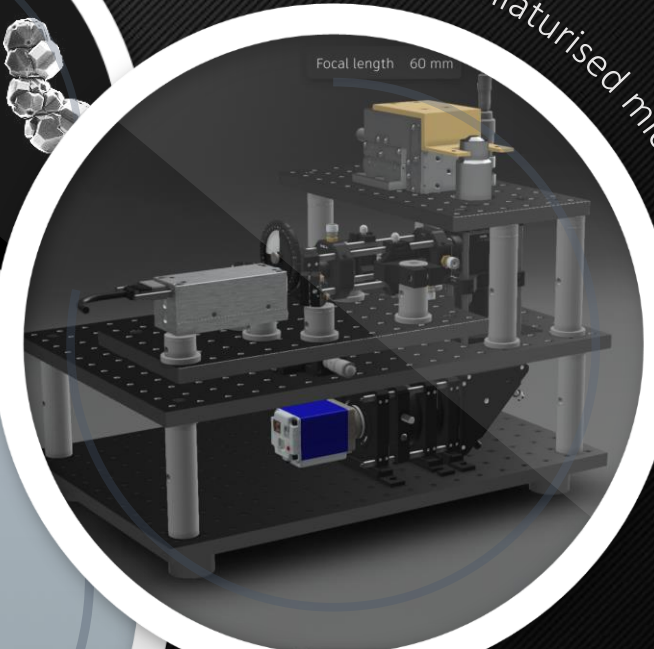
Cell signalling



New molecular probes

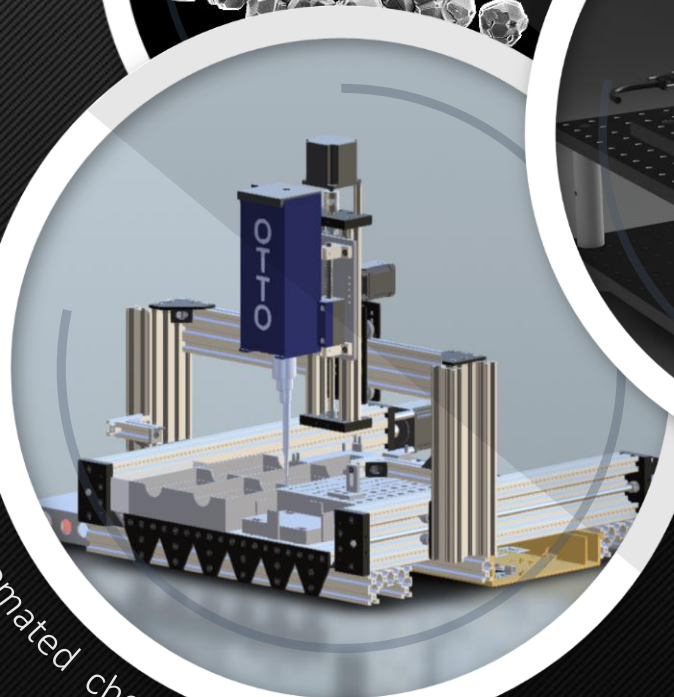


Miniaturised microscopes

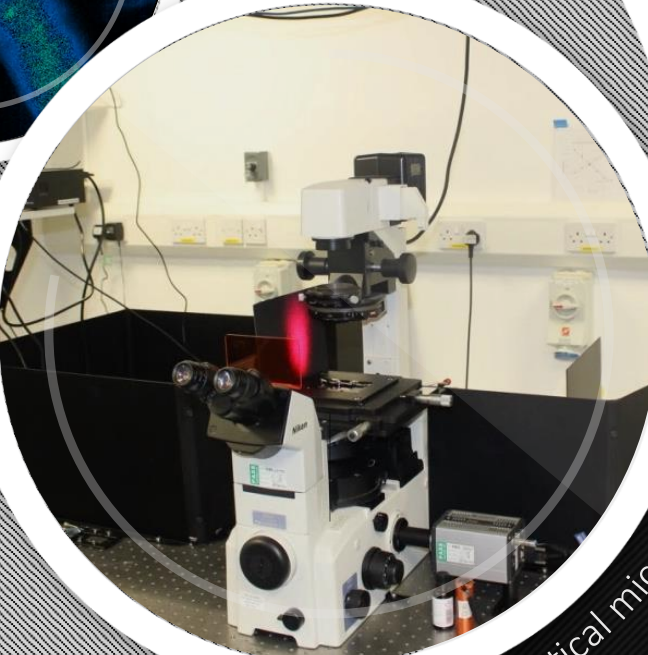


Focal length 60 mm

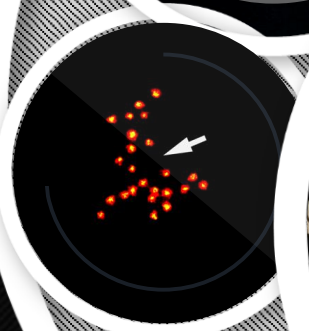
Automated chemistry



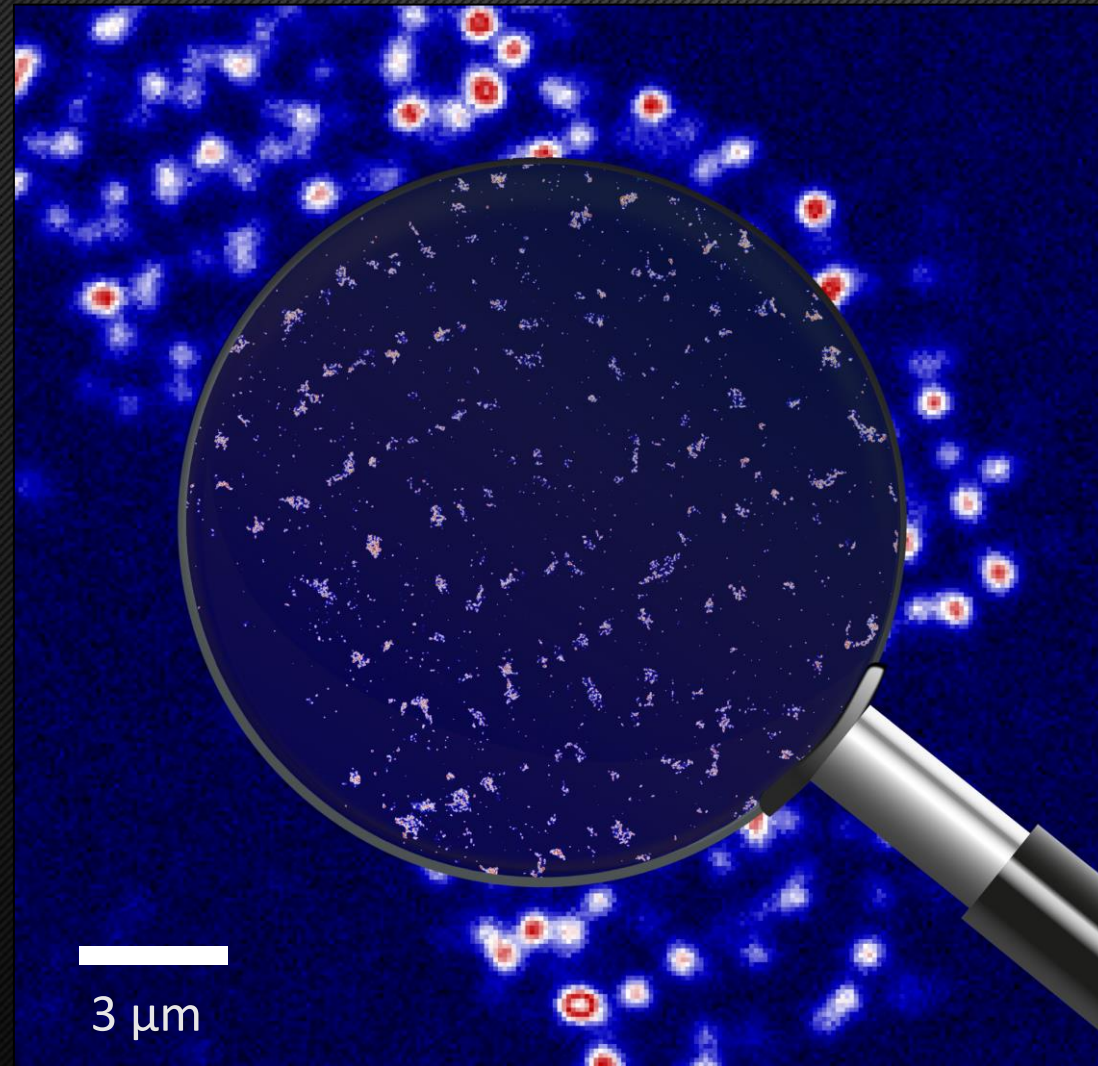
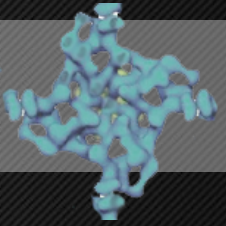
