Open Access and New Standards in Scientific Publishing
Ernest E. Moore, MD – Nothing to disclose.

Jennifer Crebs – Nothing to disclose.
How did we get here?
Timeline
15th century: Gutenberg’s press spreads across Europe.


1660s: Founding of the Royal Society (1660) and the French Academy of Sciences (1666).

January 1665: First scholarly journal (Journal des sçavans) launches.

March 1665: First scientific journal, Philosophical Transactions of the Royal Society.

Scientific communication wed to print.
**1700s:** The ‘Republic of Letters’ – explosive growth and development of science. Letters written in duplicate, published (social networking, 18th-century style)

**1800s:** The rise of specialties. Medical journals arrive on the scene, e.g. *NEJM* (1812), *The Lancet* (1823), *JAMA* (1883), *Annals of Surgery* (1885).

*Science as a profession supported by publication.*
MODERN ERA

1880s-1900s: Printing technology proliferates, but expensive. Publishers fill role of disseminating research. Focus on monographs.

1960s: Adoption of peer review by some journals.

1965: The first citation index, practical birth of impact factor.

1970s: Journal articles start to adopt specific format (introduction, methods, results, discussion).

1980s: First free science journals publish online...

“The Watson and Crick paper was not peer-reviewed by Nature... the paper could not have been refereed: its correctness is self-evident. No referee working in the field could have kept his mouth shut once he saw the structure...”

– John Maddox
Editor Emeritus, Nature

Scientific quality control. Journals as filters.
With the advent of digital technologies, equilibrium points essential for the management of copyright issues have been deeply disturbed...

We have clearly entered a revolutionary phase... real changes in power structures and social relations are in the offing.”

– Jean-Claude Guédon

In Oldenberg’s Long Shadow: Librarians, Research Scientists, Publishers, and the Control of Scientific Publishing
1991: ArXiv, the first free online scientific repository launches.

1994: National Academies Press offers free online access to all publications (including books).

1997: National Library of Medicine launches Medline/PubMed, the first free index.

1999: Open Archives Initiative launches protocol for online metadata.


Scientific dissemination as a public good.
THE PLAYERS

**Publishers:**
- Control and enforce copyright
- Set prices for content
- Financially support journals

**Librarians:**
- Primary customers of publishers
- Limited budgets (‘serials crisis’)

**Scientists:**
Serve as authors, reviewers, readers, and editors.
Belief that research that is performed with public funding should be publicly available.

Online production costs are low, publishers profits high... Disconnect questioned.

New publishing technology empowering scientists to bypass publishers.

Enforcing copyright is difficult/contentious online.
“It no longer seems to be a question whether OA is a viable alternative to the traditional subscription model for scholarly journal publishing; the question is rather when OA publishing will become the mainstream model...”

– Mikael Laakso
Hanken School of Economics
October 22, 2012
What is OA?
Definitions
“By open access, we mean its immediate, free availability on the public internet, permitting any users to read, download, copy, distribute, print, search or link to the full text of these articles, crawl them for indexing, pass them as data to software or use them for any other lawful purpose...”

– The Budapest Open Access Initiative

February 14, 2002
BIRTH OF OA

Rise of Internet (“Death of Print”) Critical to OA Movement


• Berlin Declaration on Open Access (2003) Implementing OA, organized by Max Planck Society.

• Bethesda Statement on Open Access Publishing (2003). Defined elements of open access journal and copyright, hosted by Howard Hughes Medical Institute.
Green OA refers to a kind of access accomplished via repositories.

A repository is an online database of articles. Repositories may contain author-created preprints or post-publication works.

E.g. PubMed Central (NIH)

Accounted for 12% of scientific literature in 2008. (Bjork et al. 2010)
Gold OA refers to paying a fee to publish in a journal that provides immediate access to articles on the publisher's website.

Examples include articles published by BioMed Central and the Public Library of Science.

Accounted for 6-8% of peer-reviewed literature in 2009. (Laaski et al. 2011)
HYBRID OPEN ACCESS

- **Hybrid OA** is a form of gold OA, in which individual authors (or institutions/funders) pay a fee to make articles free upon publication.

  This option will be available for the *Journal of Trauma*.

- **Delayed OA** is another type of ‘gold’ access, whereby archives are open after a preset delay (e.g. 1 year post-publication)
• **Gratis OA** is free of charge, but not necessarily free of copyright and licensing restrictions.

• **Libre OA** is free of charge and free of at least some copyright and licensing restrictions. There can be degrees of libre OA depending on the access model and copyright used.

