



Ivy Anderson  
California Digital Library

# Getting To Open: Challenges, Drivers And Opportunities For Transforming The Global Publication System



- National Academies OF Science, Engineering and Medicine Symposium

- Toward an Open Science Enterprise
- September 18, 2017



# CDL and the University of California

## The Libraries

10 campuses, 100 libraries

2 Regional Storage Facilities

Annual combined materials  
expenditures: \$94M

## California Digital Library

“11<sup>th</sup> University Library” - founded 1997

Operates systemwide digital library services  
for UC and beyond

- eScholarship open access publishing +  
repository services
- DMPTool
- Data management and sharing services
- Content licensing & open access support



- Davis
- Berkeley
- Santa Cruz
- Merced
- Santa Barbara
- Los Angeles
- Irvine
- Riverside
- San Diego

## The University

10 Campuses

5 Medical centers

3 National Laboratories

250,000 students

21,000 faculty

44,000 other academic

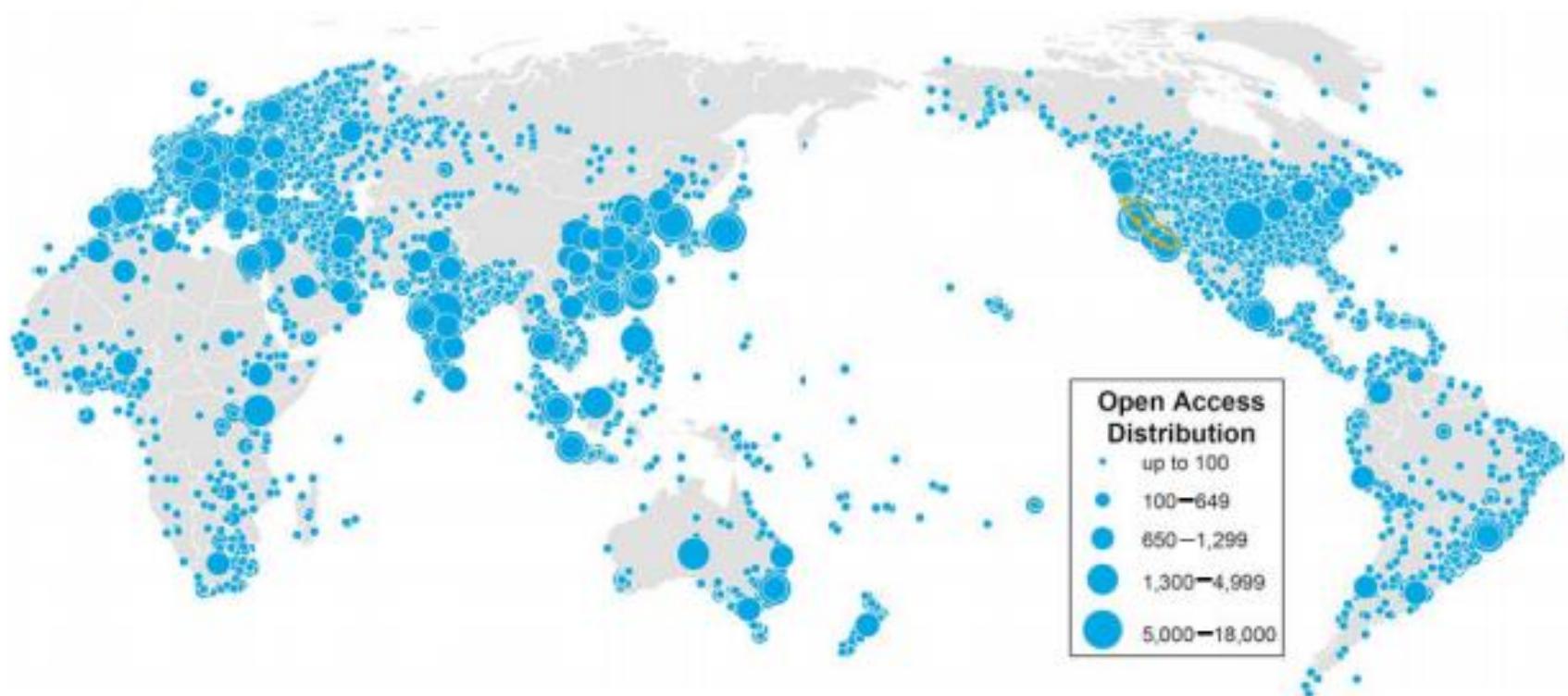
Annual research expenditures:  
\$4.5 bn

Annual publication output:  
~40,000 research articles

# Green OA policies have increased access to scholarship across the globe

*UC's Open Access policies have resulted in a growing body of freely available research in the eScholarship online repository, expanding the global reach of UC's research enterprise*

Geographic distribution of nearly one million downloads of 45,000 articles deposited since 2012 under the University of California's open access policy