High-end optical microscopes



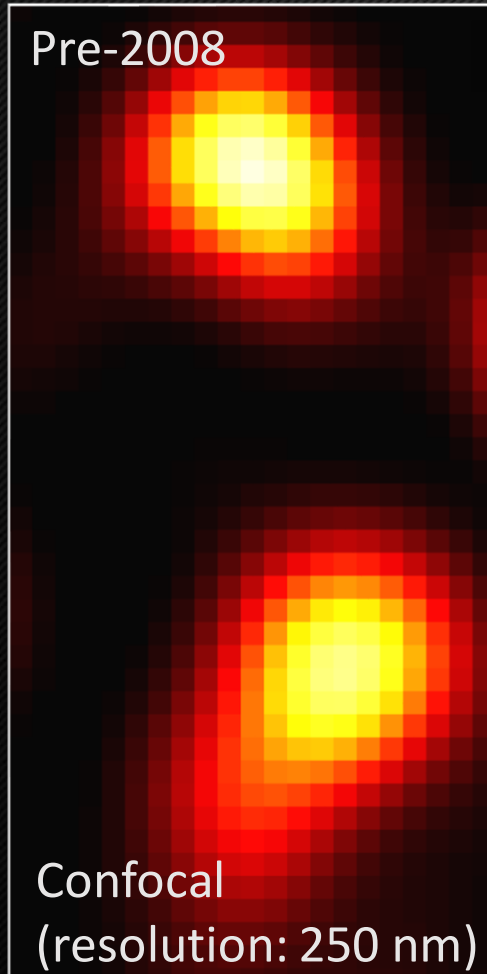
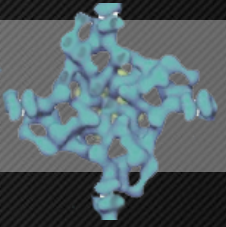
Molecule counting
algorithms



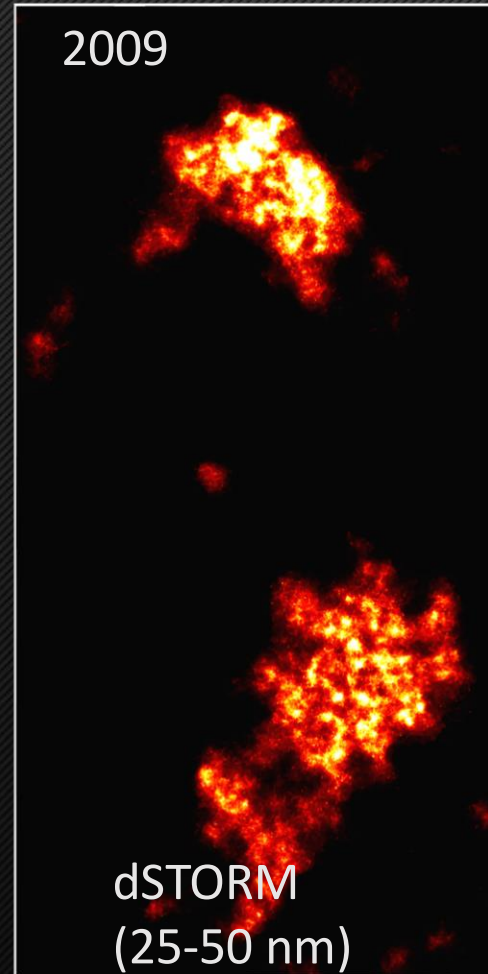
Super resolution microscopy



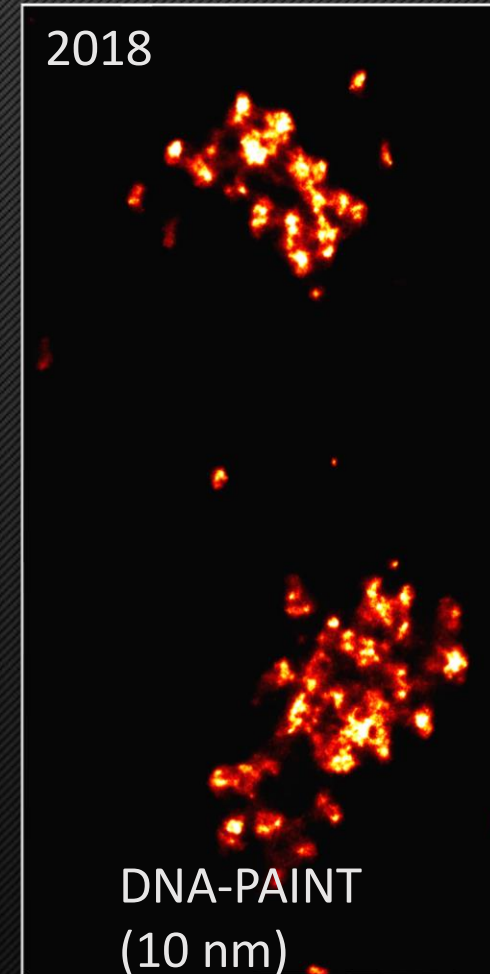
Incremental improvement in resolution – e.g. Ryanodine Receptor



