

The UK Reproducibility Network (UKRN)

Marcus Munafò



COMMENTARY

Scientists behaving badly

To protect the integrity of science, we must look beyond falsification, fabrication and plagiarism, to a wider range of questionable research practices, argue **Brian C. Martinson**, **Melissa S. Anderson** and **Raymond de Vries**.

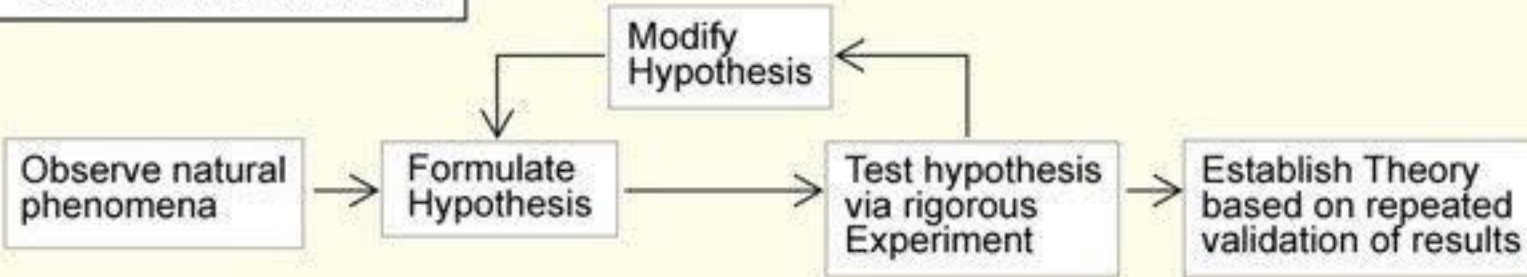
“Certain features of the working environment of science may have unexpected and potentially detrimental effects on the ethical dimensions of scientists’ work”



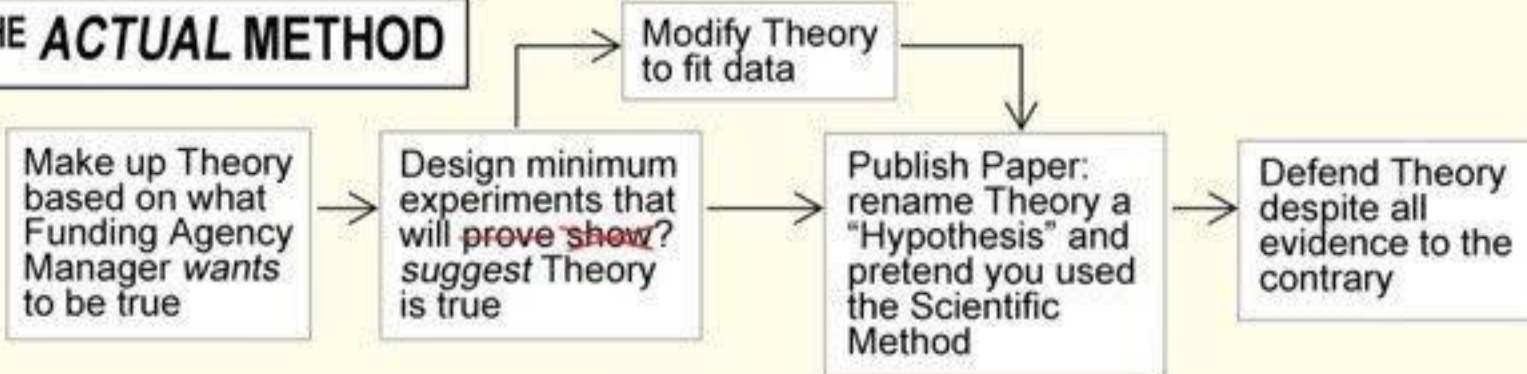
Martinson et al. (2005). *Nature*, 435, 737-738.

