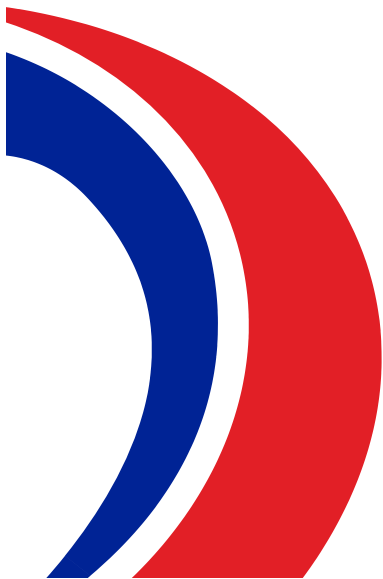


# Open access policies of leading medical journals: a cross-sectional study

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# Open access policies of leading medical journals: a cross-sectional study

- Published in *BMJ Open* on 20 June 2019
- **Authors**
  - Tim Ellison, Tim Koder, Laura Schmidt, Amy Williams and Chris Winchester (current or former employees of Oxford PharmaGenesis / PharmaGenesis London)
- **Objective of the study**
  - Academic and not-for-profit research funders increasingly require that the research they fund must be published open access, with some insisting on publishing with a CC BY licence to allow the broadest possible use
  - We aimed to clarify the open access variants provided by leading medical journals and record the availability of the CC BY licence for commercially funded research

Open access Research

## BMJ Open Open access policies of leading medical journals: a cross-sectional study

Tim S Ellison,<sup>1</sup> Tim Koder,<sup>2,3</sup> Laura Schmidt,<sup>2,3</sup> Amy Williams,<sup>1</sup> Christopher C Winchester<sup>2,3</sup>

**ABSTRACT**  
**Objectives** Academic and not-for-profit research funders are increasingly requiring that the research they fund must be published open access, with some insisting on publishing with a Creative Commons Attribution (CC BY) licence to allow the broadest possible use. We aimed to clarify the open access variants provided by leading medical journals and record the availability of the CC BY licence for commercially funded research.  
**Methods** We identified medical journals with a 2015 impact factor of  $\geq 15.0$  on 24 May 2017, then excluded from the analysis journals that only publish review articles. Between 29 June 2017 and 28 July 2017, we collected information about each journal's open access policies from their websites and/or by email contact. We contacted the journals by email again between 6 December 2017 and 2 January 2018 to confirm our findings.  
**Results** Thirty-five medical journals publishing original research from 13 publishers were included in the analysis. All 35 journals offered some form of open access allowing articles to be free-to-read, either immediately on publication or after a delay of up to 12 months. Of these journals, 21 (60%) provided immediate open access with a CC BY licence under certain circumstances (eg, to specific research funders). Of these 21, 20 only offered a CC BY licence to authors funded by non-commercial organisations and one offered this option to any funder who required it.  
**Conclusions** Most leading medical journals do not offer to authors reporting commercially funded research an open access licence that allows unrestricted sharing and adaptation of the published material. The journals' policies are therefore not aligned with open access declarations and guidelines. Commercial research funders lag behind academic funders in the development of mandatory open access policies, and it is time for them to work with publishers to advance the dissemination of the research they fund.

**Strengths and limitations of this study**

- This manuscript includes a cross-sectional analysis of open access policies of medical journals with a high impact factor, including society-owned journals, from multiple publishers.
- The open access policies of all journals analysed were clarified, and confirmation of our findings was received by email from 97% of the contacted journals.
- Open access policies of the journals and publishers analysed are subject to change, so the information presented here may change in the future.
- By selecting journals with a high impact factor, our analysis does not include prestigious journals from specialised therapy areas and regional or non-English language journals, which may have lower impact factors.
- Some of the journals included in our analysis (eg, *Science*, *Nature*) could be considered as interdisciplinary journals rather than exclusively medical journals.

average of 17 years for research evidence to reach 50% adoption in clinical practice, with the longest delays occurring after successful publication of clinical trial results.<sup>1,2</sup> Implementation of research published using the traditional subscription publication model is hindered by copyright restrictions that prohibit reuse of the published content and paywalls that prevent public access. Open access publishing has the potential to improve innovation and speed up its adoption. Complete access to research literature encourages viewing of more articles than partial access,<sup>3,4</sup> and open access articles appear to be downloaded more often and receive more citations than subscription articles, indicating a greater academic impact.<sup>5,6</sup> There is also evidence suggesting that open access articles have a broader societal impact based on altmetric data that measure the attention publications receive in the news and social media.<sup>6,11</sup> Depending on the restrictiveness of its licensing, open access can facilitate public and commercial

**INTRODUCTION**  
Hundreds of billions of US dollars are invested in medical research by governments, charities and philanthropic and commercial organisations each year, with the aim of extending and improving human lives.<sup>1</sup> Publication plays an important role in the dissemination of scientific innovation.<sup>2,3</sup> However, translation of medical research into clinical practice is slow; one study has suggested that it takes an

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<sup>2</sup>Oxford PharmaGenesis Ltd, Oxford, UK

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## Disclosures

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- **Funding**
  - This research was funded by Oxford PharmaGenesis
- **Competing interests**
  - Tim Ellison, Tim Koder and Christopher Winchester are employees of Oxford PharmaGenesis, Oxford, UK
  - At the time of the research and writing of this manuscript, Laura Schmidt and Amy Williams were employees of Oxford PharmaGenesis, Oxford, UK, and are currently employed by Comradis and dna Communications, respectively
  - Christopher Winchester is also a Director and a shareholder of Oxford PharmaGenesis Holdings Ltd

