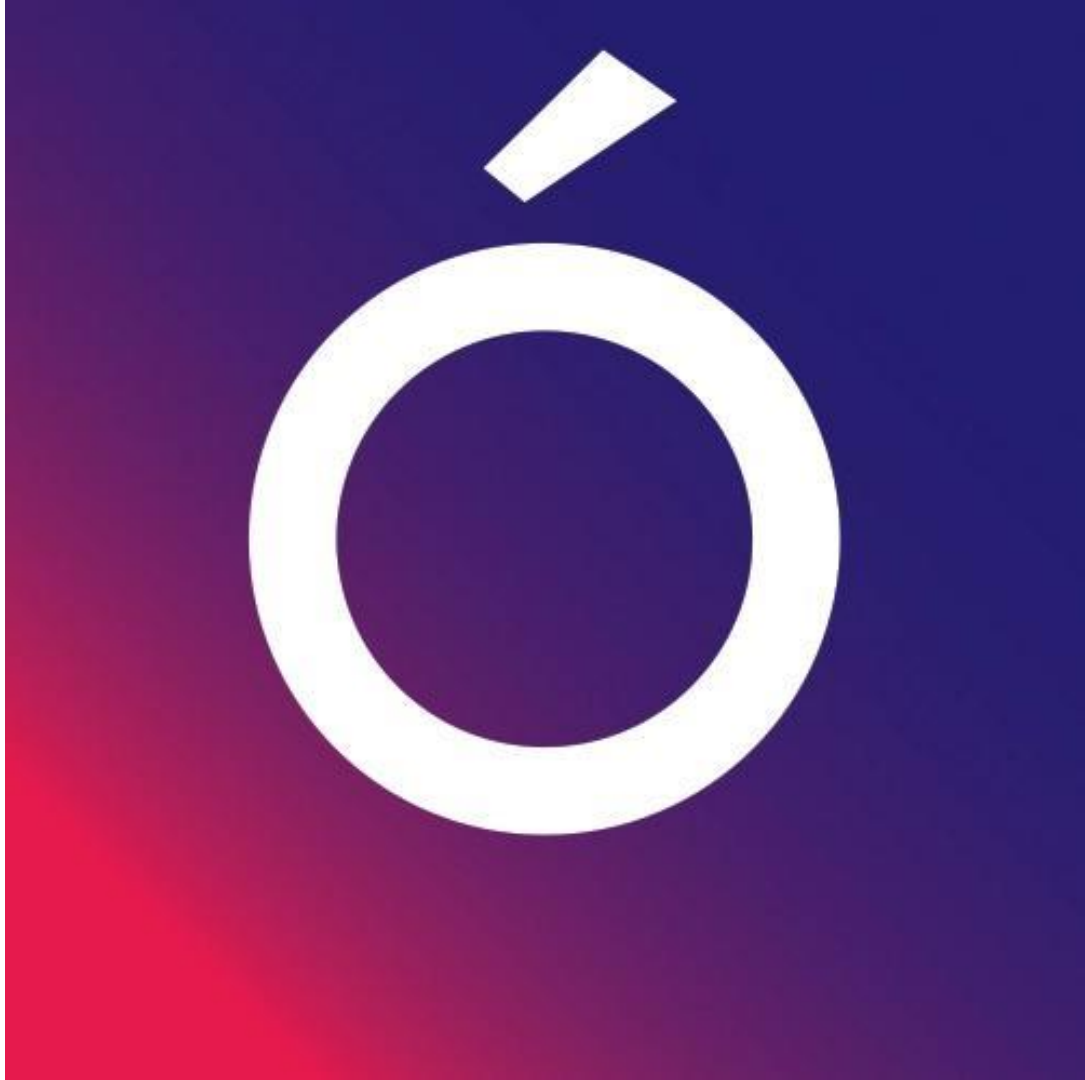
Perspectives from an Early Career Researcher

Dr. Kevin Daly
Advancing Research Culture
Conversations in Ireland
May 16th

kevin.daly@ucd.ie



Dr. Kevin Daly

- Ad Astra Fellow - Lecturer/Assistant Professor
- School of Agriculture and Food Science, UCD
- SFI Pathways awardee

Science Foundation Ireland sfi For what's next

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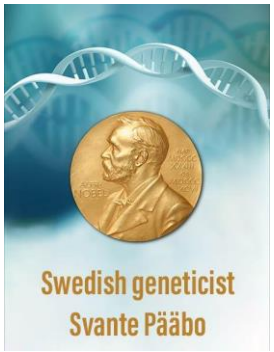

wins the Nobel prize for medicine in 2022 for decoding ancient human DNA.