Real Scientific Method

THE SCIENTIFIC METHOD



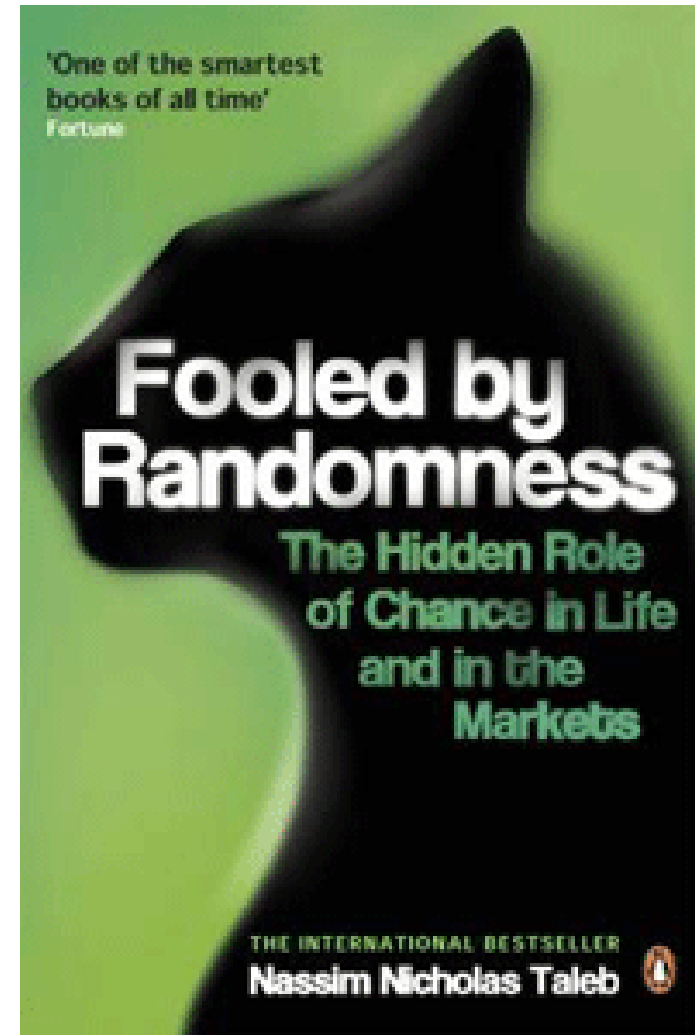
THE ACTUAL METHOD



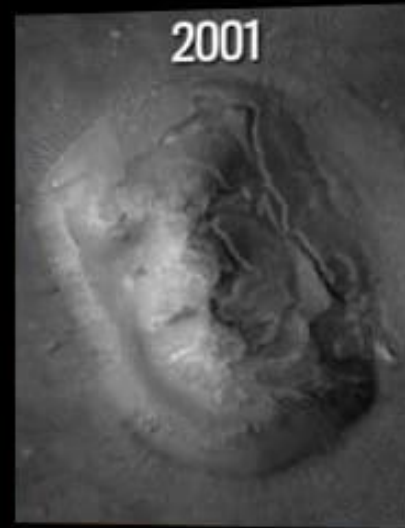
www.phdcomics.com



“Scientists may be in the business of laughing at their predecessors, but owing to an array of human mental dispositions, few realize that someone will laugh at their beliefs in the (disappointingly near) future”



Taleb (2007). Fooled by Randomness.



A manifesto for reproducible science

Marcus R. Munafò^{1,2*}, Brian A. Nosek^{3,4}, Dorothy V. M. Bishop⁵, Katherine S. Button⁶, Christopher D. Chambers⁷, Nathalie Percie du Sert⁸, Uri Simonsohn⁹, Eric-Jan Wagenmakers¹⁰, Jennifer J. Ware¹¹ and John P. A. Ioannidis^{12,13,14}