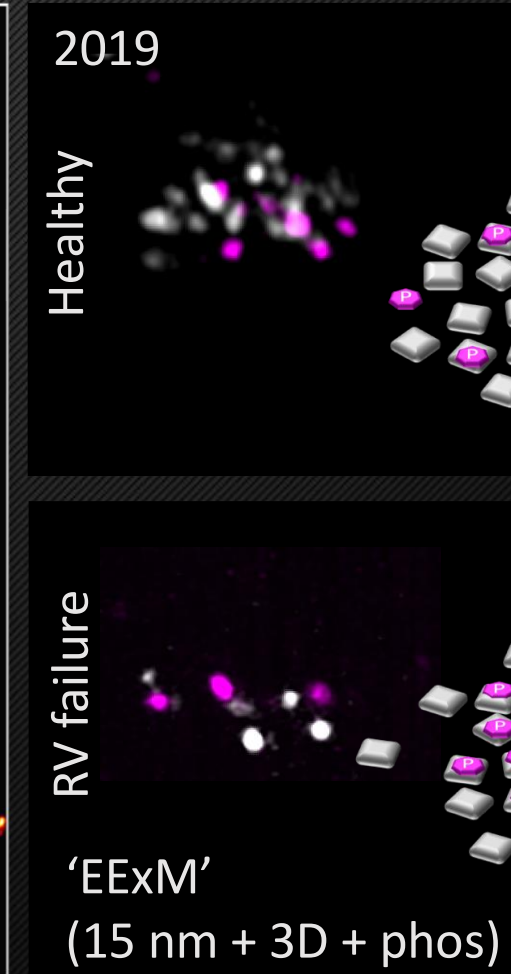
Jayasinghe et al. 2009
Biophys J.



Baddeley et al. 2009
PNAS



Jayasinghe & Clowsley 2018
Cell Reports



Sheard et al 2019
ACS Nano

100 nm

A photograph of a complex optical setup in a laboratory. The scene is dominated by blue and red laser light. On the left, a Nikon microscope is visible, with a red laser beam passing through its components. In the center, a series of mirrors and lenses are mounted on a metal frame, reflecting the blue and red beams. To the right, a black box with a label is connected to the setup. The background shows a typical laboratory environment with shelves and equipment. The text "Personal journey" is overlaid in the center of the image.

Personal journey



Postdoc - PI

Born +
Early education

High school
BSc
PhD

Postdoc



2020-*

**UKRI Future
Leader Fellow /
Senior Lecturer**

Dept of Molecular
Biology &
Biotechnology



The
University
Of
Sheffield.

2015-2020

Lecturer

School of Biomedical
Sciences



2013-2015

**Associate
Research Fellow**

Biomedical Physics



2011-2013

**Postdoctoral
Research Fellow**

School of
Biomedical
Sciences



2010-2011

**Asst. Research
Fellow**

Dept of Physiology,



2007-2011

**PhD (Physiology &
Biophysics)**

Dept of Physiology



2003- 2006

**BSc Biomedical
(1st class honours)**

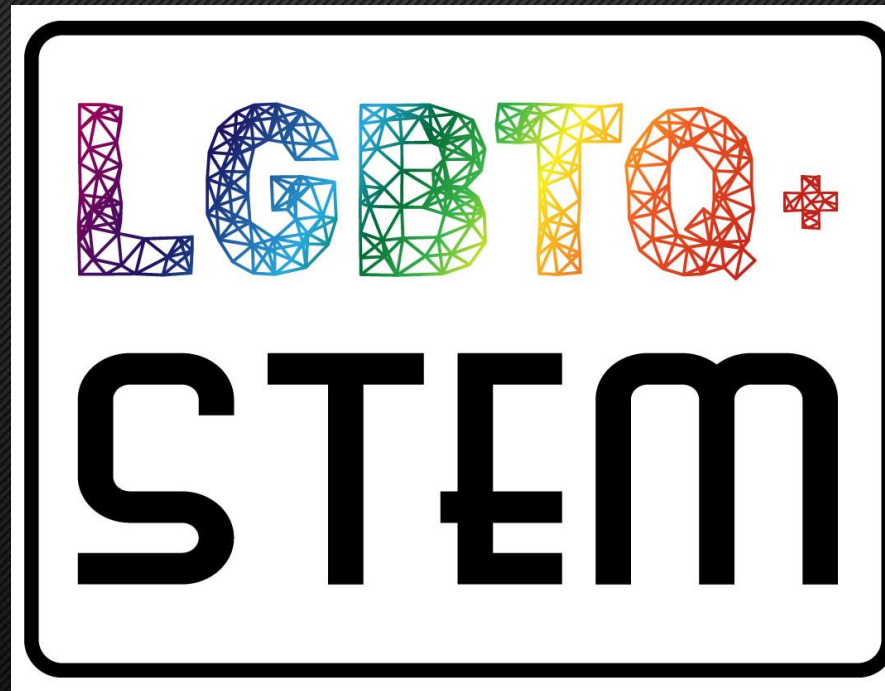
Biomedical Science



Equality, Equity, Diversity, Inclusion & Accessibility in STEMM



@tigerinstemm



@LGBTSTEM



AdvanceHE

IOP

Axes of marginalisation

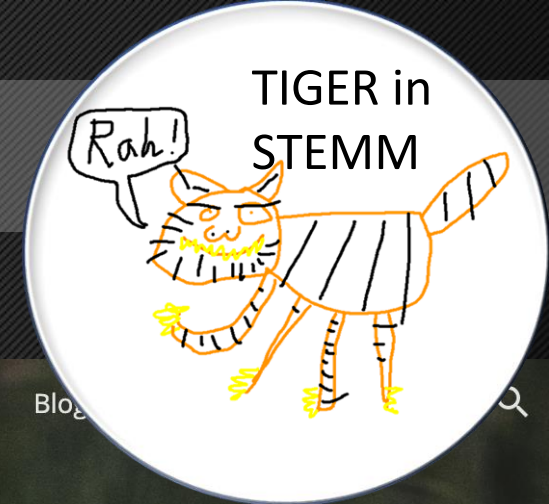


A photograph of a dark, winding road through a dense forest. The road is marked with a white line on the left and a double yellow line in the center. The scene is shrouded in thick fog, making the distant trees and road curves disappear into a grey haze. The overall mood is somber and mysterious.