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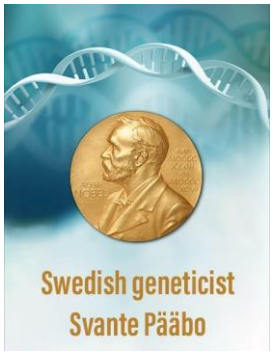

- Member of the Young Academy Ireland

Young Academy Ireland

- All-island, transdisciplinary ECRIs
- 40 members in initial cohort

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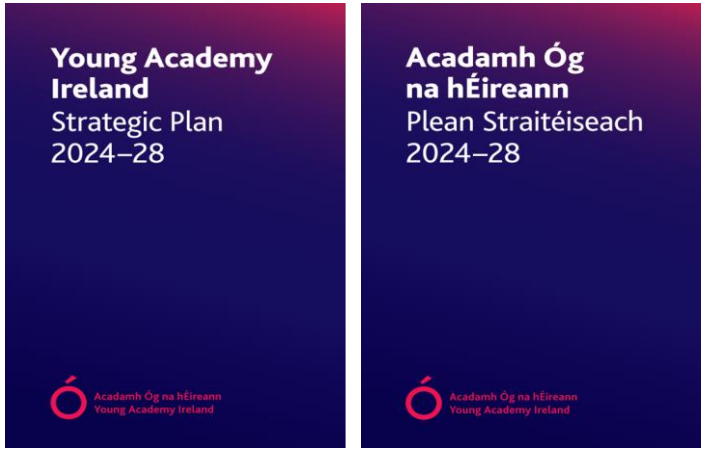
- 2024-2028 Strategic Plan:
  5 Grand Challenges



YAI Grand Challenges

1. Achieving Sustainability
2. Creating a Fair and Inclusive Society
3. Securing the **Future of Academia**
4. Supporting Public Involvement and Engagement with Research
5. Providing Transdisciplinary Expertise for Public Policy

What kind of Science and Academia do we want?

What kind of Science and Academia do ~~we~~ I want?

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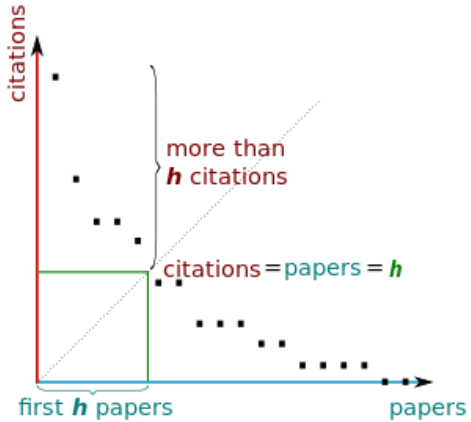
Driven by reductive metrics?



wikipedia.org

Valuing one definition of excellence?

Source: © Shutterstock

Closed research, profit driven?

€ € €

Source: nature.com
doi.org/10.1038/545145a

How are we assessing researchers today?

A global assessment of academic promotion criteria: What really counts?

