

# Hello Librarians

## Get Ready for Open Science, Open Research, Open Access

### Invited Keynote Address



தமிழ்நாடு உடற்கல்வியியல் மற்றும் விளையாட்டுப் பல்கலைக்கழகம்  
TAMILNADU PHYSICAL EDUCATION AND SPORTS UNIVERSITY  
Accredited with "B" Grade by NAAC

India's First State University in Physical Education and Sports

**UNIVERSITY LIBRARY, TN PESU**

in association with

**MADRAS LIBRARY ASSOCIATION**

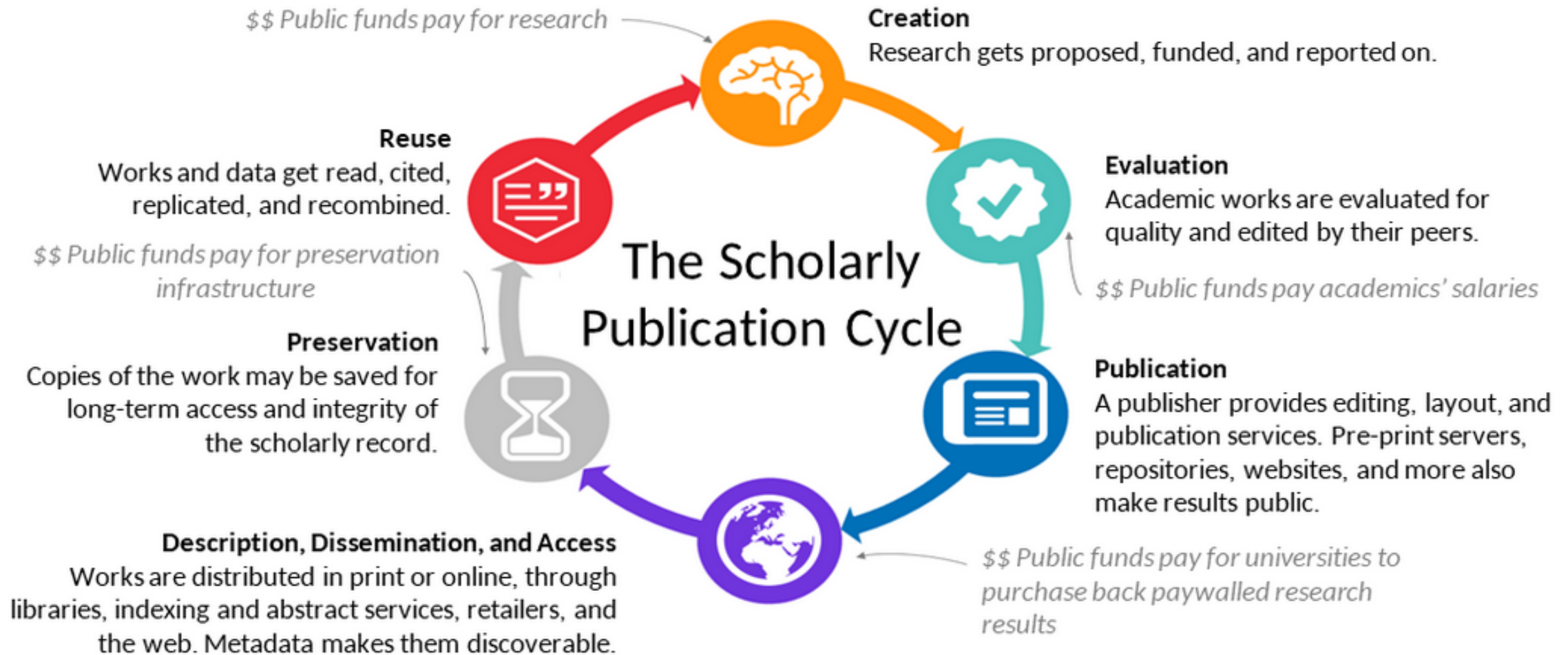


International Conference  
on  
Current Trends and Challenges in  
21<sup>st</sup> Century Librarianship  
(CTCLIS21)

**J. K. Vijayakumar (Vijay)**

**Scholarly communication** is the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. The system includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic mailing lists. Today we will address issues related primarily to the formal system of scholarly communication.

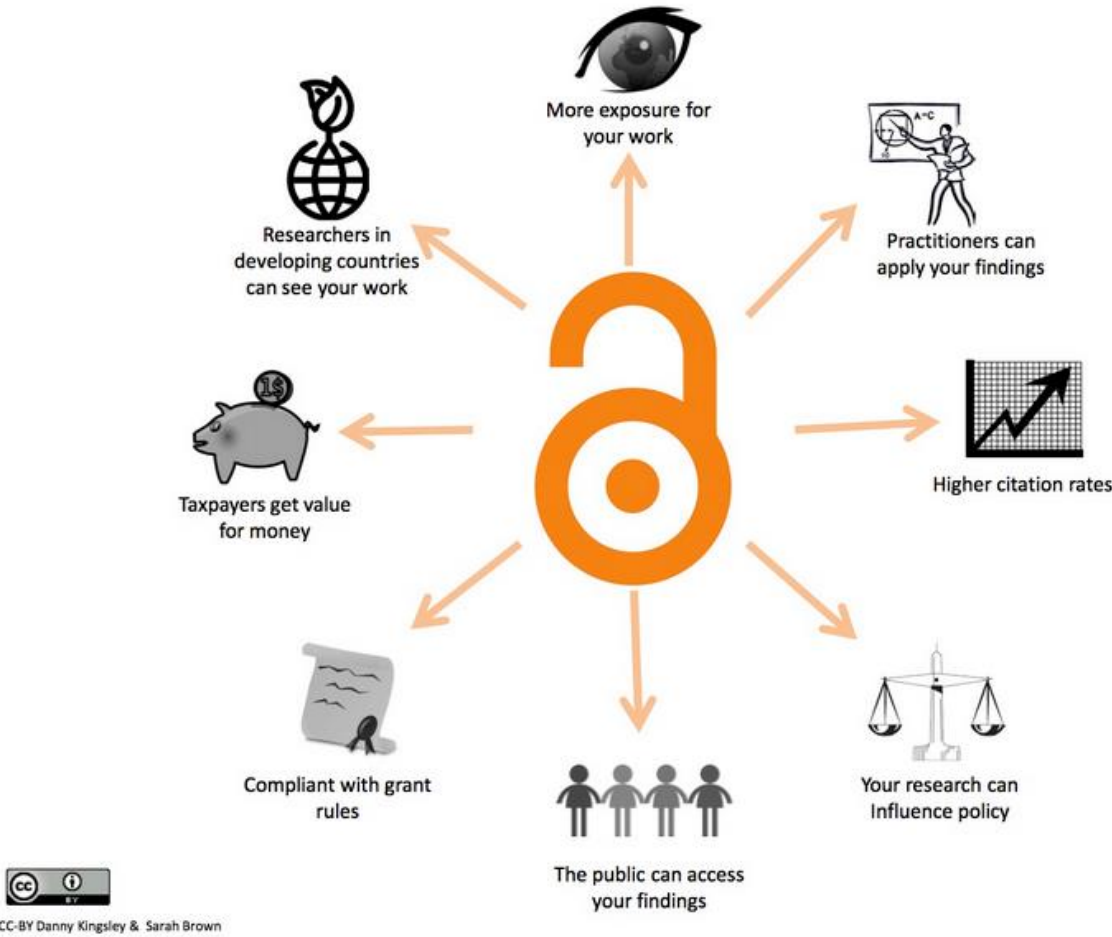
<https://www.ala.org/acrl/publications/whitepapers/principlesstrategies>



"The Publication Cycle" by University of Winnipeg is licensed under CC BY 4.0.

**Open access** is a publishing model for scholarly communication that makes research information available to readers at no cost, as opposed to the traditional subscription model in which readers have access to scholarly information by paying a subscription (usually via libraries).