Minoritisation

Marginalisation

Barriers which stifle marginalised groups



TIGERSTEMM

Home Events ▾ Governance ▾ News Resources ▾ Blog

Barriers to accessing funding

[www.tigerinstemm.org/resources/ barriers-to-funding](http://www.tigerinstemm.org/resources/barriers-to-funding)

 @tigerinstemm

Barriers faced in accessing funding



Women



Racial
minorities



LGBTQIA+

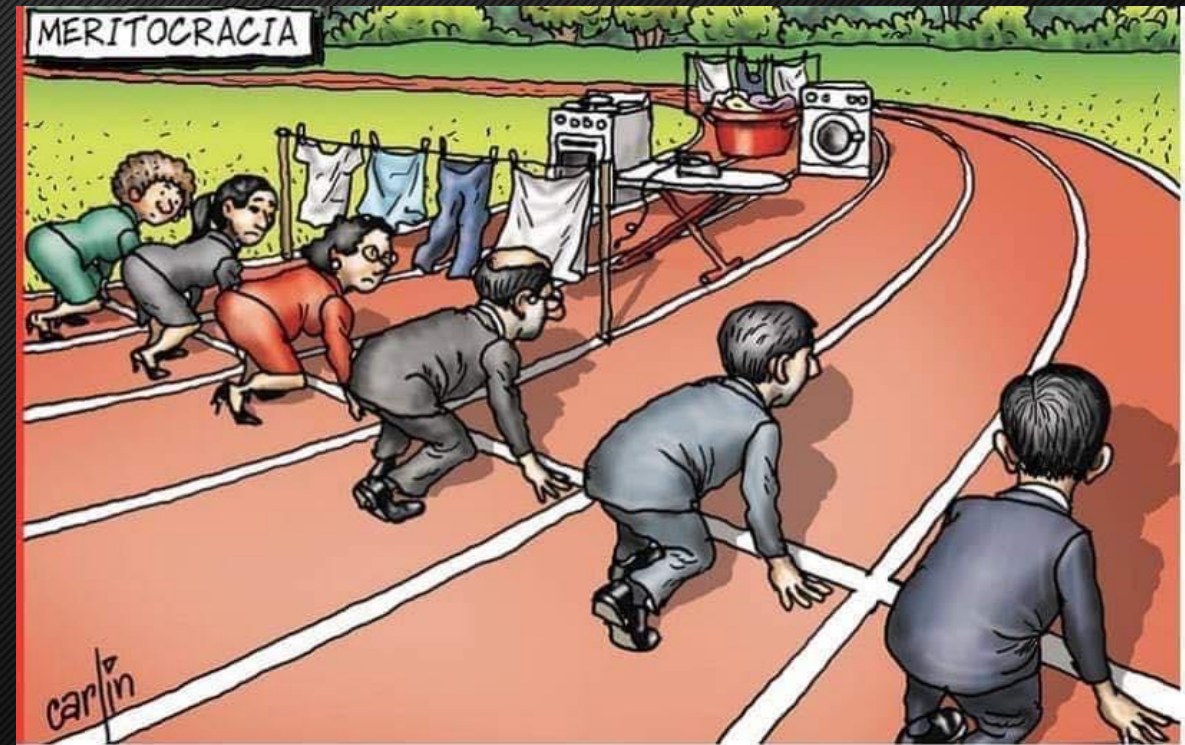
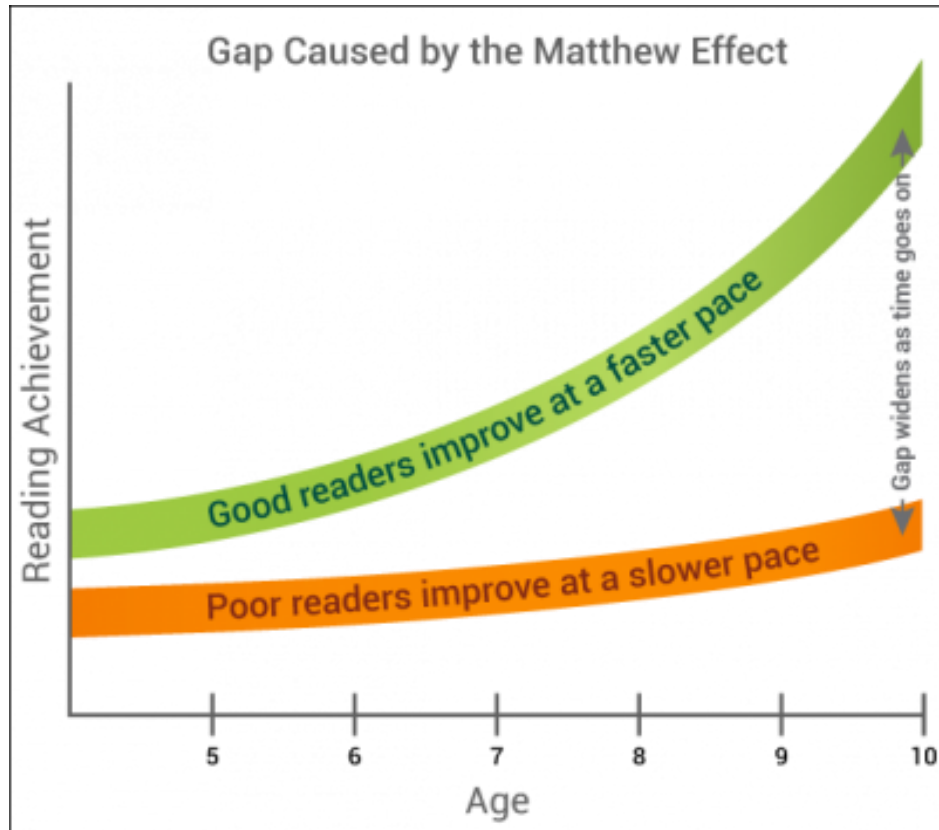


Disabled

Mechanism of marginalisation: defining success or excellence too narrowly

“Matthew effect”