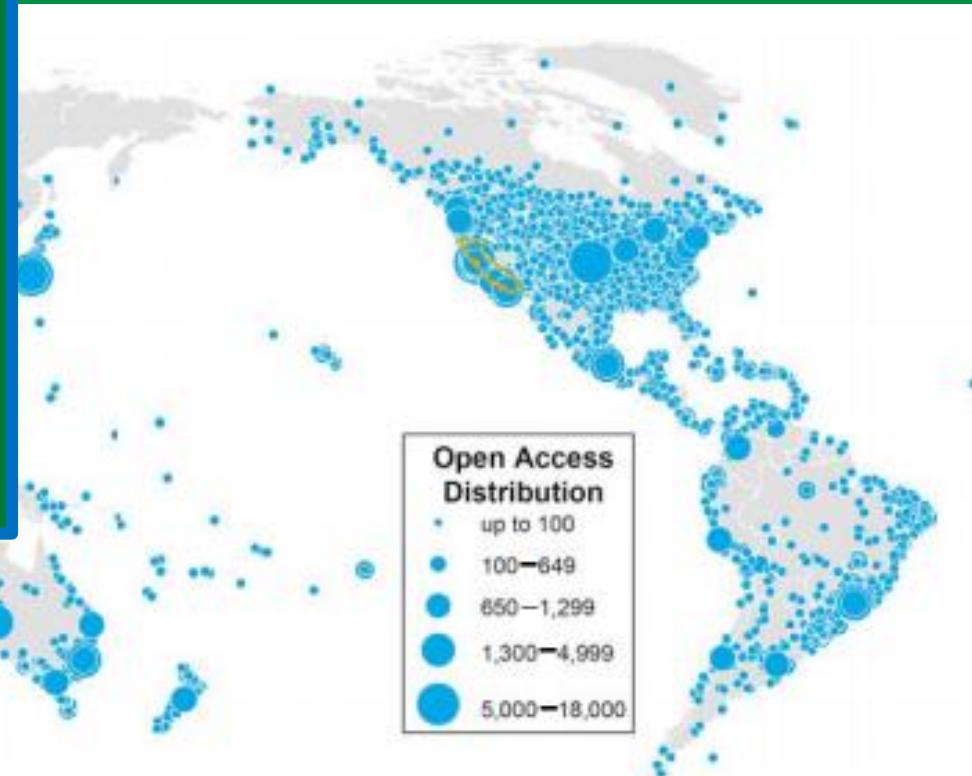


# But green OA has weaknesses as well

- Low author uptake
- High overhead for authors and institutions
- Fails to address underlying economic challenges
- Multiple versions of articles, unlinked to VOR
- By perpetuating subscriptions, hinders movement toward more immediate and sustainable OA

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“The future is with immediate publication and postpublication peer review, and the sooner we get there the better”



Michael Eisen

<http://www.sciencemag.org/news/2017/02/gates-foundation-strikes-deal-allow-its-researchers-publish-science-journals>



# How do we take those next steps?

Increasing disconnect between North American and European approaches to open access

## North America

- **Funding Agency OA Policies**
- **White House OSTP Directive**
- **FASTR**

**University Faculty OA Policies**



## Europe / UK

- **Finch Report**
- **Horizon 20/20**
- **Netherlands Call to Action on Open Access**
- **OA2020**
- **APC Offset Agreements**

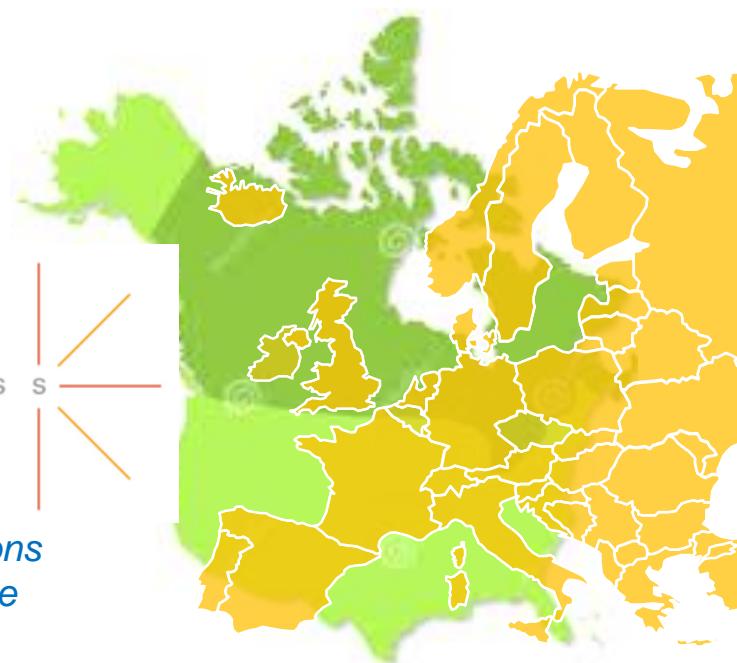


# How do we take those next steps?

*More than 80% of the total article output of the Max Planck Society is published in journals from 20 key publishers*

open access  
2 0 2 0

*87 scholarly organizations have officially signed the Expression of Interest.*



*A move to full "gold" open-access publishing will "cripple university systems" by incurring large extra costs without significantly improving access to research, leading research universities have warned.*

