

OPEN SCIENCE AND THE DISSEMINATION OF SCHOLARLY KNOWLEDGE

Normalising Pre-prints: The MENA Dialogue

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**International
Science Council**

The global voice for science

Open Science and the Dissemination of Scholarly Knowledge

Normalizing Pre-prints: The MENA Dialogue

Preprints as an entry-point to reform of the scholarly publishing system: A workshop for the MENA region

The current global science/scholarly publishing system is not what science needs. The dominant commercial systems of journal publication are slow, costly, inefficient and unaffordable to many readers and authors, particularly in low- and middle-income countries. The system falls far short of what is needed when assessed against the eight key principles for effective and efficient scientific publication established by the International Science Council. How can present aspirations for a new era of open science be realised if the communication systems that are essential to science and to the fabric of an international science community are separated and fractured?

Traditionally, Preprints (complete written descriptions of research outputs that authors wish to publish) were viewed as the preliminary versions of research articles, yet to be submitted or published in a peer-reviewed academic journal. However, the definition of the preprint is now much broader, where preprint itself is the final form of research communication, made available through an open access platform, with ‘versions of record’ embedded into the process and open peer review reports available. Peer reviewed preprints are needed for rapid yet validated dissemination of new knowledge.

[Normalising preprints](#) is a long-standing development that created major scientific dividends during the COVID-19 pandemic and has the potential to address many major problems in the scientific publishing system today. Preprints can carry several benefits including:

1. Rapid dissemination of research: Pre-prints allow researchers quickly share their findings with the scientific community.
2. Pre-prints are citable. They have a unique DOI.
3. Open access: Pre-prints are always open-access, as pre-print servers allow everyone free access, thus promoting greater equity and democratization of scientific knowledge.
4. Early feedback and collaboration: Pre-prints enable researchers to receive feedback on their work from experts in the field as well as a wider audience,
5. Dynamicity & transparency: Pre-prints can be a dynamic record of the research process, allowing others to see the evolution of ideas and methods over time. It also allows more transparency.
6. Looking at the future: Pre-prints can drive non-traditional research output by providing opportunities for outcomes, such as negative results, replications, or exploratory studies that may not fit the traditional mode of a peer-reviewed article.

To promote the idea of preprints in the MENA region, the International Science Council (ISC) and the Forum for Open Research in the MENA region (FORM) organized a joint regional workshop on 28 February 2023. The participatory workshop looked at solutions for the implementation of pre-prints by various stakeholder groups, introduced participants to the global Open Science

landscape and the goals of the International Science Council’s project on Scholarly Publishing. Through interactive sessions participants explored how scientists and other stakeholders of the scientific community can contribute to the use of preprints and means of strengthening Open Science in the MENA region.

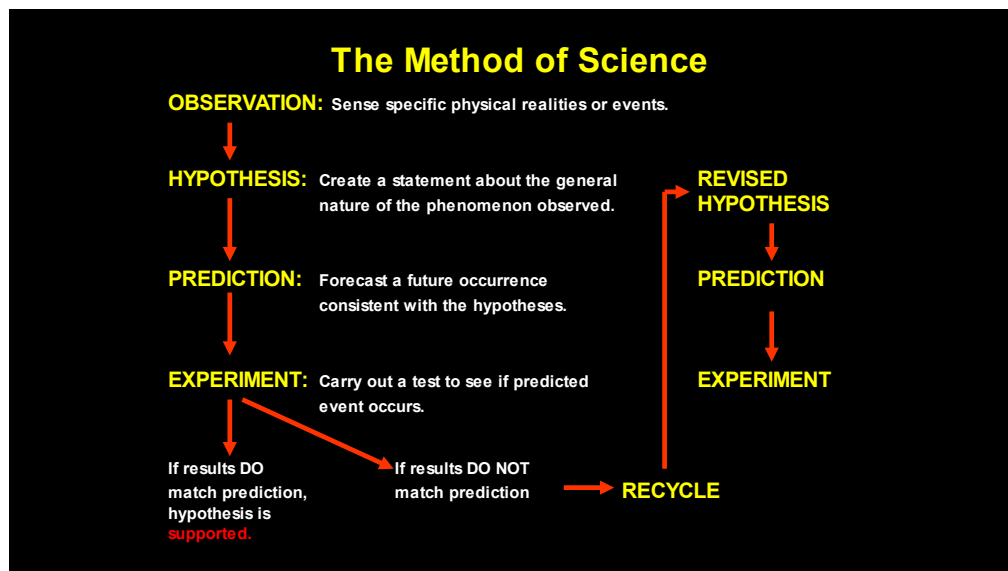
Highlights of the discussions presented during the workshop

