Emerging issues in authorship

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The trade of authorship is a violent, and indestructible obsession.

George Sand (French writer, 1804-1876)

Declaration of activities and relationships

University of Split School of Medicine, Split, Croatia: Chair, Department of Research in Biomedicine and Health Head, Center for Evidence-based Medicine

Editor Emerita, *Journal of Global Health* Senior Co-editor in Chief, *ST-OPEN*

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Common indicators

- Scientific topic: Frequently papers are in the field of cellular and molecular biology, but this is changing all the time
- Experiments: Usually many Western blot experiments, cytometry assays, histology/cell staining
- Experimental data: Western blots are often "too clean" especially the background; cytometry assays are also "too clean"; molecular weight markers are usually not shown for Western blot experiments.
- Layout: The layout of these papers appears very similar (graphs, statistical error bars, fonts in figures, etc.).
- Affiliations: Authors affiliations often do not show a specific university. At times, the mentioned departments do not seem to match the topic of the paper.



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Common indicators

- Authors: Papers are usually submitted by authors who have no publishing record with the specific journal, or elsewhere. Many non-institutional email-addresses are used. New ORCIDs seem to be created for each individual submission. This is a particularly challenging indicator as there are countries where institutional email addresses are rare and therefore that does not automatically mean the author is not genuine.
- Experimental design: Upon closer evaluation, flaws in experimental design are found. For instance, experimental data does not match the descriptions of experimental methods or reagents cannot be applied for the described purpose.
- Missing ethical approval for animal experiments.
- Substantial changes to the author list during revision or proof corrections.
- Image elements have been published elsewhere in a different paper (same or slightly manipulated Western blot image elements, whole cytometry assays, or microscopic cell images).



TOOLS FOR EDITORS

| 1. Develop guidelines for authors | 6 |
|--|---|
| 2. <u>Develop guidelines for reviewers</u> | 7 |
| 3. Develop processes to help identify ethical concerns | 8 |
| 4. <u>Develop guidelines for promptly responding to suspected ethical breaches</u> by authors, reviewers, and editors | |



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Challenges in authorship

"Old" challenges

- Definition
- Contribution declaration
- Order of authors
- Equal / anonymous authorship
- Ethics of authorship

New challenges

- Authorship in participatory research
- Artificial intelligence

Who is an author?

Article

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A C C O M P T

Underskings, Studies, and Labours

An experimental history of cold

Robert Boyle

Published: 06 March 1665 https://doi.org/10.1098/rstl.1665.0006

An Experimental History of Cold.

There is in the Prefs, a New Treatile, entituled, New Observations and Experiments in order to an Experimental History of Cold, begun by that Noble Philosopher, Mr. Robert Boyle, and in great part already Printed; He did lately very obligingly present several Copies of so much as was Printed, to the Royal Society, with a defire that some of the Members thereof might be engaged to peruse the Book, and select out of it for trial, the hints of such Experiments, as the Author there wisheth might be either yet made or prosecuted. The Heads thereof are,

Who is an author?

• Definition of authorship across disciplines

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Measurement of CP-violating asymmetries in B0 decays to CP eigenstates.

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Laboratoire de Physique des Particules, Annecy-le-Vieux, France.

Abstract

We present measurements of time-dependent CP-violating asymmetries in neutral B decays to several CP eigenstates. The measurement uses a data sample of 23x10(6) Upsilon(4S)->BbarB decays collected by the BABAR detector at the PEP-II asymmetric B Factory at SLAC. In this sample, we find events in which one neutral B meson is fully reconstructed in a CP eigenstate containing charmonium and the flavor of the other neutral B meson is determined from its decay products. The amplitude of the CP-violating asymmetry, which in the standard model is proportional to sin2beta, is derived from the decay time distributions in such events. The result is sin2beta = 0.34+/-0.20 (stat)+/-0.05 (syst).