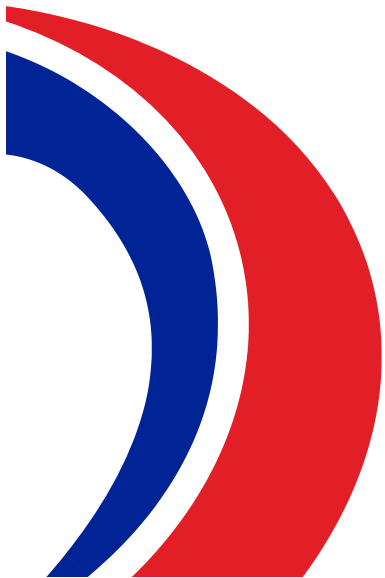


## Acknowledgements

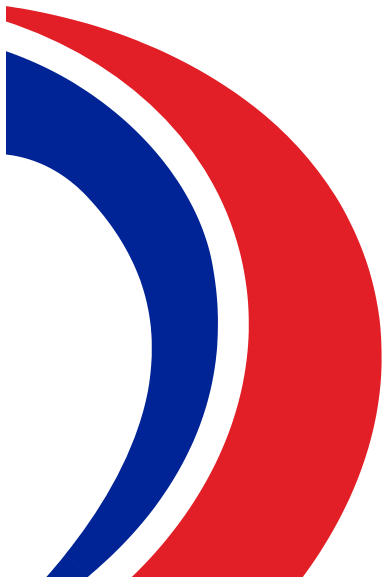
- Robert Kiley is Head of Open Research at the Wellcome Trust, London, UK, and contributed to the review of this article
- Paul Farrow is an employee of Oxford PharmaGenesis, Oxford, UK, and contributed significantly to the review of this article
- Sarah Stokes and Velissaria Vanna are employees/former employees of Oxford PharmaGenesis, Oxford, UK, and contributed to the review and editing of this article
- The authors also thank Alan Thomas and Elizabeth Kinder for their review of this article from the patient perspective
- This work was presented as a poster at both the European Meeting of the International Society for Medical Publication Professionals (ISMPP) on 23 January 2018 and the Annual Meeting of ISMPP on 2 May 2018 and was posted to bioRxiv as a preprint on 22 January 2018 (<https://www.biorxiv.org/content/early/2018/01/22/250613>)



- 1** | Introduction to open access
- 2** | Study methodology
- 3** | Study results
- 4** | Summary and conclusions



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1



# What is open access?

'Open access' refers to peer-reviewed, full-text research articles that have been accepted for publication and are available:



on demand online



to read **without charge** to end users



There are varying **restrictions on reuse** of article content as specified by the copyright licence used, and the debate as to how open access should best be defined is ongoing



# Benefits of open access

- Open access articles:
  - encourage **viewing of more articles** than partial access<sup>1,2</sup>
  - appear to be **downloaded more and receive more citations** than subscription articles, indicating a greater academic impact<sup>3-6</sup>
  - appear to have a **broader societal impact** based on altmetric data<sup>6-8</sup>
  - can facilitate **public and commercial reuse** of research results (depending on the restrictions of the licence), which is beneficial for collaboration, education and innovation<sup>6</sup>
  - **increase transparency** of research results<sup>6,9-11</sup>
  - are **no different in terms of quality** when compared with subscription articles<sup>12,13</sup>

1. Maggio LA *et al. BMJ Open* 2016;6:e012846; 2. Moorhead LL *et al. PLoS One* 2015;10:e0129708; 3. Davis PM *et al. BMJ* 2008;337:a568; 4. Ottaviani J. *PLoS One* 2016;11:e0159614; 5. Piwowar H *et al. PeerJ* 2018;6:e4375; 6. Tennant JP *et al. F1000Res* 2016;5:632; 7. Wang X *et al. Scientometrics* 2015;103:555-64; 8. Allen HG *et al. PLoS One* 2013;8:e68914; 9. Hopewell S *et al. Lancet* 2008;371:281-3; 10. Barbour V *et al. Bull World Health Organ* 2006;84:339-424; 11. Leung PTM *et al. N Engl J Med* 2017;376:2194-5; 12. Pastorino R *et al. PLoS One* 2016;11:e0154217; 13. Tahim A *et al. J Maxillofac Oral Surg* 2016;15:517-20