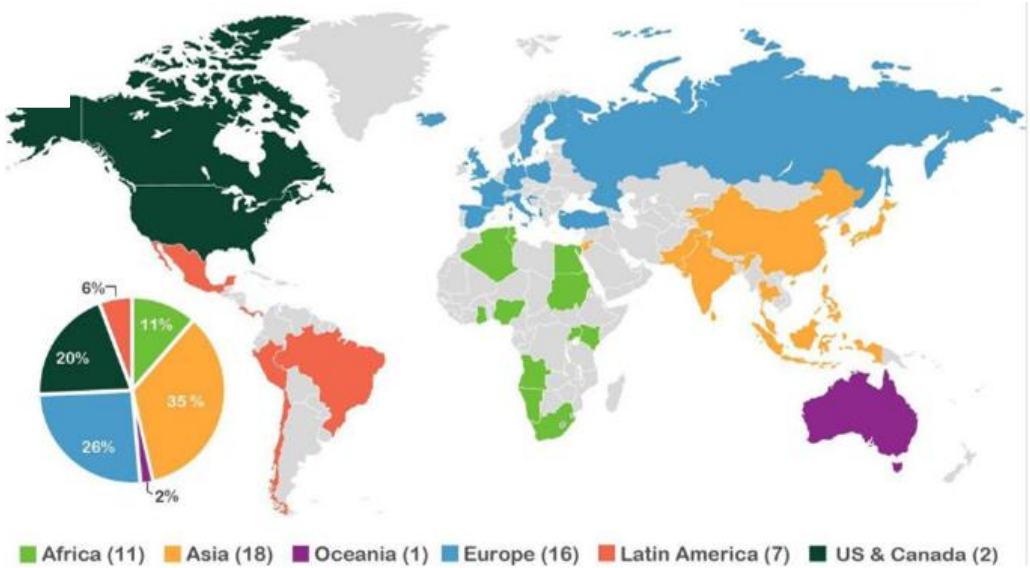
Boon Han Lim, Carlo D'Ippoliti, Martin Dominik, Koen Vermeir, and 17 more

This is a preprint; it has not been peer reviewed by a journal.

https://doi.org/10.21203/rs.3.rs-3011208/v1

Dr. Yensi Flores Bueso
MSCA Fellow, Global Young Academy,
Young Academy Ireland, CoARA

Assessing global research assessment: 221 policies

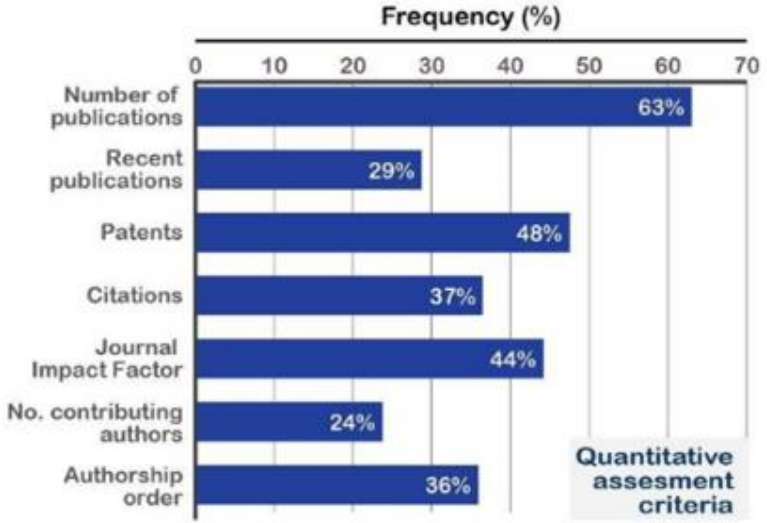


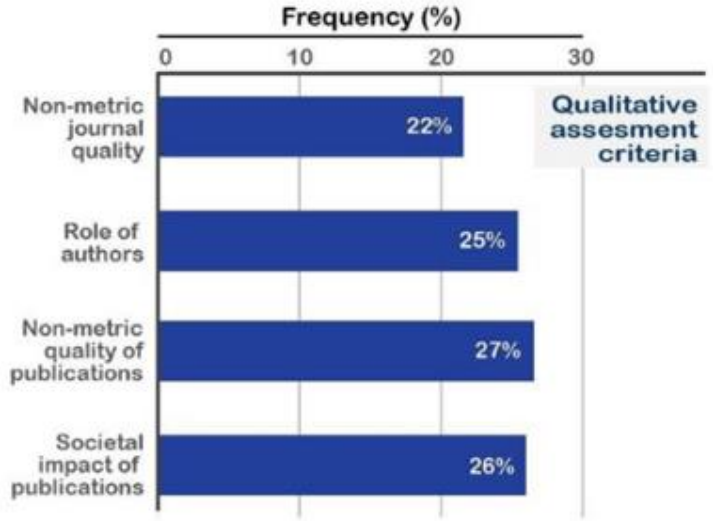
Filtering and classification of policies

