

Mallorca Declaration on Open Science

Preamble: Open Science is essential if the world is to successfully address the major challenges that it now faces. To have impact, Open Science must be based on accessibility, transparency and integrity, enabling trusted collaboration for research excellence and optimal delivery. This declaration specifically addresses the key barriers to Open Science, and builds on previous statements concerning Open Science, (http://ec.europa.eu/research/science-society/document_library/pdf_06/recommendation-access-and-preservation-scientific-information_en.pdf; <http://recodeproject.eu/>; <http://www.budapestopenaccessinitiative.org/>; <http://bookshop.europa.eu/en/open-innovation-open-science-open-to-the-world-pbKI0416263/>).

ACHIEVING OPEN SCIENCE

1. Remove the barriers that extreme competition for limited resources create for Open Science

It is important to incentivise and not just mandate Open Science practice. True progress on Open Science will require rethinking the way research is funded and researchers are rewarded, in order to address the underlying forces that currently act to discourage Open Science.

To ensure that Open Science practice does not jeopardise careers, it is essential to bring funding success rates back into a regime where Europe's best researchers can expect to attract and maintain funding for their best work. Due to the proven difficulty in predicting productivity, it is critical to support many highly qualified early-career researchers. For this, the allocation of funds should be adjusted so that all applications that meet key evaluation quality and fundability criteria receive appropriate funding.

For career assessment and advancement, evaluation metrics such as number of publications and journal impact factors should not substitute for meaningful assessment of an individual's scientific output. Assessment criteria should also explicitly and directly reward reagent and protocol sharing, data sharing, and open resource development.

2. Implement Open Access publishing where publication is part of the continuum of research research

Monopolisation and cartelisation of the publication enterprise is not compatible with Open Science. New funding and business models need to be developed to establish a sustainable and affordable Open Access publishing system. The success of Open Science will depend on Open Access publishing having sufficient resources to implement a fair and transparent evaluation process as well as to ensure the quality, reproducibility and integrity of published research. Posting on recognized pre-print servers, data publishing platforms and self-archiving on shared platforms ('Green

Open Access') provide useful complementary solutions for immediate pre-publication sharing of Open Science research.

3. Establish competence and confidence in the practice of Open Data

Competence in data management and data sharing, establishing holistic infrastructure and creating a supporting culture for openness are three core challenges for Open Data. These should be supported by development of training programmes to adopt best practice for data management skills; promoting an increased awareness of the many data repository options that already exist; and supporting ways to measure and reward data reuse, e.g. encouraging direct citation of data, educating grant award committees about assessment, and creating funding for explicit data and software career tracks.

4. Ensure research integrity

Research integrity and the responsible conduct of research are fundamental to ensuring that research findings are reliable, reproducible and trustworthy. Best practice in the conduct of research is therefore essential to the success of European science. A common European research integrity code compatible with international declarations such as the Singapore and Montréal statements should underlie all European research, and key stakeholders should be identified to work together towards building an *ann*m ecosystem that ensures research integrity. To support this, the culture of research integrity should be nurtured through education and training programmes specifically tailored for early and for more senior researchers. This is essential if Open Science is to flourish and earn the trust of the research community and wider society and to avoid the waste of scarce resources.

5. A cohesive European approach

European Institutions, Member States, universities, research centres, and researchers should support the fulfilment of the principles embodied in this Declaration and in the further development of relevant international laws and policies.

Realigning funding, publishing, and data sharing with the goal of Open Science practice will promote a global shift towards a scientific culture that will enhance the acceleration of discovery and innovation worldwide.

Context: For Europe, Open Science is essential to fully achieve its target knowledge- and innovation-based economy. The Research, Innovation, and Science Policy Experts (RISE) Open Science High Level Group gives direct strategic support to Carlos Moedas, the European Commissioner for Research, Science and Innovation, and to the European Commission. To interrogate key issues concerning Open Science, the RISE group came together with 12 invited external specialists at The University of Balearic Islands, 24th-25th May 2016. Work focussed on how to create a culture for Open Science and Research Integrity by removing barriers and promoting incentives in research funding, career advancement and publishing. Key outcomes are brought together in this declaration. It is not a regulatory document and does not represent the official policies of the countries and organisations that participated in the workshops.