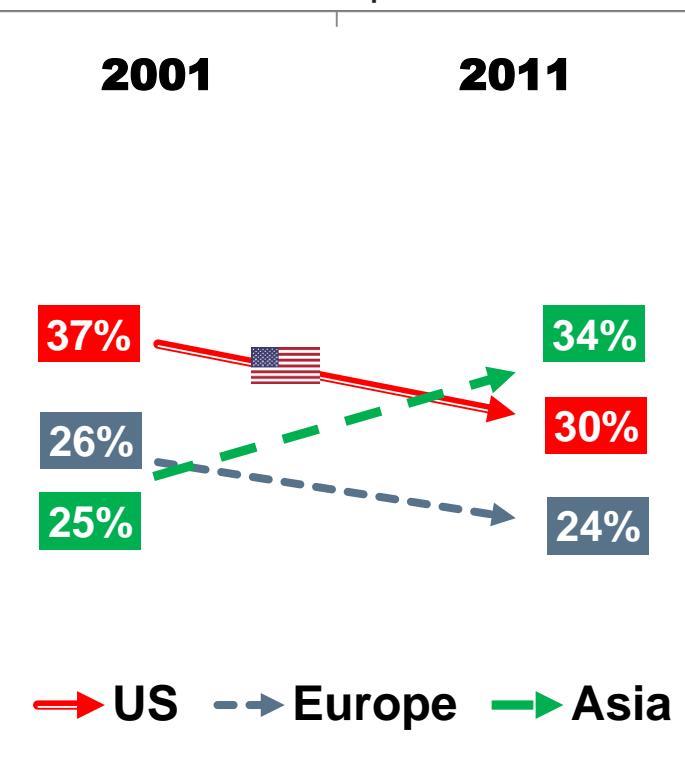
<https://www.timeshighereducation.com/news/finchs-open-access-cure-may-be-worse-than-the-disease/420392.article?storycode=420392>

June 28, 2012

The US shoulders a disproportionate share of the cost of the global STM system relative to its share of published research

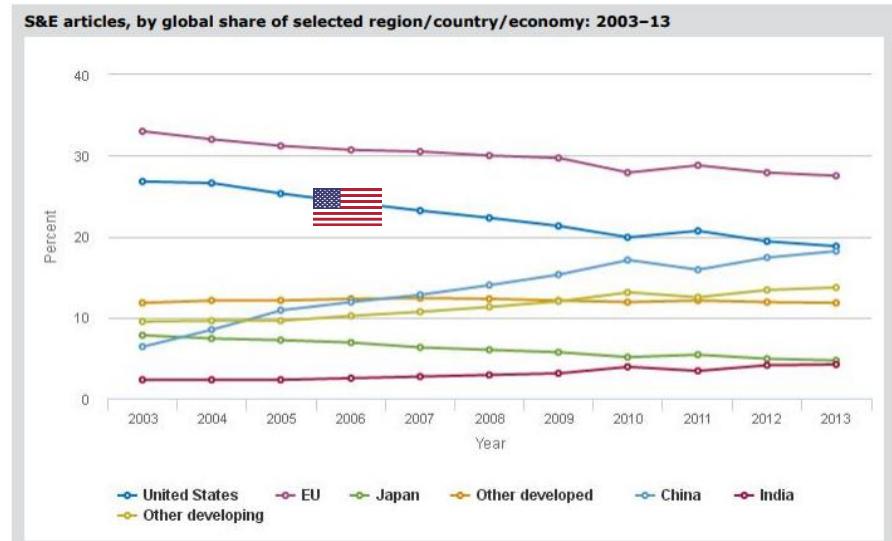
## Global R&D Share

2015 STM Report



## S&E Global Article Share

NSF 2014



**“The cumulative effect of sustained above-global-average growth in R&D spending in emerging economies has been a profound shift in the global make-up of research.”**

(STM Report, 2015)

The US shoulders a disproportionate share of the cost of the global STM system relative to its share of published research