Criteria classification

Analysis of policies & criteria

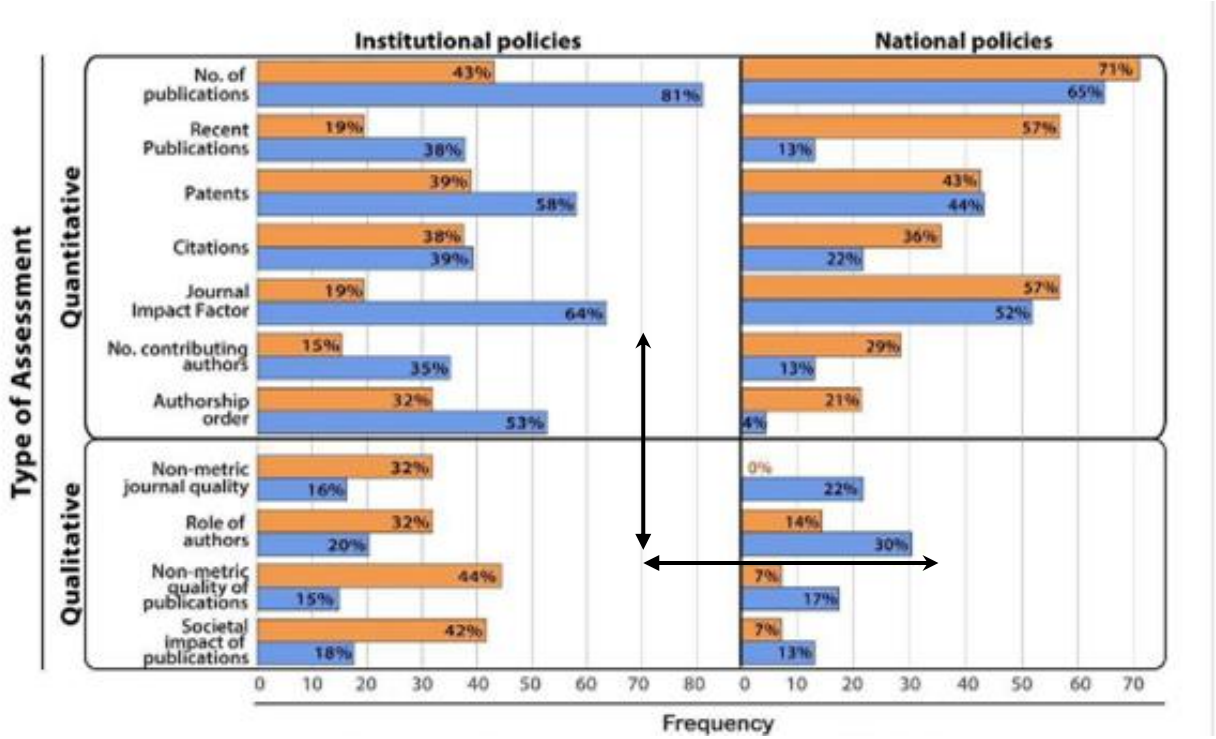
Global tendencies of research output assessment



