Scholarly Publishing is Big Business

- Worth many **billions of dollars**
- More than **2,000 publishers**
- More than **25,000 journals**
- More than **1.5 million articles** published per year
- Publishers include:
  - University presses: OUP, CUP, UCP, MIT
  - Scholarly societies/organizations: ACS, AIP, BMJ, AAAS
  - Independent, nonprofit: PLOS, CSHLP
- Secondary publishers index the work published by primaries
  - NLM, Elsevier, Thomson Reuters, APA, ACS
Library Expenditures Down

Expenditures as % Total University Expenditure (avg of 40 US institutions reporting since 1982); ARL 2012
Lifecycle of Research Funding

Research Funding

Publication

Status
They entirely determine what an author can do with his or her own work in the future. For many academics, signing such contracts is a very bad idea.”

Kevin Smith, J.D. “Setting the Record Straight on Elsevier” Scholarly Communications @Duke. January 28, 2014
“Elsevier… is using the Digital Millenium Copyright Act, an American law that lets copyright holders demand the removal of anything posted online without their permission, to require individual scientists to eliminate from their websites papers published in its journals”

Economist Jan 11, 2014
Because Publishers Hold Restrictive Copyrights

- Institutions must pay high subscription fees (also often funded by the public)
- Full text is not initially (or ever) available outside of major institutions
- Full text is not available for data mining and other applications
- Opportunities for data sharing are missed
- **Publicly funded work is not available to the public**
Open Access

• Free, immediate access online
• Unrestricted distribution and reuse
• Author retains rights to attribution
• Articles are immediately deposited in a public online archive such as PubMed Central

• **Bethesda Principles, April 2003**
Free Access ≠ Open Access

- The article/journal is free to read, but possibly after an embargo period
- You may not reuse unless reuse rights are also granted
- You may be charged if you copy large numbers of the article
- The “free” rights may be withdrawn at any time
Standardized Terminology for Open Access

- Illustrates a continuum of more open versus less open
- Broadens the understanding of Open Access
- Enables anyone to compare and contrast publications and policies
- Determines how open a publisher and/or publication is by using the grid

HowOpenIsIt? Open Access Spectrum
Version 2.0

PLOS
PLOS Journals on the Spectrum

<table>
<thead>
<tr>
<th>Access</th>
<th>Reader Rights</th>
<th>Reuse Rights</th>
<th>Copyrights</th>
<th>Author Posting Rights</th>
<th>Automatic Posting</th>
<th>Machine Readability</th>
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<tbody>
<tr>
<td>Open Access</td>
<td>Free readership rights to all articles immediately upon publication</td>
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<td>Publisher holds copyright, with no author reuse of published version beyond fair use</td>
<td>Author may not deposit any versions to repositories or websites</td>
<td>No automatic posting in third-party repositories</td>
<td></td>
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</tbody>
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*HowOpen*™ Open Access spectrum, © 2013 SPARC and PLOS, licensed under CC BY
Article Publication Fee Model: Gold OA

- Paid out of research budget, institution, or funding agency
- Author retains copyright but licenses free redistribution and reuse with attribution
- **Therefore: No income to publisher from reprint sales, pay-per-view access or (except in hybrid models) subscription fees**
Archived Repository Model: Green OA

- Publication in a non-gold OA journal then → deposition in a repository
  - Institutional
  - Subject specific
  - More general (e.g. PubMed Central)

- Embargo periods seen as critical to profitability of subscription-fee model
Open Access Reduces Influence of Competing Interests

- No incentive toward reprint sales
- No disincentive against strong competing interest policies pertaining to content and review
- No disincentive to promoting data transparency and availability
Open Access Does Not Tell You About

- The **scope** of a journal
- The **quality** of a journal
- The **review process** of a journal
- Whether the publishing organization is **for profit or nonprofit**
Advantages of Open Access

- More exposure for your work
- Practitioners can apply your findings
- Higher citation rates
- Taxpayers get value for money
- Compliant with grant rules
- The public can access your findings
- Your research can influence policy

http://aoasg.org.au/
All PLOS Journals are Gold Open Access*

• Free, immediate access online

• Unrestricted distribution and reuse

• Author retains rights to attribution and copyright

• Papers are deposited in a public online archive, such as PubMed Central

*Bethesda Principles, April 2003
Momentum of Open Access

Growth in Published STM Articles, CC BY

Data from OASPA
oaspa.org/growth-of-oa-only-journals-using-a-cc-by-license/
A Revolution in Thought

Why is it, a growing number of people are asking, that anyone can download medical nonsense from the Web for free, but citizens must pay to see the results of carefully conducted biomedical research that was financed by the taxes? The Public Library of Science aims to change that.