© [www.openaccess.nl/en](http://www.openaccess.nl/en)



**Support global OA infrastructure including Preprint servers**

**More awareness**

**Establish OA Policy & repository.**

**Repository Integrations to CRIS, ORCID, PlumX, search engines.**

**Value added services – host research data, DOIs to datasets etc**

**Negotiate transformative, off-set or discount subscription agreements.**

**Transform subscription budget to publishing budget.**

**Author fund & Library publishing**

## Researcher OA actions

**Self-archive (eg: pre-print server)**

**Deposit to Institutional Repository**

**Pay to publish (Article Processing Charge - APC)**



Submitted version  
Author's original  
Pre-print

Submit to publisher

Peer review

Edit



Accepted version  
Post-print  
AAM

Accepted by publisher

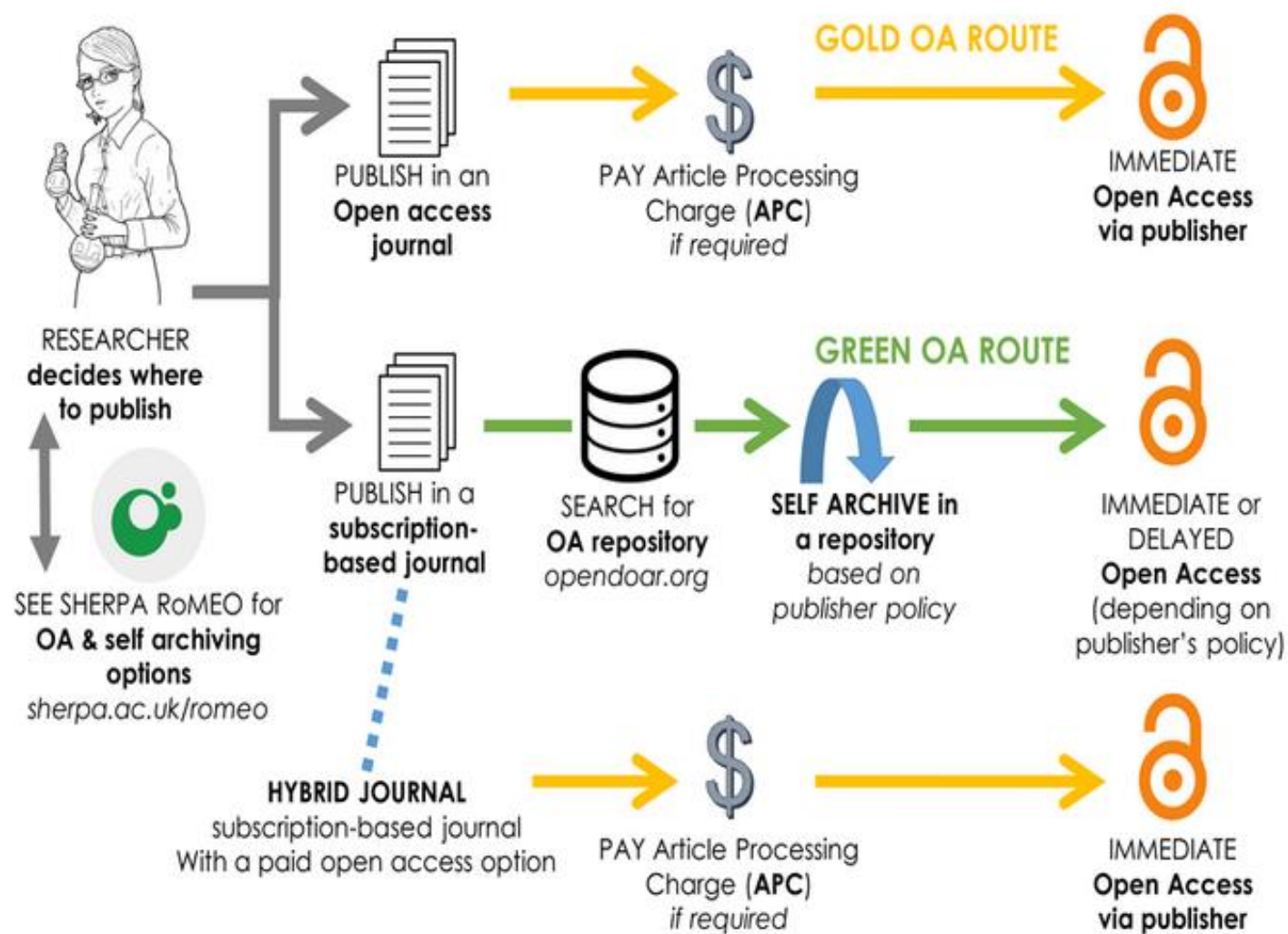
Copy-editing and typesetting



Published version  
Version of record

Publication

# Open Access Publishing



# Combination of 3 routes to reach 100% Open Access

<b>Route 1</b>	<b>Route 2</b>	<b>Route 3</b>
<b>Open Access only publishing venues (Gold journals or such platforms)</b>  <b>Immediate Open Access</b>	<b>Institutional Repository route</b>  <b>Delayed (0 to 24 months) Open Access</b>	<b>Transition from subscription to publishing model (Hybrid journals)</b>  <b>Immediate Open Access</b>
<b>Institutional Membership/OA Agreement.</b>  <b>CC-BY License</b>	<b>Authors deposit Author's Accepted Manuscript (AAM) and made openly available.</b>  <b>Copy right and reuse restrictions</b>	<b>Change from subscription agreement to read and publish / offset agreements with publishers.</b>  <b>CC-BY License</b>
<ul style="list-style-type: none"><li>• <b>APCs can be negotiated down</b></li><li>• <b>Centralized invoice management and reporting</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Establish repository and Open Access policy</b></li><li>• <b>Integration with other platforms and search engines</b></li><li>• <b>Value added services</b></li><li>• <b>Support global OA infrastructure</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Negotiate transformative deals and avoid double dipping</b></li><li>• <b>Support models like Diamond, S2O, SCOAP3 etc</b></li><li>• <b>Centralized invoice management and reporting</b></li></ul>