## Global R&D Share

2015 STM Report

2001 2014

2001

## 2014 STM Revenue Share

■ ROW ■ Asia-Pacific ■ EMEA ■ US

37%



26%

25%

Asia-Pacific

ROW

4%

US



55%

28%

14%

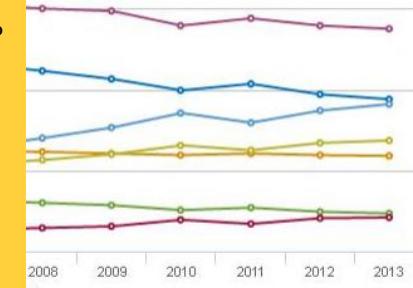
STM 2015 Report

→ US → Europe → Asia

## S&E Global Article Share

NSF 2014

Country/economy: 2003-13



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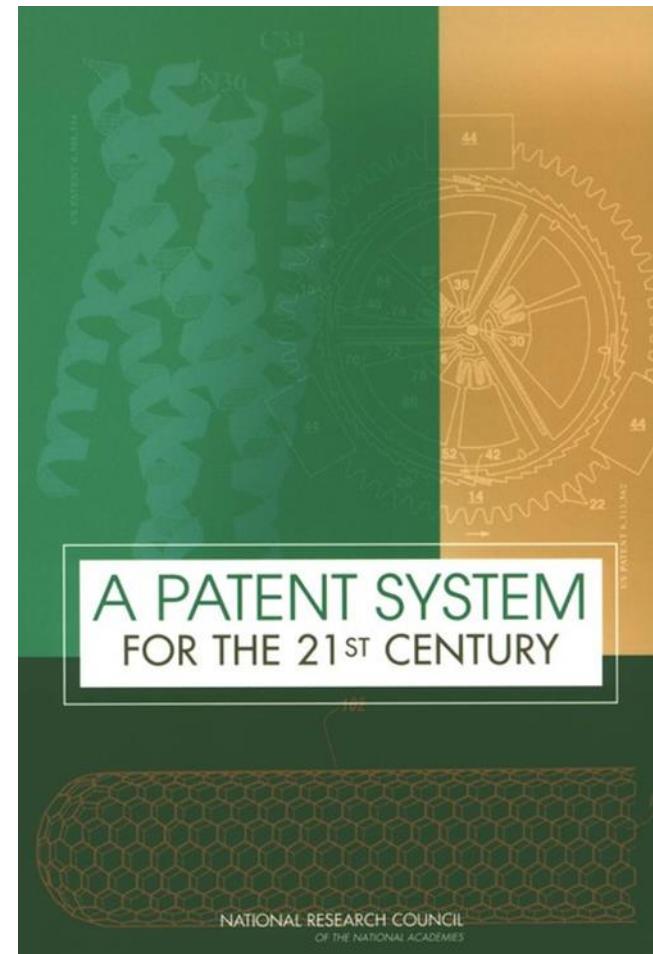
(STM Report, 2015)

# Patent Analogy: First to Invent vs. First to File

*In 2011, the U.S. adopted the First to File patent system used in other countries to address growing problems of patent quality, rising transaction costs, and impediments to knowledge dissemination arising from international inconsistencies.*

“...[by aligning] the U.S. with the rest of the world ... the America Invents Act distinctly improves U.S. patent law for small businesses ... bringing more certainty, simplicity and economy to the patent process”

The America Invents Act is Better for Small Business  
SEPTEMBER 21, 2011 BY JOHN KOENIG  
<http://johnkoenig.com/author/john-koenig/>



# What about authors?

“As subscription prices climb, ...[w]e need an affordable alternative that preserves both quality and prestige.

The university should negotiate with publishers on our behalf so that we can retain our copyrights and share our work, but any open access or other solutions should be no more inconvenient to us than the forms we now sign that surrender our rights.”

David Crohn, Department of Environmental Science, UC Riverside



“the failure of Green and Gold is down to a preference for stakeholders not to change compounded by the scale of the change needed.”

“...even when everybody has accepted that change is unavoidable, change is like death and taxes – it should be postponed as long as possible, and no change would be vastly preferable (Drucker, 1999).”

- Toby Green, OECD



# SCOAP<sup>3</sup> – Sponsoring Consortium for Open Access Publishing in Particle Physics

What is SCOAP<sup>3</sup>

SCOAP<sup>3</sup> Partners

SCOAP<sup>3</sup> Journals

SCOAP<sup>3</sup> Repository

***SCOAP<sup>3</sup> has converted the high energy physics (HEP) literature from major publishers to open access by redirecting library subscription revenue toward per-article costs. With APS joining in 2018, SCOAP<sup>3</sup> will have converted 87% of the HEP literature to open access.***



Access the  
Repository

Articles funded by SCOAP<sup>3</sup>:

0

yesterday

341

last 30 days

2 964

in 2017

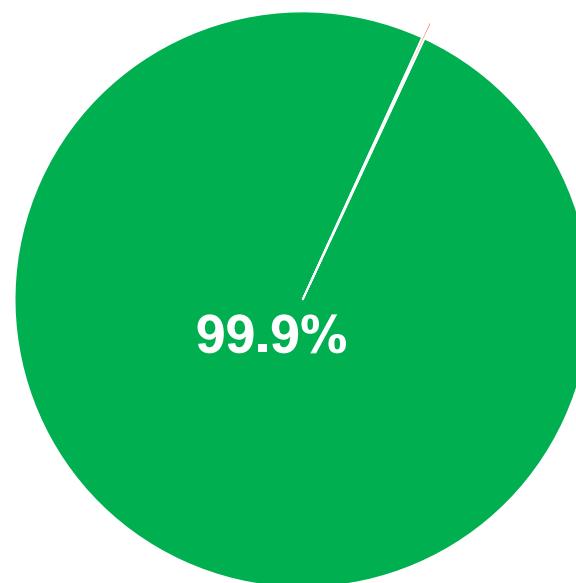
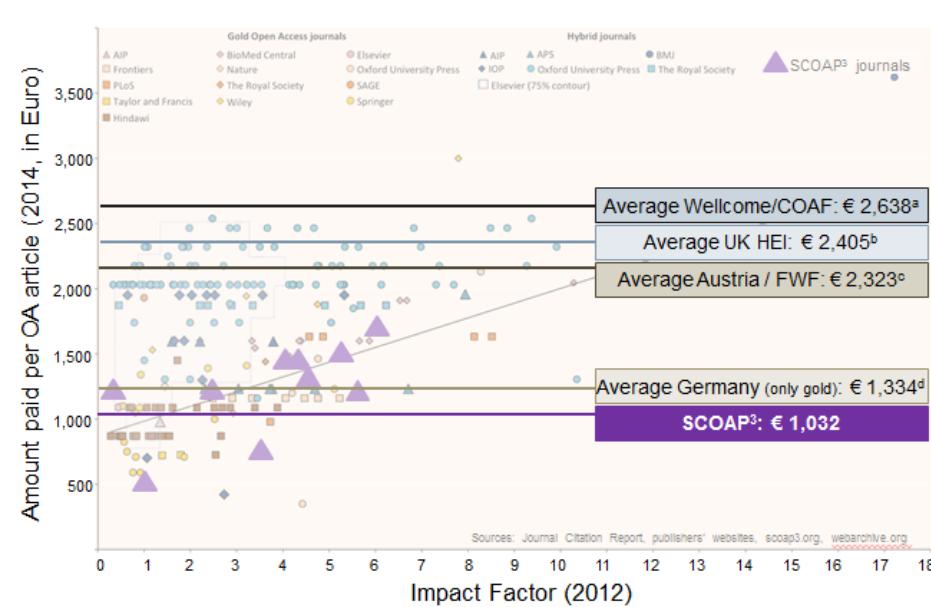
16 631

since 2014

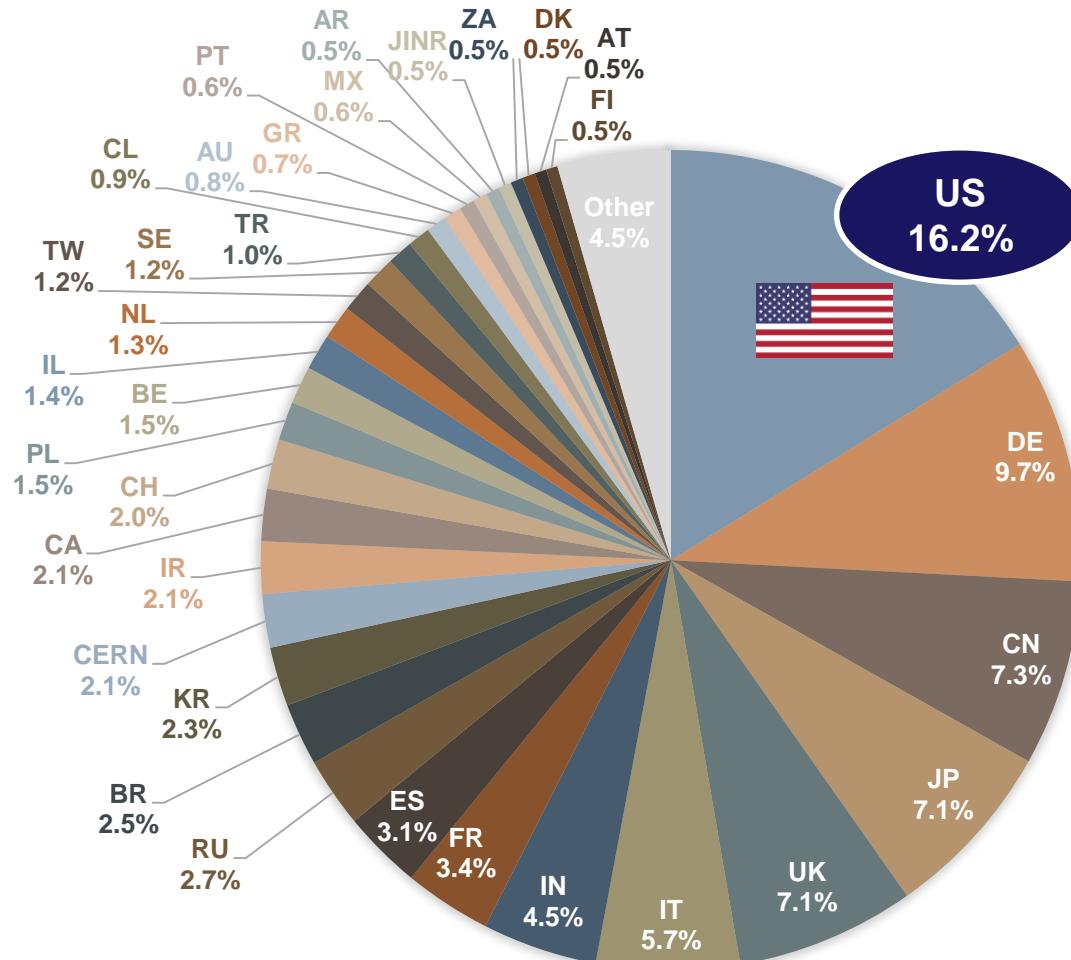
# SCOAP<sup>3</sup> offers a real-world example of how global collaboration among libraries, publishers, and research funders can be deployed to achieve open access aims