With the intention of having regional dialogues and exploring local solutions to normalising preprints ISC in collaboration with FORM organised a 3-hour workshop on 28 February 2023. The program introduced participants to open science practices with a special focus on preprints. It emphasised the potential value that the process of normalising preprints can offer to researchers and the entire scientific community. It explored solutions for the adoption of pre-prints as a means to communicate research findings in the MENA region. Participants included early career researchers, senior academicians, policymakers, publishers and Open Science enthusiasts.

The event had an impressive line of speakers and Panelists including [Ismail Serageldin](#), [Geoffrey Boulton](#), [Luke Drury](#), [Tosin Ekundayo](#) and [Iratxe Puebla](#).

Emphasis on the Method of Science:

[Ismail Serageldin](#), Emeritus Librarian of Alexandria, Egypt analyzed the practice and advancement of science. Science is Falsifiable, Approximative, Empirical, Replicable among others. “Science advances by Replication and evidence of correctness Not the high authority of any individual” he highlighted. He narrated how empirical evidence of quantum mechanics proved even Einstein wrong. The 2022 Nobel Prize in Physics was awarded for demonstrating quantum entanglement as a real principle. Ismail also narrated anecdotes from the discovery of Helicobacter Pylori and the lives of several nobel laureates.



Slide from the presentation of Ismail Serageldin

Speaking on the growth of science through cumulative advances he quoted Isaac Newton who said “If I have seen further, it is by standing on the shoulders of giants.”

- a) **Access to the work of others** although has become easy due to the digital revolution, has also given rise to disinformation and misinformation.
- b) **Recognizing priority of discovery:** He praised the exemplary ethics of Hugo de Vries, Carl Correns and Erich von Tschermak who gave Gregor Mendel his due honor that made him father of genetics.
- c) **Interaction with new technologies:** He mentioned the growth of telescopes from Galelio and Newton, the ICT revolution and the recent advances in AI. He mentioned how Google’s “Deep Mind” subsidiary “Alfa-Fold” brought Artificial Intelligence (AI) to the task of predicting the 3-D structure of the protein.
- d) **Maintaining Scientific record: Truth triumphs.** He proved this through the stories of Galelio and Darwin.

Ismail drew attention to how the popular press historically played against science, leading to a continuous battle to counter sensalisation of half-baked knowledge, the [anti-vaccination](#) campaign is one such example. Hence science needed to create trusted sources such as scientific journals and the process of peer-review to communicate new knowledge. However, the journals ultimately created institutional barriers to access, incomplete backing for scientific claims, and slow transmission of knowledge. The peer-review process is in place to ensure quality and, therefore, confidence in the published material. Inter alia, he highlighted four major problems-

- a) Incomplete peer review without validating/ replicating the underlying data,
- b) Many claims cannot be validated by replication due to the inaccessibility of underlying data. Datasets are important outputs in the enterprise of science and should be accessible.
- c) Much of the material is inaccessible to many worldwide due to paywalls and other obstacles.
- d) The publication process is too slow for modern times (especially felt during the pandemic)

He explained the need for Open Science Movement and its framework consisting of free software, open-source, public/private workflows, seamless integrations, and collaboration. Open Science enables countries to minimize risks and maximize opportunities. It helps maintain the rigor and reliability of science, creatively integrate diverse data resources to tackle complex challenges, promote open innovation, and engage with other societal actors as knowledge partners. “Open Science will be fundamental to the realization of the SDGs.”, he said. He acknowledged the obstacles, such as varying and incompatible standards across different disciplines to codify data and challenges due to the dominance of top Tech companies. Commending the International Science Council (ISC), he said that “The ISC frames an inclusive definition of open science as: Science that is open to scrutiny and challenge, and to the knowledge needs and interests of wider publics”. He pointed to [ISC’s eight principles of scientific publishing](#) and the way to achieve them [through preprints](#).