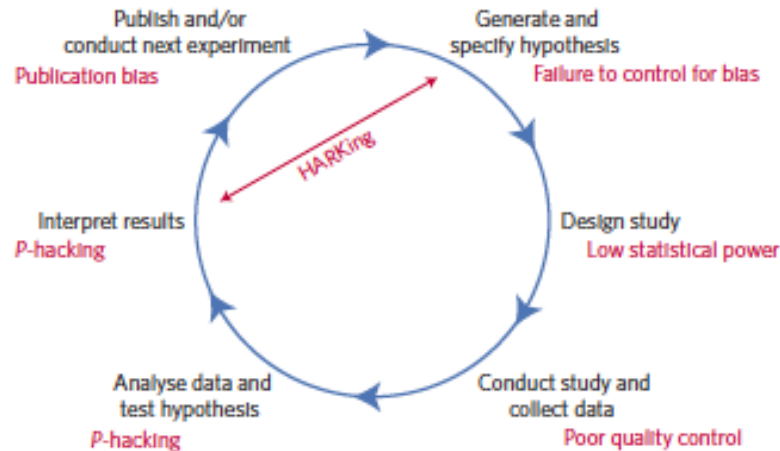


Table 1 | A manifesto for reproducible science.

| Theme | Proposal | Examples of initiatives/potential solutions (extent of current adoption) | Stakeholder(s) |
|-----------------------------|---|---|----------------|
| Methods | Protecting against cognitive biases | All of the initiatives listed below (* to ****) Blinding (**) | J, F |
| | Improving methodological training | Rigorous training in statistics and research methods for future researchers (*) Rigorous continuing education in statistics and methods for researchers (*) | I, F |
| | Independent methodological support | Involvement of methodologists in research (**) Independent oversight (*) | F |
| | Collaboration and team science | Multi-site studies/distributed data collection (*) Team-science consortia (*) | I, F |
| Reporting and dissemination | Promoting study pre-registration | Registered Reports (*) Open Science Framework (*) | J, F |
| | Improving the quality of reporting | Use of reporting checklists (**) Protocol checklists (*) | J |
| | Protecting against conflicts of interest | Disclosure of conflicts of interest (***) Exclusion/containment of financial and non-financial conflicts of interest (*) | J |
| Reproducibility | Encouraging transparency and open science | Open data, materials, software and so on (* to **) Pre-registration (**** for clinical trials, * for other studies) | J, F, R |
| Evaluation | Diversifying peer review | Preprints (* in biomedical/behavioural sciences, **** in physical sciences) Pre- and post-publication peer review, for example, Publons, PubMed Commons (*) | J |
| Incentives | Rewarding open and reproducible practices | Badges (*) Registered Reports (*) Transparency and Openness Promotion guidelines (*) Funding replication studies (*) Open science practices in hiring and promotion (*) | J, I, F |

Estimated extent of current adoption: *, <5%; **, 5–30%; ***, 30–60%; ****, >60%. Abbreviations for key stakeholders: J, journals/publishers; F, funders; I, institutions; R, regulators.

Munafò et al. (2017). Nat Hum Behav, 1, 0021.



For the UK to lead the world in conducting and promoting rigorous research.

Understand factors that contribute to poor research reproducibility
Provide training and disseminate best practice
Support and test interventions to improve reproducibility
Ensure coordination with stakeholders

- Launched March 2019
- Local network leads at >40 UK institutions
- Institutional leads at 15 UK institutions
- Supported by a range of external stakeholders
- Developing networks in other countries