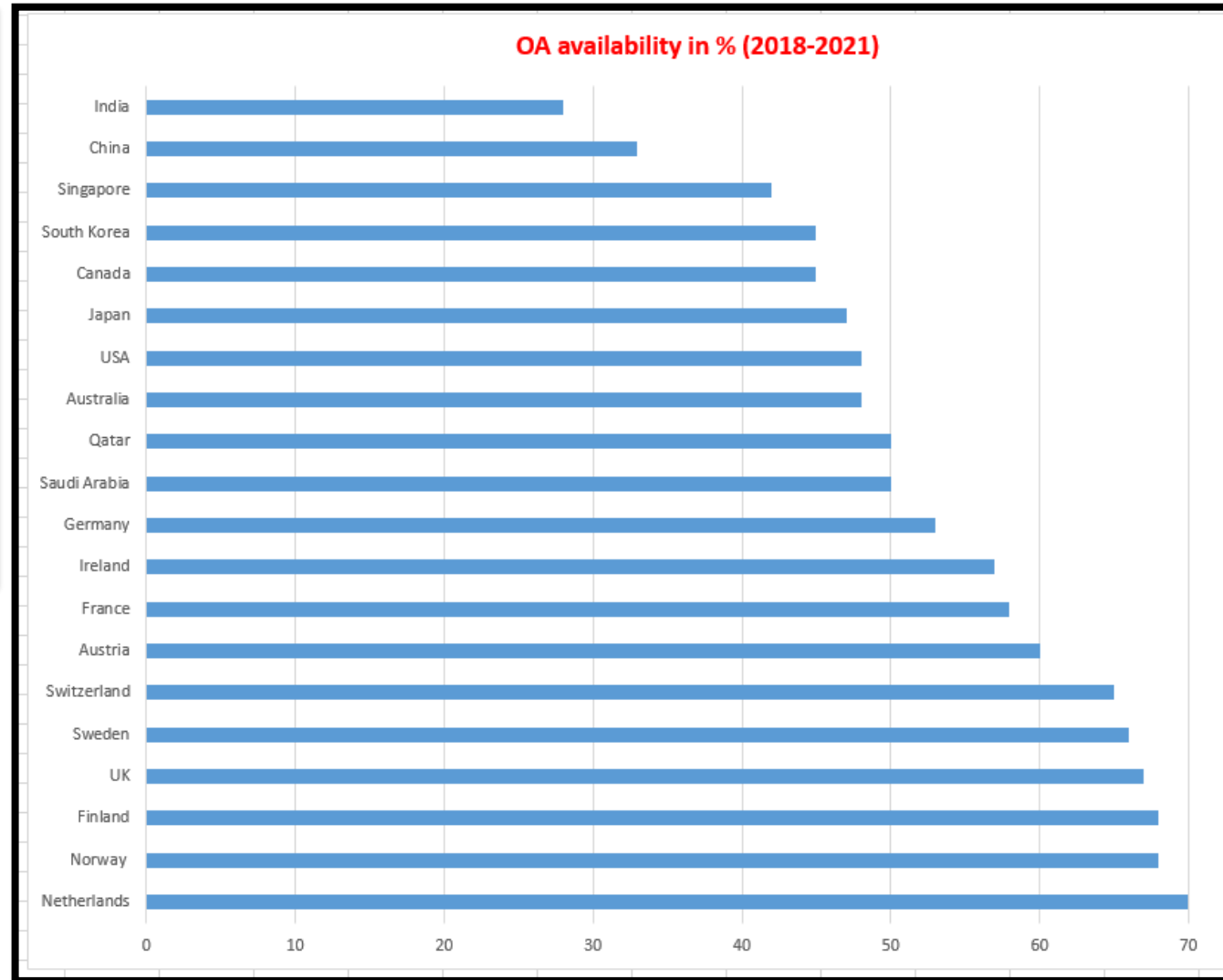
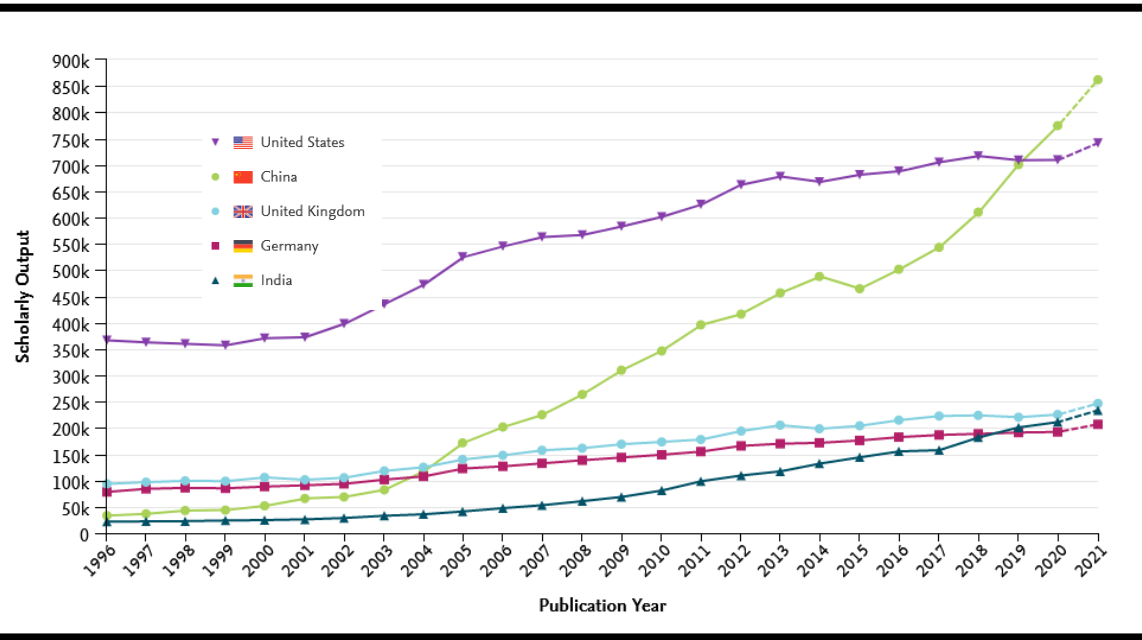
■ Transformative agreement 
 ■ Fully OA journal 
 ■ Hybrid/Closed



Source: <https://github.com/subugoe/oa2020cadata/>, ESAC Transformative Agreement Registry.  
 TA data last updated: 09-09-2022



# OA availability by percent (SciVal / Unpaywall data)



- Vrije 76%
- Amsterdam 75%
- Oxford 75%
- Cambridge 74%
- Caltech 71%
- KAUST 69%
- Imperial College 69%
- ETH 68%
- MIT 66%
- Harvard 62%
- Stanford 60%

*All India level during 2018-2021 - **27%***

*IISc 38.6%*

*Manipal 43.5%,*

*All leading IITs are below 30%*

# Scholarly Record

## Scholarly record: Content & perspective

Date	\$ bn
2012-01-01	16289.6
2012-04-01	16419.2
2012-07-01	16603.7
2012-10-01	16677.3
2013-01-01	16772.7
2013-04-01	16907.9
2013-07-01	17175.9

**Faculty:** what establishes credentials

**Researchers:** what is necessary to validate & build on current literature

**Publishers:** what is “published”

**Scholarly?**

*e-*



```
float gasdev(long *idum) {
  static int iset = 0;
  static float gset;
  float fac, rsq, v1, v2;
  if (iset == 0) {
    do {
      v1 = 2.0*ran1(idum) - 1.0;
      v2 = 2.0*ran1(idum) - 1.0;
      rsq = v1*v1 + v2*v2;
    } while (rsq > 1.0);
    iset = 1;
    gset = v1/v2;
  }
  return v1/gset;
}
```



Libraries' services always connected to the collections: (scholarly records/published literature)

# New Scholarly Record



"The content of the scholarly record" by [OCLC Research](#), from *The Evolving Scholarly Record* (doi:10.25333/C3763V), CC BY 4.0

University Library  
<https://repository.kaust.edu.sa/>

Search

## Adsorptive Molecular Sieving of Styrene over Ethylbenzene by Trianglimine Crystals

POST-PRINT

ORCID

COLLABORATION

FUNDING

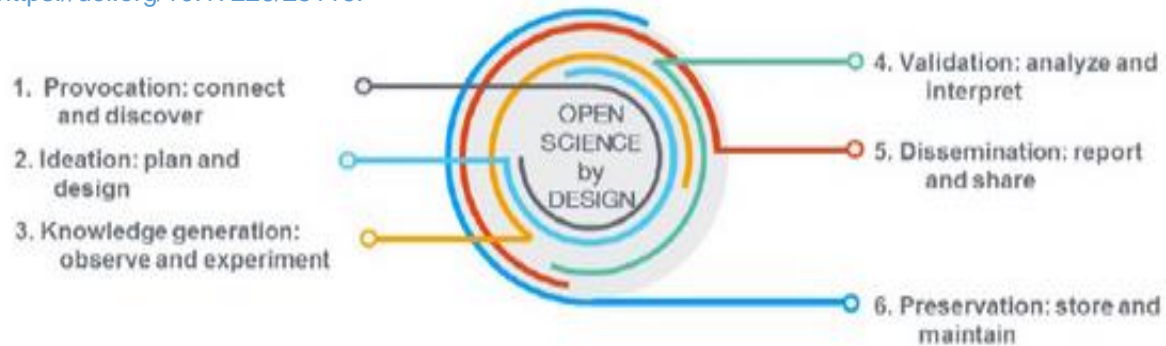
DISCUSSION

FINAL VERSION

DOI

PRE-PRINT

RESEARCH DATA



EN English

Home > Research and innovation > Strategy > Strategy 2020-2024 > Our digital future > Open Science

## Open Science

An approach to the scientific process that focuses on spreading knowledge as soon as it is available using digital and collaborative technology. Expert groups, publications, news and events.