The case for Open Science:

[Prof. Geoffrey Boulton](#), Regius Professor of Geology Emeritus, University of Edinburgh, and Board Member of the International Science Council discussed the evolution of knowledge transmission right from the invention of printing in the 15th century to what it is with the advent of the digital revolution. He stressed on the importance of open-access publishing and the submission of evidence in scientific journals for the “validation and self-correction of scientific knowledge”. While the upcoming era of open science is enabled by computational power, vast data fluxes, and artificial intelligence, we must uphold science's core principles of continual, open, and skeptical scrutiny. ISC places Open Data, Open Access Publishing, and Openness to Society as the utmost priority because "Open Access Publishing is not a nice to have but absolutely essential". The global scientific responses to the COVID-19 pandemic is an exemplary case of open science in action. Geoffrey pointed that most articles published are not useful, just fillers. The research community must now focus on quality not quantity. Publishing incremental garbage should be discouraged.”

Normalizing Preprints:

[Luke Drury](#), Emeritus Professor of Astrophysics, Dublin Institute for Advanced Studies and Vice President of All European Academies (ALLEA) set the context of preprints during the panel discussion. Luke is a member of the steering group for the ISC’s [Future of Scientific Publishing project](#) and the author of its [occasional paper on Normalising Preprints](#). He deconstructed the meaning of “publishing” conflating it to three distinct activities:

- A. Sharing data, methods and theories with the wider community- “making public.”
- B. Evaluation of one’s contributions by colleagues leading to improvements, revisions and assignment of significance - “peer review”.
- C. Cataloguing, cross-referencing, indexing and long-term archiving to enable discovery and retrieval- meta-data.

In this digital age the journal does none of them very well. Journal-organised peer review is broken and does not deliver quality- too many cases of bad articles and journals have a very poor record on retractions. Preprints (also sometimes called working papers) originated because of dissatisfaction with the long delays in getting papers into print in the traditional print journals. They provide an optimal solution to rapid dissemination of new results as seen with Ebola, COVID and now monkeypox.

“Just because science was communicated in a certain way fifty years ago doesn’t mean that we have to stick to the norms and conventions of that time, especially when these have been monetised by powerful commercial interests.” He highlighted some of the advantages of preprints that include Rapid dissemination of new research, Time-stamping by the repository which resolves priority disputes and reduces theft of results and ideas, no operating costs, rights retention and the ability to have a record of versions of instead on just one version of record He mentioned that preprints are now the dominant mode of peer to peer communication in many areas - theoretical physics,

mathematics, economics, astrophysics, but increasingly also in the life sciences and other disciplines. He also touched on some current disadvantages of preprints which include that there is no weightage in research evaluations and suggested strengthening the preprint system through open peer review, efficient indexing and responsible research and ethics. He also suggested a light gate-keeping of the pre-print repositories as a means to “keep the misinformation and garbage out”.

Seven-point agenda:

Tosin Ekundayo- Entrepreneur, author and Assistant Professor at Synergy University, Dubai presented practical means to deploy preprints in the MENA region.