Low Average Cost Per Article:  
€ 1,022

High Publisher Compliance  
(correct license, timeliness, repository deposit)



# ...with country costs scaled to match global output



*Country participation fees  
based on HEP article  
publication share*

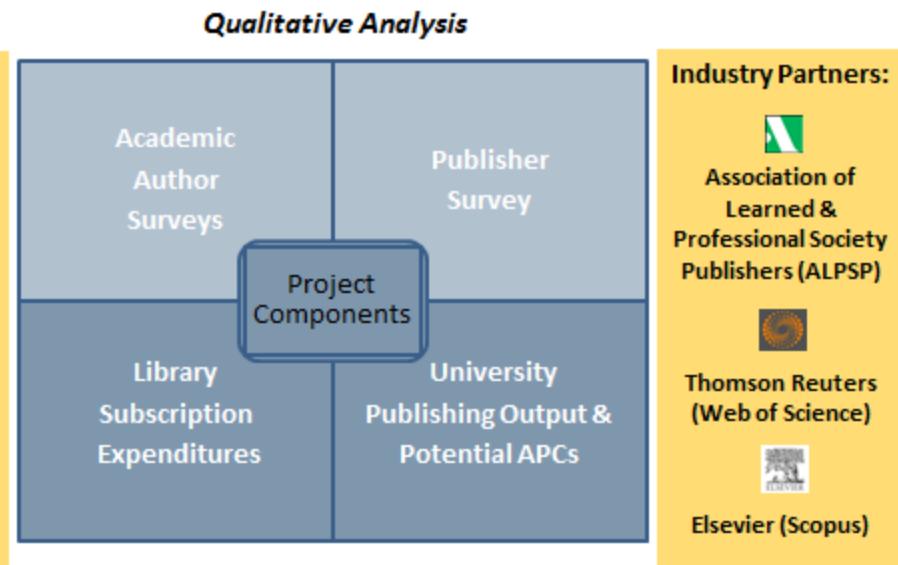
Share of HEP publications 2014-2015 (as used for SCOAP<sup>3</sup> Phase 2)



*UC's Pay It Forward study sought to study the impact of a largescale conversion of the literature via APCs on large North American research institutions*

[http://icis.ucdavis.edu/?page\\_id=713](http://icis.ucdavis.edu/?page_id=713)