Correlation of reading age and development



Credit: Carlos Tovar Samanez

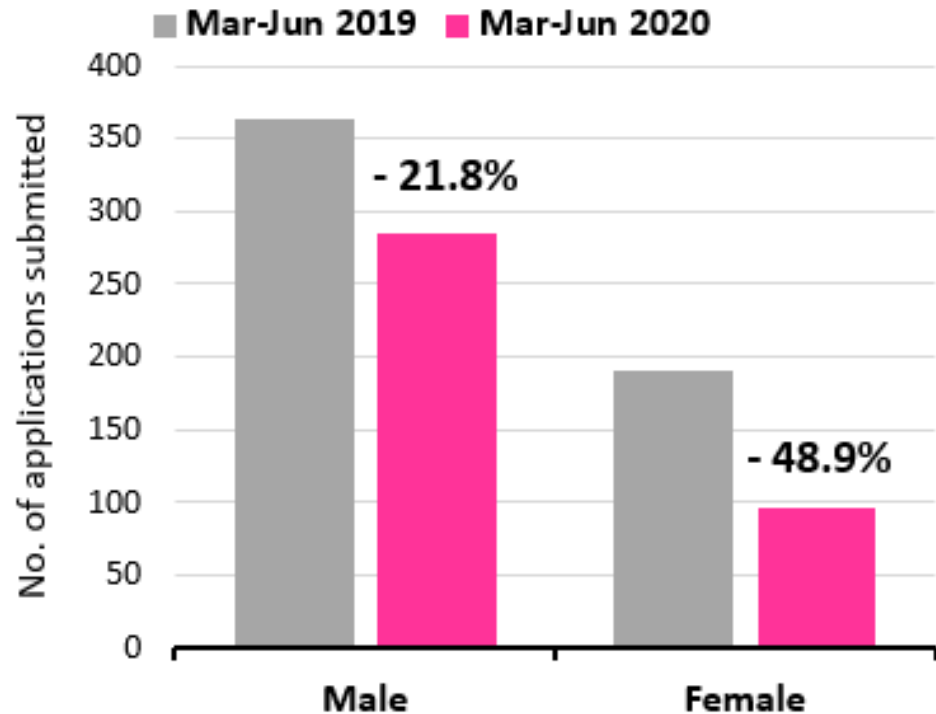
“Matthew effect”: marginalisation of female academics during pandemic



Data



“Matthew effect”: marginalisation of female academics during pandemic



Number of applications made between March and June 2020 (lockdown 1.0) compared to equivalent time point in 2019 by gender.

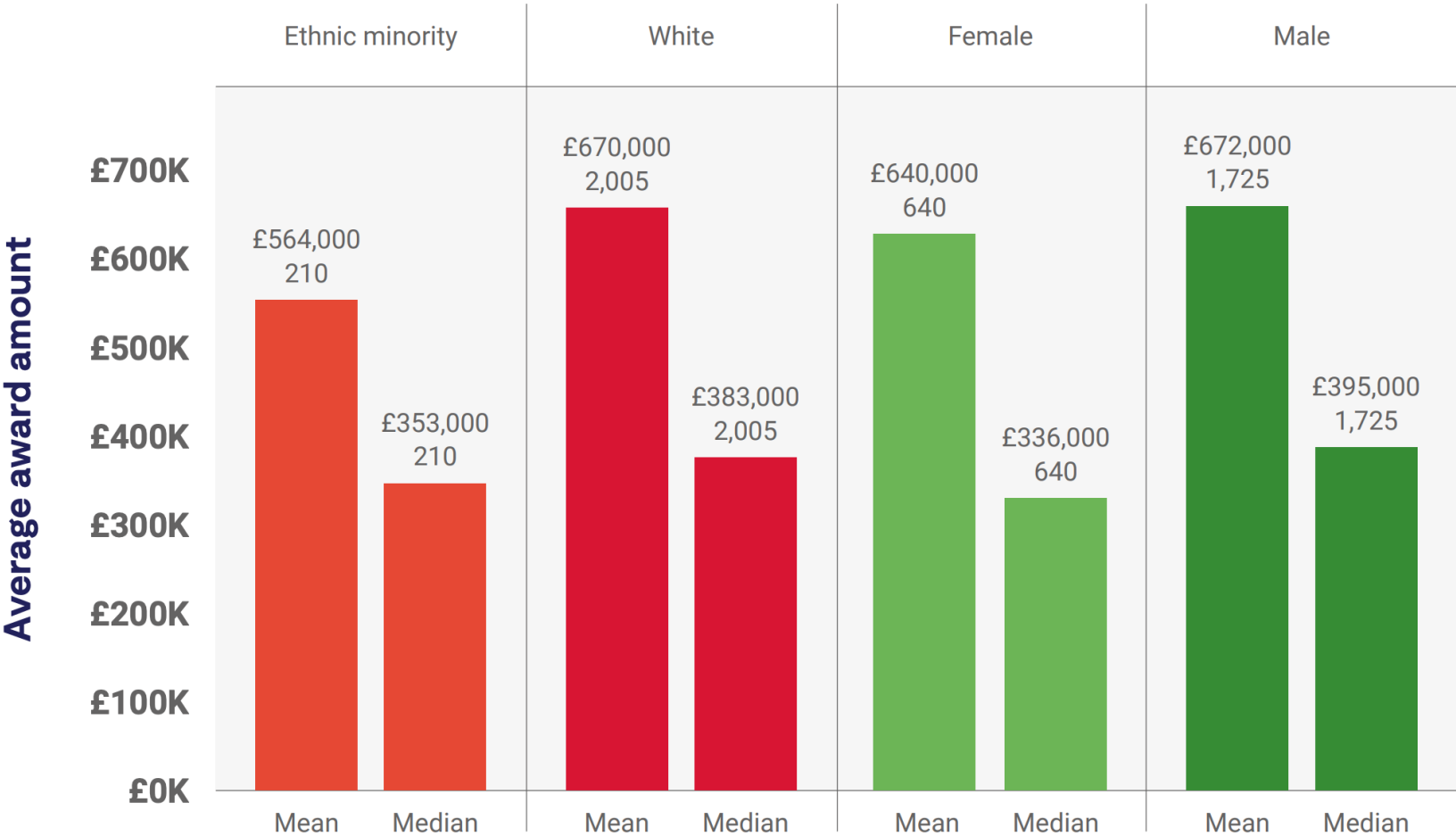
- Marginalised from tenure, promotions or hiring
- Effect on manuscript submission so much worse for Black women than White women (DOI: [10.3389/fpsyg.2021.663252](https://doi.org/10.3389/fpsyg.2021.663252))
- Universities choosing to discontinue staff on fixed-term contracts or depts that are deemed “unviable”