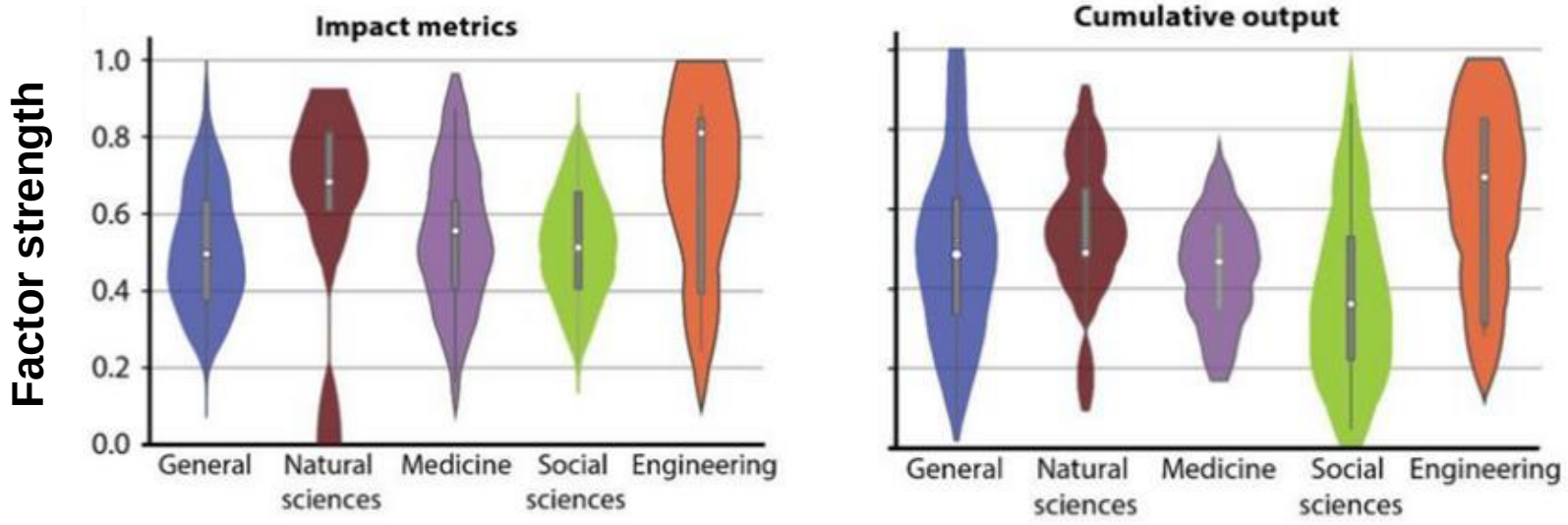


Qualitative assessment remains less frequent (55%) than quantitative (90%)

Differing assessment in Global North & Global South



Assessment for promotion by disciplines



A Transparent Science?

- Reproducibility crisis: 20-60% of research non-reproducible
- Raw data access; code accessibility
- Reinforces global research inequity

Begley, C. G.; Ellis, L. M. (2012). "Drug Development: Raise Standards for Preclinical Cancer Research". Nature.
Baker, M. 1,500 scientists lift the lid on reproducibility. Nature 533, 452–454 (2016). https://doi.org/10.1038/533452a
Open Science Collaboration, Estimating the reproducibility of psychological science. Science 349, aa4716 (2015)
Piwowar et al 2019. https://doi.org/10.1101/795310

Derived from Thomas Guillemaud, Denis Bourguet, and Marjolaine Hamelin: https://osf.io/6rxmh
Illustration: Kieran Blakey

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- Worldwide 2019: 70% manuscripts paywalled
- Article Processing Charges: ~€3,000 (boutique journals >€10,000)
- Downsides of closed peer review: hidden biases, editorial decisions