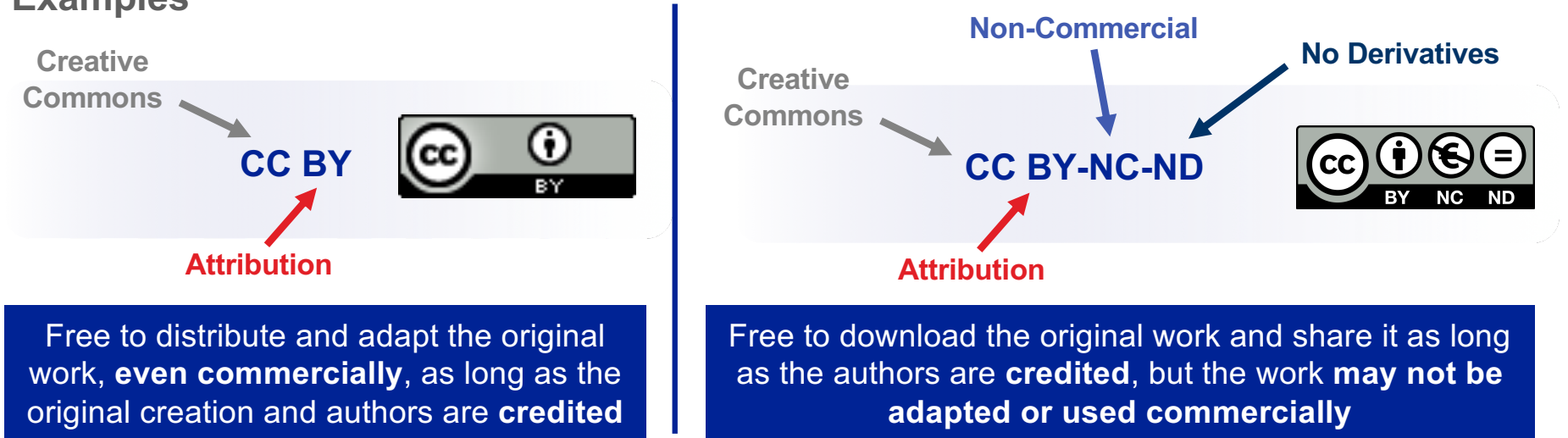




# Creative Commons licences<sup>1,2</sup>

- Authors can pay an APC to retain copyright of their article under the terms of a particular Creative Commons licence
- Some Creative Commons licences allow more sharing and reuse than others

## Examples



APC, article processing charge; BY, Attribution; CC, Creative Commons; NC, Non-Commercial; ND, No Derivatives  
1. Creative Commons. About The Licenses. Available from: <https://creativecommons.org/licenses/> (Accessed 10 October 2019); 2. Open Pharma educational materials – open access. Available from: <https://openpharma.blog/wp-content/uploads/2019/03/Open-Pharma-Educational-Materials-Open-Access.pdf> (Accessed 29 September 2019)



# The CC BY licence

- Recommended by:
  - the **Budapest Open Access Initiative**<sup>1</sup>
  - the **Berlin Declaration**<sup>2</sup>
  - the **Bethesda Statement**<sup>3</sup>
  - the **Directory of Open Access Journals (DOAJ)**<sup>4</sup>
  - the **Open Access Scholarly Publishers Association (OASPA)**<sup>5</sup>
  - **cOAlition S**<sup>6</sup>
- Required by academic and not-for-profit research funders, including:
  - the **Wellcome Trust**
  - the **Bill & Melinda Gates Foundation**<sup>7,8</sup>

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1. Budapest Open Access Initiative. Available from: <https://www.budapestopenaccessinitiative.org/boai-10-recommendations> (Accessed 29 September 2019); 2. Open access Max-Planck-Gesellschaft. Available from: <https://openaccess.mpg.de/Berlin-Declaration> (Accessed 29 September 2019). 3. Brown PO *et al.* Bethesda Statement on Open Access Publishing. Available from: <https://legacy.earlham.edu/~peters/fos/bethesda.htm> (Accessed 29 September 2019); 4. Directory of Open Access Journals. Available from: <https://doaj.org/publishers#licensing> (Accessed 29 September 2019); 5. Open Access Scholarly Publishers Association. Available from: <https://oaspa.org/best-practices-licensing-attribution-need-to-know/> (Accessed 29 September 2019); 6. Plan S. Science Europe cOAlition. Available from: <https://www.coalition-s.org/principles-and-implementation/> (Accessed 29 September 2019); 7. Wellcome Trust. Open access policy. Available from: <https://wellcome.ac.uk/funding/guidance/open-access-policy> (Accessed 29 September 2019); 8. Bill & Melinda Gates Foundation. Available from: <https://www.gatesfoundation.org/how-we-work/general-information/open-access-policy> (Accessed 29 September 2019)



# Open access policies applied by medical journals

## Open access with a Creative Commons licence

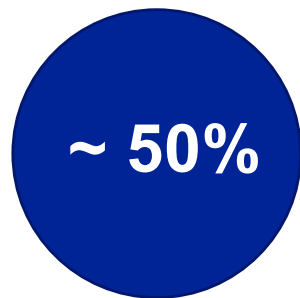
- Facilitated by an **APC**
- Following payment by the research author, institution or funder, articles are usually made **available on the journal's website at the time of publication** in the **publisher's typeset format (VoR)**

## Free-to-read access without a licence at the time of publication

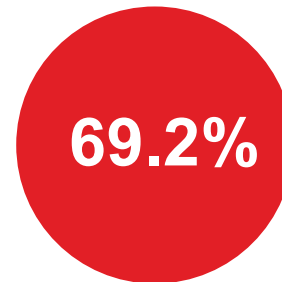
- Typically involve an **embargo period** before the published articles are freely accessible
- May allow access only to the **accepted manuscript** (a version that has not been edited and typeset by the journal), which is made available on the author's institutional website, PubMed Central or Europe PubMed Central without a requirement for payment



# An increasing trend towards open access publishing



of journal articles  
were published  
open access in  
2015<sup>1</sup>



of global health research  
articles published in 2010–2014  
were not freely available on the  
journal's website<sup>2</sup>

Many academic and not-for-profit research funders now require  
the research they fund to be published open access<sup>3–9</sup>