Racism is the most pronounced axis of marginalisation in the UK

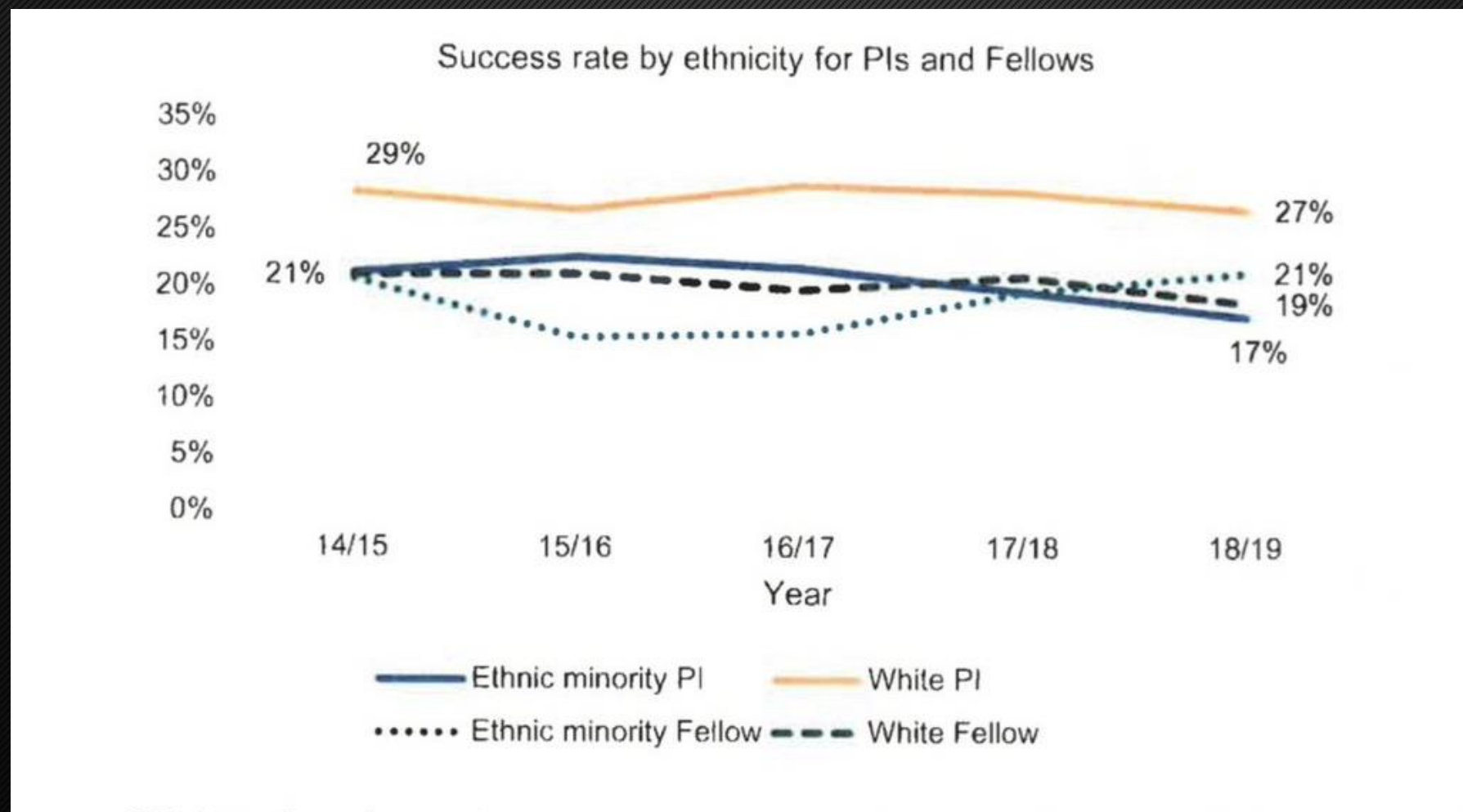
Figure 3: Differences in median and mean award values

Average amount awarded by ethnicity and gender for research grants in UKRI (2018–19).

Numbers on the top of the bar refer to the average award value and counts of the specified group.