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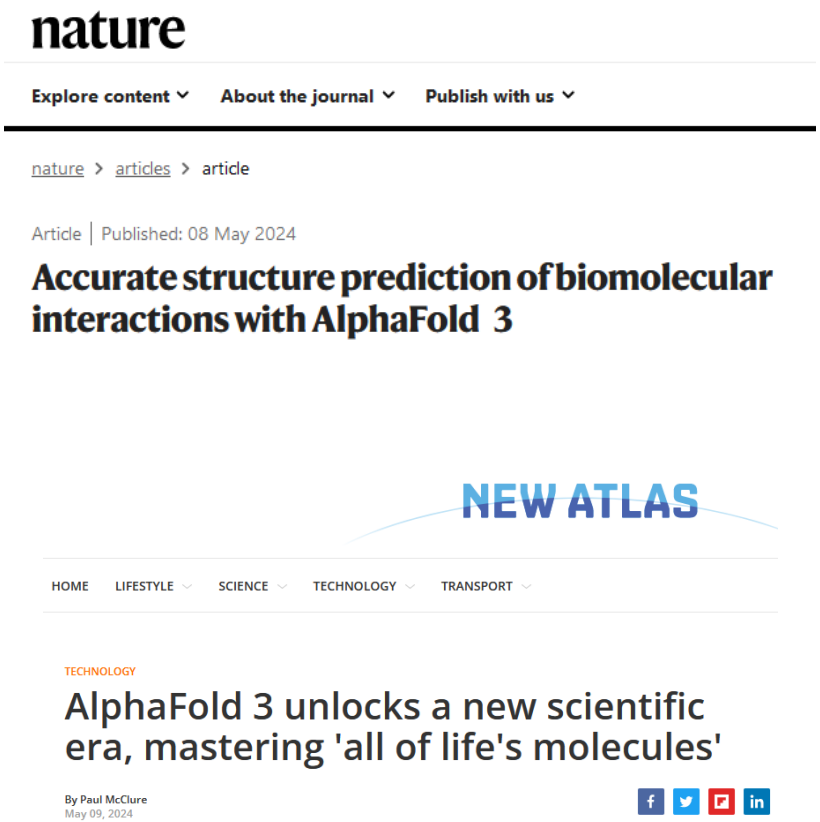
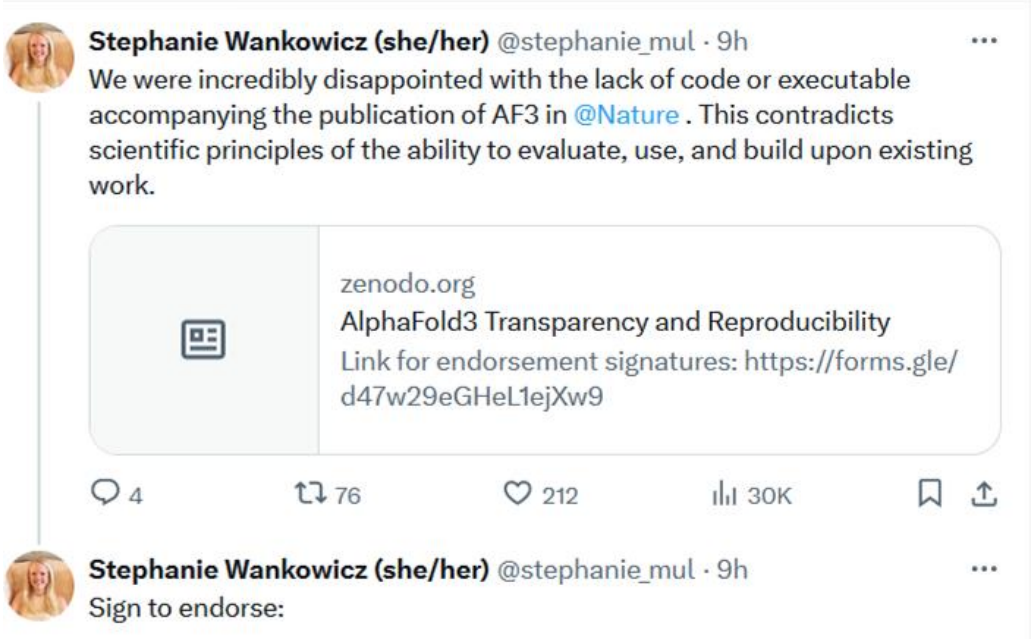
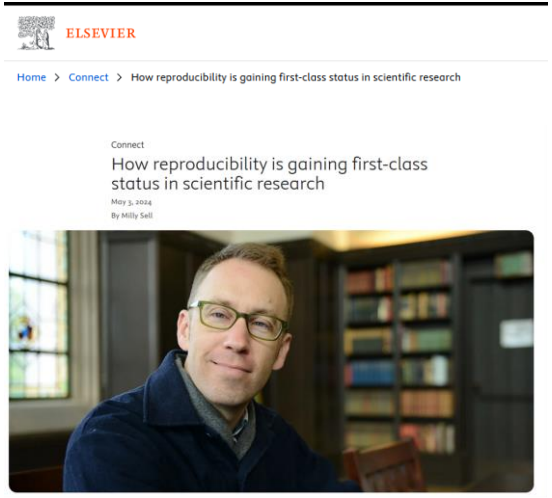