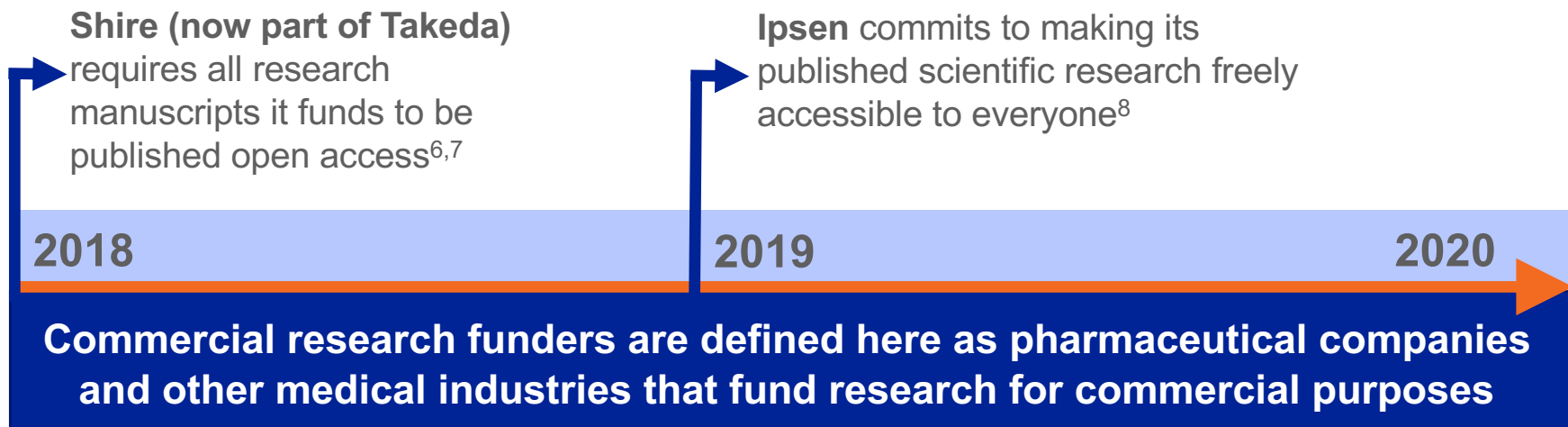
CC BY, Creative Commons Attribution licence

1. Piwowar H *et al.* *PeerJ* 2018;6:e4375; 2. Smith E *et al.* *Health Res Policy Syst* 2017;15:73; 3. Tennant JP *et al.* *F1000Res* 2016;5:632; 4. Wellcome Trust. Open access policy. Available from: <https://wellcome.ac.uk/funding/managing-grant/open-access-policy> (Accessed 14 October 2019); 5. Charity Open Access Fund. COAF guidelines. Available from: <https://wellcome.ac.uk/funding/guidance/charity-open-access-fund> (Accessed 14 October 2019); 6. Bill & Melinda Gates Foundation. Available from: <https://www.gatesfoundation.org/how-we-work/general-information/open-access-policy> (Accessed 14 October 2019); 7. Collins E. *BMJ Open* 2013;3:e004171; 8. Marchington J *et al.* Available from: [http://www.caudex.com/downloads/OA\\_survey\\_EU\\_ISMPP\\_2017\\_poster\\_15.pdf](http://www.caudex.com/downloads/OA_survey_EU_ISMPP_2017_poster_15.pdf) (Accessed 14 October 2019); 9. Medical Research Council UK. Available from: <https://mrc.ukri.org/research/policies-and-guidance-for-researchers/open-access-policy/> (Accessed 14 October 2019)



## Open access policies of commercial research funders

- **Commercial research funders, which fund approximately half of all medical research**,<sup>1–3</sup> have been more hesitant to require open access publishing but now commonly pay for open access when the option is available<sup>4</sup>
- The proportion of articles authored by large pharmaceutical companies that were published open access doubled between 2009 and 2016<sup>5</sup>



1. Moses H *et al.* *JAMA* 2015;313:174–89; 2. Dorsey ER *et al.* *JAMA* 2010;303:137–43; 3. Hakoum MB *et al.* *BMJ Open* 2017;7:e015997; 4. Collins E. *BMJ Open* 2013;3:e004171; 5. Yegros-Yegros A, van Leeuwen T. *SocArXiv* 2019. Available from: <https://doi.org/10.31235/osf.io/zt6kc> (Accessed 11 October 2019); 6. ISMPP MAP Newsletter. Available from: <https://ismpp-newsletter.com/2018/01/30/shire-announces-new-open-access-policy/> (Accessed 14 October 2019); 7. Shire. Available from: <https://www.shire.com/en/newsroom/2018/january/xajhds> (Accessed 16 July 2018); 8. Ipsen. Available from: <https://www.ipсен.com/ipсен-commits-to-making-all-its-published-scientific-research-freely-accessible-to-everyone/> (Accessed 14 October 2019)

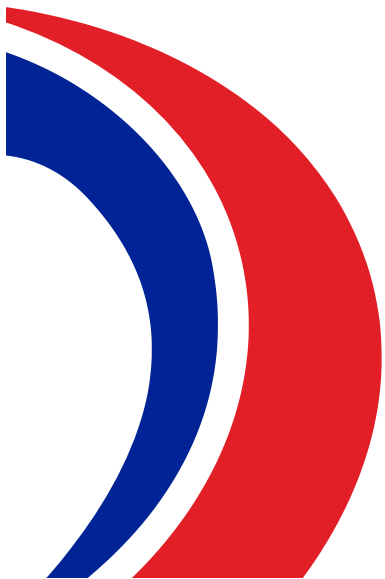


1 | Introduction to open access

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2



## Study methodology (1/2)



### For each journal, we recorded the following information

- For immediate open access, whether a CC BY licence or other Creative Commons licence was provided
- For delayed open access, the length of embargo period for open access
- For both immediate and delayed open access, which version of the article would be available (published VoR or accepted)