PAGE CONTENTS

### The EU's open science policy

# Open Science



Components of Open Science

Towards a UNESCO Recommendation on Open Science

Building a Global Consensus on Open Science



Downloaded from <http://sciencesciencemag.org/> on October 21, 2020

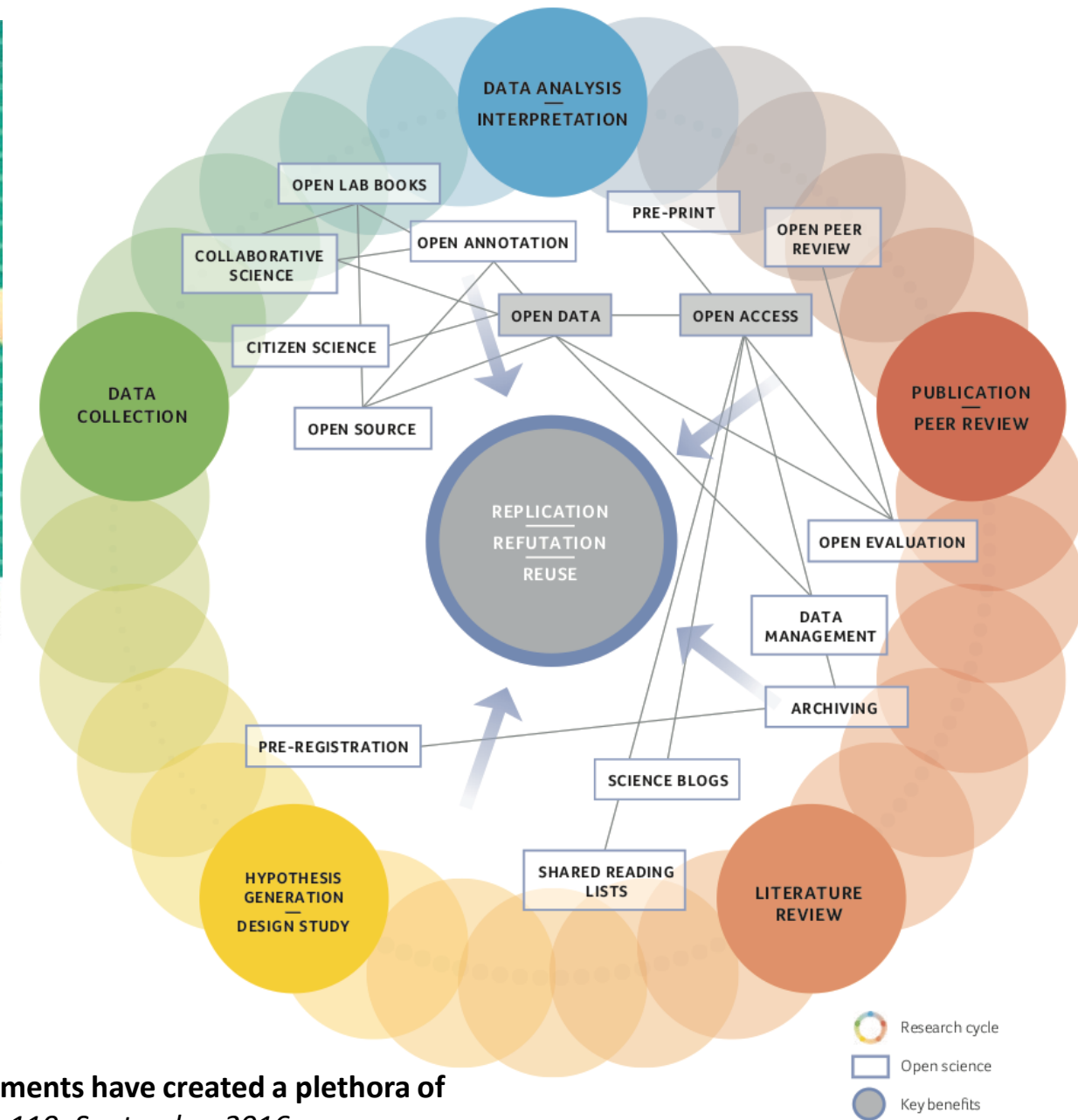
**SCIENTIFIC PUBLISHING**

# In pursuit of open science, open access is not enough

Preventing monopolies in knowledge infrastructure is the next battleground for publishers and research institutions

By Claudio Aspesi<sup>1</sup> and Amy Brand<sup>2,3</sup>

The elements of open science: Grassroots movements have created a plethora of new concepts. Source: Daniel Saraqa in Horizons 110, September 2016



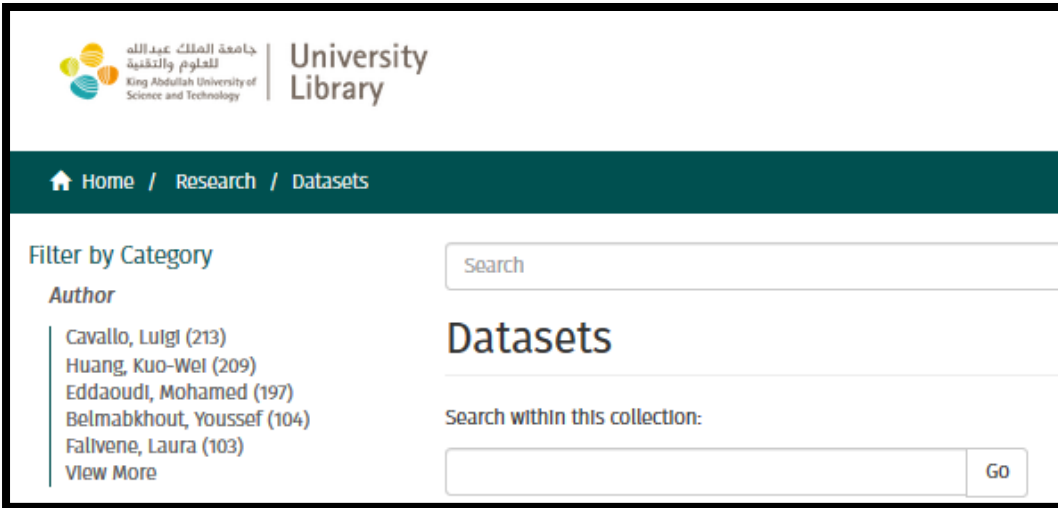
-  Research cycle
-  Open science
-  Key benefits

# Open Data: research data Management

Research data management (RDM) is assuming an increasingly prominent place in scholarly communication, funder requirements, codes of academic practice, university research strategy, and even national policy.

© OCLC RDM report

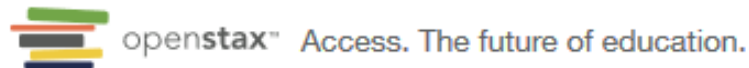
- Raw/initially processed data produced at a research facility such as an observatory
- ‘Research ready’ processed data which has been fully calibrated, combined and cleaned/annotated
- Published output dataset – following detailed analysis of research ready datasets
- Published catalogue type representation of published output dataset



# Open Educational Resources (OER)

Open Educational Resources (OER) are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.

@UNESCO



# Open Source for Open Science

Open research software, or open-source research software, refers to the use and development of software for analysis, simulation, visualization, etc. where the full source code is available. In addition, according to the Open Source Definition, open-source software must be distributed in source and/or compiled form (with the source code available in the latter case), and must be shared under a license that allows modification, derivation, and redistribution.

© The Open Science Training Handbook





# Open Peer Review OPR

Open peer review is an umbrella term for a number of overlapping ways that peer review models can be adapted in line with the aims of Open Science.