2001: 743 authors

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A search is reported for the pair production of a new quark b' with at least one b' decaying to a Z boson and a bottom quark. The data, corresponding A search is reported for the part production of a live quark to with a rest one of uncrying to a 2 costicit and a doordin quark, rine data, corresponding 20 bits 10 hitsgreak luminate), we calceled team policities as 'a 's 'T' A' with the TLAS detected the CEVL Lage Helden Childre Using events with a D-tagging if and a 2 basin reconstructed from opposite-charge electrons, the mass distribution of large transverse momentum V conditions: level of the quarks with masses (b) < 400 GW that decay enterly us b - 2th. In the case of a vectorities only with the first databated integration, results (b) < 300 GW that decay enterly us b - 2th. In the case of a vectorities length I moving oble) with the first databated integration, results (b) < 300 GW that decay enterly us b - 2th. In the case of a vectorities length I moving oble) with

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Phys Rev Lett. 2021 Dec 31;127(27):271801. https://pubmed.ncbi.nlm.nih.gov/35061407/

Challenges in authorship

Marušić A, Bošnjak L, Jerončić A. A systematic review of research on the meaning, ethics and practices of authorship across scholarly disciplines. PLoS One. **2011;6(9**):e23477

- Authorship perceptions, definitions, and practices (n=58 articles)
- 2. Order of authors on the byline (n=45)
- 3. Ethical and unethical authorship practices (n=46)
- 4. Power issues in authorship (n=19)

Hosseini M, Gordijn B. A review of the literature on ethical issues related to scientific authorship. Account Res. **2020** Jul;27(5):284-324.

- Attribution (n=100 articles)
- Violations of the norms of authorship (n=94)
- Bias (n=81)
- Responsibility and accountability (n=46)
- Authorship order (n=43)
- Citations and referencing (n=43)
- Definition of authorship (n=38)
- Publication strategy (n=37)
- Originality (n=35)
- Sanctions (n=16)

Misuse of authorship

Prevalence of authorship problems:

- Overall 29% (95%CI 24-35%) researchers reporting experience with authorship misuse
- 55% (95%CI 45-64%) in France/ S. Africa/ India/ Bangladesh
- 23% (95%CI 18-28%) in USA/ UK/ int. journals

Authorship definition

ICMJE INTERNATIONAL COMMITTEE of MEDICAL JOURNAL EDITORS

The ICMJE recommends that authorship be based on the following 4 criteria:

- 1. Substantial contributions to the conception OR design of the work; OR the acquisition, analysis, OR interpretation of data for the work; AND
- 2. Drafting the work OR reviewing it critically for important intellectual content; AND
- 3. Final approval of the version to be published; AND
- 4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Everyone who has made substantial intellectual contributions to the study on which the article is based (for example, to the research question, design, analysis, interpretation, and written description) should be an author.

Authorship definition

Elsevier 2012 (<u>http://www.elsevier.com/authors/author-rights-and-responsibilities#responsibilities</u>)

Authorship should be limited to those who have made a significant contribution to the conception, design, execution, **or** interpretation of the reported study. All those who have made significant contributions should be listed as co-authors. Where there are others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors.

Elsevier 2023

(https://www.elsevier.com/ data/assets/pdf_file/0006/653883/Authorship-factsheet-March-2019.pdf)

Four criteria must all be met to be credited as an author:

- Substantial contribution to the study conception and design, data acquisition, analysis, and interpretation.
- Drafting or revising the article for intellectual content.
- Approval of the final version.
- Agreement to be accountable for all aspects of the work related to the accuracy or integrity of any part of the work.

Scientometrics (2012) 93:751-763 DOI 10.1007/s11192-012-0773-y

Prescribed practices of authorship: review of codes of ethics from professional bodies and journal guidelines across disciplines

Lana Bošnjak • Ana Marušić

Wiley 2012

(http://authorservices.wiley.com/bauthor/publicationethics.asp#_Toc149460095)

Wiley-Blackwell recommends that journal editors consider adopting the ICMJE authorship criteria as part of their editorial policy. The ICMJE authorship criteria state 'authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3.'

Wiley 2023 (https://authorservices.wiley.com/ethics-guidelines/index.html#5)

There is no universal definition of authorship, and practices vary by discipline and communities especially when individuals collaborate across subject areas. Different disciplines adopt their own criteria, for example, the ICMJE guidelines are well-known in the biomedical fields, the APA guidelines are used in Psychology, the EuChemS guidelines are adopted in Chemistry, whereas in the arts, humanities and social sciences, publications by single authors are more common. However, the minimum recognized requirements for authorship are making a substantial contribution to the research and being accountable for the work undertaken (COPE Discussion document: authorship).