@UKRepro
www.ukrn.org



Marcus
Munafò

Laura
Fortunato

Malcolm
MacLeod

Alex
Collins

Chris
Chambers

Nicole
Janz



UKRN

Institutional
Lead

Local Lead
and
Network

Local Lead
and
Network

Local Lead
and
Network

Steering
Group

Stakeholder
Engagement Group

Advisory
Board

Local Lead
and
Network

Local Lead
and
Network

Local Lead
and
Network



UKRN

September 2018

Informal meeting
University of Bristol

March 2019

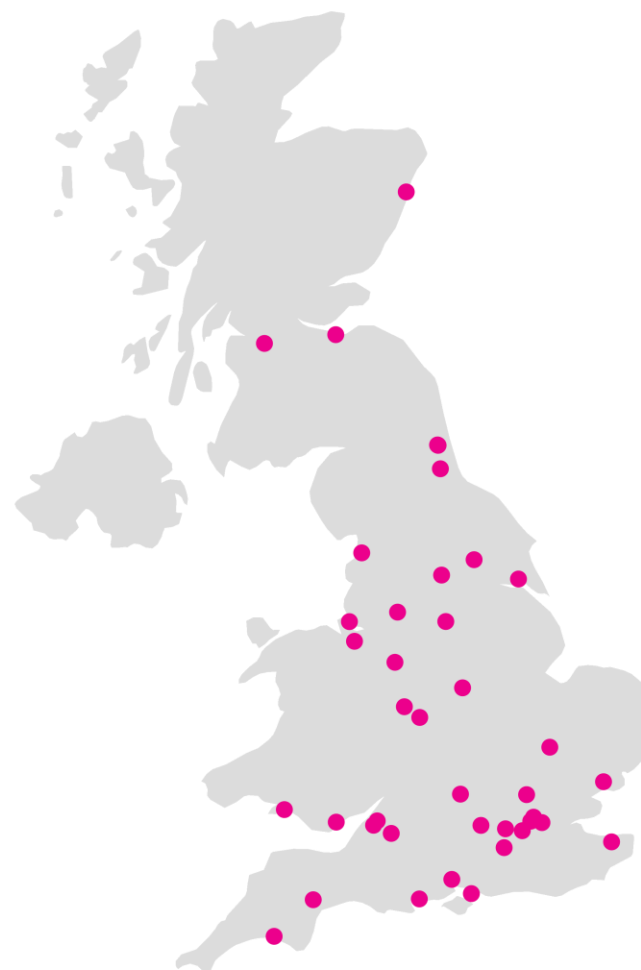
1st annual meeting
King's College London

December 2019

First institutional members
Initially 10, now 15...

March 2020

2nd annual meeting
University of Oxford



UKRN

September 2018

Informal meeting
University of Bristol

March 2019

1st annual meeting
King's College London

December 2019

First institutional members
Initially 10, now 15...

March 2020

2nd annual meeting
University of Oxford



UKRN

Peer-led consortium

Involves researchers,
institutions and other orgs

Opportunity to improve research

Working collaboratively to
reform culture and practice

Broad disciplinary representation

Focus on open research for
inclusivity beyond the sciences



UKRN Initiatives



Accountable Replication Policies

Journals' commitment to publish valid replications of their previously published studies.



Octopus

Octopus is a new platform to replace journals and papers as the primary research record.



Open Research Working Groups

Action-oriented teams reforming research for transparency, accessibility and reproducibility.



ReproducibiliTea

Early-career researcher community promoting open and reproducible research.



Hiring Policies Certification Scheme

Academic employers' declaration to recruit based on record of open research practices.



Laboratory Efficiency Assessment Framework (LEAF)

LEAF programme is a standard in environmentally sustainable laboratory practices.



FEATURE

Research on covid-19 is suffering “imperfect incentives at every stage”

The rush to publish and report during the pandemic is compromising quality, worried experts tell
Stephen Armstrong

Stephen Armstrong *freelance journalist*





Retraction—Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis

Published Online
June 4, 2020
[https://doi.org/10.1016/S0140-6736\(20\)31324-6](https://doi.org/10.1016/S0140-6736(20)31324-6)

After publication of our *Lancet* Article,¹ several concerns were raised with respect to the veracity of the data and analyses conducted by Surgisphere Corporation and its founder and our co-author, Sapan Desai, in our publication. We launched an independent third-party peer review of Surgisphere with the consent of Sapan Desai to evaluate the origination of the database elements, to confirm the completeness of the database, and to replicate the analyses presented in the paper.