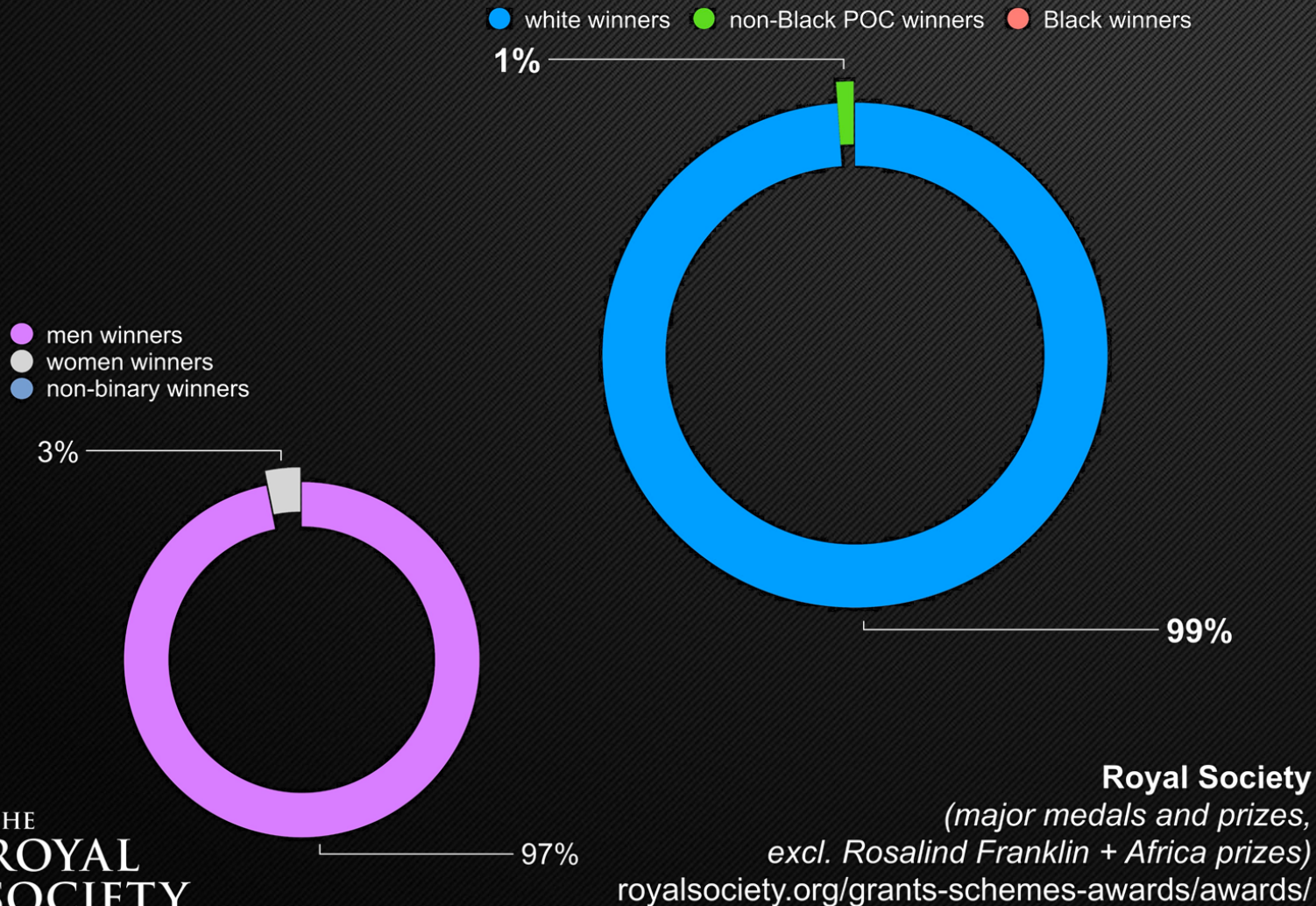


Racism is the most pronounced axis of marginalisation in the UK



“Science is and always has been a meritocracy”

UK science medals and prizes

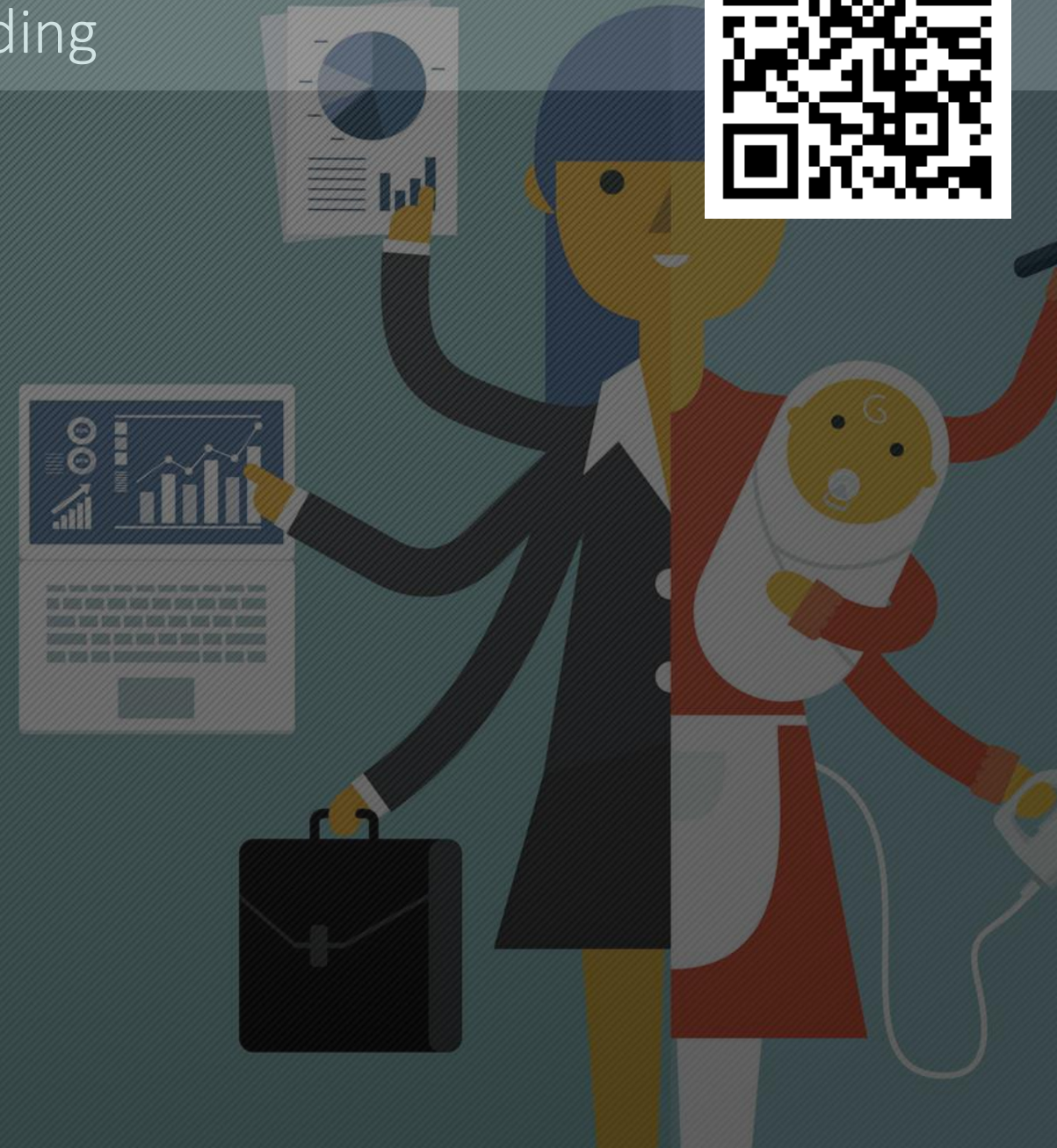


Barriers faced by minorities in STEM



Barriers faced by women in accessing funding

- Exclusive criteria of excellence (e.g. years since PhD completion)
- Timing and rigidity of funding deadlines
- Expectations on travelling
- Bullying, exclusion, harassment and stigmatization
- Exclusion of women from invited talks, awards, promotion opportunities (e.g. “you are not ready” or “not noteworthy”)