• **Variations on the Creative Commons copyright license** available.
- **Copyright** covers exclusive rights over reproduction, distribution, and derivative works.
- In the U.S., copyright terms extend **75 years** after the death of the author or **95 years** after publication.
In traditional scientific journals, the act of transferring copyright has corollaries:

- No author royalty
- Copyright assigned to publisher
- Author retains few rights over use or distribution
- Publisher controls the work
How does it differ?
OA vs. print
TRADITIONAL JOURNALS

Owned and published by society

- Full control over content, copyright, dissemination, and revenue
- All publishing tasks and expenses in-house

Owned by society, publisher contracted

- Editorial independence, but commercial decisions made in partnership with society
- Production, hosting, and distribution handled by publisher
- Copyright held by either

Owned by publisher, affiliated with society

- Various models for editorial process (typically one external editor, staff provided by publisher)
- All business decisions and procedures handled by publisher
TRADITIONAL FEATURES

Print & Online Subscription Journals

• Readers pay for access
• Print distribution; need for physical archives
• Printing and warehousing costs
• Most revenue from institutional subscriptions
• Attrition due to low cost effectiveness of bundles and budget caps, (“serials crisis”)  
• Journal-level metrics as proxy for quality (i.e. impact factor)
OPEN ACCESS JOURNALS

Hybrid – Print/Online

- Identical processes used with print issue.
- Copyright level for OA articles determined by publisher/society.
- Higher APC than full gold

Full Gold – Online

- Full control over content, copyright, dissemination, and revenue
- All publishing, editing, and production tasks in-house
- Custom software for submissions and article stats
- Focus on speed of peer review and publication
- CC-BY licenses
Online Open Access Journals

- Author pays for publishing service
- Online distribution
- Typesetting, online hosting costs
- Revenue from article processing fees (APCs)
- Many funding types
- Rise of the “megajournal,” validity over novelty
- Article-level metrics as proxy for quality (i.e. citation counts, altmetrics)

“Editors once did indeed rule the roost, but now the leaders [of scholarly publishing] are technologists who think like economists.” (Esposito, 2013)
OPEN ACCESS COPYRIGHT

**Attribution (BY):** All licenses require that others who use your work in any way must attribute it (i.e. must cite the work, give you credit).

**Non-Commercial (NC):** You let others copy, distribute, display, modify and use your work for any purpose other than commercial.

**No Derivative Works (ND):** You allow others to copy, distribute, display and only original copies of your work – but with no modifications.

**Share Alike (SA):** You permit copying, distribution, display, and modification of your work, as long as any distribution occurs on the same terms.

**CC-BY License:** Maximum dissemination and use.

**CC BY-NC-ND License:** Can cite and share, but no selling or modifications permitted.
# JTACS COPYRIGHT

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**Format:** More flexibility (full color, unlimited figs).

**Lower costs:** Production costs constrained to online, peer review can be open-source.

**Speed.** Faster article publication cycles. Early citation advantage.

**Novelty.** No need to adhere to print conventions (volumes, issues, etc). Transition has led to diversity of funding/peer review types.

**Innovative.** Article-level metrics, interactive post-publication comments. Machine-readable content, open to data mining.
CONS OF OPEN ACCESS

Complicated. Many changes are converging at once. Funders mandating copyright.

Unstable pricing. Monetizing OA has led to article processing charges (APCs), which may face downward pressure.

Predatory. Low barriers have resulted in a proliferation of dubious gold OA “journals.”

Indexing. NLM and Thomson Reuters set proprietary standards. If new journal accepted, IF takes a minimum of 3 years.
Where is it happening?
Status of OA
OPEN DISCIPLINES

Types of OA by Discipline

(Laakso and Björk, 2012)
Small uptake in hybrid OA by clinical scientists. Cost is cited as the primary factor.

In *PNAS*, 79.4% of authors would pay $500, but only 2% would pay more than $2000. (Björk, 2012)
GOLD VS HYBRID COST

- Range $0–$4366. Median gold APC is $0. Mean $1200.

- Prestige (AI score) does not correlate with price when hybrid OA journals are added to the mix.

- Majority of hybrid APCs are at $3000, regardless of impact factor.

(Van Noorden, 2013. *Nature*; 495 (West et al. 2013)}
• Early years of OA publishing were largely driven by scientific societies.
• Dramatic recent growth of commercial publisher-operated ‘gold’ OA publications (13,400 articles in 2005 to 119,900 in 2011).

(Laakso and Björk, 2012)
N.b. Chart only includes full immediate OA journals, excluding delayed and hybrid OA.

(Laakso and Björk, 2012)
GROWTH OF OPEN ACCESS

Gold OA Journals, 1993-2009

- 17% of the 1.66 million articles in 2011 published OA

(Laakso et al, 2011; Poynder, 2011)

OA Growth Projections, 2009-2029

- Two growth projections estimate that OA will account for 60% of all pubs in 2019 or 2025

(Laakso et al, 2011; Poynder, 2011)
WHY? CITATION ADVANTAGE.

- First longitudinal study of citations found that OA articles are cited earlier and more often than non-OA articles.
- Visualization of 2003-2012 Web of Science data corroborates citation gain.

(Davis, 2013)
Open Access Mandates & Models
FEDERAL MANDATES

**Fair Access to Science and Technology Research (FASTR) Act (13 Feb 2013)**
requires OA for peer-reviewed manuscripts of articles reporting the results of federally-funded research.

**Office of Science and Technology Memo (22 Feb 2013)**
All agencies with R&D budgets > $100M = Open access within 12 months of publication.