## Study methodology (2/2)

**For journals that provided a CC BY licence, we collected additional information on:**

- the requirements for obtaining a CC BY licence (e.g. dependence on funding source)
- APCs

- We confirmed our findings with the journals' editorial offices by email
- Once open access variants were recorded, we categorized the most open variant provided by each included journal using our own classification:

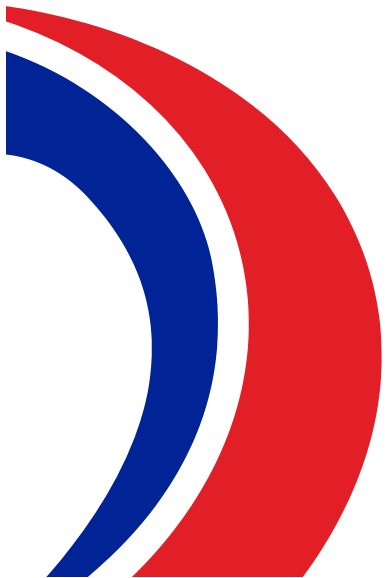
**Table 1** Categorisation of journals based on the most open variant of open access offered

Category	Version of article available	Embargo period*	CC BY licence offered by the journal?
1	Published	None	Yes
2	Published	None	No
3	Published/accepted	≤12 months	No