+ Transparency

+ Speed

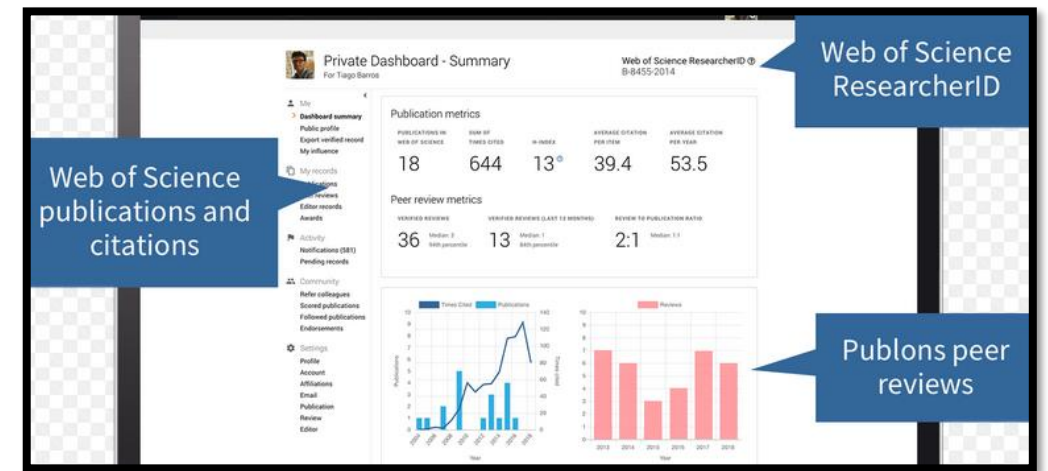
+ Reliability

+ Consistency

+ Context

+ Motivation

Publishers provide peer- reviewers training  
Peer review part of research profiles  
Include in our awareness sessions  
Preprint servers : example

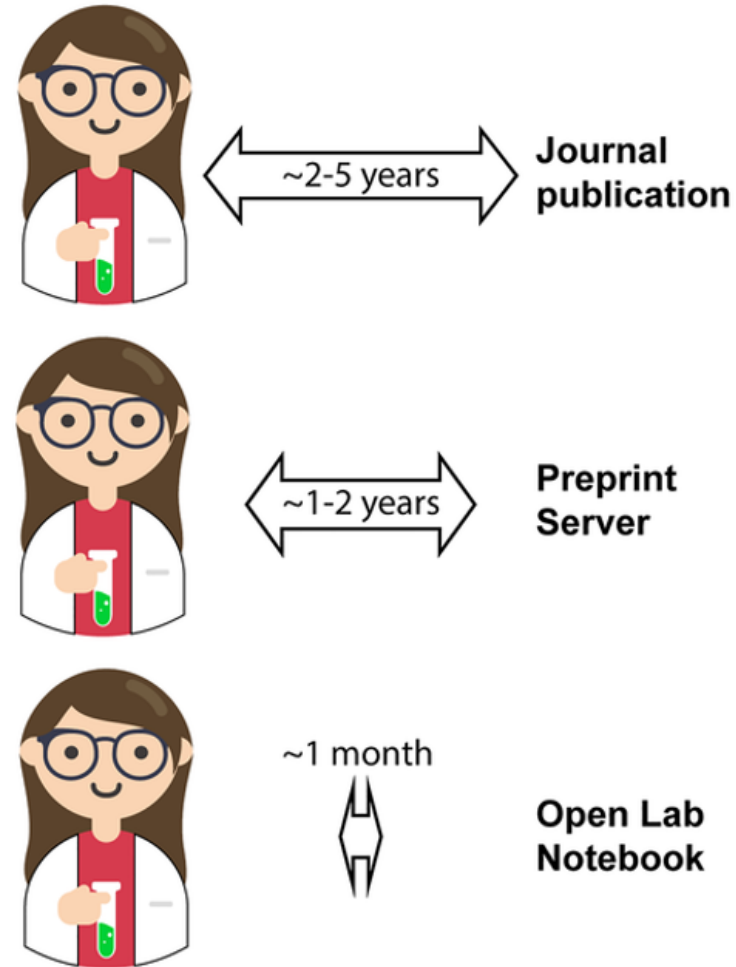


# Open Notebook Science

Open notebooks drastically reduce the time frame from bench to publication in the public domain.

**Open-notebook science** is the practice of making the entire primary record of a research project publicly available online as it is recorded. This involves placing the personal, or laboratory, notebook of the researcher online along with all raw and processed data, and any associated material, as this material is generated.

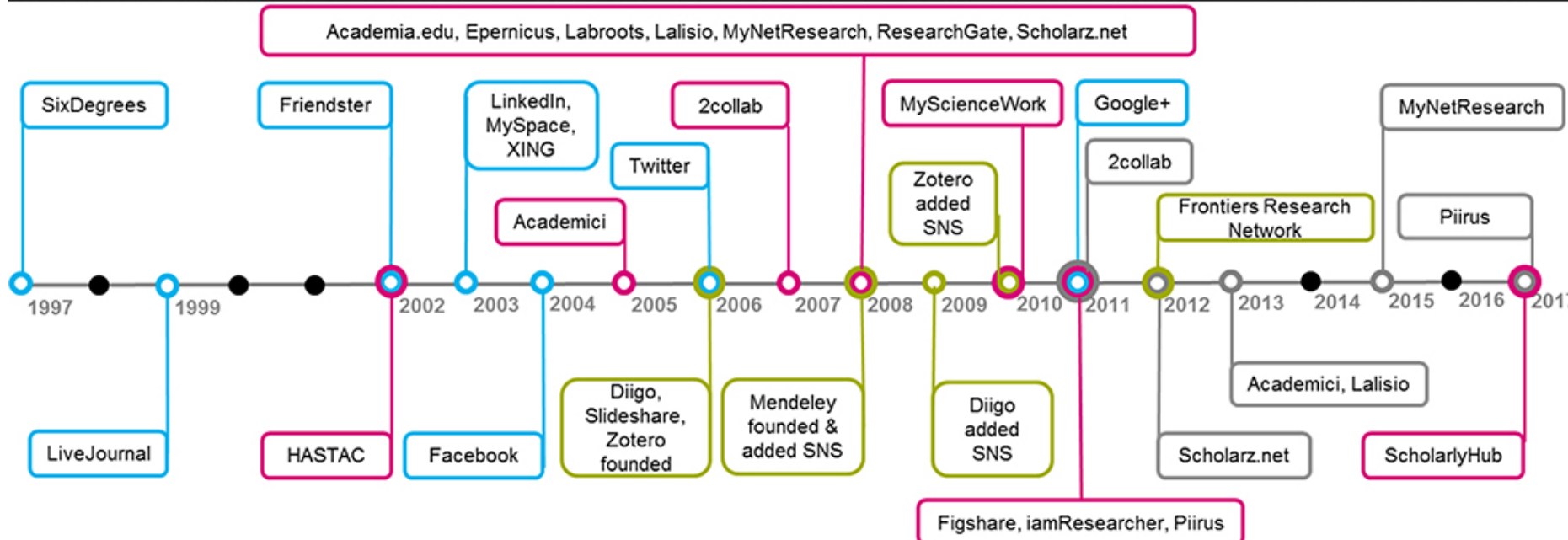
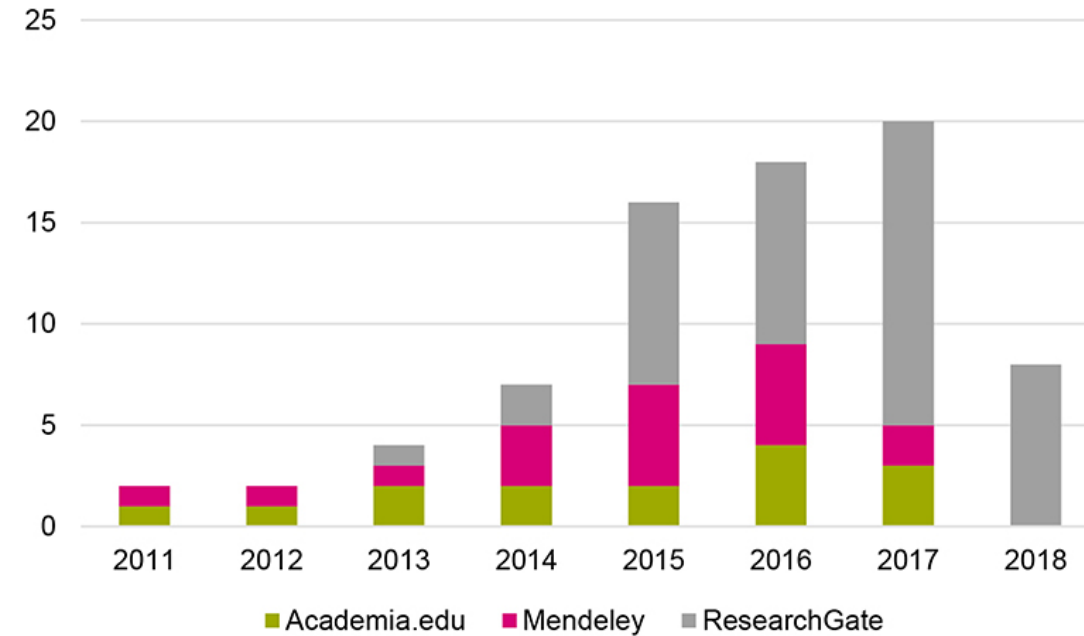
© Wikipedia