Barriers faced by LGBTQIA+ people in accessing funding



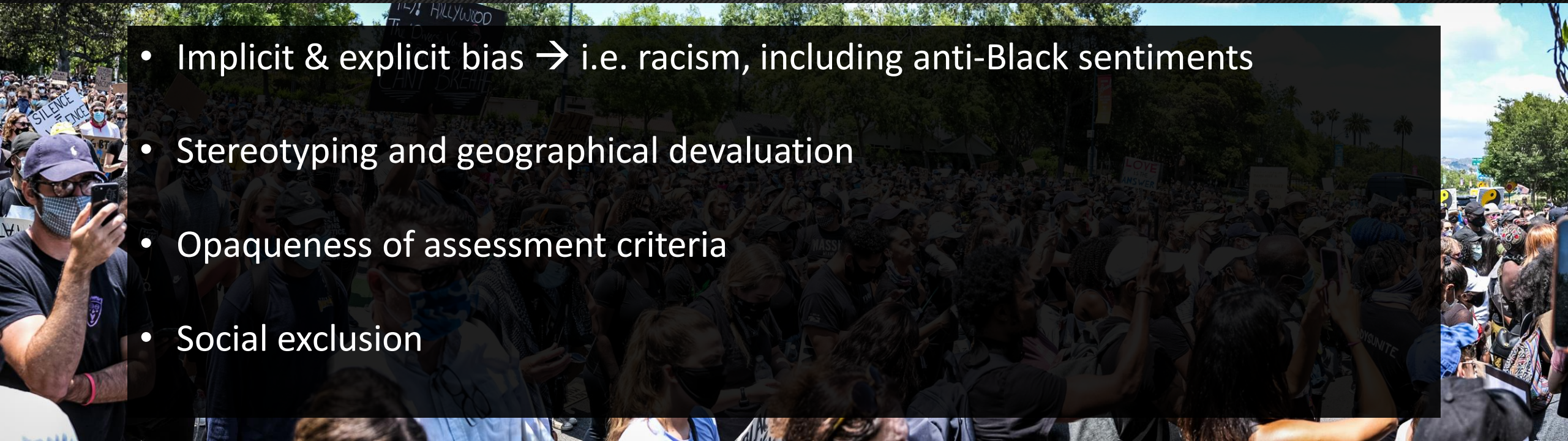
- Social exclusion
- Professional devaluation
- Bullying, harassment & hate speech in work place
- Discouraging from being out



Barriers faced by minoritized races in accessing funding

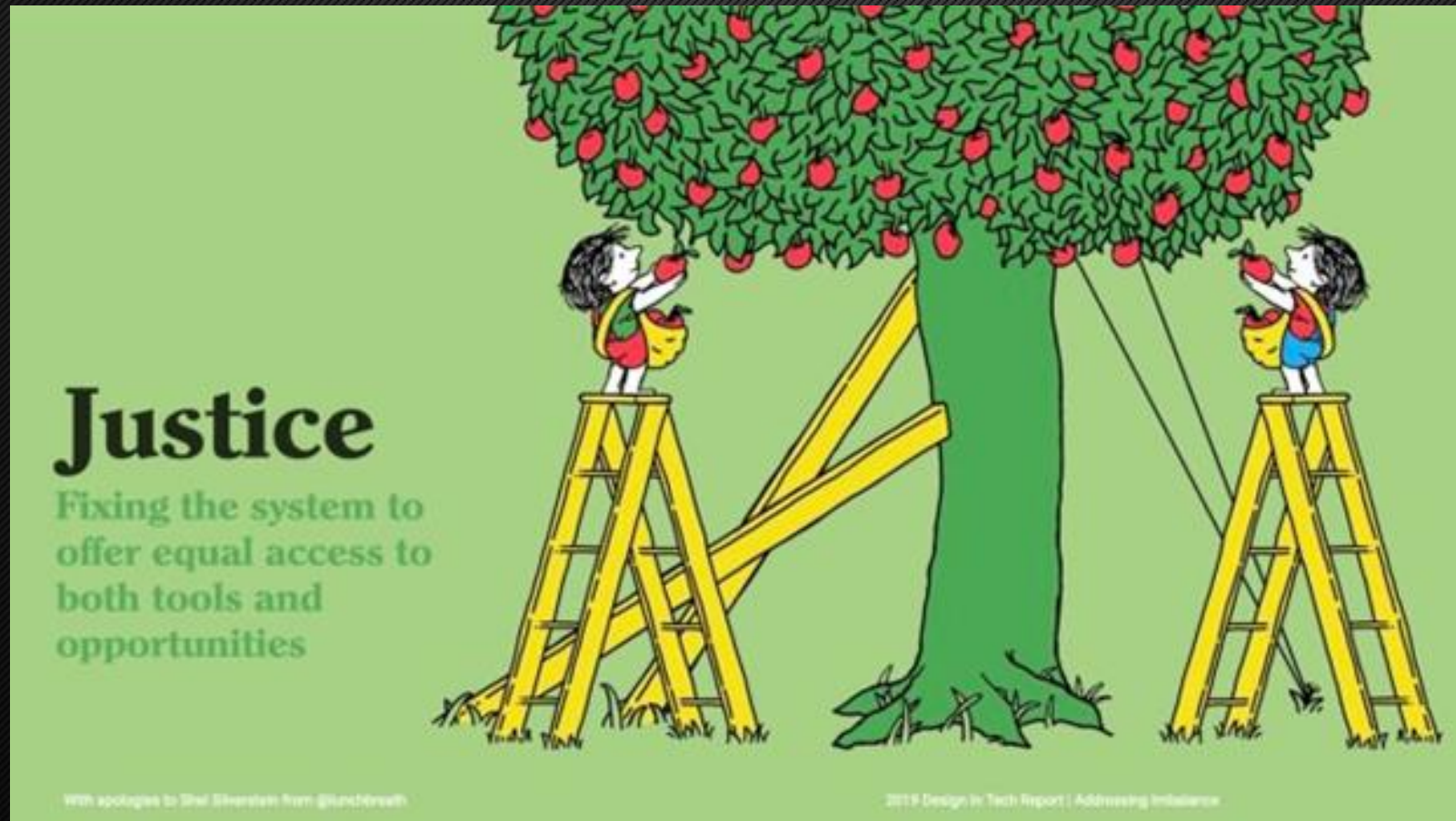


- Implicit & explicit bias → i.e. racism, including anti-Black sentiments
- Stereotyping and geographical devaluation
- Opaqueness of assessment criteria
- Social exclusion



Solution: J-E-D-I

J - E - D - I



JEDI(A) the 2020 vision

Positive action

Anti-hate speech measures

Preventing bullying, harassment, intimidation in workplaces

Safety from/during travel

Pay gap + barriers to employment/ promotions

Intersectionality

Evidence (data) of fairness in funding



Bolder & effective vision for levelling up



- Equity target in hiring, promotions and leadership (similar to Net-Zero)
- Universal basic research grant
- Revamp of assessment of researcher track record
- Independent monitoring and penalty structure for funders & research institutes that do not practice JEDI(A)
- Enforce public accountability of handling and awarding of publicly-funded research.

How do we get to J-E-D-I-(A)?

- Recognize the urgency
- Discard limiting beliefs
- Confront the myth of meritocracy
- Educate others
- Diversify leadership
- Promote and lift the voices of marginalized colleagues
- Allyship



Allyship

Volunteer

Promote

Support

Be present



Photo: CC-BY Sharon McCutcheon