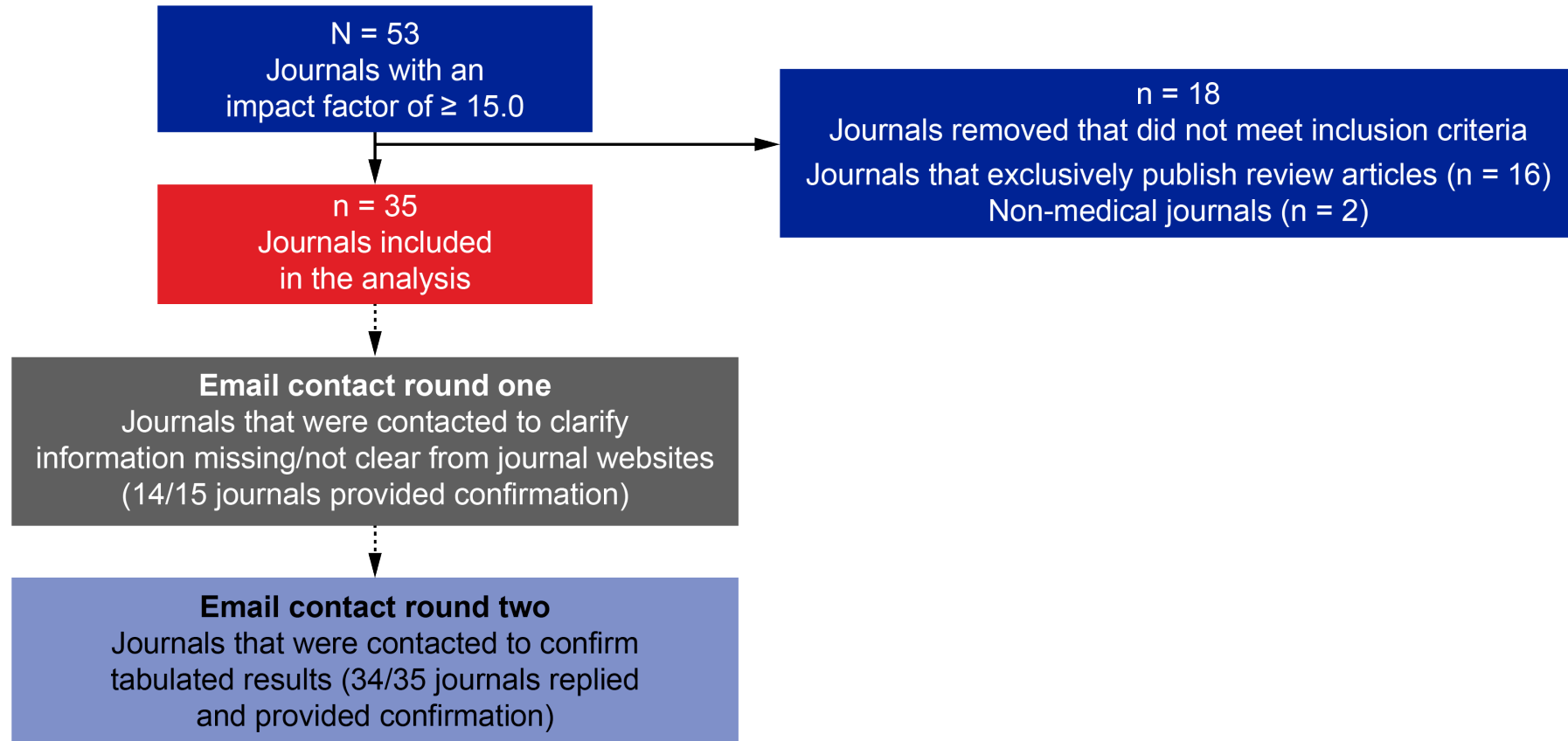
- 1 | Introduction to open access
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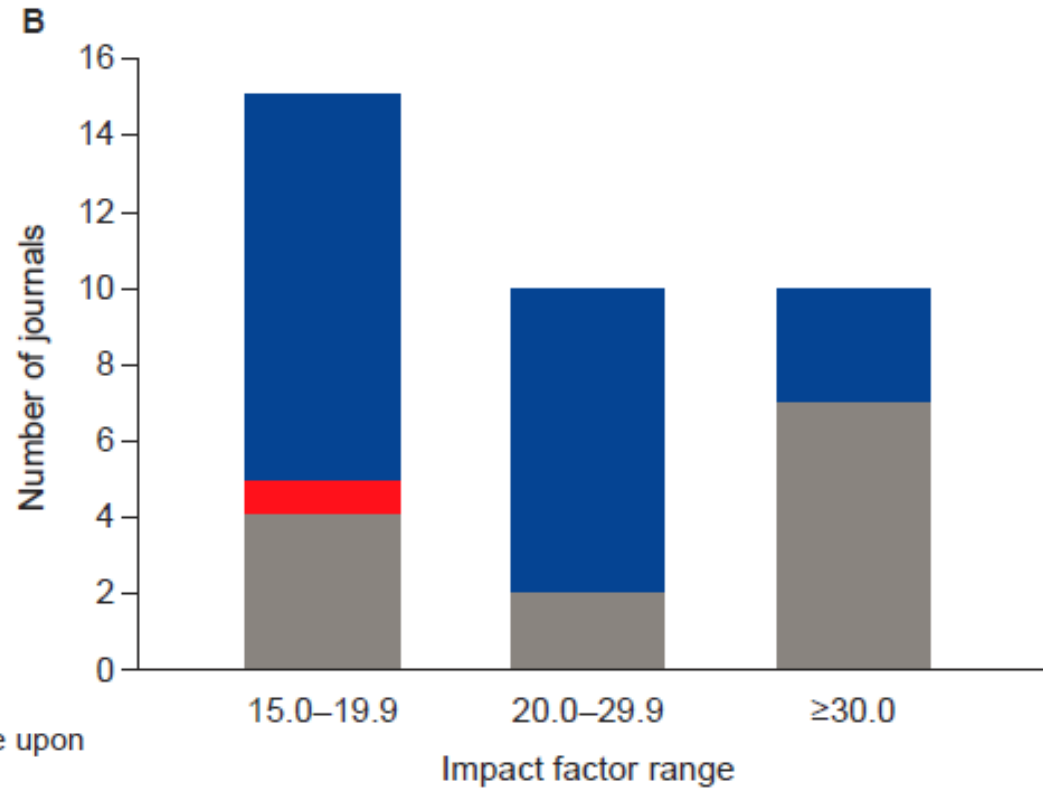
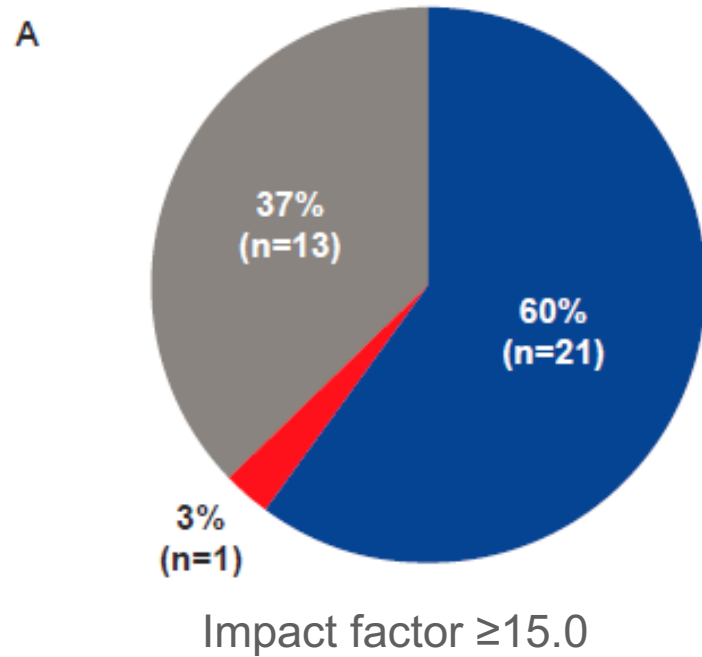
3