Harding RJ (2019) Open notebook science can maximize impact for rare disease projects. PLOS Biology 17(1): e3000120.  
<https://doi.org/10.1371/journal.pbio.3000120>  
<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000120>

# Scientific Social Networks

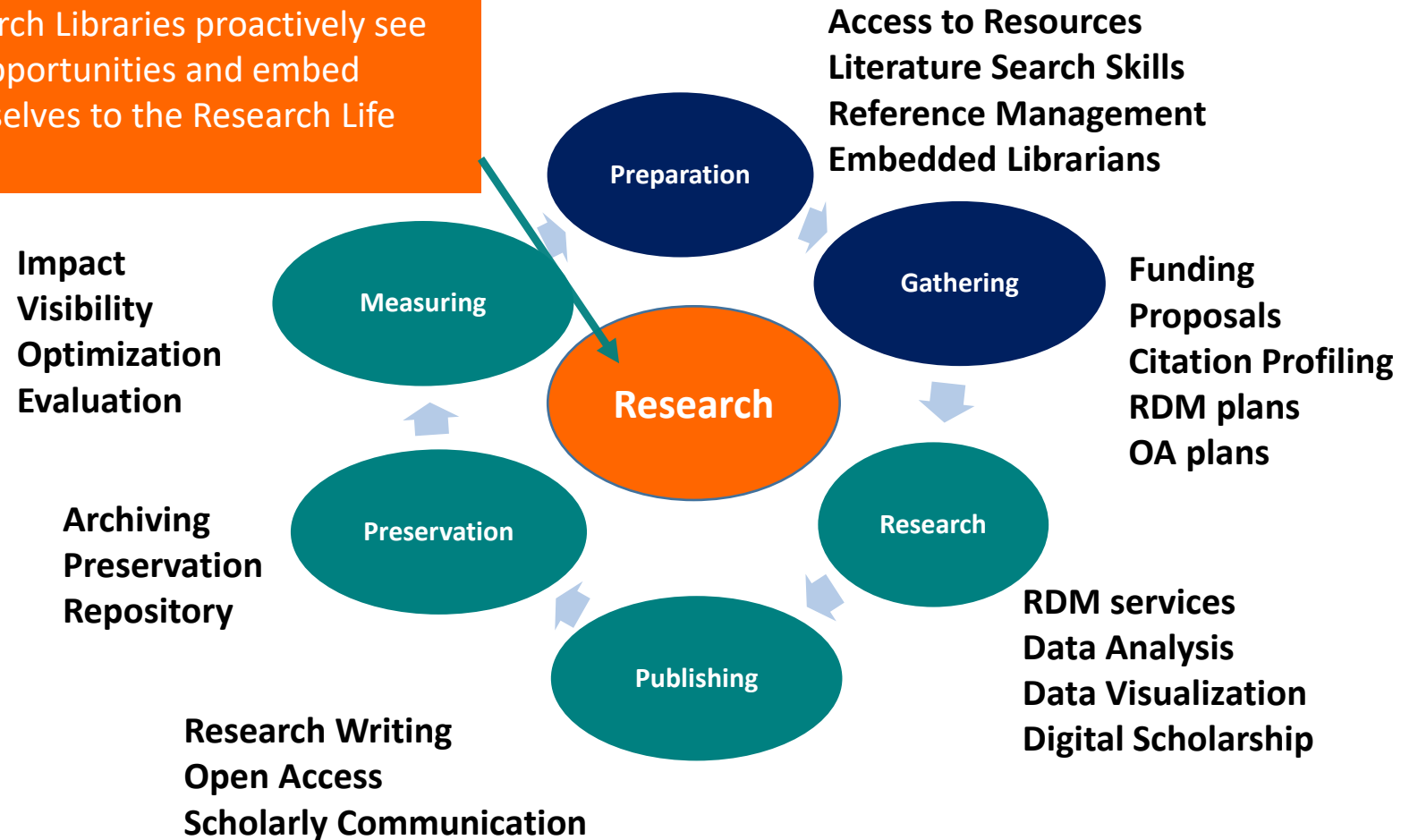
"Academic social media" sites are targeted toward researchers and academics, but the same cautions exist here as on Twitter, Facebook, and other more social sites. Be aware of your audience, privacy settings, and your digital reach.



# Library roles in Researcher Life Cycle

Embedding Openness  
as default in Research  
Life Cycle

Research Libraries proactively see the opportunities and embed themselves to the Research Life Cycle



# RESEARCH LIFECYCLE



OSF PREPRINTS



preprint

Publish Report

Search and Discover

bibliography



co-writing

Write Report

Develop Idea

preregistration

OSF REGISTRIES

Interpret Findings

Design Study

Analyze Data

Acquire Materials

analysis code

Store Data

Collect Data

online data collection

safe backup  
share with collaborators



... and more!