Journal of Archaeological Science



Ben Marwick: *"The reproducibility of research work needs to be recognized as an* ***exceptional scholarly product****, much like a journal article itself."*

"I have experienced how different research institutions around the world ***don't have equal access to skills and training.*** *…. Increased effort on reproducibility and sharing of code and data will help diminish this bias by providing* ***more equitable access to research materials****."*

Many journals: Data Availability Statement
Open Science Badges

JAS Reproducibility Review
JAS Reproducibility Prize

https://www.elsevier.com/connect/how-reproducibility-is-gaining-first-class-status-in-scientific-research

Peer Community In (PCI)

"**Communities of researchers** handling the evaluation of (through peer review) and **recommending preprints** in their scientific field"

Goat ancient DNA analysis unveils a new lineage that may have hybridized with domestic goats

Laura Botigué based on reviews by Torsten Günther and 1 anonymous reviewer

A recommendation of:

A novel lineage of the Capra genus discovered in the Taurus Mountains of Turkey using ancient genomics

Kevin G. Daly, Benjamin S. Arbuckle, Conor Rossi, Valeria Mattiangeli, Phoebe A. Lawlor, Marjan Mashkour, Eberhard Sauer, Joséphine Lesur, Levent Atici, Cevdet Merih Erek, Daniel G. Bradley

(2022), bioRxiv, 2022.04.08.487619, ver. 5 peer-reviewed and recommended by Peer Community in Genomics
https://doi.org/10.1101/2022.04.08.487619

READ PREPRINT IN PREPRINT SERVER

Data+code

Data used for results

- *https://osf.io/3ecqd/*

Scripts used to obtain or analyze results

- *https://osf.io/3ecqd/*

Abstract

EN AR ES FR HI JA PT RU ZH-CN

Submission: posted 15 April 2022
Recommendation: posted 02 August 2022, validated 23 August 2022

Cite this recommendation as:
Botigué, L. (2022) Goat ancient DNA analysis unveils a new lineage that may have hybridized with domestic goats. *Peer Community in Genomics, 100020.* *https://doi.org/10.24072/pci.genomics.100020*

Recommendation, all correspondence & changes

Reviews

Evaluation round #1

DOI or URL of the preprint: *https://doi.org/10.1101/2022.04.08.487619*

Author's Reply, 14 Jul 2022

Download author's reply
Download tracked changes file

Decision by Laura Botigué, *posted 16 May 2022*

The manuscript "A novel lineage of the Capra genus discovered in the Taurus mountains of Turkey using ancient genomics" analyses the genomes of different ~14,000 year-old Capra specimens from an archaeological site in southern Turkey. The time and location of these remains are of interest because they can shed more light into the details behind the domestication process of domestic goats. Both reviewers have found that the manuscript makes relevant contributions in several fields. Reviewer one is particularly enthusiastic about the Dext statistic and suggests that this statistic is exposed in a more relevant manner.

There are however, several concerns that the two reviewers share. The first of them, is that the manuscript revolves around the claim of the novel finding of a lost Capra lineage. Beyond the difficulties surrounding the very definition of species and subspecies that Reviewer 1 raises and the possibility raised by Reviewer 2 of these specimen being a hybrid, both reviewers point to the current gap of knowledge that exists on the population structure of the modern Capra genus. The Discussion should be more explicitly framed acknowledging this gap of knowledge. The second concern is about the processing of the low coverage genomes. Some additional analyses are proposed to avoid mapping biases and to quantify the mismapping effects associated with the low coverage genomes. I also think it would be necessary to provide more information on the number of SNPs used in the different analyses.