# Flow chart of journals included in the study



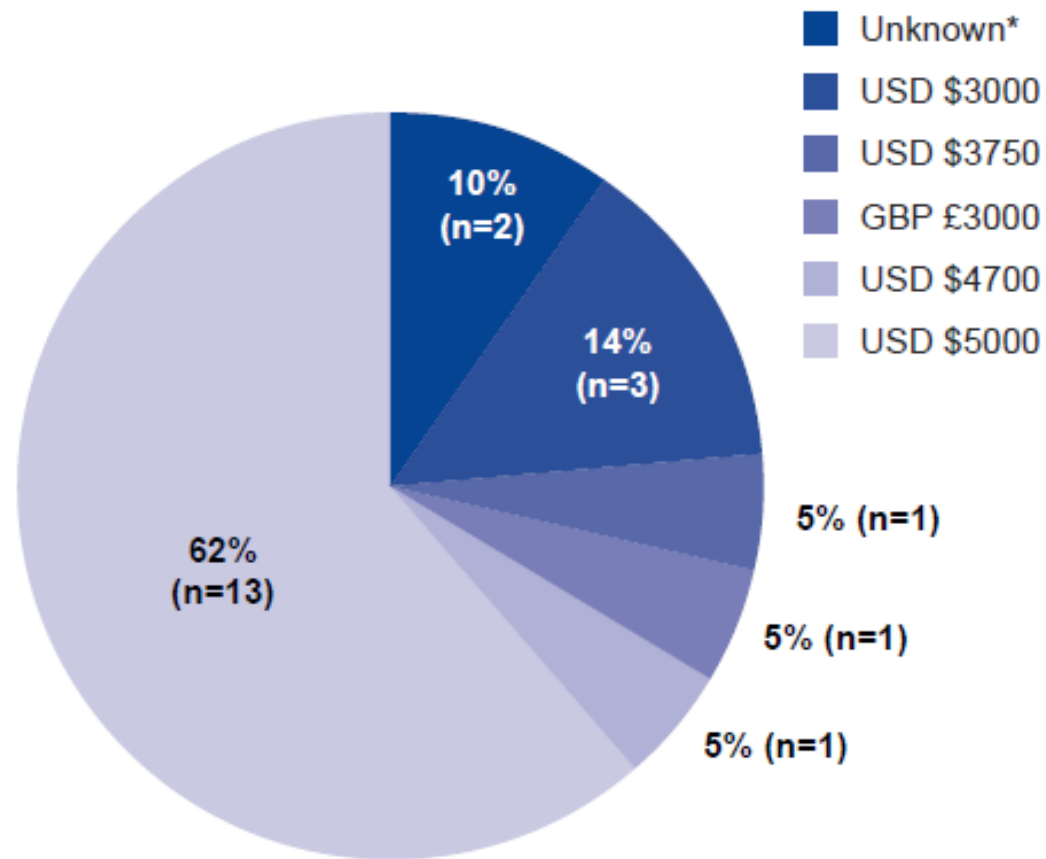
# Medical journals categorized by impact factor and their most open variant of open access available (n = 35)



- Category 1: published version of record available upon publication with a CC BY licence
- Category 2: published version of record free to read upon publication (no Creative Commons licence)
- Category 3: published version of record or accepted version first available 6–12 months after publication (no Creative Commons licence)



## Article processing charges of journals that offer immediate open access with a CC BY licence (n = 21)



\*Details on processing fees are provided at acceptance  
CC BY, Creative Commons Attribution licence; GBP, Great British pounds; USD, United States dollars  
Ellison T *et al.* *BMJ Open* 2019;9:e028655. doi: 10.1136/bmjopen-2018-028655



## Access policies of journals with high impact factors that do not provide open access with Creative Commons licences

Publisher	Organisation status	Journals included (n=14)	Open access variants available*	
			Embargo period†	Version of article available
American Association for Cancer Research Journals	Non-profit society	<i>Cancer Discov</i>	None 6–12 months	VoR‡ Accepted
American College of Physicians	Non profit society	<i>Ann Intern Med</i>	6 months	Accepted
American Medical Association	Non-profit society	<i>JAMA</i>	None 6 months	VoR§ VoR
Massachusetts Medical Society	Non-profit society	<i>N Engl J Med</i>	6 months	VoR
Nature Publishing Group	Commercial	<i>Nature; Nat Biotechnol; Nat Cell Biol; Nat Genet; Nat Immunol; Nat Mater; Nat Med; Nat Methods; Nat Neurosci</i>	6 months	Accepted
Wiley-Blackwell	Commercial	<i>World Psychiatry</i>	12 months	Accepted

\*Available under the terms specified on the journal website. †None = immediate open access; > 0 months = delayed open access. ‡On payment of US\$3500 AuthorChoice fee.