adapted from  
<https://osf.io/gx6vs/>

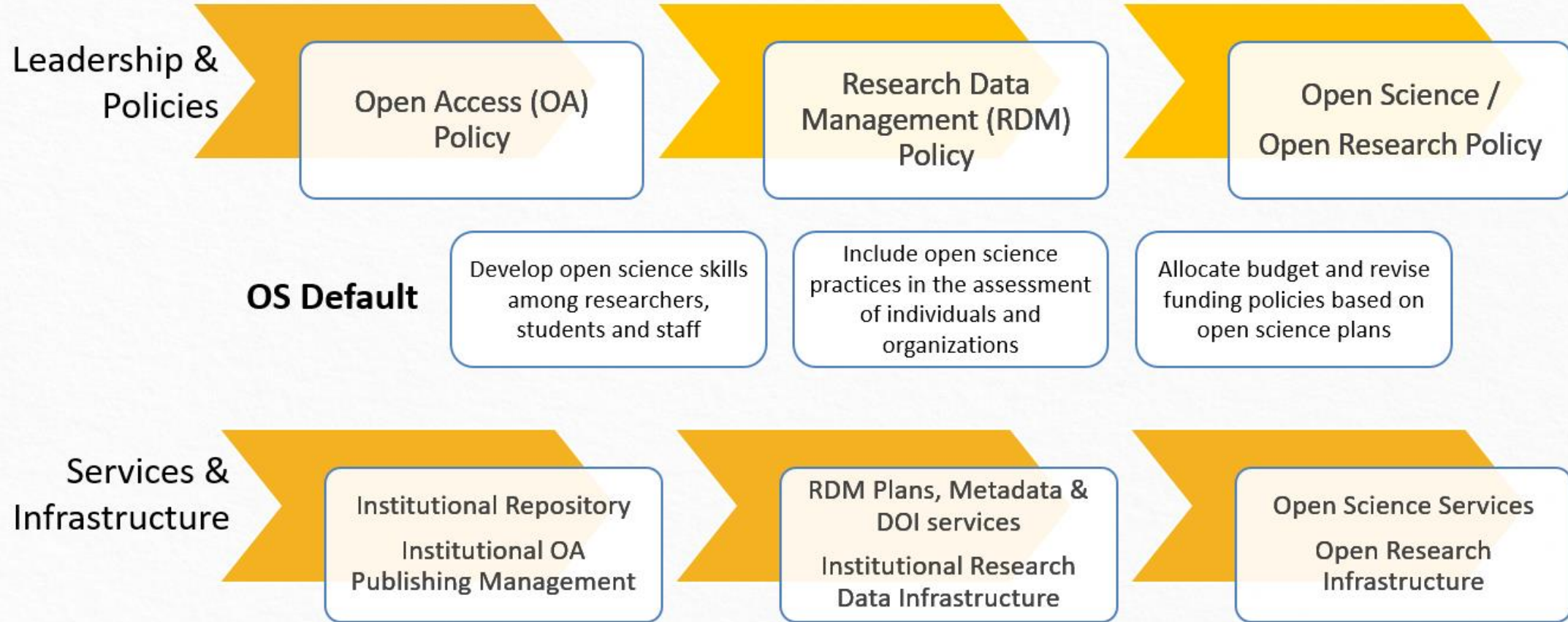


*Erasmus*



Antonio Schettino

# Towards Open Science/Research: Institutional approach





# Draft 5th National Science, Technology, and Innovation Policy

Draft STIP Doc 1.4, December 2020

## Chapter 1: Open Science

- 1.1 National STI Observatory
- 1.2 Indian Science and Technology Archive of Research
- 1.3 Open Data
- 1.4 Open Access
- 1.5 One Nation, One Subscription
- 1.6 Indian Journals
- 1.7 Research Facilities
- 1.8 Open Educational Resources
- 1.9 Libraries
- 1.10 Learning Spaces

A screenshot of a news article from News9live. The article title is "Quad leaders will promote concept of open science: White House". The author is "News9live" and the date is "24 May 2022 5:44 AM". The article has social media sharing icons for Facebook, Twitter, WhatsApp, and Email. The navigation bar includes "HOME", "LATEST", "TRENDING", "SCIENCE & TECH", "IPL 2022", "INDIA", "STATE", "WORLD", and "SPORTS".

news  
9live

HOME LATEST TRENDING SCIENCE & TECH IPL 2022 INDIA STATE WORLD SPORTS

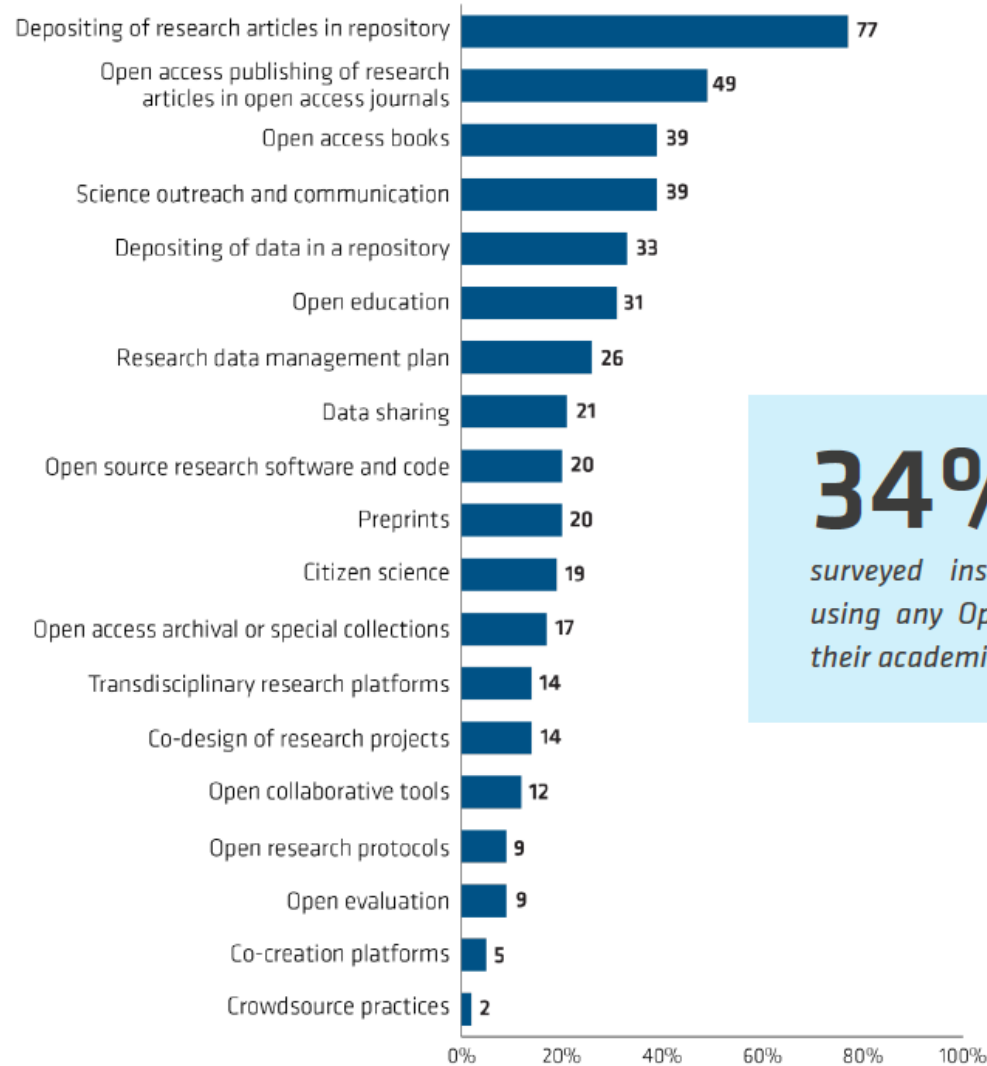
### Quad leaders will promote concept of open science: White House

News9live  
24 May 2022 5:44 AM

f t w e

**Figure 44 – Open Science elements included in academic assessments**

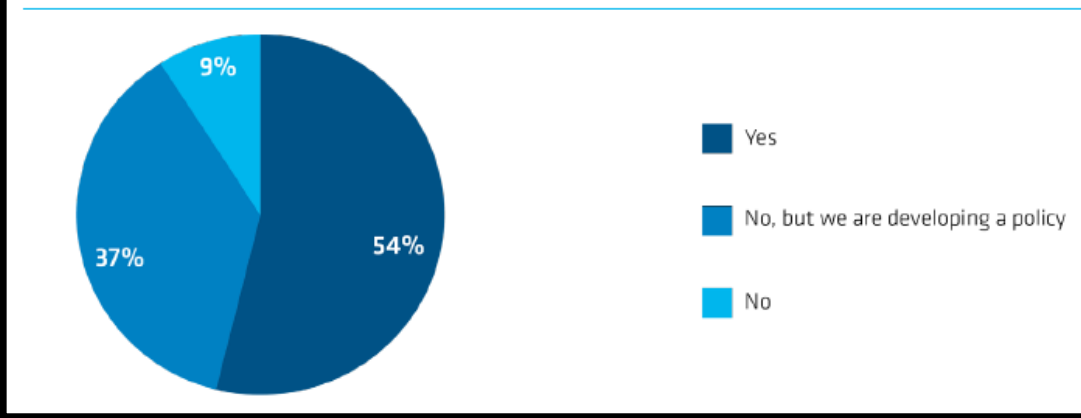
Number of respondents: 172/272.



Note: Only institutions that indicated using at least one Open Science element in their academic assessments are included in this Figure.

**Figure 10 – Existence of an institutional Open Science policy**

Number of respondents: 271/272.



**34%**

surveyed institutions reported not using any Open Science elements in their academic assessments.

**Fully integrate Open Science in reward and incentive practices.** For Open Science to become the norm, it must become an integral part of academic assessments. Research funders and institutions play a key role in making this transition possible, by increasingly incorporating Open Science contributions in assessment and restructuring current award and recognition systems.