Something that the two reviewers do not comment on but I noticed is that in the legend of Figure 1B it is sated that the tree was done for genomes above 0.5x, but Tur2 is included and its genome is reported to be 0.02x.

I think that addressing these points would results in a significantly improved piece of work.

Reviewed by anonymous reviewer 1, 13 May 2022

In this article, the authors have sequenced multiple Capra ancient specimens from the Direkli and, in doing so, they have discovered one individual representing a tur-like novel lineage, Direkly 4, which might represent an extinct goat

Challenges getting to our destination…

Where we are

Where we want to go

A healthier academia which values more than one quality

Challenges for ECRs

- First mover disadvantage: serve old system or invest in quality research
- More work, same outcome?
- Not box-ticking: truly **valuing a range of excellences** (which everyone not need excel at)
- The measure **will** become a target

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- First mover disadvantage: serve old system or invest in quality research
- More work, same outcome?
- Not box-ticking: truly **valuing a range of excellences** (which everyone not need excel at)
- The measure **will** become a target
- Divergence between Global North and South
- Evaluators correctly trained?
- Narrative CVs: rewards better English or support networks?

How can institutions help? - ECRs

- Reduce **uncertainty** for ECRs: transparency and consistency
- Help ECRs **understand** what new definitions of quality (or qualities) - shouldn't need to excel at all
- **Support and value** ECRs contributions to improving academia e.g. open science awards

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- **Support and value** ECRs contributions to improving academia e.g. open science awards
- ECR **training**: Open Science, CV peer review
- ECRs as **data,** and **as stakeholders** in system and cultural change
- Internally measure **successes and challenges**
    - No such thing as perfect evaluation

How can institutions help? - Cultural change

Image: Nick Youngson – http://www.nyphotographic.com/

How can institutions help? - Cultural change

- Emphasizing the **qualities** not just singular quality of researchers
- Responsibility will always be on evaluators to maintain academic **rigor**, and assessment never bias free

Image: Nick Youngson – http://www.nypbotographic.com/

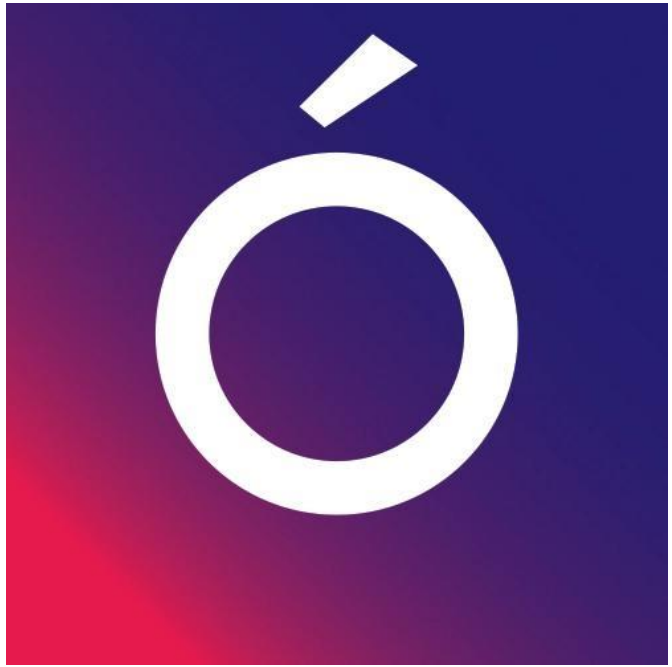
How can institutions help? - Cultural change

- Emphasizing the **qualities** not just singular quality of researchers
- Responsibility will always be on evaluators to maintain academic **rigor**, and assessment never bias free
- Two pronged approach: grassroots advocacy and top-down systemic change (i.e. CoARA)
- **Incentivize** RRA training, commitment to best research practices, internal awards etc
- Mitigate against workload creep

Image: Nick Youngson – http://www.nyphotographic.com/

Thanks to

- Grace Mulcahy
- Yensi Flores Bueso
- Stefan Muller
- Agata Westin
- Declan O'Loughlin & rest of the YAI
- Science Foundation Ireland



Science Foundation Ireland sfi For what's next