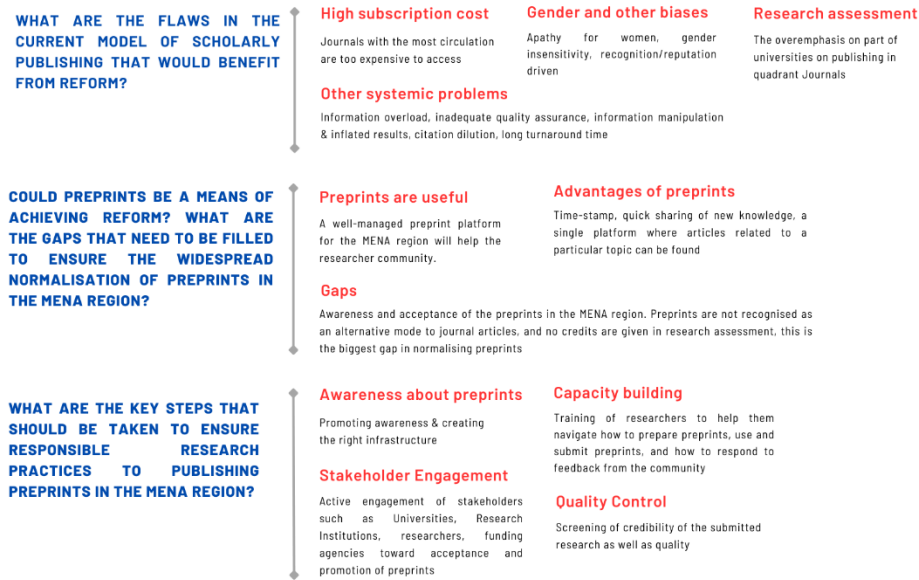
1. **Raise Awareness** through social media, webinars, workshops, and other outreach activities.
2. **Engage Stakeholders** of the research community- universities, research institutions, funding agencies, and publishers as a standard practice.
3. **Develop infrastructure** such as preprint servers, repositories and archives.
4. **Encourage researchers** to submit preprints by offering incentives such as early access to research or recognition.
5. **Address cultural barriers** regarding preprints, their perceived value compared to traditional publications, concerns over plagiarism, intellectual property rights etc.
6. **Train and support researchers** to navigate the preprint submission process- how to prepare preprints, use preprint servers and respond to feedback from community.
7. **Foster collaboration** internationally by promoting the use of preprints as a means of sharing research results.

Resources and Community Champions:

Iratxe Puebla- Director of Strategic Initiatives & Community at ASAPBio highlighted the activities of ASAPBio in supporting researchers with discussion, research and action to increase the productive use of preprints in the life sciences and in nurturing preprint advocates through community programs and resources. A particular mention may be made of the [ASAP Bio Fellows program](#). She mentioned how posting preprints relieves a lot of pressure for researchers.

Overcoming Myths and Concerns:

The breakout rooms enabled participants to voice their opinions, concerns, challenges and ideas towards [normalising preprints](#) in MENA. The opinions expressed by the participants are summarized below.



- **Flaws in the current model of scholarly publishing:** Participants agreed that the current dominant publishing model is steered by the interests of commercial publishers. High subscription fees and article processing charges (APCs) have created issues of delays, exclusion and inaccessibility. In addition, the MENA region has challenges of low awareness about open access and alternate publishing models. They face unique ethical and cultural issues, including taboo on certain research topics, gender insensitivity and imbalance, and apathy towards women researchers.
- **Barriers to normalizing preprints:** The research assessment system is overly dependent on the metrics of recognition and reputation created by commercial entities as indicators of "good science," and does not recognize preprints during evaluation. The focus on quantity over quality is leading to disadvantages such as information overload and low reproducibility of research outputs. While lack adequate of infrastructure for preprints is an issue, a major obstacle is the lack of awareness on preprints that leads to unfounded fears that "somebody may steal my idea", myths that preprints encourage plagiarism, and doubts about the credibility and quality of preprints. Panelists interacted with the participants to assure them that publishing research findings as preprints gives authors early movers advantages rather than taking the credit away.
- **Ensuring responsible research practices for publishing preprints in MENA:** There is a need for active engagement of stakeholders such as universities, research institutions, researchers, and funding agencies to promote the use of preprints in the

MENA region. Some critical enablers for responsible research practices include training researchers for preparation, submission, and use of preprints, as well as responding to feedback from the community.