Rick Weiss, The Washington Post
August 5, 2003
For All PLOS Journals in 2014

<table>
<thead>
<tr>
<th>Category</th>
<th>Totals</th>
</tr>
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<tr>
<td>Pre-submission inquiries</td>
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<tr>
<td>Full submissions</td>
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<td>Research articles published</td>
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<td>Academic Editors</td>
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<td>Unique reviewers</td>
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<td>Total completed reviews</td>
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</table>
150 submissions per month
Each editor has at least 30 papers to look after
More papers come all the time

Commission
Podcasts / advocacy
Conference
Meetings
Thoughtful cover letter
Well written abstract
Think of what Editors are looking for
Providing all the required information will expedite initial decision of whether to referee
Why peer review?

• Peer review ensures that your paper is as scientifically robust and complete as possible.

• An opportunity to improve your contribution, not an inconvenience!

• If rejected: take criticism on board before submitting to another journal!
Data Availability

The following policy applies to all of PLOS journals, unless otherwise noted.

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When submitting a manuscript online, authors must provide a Data Availability Statement describing compliance with PLOS's policy. If the article is accepted for publication, the data availability statement will be published as part of the final article.

Refusal to share data and related metadata and methods in accordance with this policy will be grounds for rejection. PLOS journal editors encourage researchers to contact them if they encounter difficulties in obtaining data from articles published in PLOS journals. If restrictions on access to data come to light after publication, we reserve the right to post a correction, to contact the authors’ institutions and funders, or in extreme cases to retract the publication.

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The data policy was implemented on March 3, 2014. Any paper submitted before that date will not have a data availability statement.
CHALLENGES IN IRREPRODUCIBLE RESEARCH

Science moves forward by corroboration — when researchers verify others’ results. Science advances faster when people waste less time pursuing false leads. No research paper can ever be considered to be the final word, but there are too many that do not stand up to further study.

There is growing alarm about results that cannot be reproduced. Explanations include increased levels of scrutiny, complexity of experiments and statistics, and pressures on researchers. Journals, scientists, institutions and funders all have a part in tackling reproducibility. *Nature* has taken substantive steps to improve the transparency and robustness of its scientific reporting.
A Proactive Approach to Reproducibility with Evidence-Based Research on Research

Posted on January 6, 2016 by PLOS

Discovery and reproducibility are cornerstones of the scientific enterprise. Without one, the other is hindered; new work is built on the foundation of previous results, for both breakthroughs and smaller advances, and the ability to reproduce published results expedites discovery.

Scientific research is increasingly technical, multidisciplinary and collaborative, bringing additional challenges to reproducibility and reliability. It is not new that there have been instances when published results were irreproducible, what is relevant in recent years – aided by Open Access – is the ability of motivated scientists to analyze not only data consolidated from multiple studies, in meta-analysis, but also to analyze the design, methods, reporting and evaluation of research, in meta-research studies.

Meta-research is the study of how science is conducted and reported. In recognition of the importance of this emerging field to bolstering public confidence in science and reducing unnecessary costs and efforts, PLOS Biology is taking a proactive approach to encourage reproducibility efforts with a new Meta-Research Section devoted to evidence-based research on research.

In expanding its scope to include this branch of scientific research, the journal aims “to provide a high-visibility home for research on research practices in the life sciences,” says PLOS Biology Senior Editor Stavroula Kousta. “By recognizing the importance of meta-research as a field, we hope to help reduce waste and restore the public’s trust in science,” she adds. In elevating the importance of data-driven meta-research, PLOS Biology ultimately aims to improve research practices.

Launch of this new section in PLOS Biology is accompanied by an editorial further detailing the motivation behind this addition (together with cited evidence)
Thank You

Clare Garvey

PLOS Medicine