§Available to read on JAMA Network Reader

VoR, version of record

Ellison T *et al. BMJ Open* 2019;9:e028655. doi: 10.1136/bmjopen-2018-028655



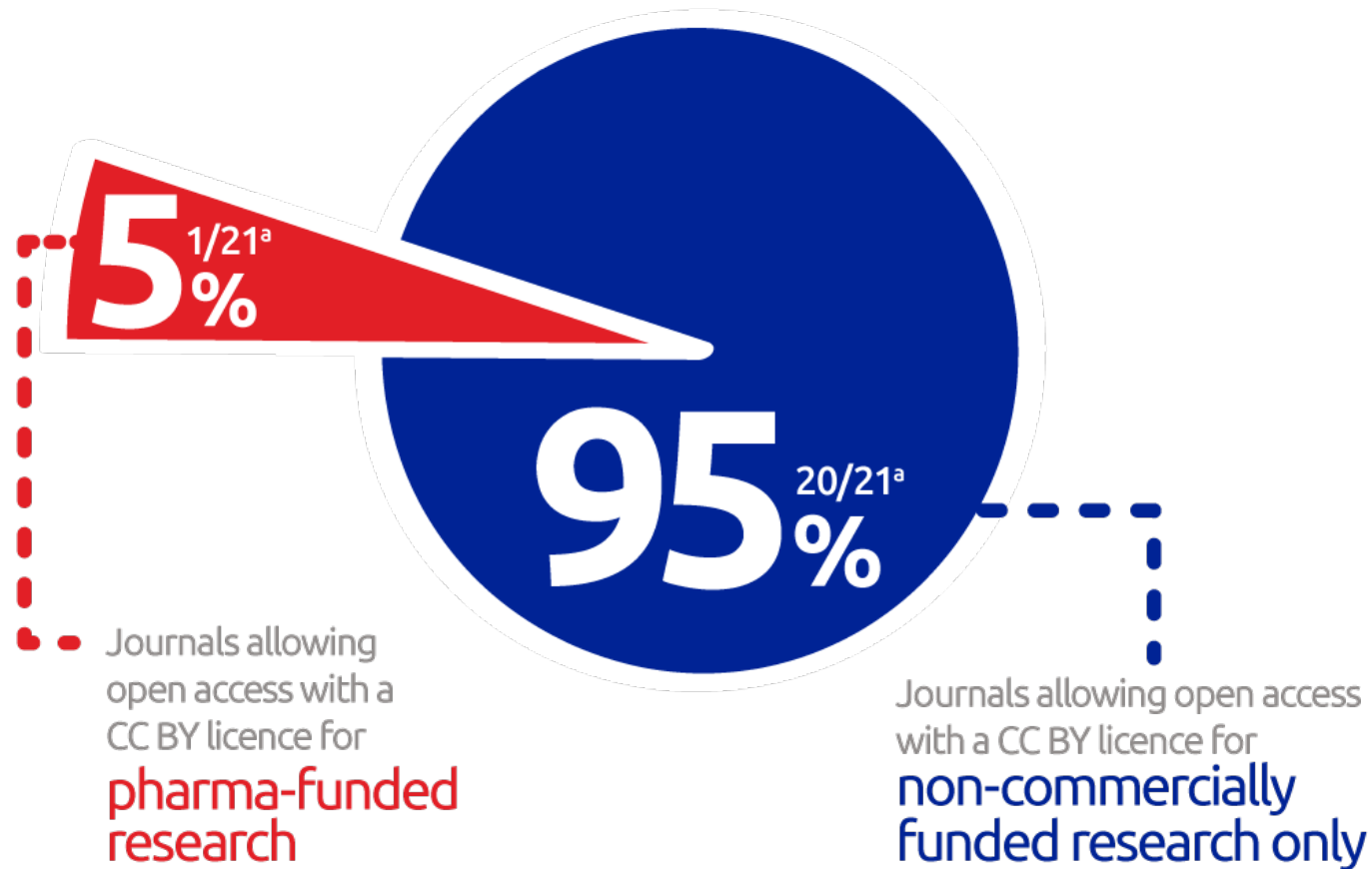
## Examples of open access policies of journals with high impact factors that offer immediate open access with the CC BY licence (n = 21)

Publisher	Organisation status	Journals included (n=21)	Open access variants available*			Funding requirements for obtaining open access with a CC BY licence
			Embargo period†	Creative commons licence	Version of article available	
American Association for the Advancement of Science	Non-profit society	<i>Science; Sci Transl Med</i>	None	CC BY	VoR	The american association for the advancement of science 'will allow authors funded by the Bill & Melinda Gates Foundation to publish their research with a CC BY licence'‡
			None	None	Accepted	
			6 months	None	Accepted	
			12 months	None	VoR	
American Society of Clinical Oncology	Non-profit society	<i>J Clin Oncol</i>	None	CC BY CC BY-NC-ND	VoR	Creative commons licences available only if funders are 'academical institutions, not-for-profit organisations, philanthropical foundations or government agencies'
			6 months	None	VoR	
			12 months	None	VoR	
BMJ Publishing Group	Non-profit society	<i>BMJ</i>	None	CC BY CC BY-NC	VoR	CC BY licence available for authors 'where the funder requires it'
Cell Press	Commercial	<i>Cancer Cell; Cell; Cell Metab; Cell Stem Cell; Immunity</i>	None	CC BY CC BY-NC-ND	VoR	Creative commons licences 'available only to authors covered by a funding body agreement' (these non-commercial funding bodies are listed on the journal websites)
			12 months	None	Accepted	

\*Available under the terms specified on the journal website. †None = immediate open access; > 0 months = delayed open access. ‡The American Association for the Advancement of Science's pilot open access partnership with the Gates Foundation concluded on 30 June 2018. §Accepted manuscripts can be self-archived and are required to attach a CC BY-NC-ND licence  
 BY, Attribution; CC, Creative Commons; NC, Non-Commercial; ND, No Derivatives; VoR, version of record  
 Ellison T *et al. BMJ Open* 2019;9:e028655. doi: 10.1136/bmjopen-2018-028655



## The take-home message of our research



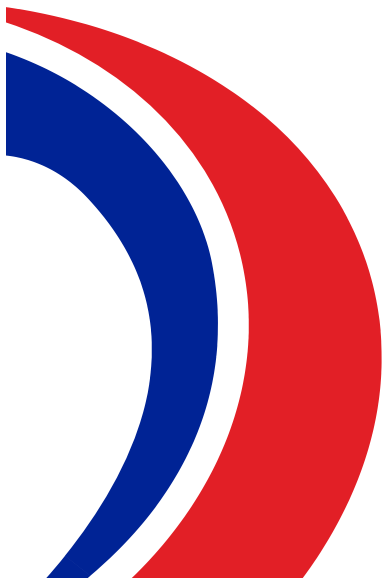
<sup>a</sup>Out of 35 top-ranked journals included in the analysis, 21 allowed immediate open access with a CC BY licence (the other 14 allowed some form of open access either immediately or after a delay of up to 12 months)

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## Summary and conclusions

- The availability of open access options depends on the funding source
  - Although 60% of high-impact medical journals provide immediate open access under the gold standard Creative Commons Attribution (CC BY) licence, 95% of these journals offered this option only to authors funded by non-commercial organizations
- Journals currently restrict access to medical research funded by the pharma industry
- If pharma joined non-commercial funders in requiring open access under a gold standard CC BY licence, then leading journals would need to change their policies or stop publishing industry research
- As a result of this research, Oxford PharmaGenesis updated its publication policy to commit to publishing its own research open access under a CC BY licence