There was positive feedback from participants who found that the event provided a learning opportunity on the importance of normalizing preprints. Many of them highlighted that understanding of preprints and their benefits in the region is currently far from satisfactory. A lot needs to be done to raise awareness. Preprints help rapidly disseminate new research, which usually takes a long time in the traditional journal route. Moreover, the early disclosure through preprint repositories provides a timestamping on the research findings, which can resolve priority conflicts and helps minimize the risk of intellectual property theft. All these benefits come without any monetary investments from the authors, and authors still hold the copyright of their work. They promote the growth of science by giving access to the record of versions instead of just one version of record. Fears about the credibility and quality of preprints were addressed through this discussion, and participants got a sense of how preprints can solve the problems of traditional publishing.

A major apprehension researchers have about pre-prints is that they are not peer-reviewed. The peer-review is an irreplaceable factor, that strengthens the integrity and foundation of scientific discoveries for centuries. While we agree with the power of peer-review, we can't overlook the recent trends of lousy peer-review processes and mushrooming of predatory journals where peer-review is just an eyewash. There are so many instances where so called prestigious journals have failed to identify and take actions against fraudulent works published. The evidence against them is mounting.

The primary reason for the drastic fall in the quality of peer-review is the sheer volume of articles that are published periodically. Prof. Geoffrey Boulton, commented "Most of articles are not useful, just fillers." The research community must focus on quality not quantity. Publishing incremental garbage should be discouraged. Prof Luke Drury suggested that "Pre-print repositories must have light gatekeeping to keep the garbage out".

By definition, science is open, but it needs to be more open to make science work for society. We have not yet realized the power of technology, or why the internet has not disrupted the journal ecosystem.

Watch the recording of the event [here](#).

Further Resources:

- ❖ [ISC's Open Science monthly RoundUp](#)
- ❖ [ASAP Bio's Preprint Resource Center](#)
- ❖ [The Preprint Citation Index: linking preprints to the trusted Web of Science ecosystem](#)
- ❖ [A brief history of preprints](#)
- ❖ [Sharing preprints: A resource guide from FOSTER](#)
- ❖ [Open Research Handbook: Preprints](#)
- ❖ [Benefits of Preprints](#)
- ❖ [10 tips for submitting a successful preprints](#)
- ❖ [List of preprint servers](#)
- ❖ [Where to find preprints](#)
- ❖ [NIH preprint pilot](#)

About the International Science Council:

The [International Science Council \(ISC\)](#) is a unique global non-governmental organization bringing together the natural and social sciences. Its members are around 200 international scientific unions and associations as well as national and regional scientific organizations including academies and research councils. With a vision of [Science as a Global Public Good](#), the ISC aims to be the global voice of and for science. The International Science Council (ISC) works at the global level to catalyse, incubate and convene scientific expertise, advice, influence and impactful international action on issues of major concern to both science and society. The [Future of Scientific Publishing Project](#) seeks to create change in scholarly publishing by working in partnership with the scientific and stakeholder communities to normalize creative innovations among researchers and the institutions in which they work. The work is informed by the [eight fundamental principles for scientific publishing](#), that can contribute to the reform of the publishing system.

About FORM:

The [Forum for Open Research in MENA \(FORM\)](#) is a non-profit membership organisation supporting the advancement of Open Science policies and practices in research communities and institutions across the Arab region. It aims to empower research libraries across the Arab world by facilitating the exchange of actionable insights and the development of practical policies for a more Open Arab region. As catalyst for positive action, FORM works with key stakeholders to develop and implement a pragmatic programme to facilitate the transition towards more accessible, inclusive and sustainable research and education models in the Arab region. The organisation also seeks to address structural inequities relating to the accessibility and visibility of the region's research outputs, especially Arabic-language research. It is striving to build an international alliance of higher education institutions, research libraries, and other research communities based within the Arab region and global non-profit organisations working to support Open Science.



F.O.R.M.

Forum for Open Research in MENA

<https://forumforopen.org/>