Our independent peer reviewers informed us that Surgisphere would not transfer the full dataset, client contracts, and the full ISO audit report to their servers for analysis as such transfer would violate client agreements and confidentiality requirements. As such, our reviewers were not able to conduct an independent and private peer review and therefore notified us of their withdrawal from the peer-review process.

We always aspire to perform our research in accordance with the highest ethical and professional guidelines. We can never forget the responsibility we have as researchers to scrupulously ensure that we rely on data sources that adhere to our high standards. Based on this development, we can no longer vouch for the veracity of the primary data sources. Due to this unfortunate development, the authors request that the paper be retracted.

We all entered this collaboration to contribute in good faith and at a time of great need during the COVID-19 pandemic. We deeply apologise to you, the editors, and the journal readership for any embarrassment or inconvenience that this may have caused.

MRM reports personal fees from Abbott, Medtronic, Janssen, Roivant, Triple Gene, Mesoblast, Baim Institute for Clinical Research, Portola, Bayer, NupulseCV, FineHeart, and Leviticus. FR has been paid for time spent as a committee member for clinical trials, advisory boards, other forms of consulting, and lectures or presentations; these payments were made directly to the University of Zurich and no personal payments were received in relation to these trials or other activities since 2018. Before 2018 FR reports grants and personal fees from SJM/Abbott, grants and personal fees from Servier, personal fees from Zoll, personal fees from Astra Zeneca, personal fees from Sanofi, grants and personal fees from Novartis, personal fees from Amgen, personal fees from BMS, personal fees from Pfizer, personal fees from Fresenius, personal fees from Vifor, personal fees from Roche, grants and personal fees from Bayer, personal fees from Cardiorientis, personal fees from Boehringer Ingelheim, other from Heartware, and grants from Mars. ANP declares no competing interests.

***Mandeep R Mehra, Frank Ruschitzka, Amit N Patel**
mmehra@bwh.harvard.edu

Brigham and Women's Hospital Heart and Vascular Center and Harvard Medical School, Boston, MA 02115, USA (MRM); University Heart Center, University Hospital Zurich, Zurich, Switzerland (FR); Department of Biomedical Engineering, University of Utah, Salt Lake City, UT, USA (ANP); and HCA Research Institute, Nashville, TN, USA (ANP)

¹ Mehra MR, Desai SS, Ruschitzka F, Patel AN. Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis. *Lancet* 2020; published online May 22. [https://doi.org/10.1016/S0140-6736\(20\)31180-6](https://doi.org/10.1016/S0140-6736(20)31180-6).



VIRTUAL CONFERENCE

REPRODUCIBILITY, REPLICABILITY AND TRUST IN SCIENCE

09- 11 September 2020 |

Bringing together international researchers, publishers, institutions and funders to improve the robustness of scientific research



PROGRAMME COMMITTEE

Veronique Kiermer - PLOS, USA
Maria Leptin - EMBO, Germany
Johanna McEntyre - EMBL- EBI, UK
Marcus Munafo - University of Bristol, UK

DEADLINES

Submit abstracts by: 04 August 2020
Register by: 02 September 2020

KEYNOTE SPEAKER

Michael Blastland – Journalist and Author, UK

CONFIRMED SPEAKERS

Olavo Amaral – University of Rio de Janeiro, Brazil
Julie Beeso – Oxford PharmaGenesis, UK
Ewan Birney – EMBL- EBI, UK
Niklas Blomberg – ELIXIR, UK
Anne-Marie Coriat – Wellcome, UK
Malcolm Macleod – University of Edinburgh, UK
Sarah de Rijcke – Leiden University, The Netherlands
Sandra Schmid – UT Southwestern, USA
Magdalena Skipper – Nature, UK

#RRTS20

For more information: [bit.ly/ RRTS20_S](https://bit.ly/RRTS20_S)



WELL-COME GENOME CAMPUS
CONNECTING
SCIENCE
ADVANCED
COURSES+
SCIENTIFIC
CONFERENCES