Authorship vs contributorship

| Special Communication | | |
|--|--------------------------------------|--|
| When Authorship Fails | | |
| A Proposal to Make Contributors Accountable | | |
| Drummond Rennie, MD: Veronica Yank: Linda Emanuel, MD, PhD | JAMA, August 20, 1997-Vol 278, No. 7 | |

We propose dropping the outmoded notion of *author* in favor of the more useful and realistic one of *contributor*. This requires disclosure to readers of the contributions made to the research and to the manuscript by the contributors, so that they can accept both credit and responsibility. In addition, certain named contributors take on the role of guarantor for the integrity of the entire work.

Contributorship: CRediT taxonomy

| Term | Definition | | |
|-------------------------------|--|--|--|
| Conceptualization | Ideas; or evolution of overarching research goals and aims | | |
| Methodology | Development or design of methodology; creation of models | | |
| Software | Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components | | |
| Validation | Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs | | |
| Formal analysis | Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data | | |
| Investigation | Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection | | |
| Resources | Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools | | |
| Data curation | Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse | | |
| Writing - Original Draft | Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation) | | |
| Writing - Review & Editing | Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre-or postpublication stages | | |
| Visualization | Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation | | |
| Supervision | Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team | | |
| Project administration | Management and coordination responsibility for the research activity planning and execution | | |
| Funding acquisition | Acquisition of the financial support for the project leading to this publication | | |

Author vs. contributor

Authorship Criteria and Disclosure of Contributions JAMA, July 7, 2004—Vol 292, No. 1 Comparison of 3 General Medical Journals With Different Author Contribution Forms

| Tamara Bates, MD | Context A number of general medical |
|------------------------|--|
| nte Anić, MD | Medical Journal Editors (ICMJE) request a |
| Matko Marušić, MD. PhD | known about the effect of journal policies |
| Ana Marušić, MD, PhD | Objective To determine the number of teria for authorship, according to their p |

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Reliability of disclosure forms of authors' contributions

CMAL · JANUARY 2, 2007 · 176(1) 41

Vesna Ilakovac, Kristina Fister, Matko Marusic, Ana Marusic

OPEN access Freely available online

PLos one

Less Work, Less Respect: Authors' Perceived Importance of Research Contributions and Their Declared **Contributions to Research Articles**

Ana Ivaniš¹*, Darko Hren², Matko Marušić³, Ana Marušić³

1 Vrapče Psychiatric Hospital, Zagreb, Croatia, 2 Faculty of Philosophy, University of Split, Split, Croatia, 3 Department of Research in Biomedicine and Health, University of Split School of Medicine, Split, Croatia

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| ORIGINAL ARTICLE | |
| How the structure of | |
| contribution disclosure | |
| statements affects validity of | f |
| authorship: a randomized st | udy |
| in a general medical journal* | |
| Ana Marušić [®] , Tamara Bates ^b , Ante Anić [®] and Marušić [®] | atko |

Quantification of Authors' Contributions and Eligibility for Authorship: Randomized Study in a General Medical Journal

Ana Ivaniš, MD, Darko Hren, BS, Dario Sambunjak, MD, Matko Marušić, MD, PhD, and Ana Marušić, MD, PhD

Croatian Medical Journal, Zagreb University School of Medicine, Zagreb, Croatia.

BACKGROUND: Assessment of authorship contribution is often based on unreliable questionnaires

J Gen Intern Med DOI: 10.1007/s11606-008-0599-8

Malički et al. BMC Medical Research Methodology 2012, 12:189 http://www.biomedcentral.com/1471-2288/12/18

BMC Medical Research Methodology

CORRESPONDENCE

Open Access

Why do you think you should be the author on this manuscript? Analysis of open-ended responses of authors in a general medical journal

Mario Malički, Ana Jerončić, Matko Marušić and Ana Marušić

Equal authorship

Conte et al. FASEB J. 2013;27(10):3902-4.

Change from no joint first authorship in 1990 to co-first authorship of >30% of all research publications in 2012.

Resnik et al. Account Res. 2020;27(3):115-137.

Survey of 1,540 researchers: 58% had been designated as an EC at least once. 38% regarded these designations as useful but ethically questionable. 32% said EC designations are ethically questionable because ECs are difficult to define or measure and 26% said they are ethically questionable because people rarely contribute equally.