# Open Science : Role of Libraries

And their role is that of **enablers**: *“Libraries have adapted their role and are now active in the preservation, curation, publication and dissemination of digital scientific materials, in the form of publications, data and other research-related content. Libraries and repositories constitute the physical infrastructure that allows scientists to share use and reuse the outcome of their work, and they have been essential in the creation of the Open Science movement”* © OECD, 2015.

- **Advocating and raising awareness**: promotion of the benefits of Open Science should take place in parallel with the development of tools and services, the incentives and recognition mechanisms that support excellence in Open Science. Libraries can advocate within institutions to develop open access policies and roadmaps. This will benefit not only researchers, but also other stakeholders at institutional level and international level, and even the whole society, promoting Open Science and engaging with citizens.
- **Giving support to the infrastructures** to share articles or data, including repositories; keeping with their involvement and responsibilities in the development and governance of repositories of publications and data, in regards to appraisal, selection, description and metadata application, curation and preservation; information retrieval; monitoring data reuse, citation and impact, etc.
- Contributing to the development of **research data management (RDM)** policies and strategies at their home institutions and carrying RDM themselves;
- **Training and supporting researchers** to open their research workflows, sharing and reusing the research outputs produced by others. Besides the necessary research infrastructure, researchers need support at a practical level throughout the whole research cycle. Librarians can offer guidance, training and services in: the provision of information during the exploratory stage of research; funding opportunities and requirements; bibliography and data management; applying metadata; identification of open research methods and tools for analysis; outputs sharing and publication; data citation, licensing and other intellectual property issues; preparing data for deposit and long-term preservation of data, among others. For these purposes, librarians need to know their community research practices in regards to information use, production, and sharing, and the platforms, tools and services that they use.

# Developing the Librarian Workforce for Data Science and Open Science

## Computational Skills

- Computational literacy
- Database design
- Familiarity with relevant coding languages, such as R and Python
- Machine learning and data or text mining
- Data visualization

## Data Skills

- Data management plans and data workflows
- Data and metadata standards and curation
- Data sharing and reuse
- Data citation
- Data policy and governance

## Research and Subject Matter Knowledge

- General understanding of the relevant science or subject matter
- Research design and workflows
- Statistics
- Methods for reproducibility

## Interpersonal Skills

- Team science skills
- Entrepreneurship
- Advocacy skills
- Community building

## Traditional Library Skills

- Consultation and reference
- Metadata
- Literature searching
- Scholarly communication
- Bibliometrics
- Training and instruction
- Assessment and evaluation

## Skills for Developing Programs and Services

- Interview and assessment skills to understand institutional needs
- Scoping and planning for sustainability
- Willingness to embrace failure
- Communication and marketing skills

## Skills for Lifelong Learning

- Flexibility and adaptability
- “Anthropological” mindset
- Logic and problem-solving
- Design thinking
- Computational thinking

# Copyright in Academic Research and Publication

Consider two sides to *copyright* in scholarly communication :

- **Your rights in the works you are creating, such as your dissertations, scholarly articles, and books**
- **The rights of other authors or creators in the copyrighted works you are using.**

In addition, scholars sign contracts in the form of deposit and publication agreements with publishers when signing publication agreements for scholarly articles and books

Deposit agreements and publication agreements are legal contracts. You should read your contracts carefully, understand them, make careful decisions in negotiating them, and retain copies of them for future use.

In addition, the use of third-party works in academic publications involves understanding the licenses associated with those works.

<https://www.libraries.rutgers.edu/research-tools-and-services/copyright-guidance/copyright-academic-research-and-publication>

# Copyright: changing landscape

The international copyright system was established in the 18th century to support the growth of the publishing industry which succeeded in producing the vast numbers of books and journals held in libraries across the world.

The rise of Open Access in academic and associated policies by national agencies and funders transforms the way research is shared and re-used, and so the Copyright laws.

Scholars face a different decision-making process today than they did in the past. You have the right to make those works publicly available in the manner and at the time you choose. The decisions - which publisher to choose, whether the work will be made available in a traditional manner or as an open access publication, or both, when your work will first be made available to the public lawfully, and whether to consider self-publishing-- have a greater impact on the distribution of and access to your works than ever before.

<https://www.libraries.rutgers.edu/research-tools-and-services/copyright-guidance/copyright-academic-research-and-publication>

## Retaining your copyright or transferring it to a publisher

Retaining copyright rather than transferring to a publisher may leave the author with more flexibility with respect to future uses, but even if copyright is transferred to a publisher, significant flexibility may be built into the publication agreement.

## Your scholarly publications: use of third party works

Whether you are publishing in a traditional or an open access publication, when using works created by others, it is your responsibility to ensure that your use falls within the scope of the fair use exception or within the terms of any license associated with the work. If the license does not permit the use, or if your use would be considered to exceed the scope of the fair use exception, then you may need to obtain permission from the copyright holder to use the third-party work in the scholarly publication.

**Important:** Authors also need to be aware that most archives/repositories do not hold copyright in most of the materials they hold. Archives collect materials to preserve and provide access to them but generally do not hold the copyrights.

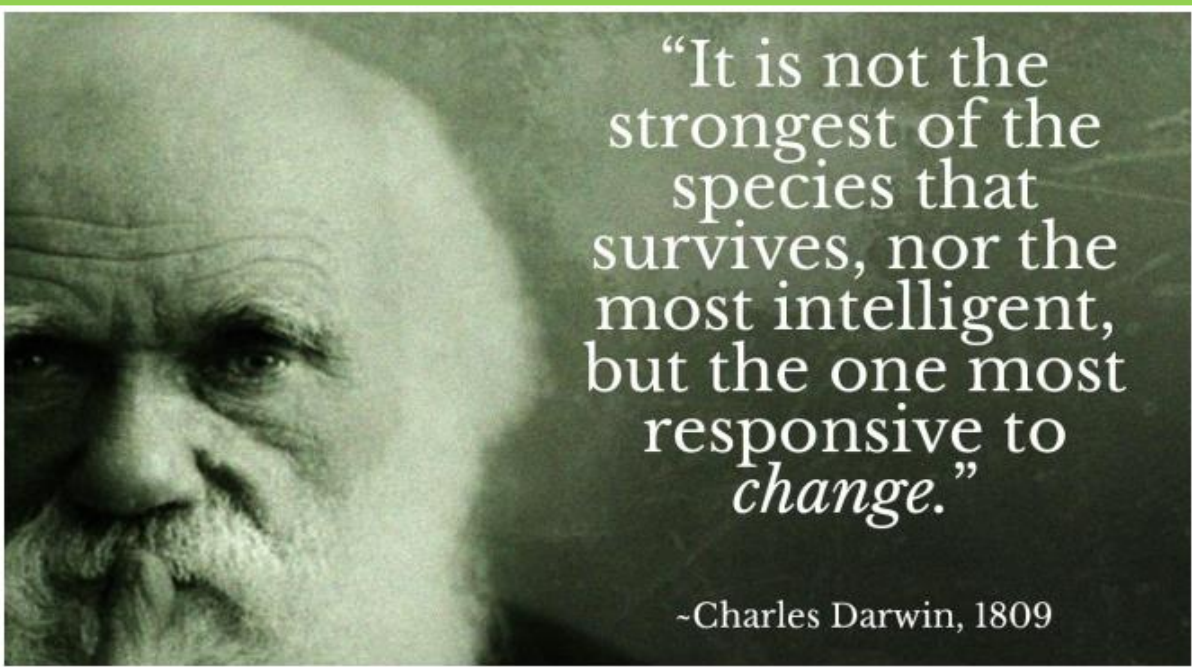
<https://www.libraries.rutgers.edu/research-tools-and-services/copyright-guidance/copyright-academic-research-and-publication>

**Creative Commons** licenses give everyone from individual creators to large institutions a standardized way to grant the public permission to use their creative work under copyright law. From the reuser's perspective, the presence of a Creative Commons license on a copyrighted work answers the question, *“What can I do with this work?”*

## **The Creative Commons License Options**

There are six different license types

[creativecommons.org/](https://creativecommons.org/)



**Thank you**