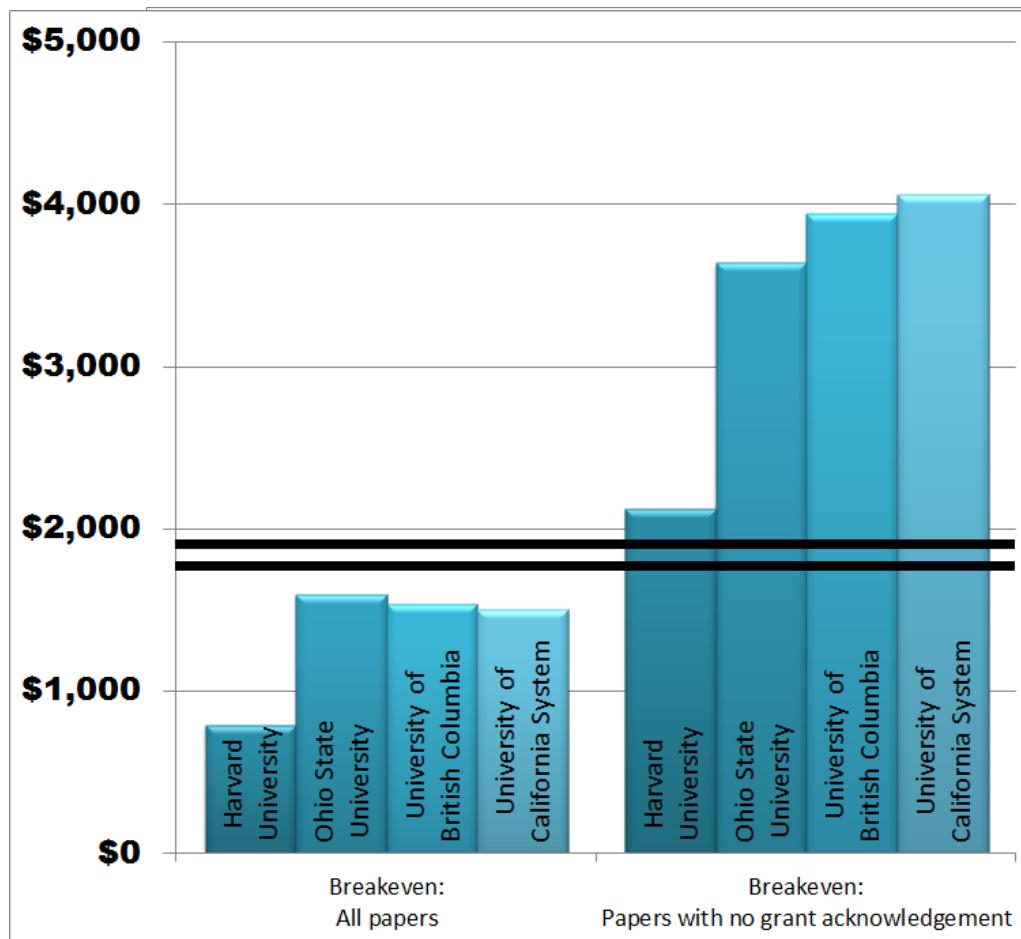
*These institutions would assume the bulk of the financial burden in an APC-driven OA model*





# Findings: Affordability

Our study looked at the level of APC each institution could afford, based on its current subscription spend



APCs are affordable for large research-intensive institutions if grant funds are applied

\$1892: Average APC for partner institution publications in full OA journals



# Strategy: Multi-Payer Model



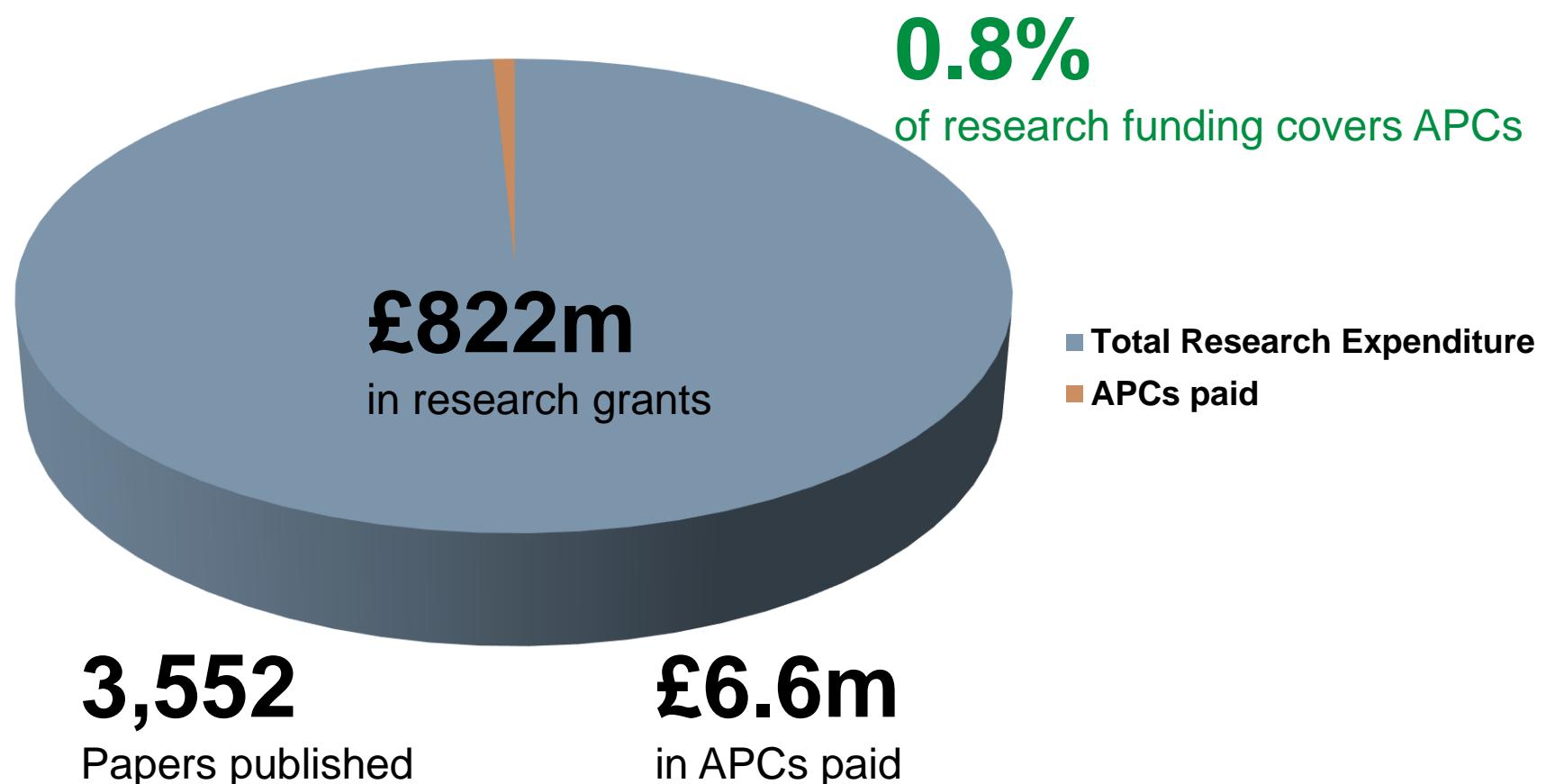
**Library subsidy  
(linked to average cost  
to publish)**