Lount & Pettit. Shared first authorship should be declared on academic CVs. Nat Hum Behav. 2023;7(5):659.

Anonymous authorship

Shamsi A et al. A grey zone for bibliometrics: publications indexed in Web of Science as anonymous. Scientometrics. 2022;127(10):5989-6009.

• (WoSCC), 1,420,842 documents under "anonymous" authorship in Web of Science Core Collection from 1900 to 2021 (1.5% of the total indexed documents)

Authorship in participatory research

Citizen science is one of the 8 ambitions of Open Science in Horizon Europe (<u>https://research-and-innovation.ec.europa.eu/strategy/strategy-</u> 2020-2024/our-digital-future/open-science_en)

Experience from research involving indigenous populations and patients

Authorship in participatory research

Castleden et al. J Empir Res Hum Res Ethics. 2010;5(4):23-32.

Qualitative study with researchers showed inconsistent practices in:

- methods of acknowledging community contributions
- requirements for shared authorship with individual versus collective/community partners
- benefits and risks to sharing authorship with collective/community partners

Ellis et al. J Particip Med. 2021;13(2):e27141.

Rapid review of scoping/systematic reviews

- wide range of terms used for patient and public authors in author affiliations (patient, caregiver or consumer representative, patient partner, expert by experience, citizen researcher, public contributor ...)
- there was little or no information about which review tasks the partner coauthors contributed to
- only 14% (5/37) of systematic/scoping reviews mentioned patient or public involvement as authors in the abstract; involvement was often only indicated in the author affiliation field or in the review text (methods or contributions section).

Artificial intelligence and authorship

"Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals." – European Commissi

- By January 18, 2023, four studies in the PubMed database had ChatGPT listed as a co-author
- One was later corrected with the ChatGPT removed as co-author
- Scientific publishers have been defining their policies towards using chatbots (including ChatGPT) in writing research articles or designing/conducting studies
- Multiple organizations have taken stances on this issue
- Exacerbating issues such as paper mills

 Editorial
 > Nurse Educ Pract. 2023 Jan;66:103537. doi: 10.1016/j.nepr.2022.103537.

 Epub 2022 Dec 16.

Open artificial intelligence platforms in nursing education: Tools for academic progress or abuse?

Affiliations + expand PMID: 36549229 DOI: 10.1016/j.nepr.2022.103537
 Published Erratum
 > Nurse Educ Pract. 2023 Feb;67:103572. doi: 10.1016/j.nepr.2023.103572.

 Epub 2023 Feb 6.

Corrigendum to "Open artificial intelligence platforms in nursing education: Tools for academic progress or abuse?" [Nurse Educ. Pract. 66 (2023) 103537]

Siobhan O'Connor ¹

Affiliations + expand PMID: 36754768 DOI: 10.1016/j.nepr.2023.103572

Artificial intelligence and authorship

World Association of Medical Editors, 2023

- Chatbots cannot be authors.
- Authors should be transparent when chatbots are used and provide information about how they were used.
- Authors are responsible for the work performed by a chatbot in their paper (including the accuracy of what is presented, and the absence of plagiarism) and for appropriate attribution of all sources (including for material produced by the chatbot).
- Editors need appropriate tools to help them detect content generated or altered by AI and these tools must be available regardless of their ability to pay.

Al and image manipulation

Based on large number of existing images, convincing "deepfakes" can be created in scientific contexts as well

Wang et al. (2022) trained an AI model to generate western blots (from 3000 authentic images) and images of oesophageal cancer on gastroscope images from cancer-free locations of intestine (from 50 positive and 50 negative locations)

Al and image manipulation

- Almost impossible for the naked eye to see
- Elisabeth Bik super-spotter of duplicated images expressed worries regarding this issue
- Traditional image tools are also unsuccessful
- Some tools do exist: *fotoforensics* (<u>https://fotoforensics.com/</u>) and *Forensically* (<u>https://29a.ch/photo-forensics/#forensic-magnifier</u>)
- Tools for editors (STM Association, <u>https://www.stm-assoc.org/stm-image-alterations-</u> <u>duplications-resources-v2/</u>)

MODULE 1. This first module provides an overview of the most commonly found image aberrations in scientific publications and illustrates how they may be detected and verified. <u>Watch the video here</u>.

https://embassy.science/wiki/Main_Page

the embassy of good science

and ethics