**Executive Order (19 March 2013)**
Open data policy
OTHER MANDATES

By Institution

• **Harvard Open Access Policy**: all faculty must deposit papers in institutional repository.
• **University of California** (July 2013) mandated that research articles by faculty on all campuses must be made available to the public at no charge.
• **Cornell, Dartmouth, Harvard, MIT, and Berkeley** reimburse authors for gold APC charges (Compact for Open-Access Publishing Equity)

By Funder

• **Wellcome Trust, NIH, and Howard Hughes Medical Institute** mandate OA within certain time periods (6 or 12 months)
• **United Kingdom Research Councils (RCUK) Policy** on Open Access (July 2012): Publicly-funded research in the UK must publish with immediate OA if funds are available.
MODELS: MEGA JOURNALS

The largest open access journal in the world is:

**PLOS ONE**

2012 IF = 3.730

In 2013, PLOS ONE has published > 2,500 articles per month (APC = $1350).

PLOS peer review emphasizes validity of research strategy, rather than novelty of results.
The highest impact factor in the world belongs to an open-access journal:

**CA - A Cancer Journal for Clinicians**

2012 IF = 153.459

This is due to the citation advantage of OA coupled with CA’s very low number of citable articles.

This journal typically publishes fewer than 20 papers each year (APC = $0).
EXAMPLES:
GOLD (WITH IF)

- Published by Biomed Central
- Launched November 2007, IF: 0.95
- APC = $1690, discounts for BMC members
EXAMPLES: GOLD (WITH IF)

- Published by Biomed Central
- Launched July 2008, IF: 1.68
- APC = $1865, discounts for BMC members
EXAMPLES:
GOLD (WITHOUT IF)

Published by Medknow/Wolters Kluwer
Launched January 2008, no IF
APC = $200
EXAMPLES:
GOLD SPINOFF (WITHOUT IF)

- Published by LWW
- Launched May 2013, no IF
- APC = $1995 for full article, $500 case reports
EXAMPLES:
GOLD ("PREDATORY")

Published by OMICS Group
Launched May 2013, no IF
APC = $900 (all article types)
Open Access &

*J Trauma Acute Care Surg*
SOCIETIES AND OPEN ACCESS

- 740 society-owned OA publications in print (as of 24 July 2013)
- 146 societies operated more than one OA title
- For societies that used a commercial publisher, BioMed Central, Nature, Oxford University Press, Springer, and Wiley were represented

Details available from a spreadsheet maintained by the Scholarly Publishing and Academic Resources Coalition
FIRST, WE HYBRIDIZE...

- LWW aiming to implement hybrid OA option for *J Trauma Acute Care Surg* later this year.

- Research Councils UK (RCUK) requires this option for all published research; US federal agencies announced requirements in Aug 2013.

- Hybrid option provides maximum visibility from the start
**Regular Hybrid Summary**

**Access:**
- Open on publication

**Reuse rights:**
- No commercial

**Copyright:**
- With author

**APC:** $3000

**License:** CC BY-NC-ND

**Summary:**
- After acceptance, authors pay fee to open access.
- Author retains copyright, license forbids commercial reuse.
- LWW can sell reprints.
## HYBRID ACCESS FOR RCUK PAPERS

<table>
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<th>Access: Open on publication</th>
<th>Reuse rights: Generous</th>
<th>Copyright: With author</th>
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**RCUK Hybrid Option**

- **APC:** $3800
- **License:** CC-BY

**Summary:**
- Only available to RCUK-funded authors.
- After acceptance, authors pay fee to open access.
- Author retains copyright, reuse possible. LWW may not sell reprints.
Editors and AAST are considering a spinoff full gold journal with specialized scope.

Desire to serve needs of trauma community while maintaining same high standards of peer review and turnaround.

*JTACS* is the third-largest surgical journal in the world. Rejected papers nearly always find homes elsewhere...
AAST/JOT CHALLENGES

• Reputation of print journal = impact factor
• Editors of the *Journal* are expected to raise IF
• This will require reducing number of articles published per year.

Cites to recent articles
Number of recent articles

\[
\frac{2857}{1217} = 2.348
\]

Dilemma is publishing low-citation articles that are a part of our mission, e.g.:

• Injury prevention
• Disaster management
• Health disparities
• Techniques/procedures
• Case reports
New Open Access Journal
“Trauma Advocacy” or “Global Access”
? Author publication fees/discounts
? Editorial leadership
? Interest
# SUMMARY: COSTS AND BENEFITS

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<th>Disadvantages</th>
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<td><strong>Author</strong></td>
<td>• Citations are enhanced</td>
<td>• Pays for publication, requires funding source.</td>
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<td>• Reduced time to publication</td>
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<td><strong>Reader</strong></td>
<td>• Immediate access to publication</td>
<td>• Confusion as to quality of peer review and sustainability</td>
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<td>• Potential for international growth</td>
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<td><strong>Publisher</strong></td>
<td>• Lower overhead (no need to ship, warehouse, or manage rights)</td>
<td>• Reduced profits</td>
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<td>• Must shift focus from sales to author services</td>
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<td><strong>AAST</strong></td>
<td>• New publication to serve membership, address needs</td>
<td>• Reduced income from publisher</td>
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<td>• Gain expertise in new publishing venture.</td>
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THANK YOU!