**Grants, Startup  
packages,  
discretionary research  
funds**

# Funder support for APCs is a bearable cost

## Wellcome Trust 2016 Expenditure Data

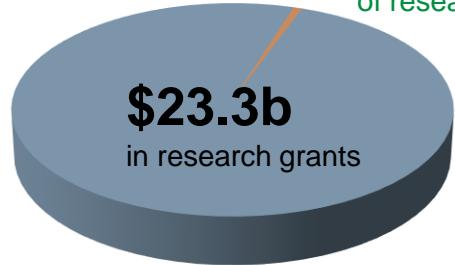


# Estimated costs if US agencies funded APCs for all sponsored publications

**NIH, 2016**

**0.9%**

of research funding covers APCs



**91,882**

Papers published

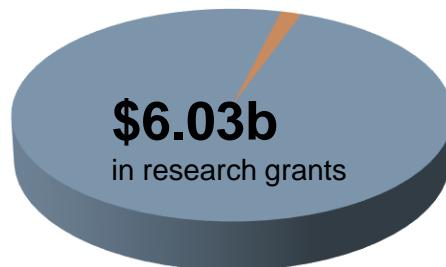
**\$204m**

In estimated APCs\*

**NSF, 2016**

**1.8%**

of research funding covers APCs



**48,926**

Papers published

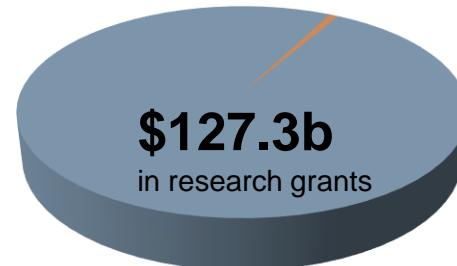
**\$102m**

In estimated APCs\*

**All US Federal Funding,  
2013**

**0.8%**

of research  
funding covers  
APCs



**465,731**

Papers published

**\$1.03b**

In estimated APCs\*

\* Assumes an average APC of \$2215

Publishing data from Web of Science, estimated APCs from UC *Pay It Forward* Study

*“This generation [of digital natives] does not only have new technical skills but different approaches to reading and sharing information. That will change the modes of scholarly communication significantly.”*

- Falk Reckling, FWF



eScholarship  
University of California

## ***Library-based OA Publishing***



# Open Library of the Humanities

# What is needed at the national policy level

- Consider whether to establish a national policy preference for immediate OA
- Support use of grant funds to subvent publication
  - Both direct and IDC
  - Library and other institutional expenditures in support of OA should be incorporated into F&A cost allocation formulas
    - Open access APC funds
    - Subscription redirection
    - Funding for open publishing infrastructure
    - Library-based publishing and repositories
- Undertake rigorous economic analysis to better understand the global market and how it is evolving – don't just leave this to other international stakeholders whose interests may be different from the U.S.
- Convene a study group on offsetting to better inform decision-making in this area
- Monitor global developments on an ongoing basis to identify opportunities for harmonization and large-scale transition

