

Supporting an open research ecosystem

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**Christopher Spalding and
Tamir Borensztajn, EBSCO**

In a June 2019 [blog post](#), EBSCO noted our vision for open science and unfettered access to scholarly research. At the time we posed several questions around the collection and dissemination of research output. We have now taken an additional step in support of open science by partnering with companies that help advance open research: [Code Ocean](#), [protocols.io](#) and [Arkivum](#). The first two of these companies provide platforms for the reproducibility and re-use of research while enabling institutions to gain better stewardship over the totality of their research output. Arkivum, on its part, ensures the long-term data management and preservation of research. Through these partnerships, we further support an open research ecosystem for the creation, dissemination, discovery and preservation of scientific knowledge.



The issues that surround the reproducibility of research are well understood. A [2016 survey published in Nature](#) sheds light on the crisis in research noting that “more than 70% of researchers have tried and failed to reproduce another scientist's experiments, and more than half have failed to reproduce their own experiments.” In January of this year, Nobel Prize winner in Chemistry, Frances Arnold, [made news](#) when she retracted her paper as her work was not reproducible. When we consider the underlying problems with reproducibility, the research article may indeed lie at the heart of the problem; it often constitutes merely the ‘advertisement’ of the research without providing adequate access to the data, the computational code and the methods that underly the research itself. A [2017 article in The Atlantic](#) highlighted this point, stating:

“The hardest part, by far, was figuring out exactly what the original labs actually did. Scientific papers come with methods sections that theoretically ought to provide recipes for doing the same experiments. But often, those recipes are incomplete, missing out important steps, details, or ingredients. In some cases, the recipes aren’t described at all; researchers simply cite an earlier study that used a similar technique.”

Fundamentally, an open research ecosystem goes further – not only by supporting access to the complete set of instructions, data or code that underlies the research, but by solving the most time-sensitive issues in scientific research as well. If we take the outbreak of the coronavirus for example in the beginning of 2020, the need to understand advances in combating the virus in near real-time was of the essence. Indeed, the ability for the research community to do its work and share it as it happens and, moreover, to be assured that its work can be found and accessed in an unfettered way is of critical, life-saving importance. If and only if we have an open infrastructure unimpeded by closed platforms or systems can we deliver on the opportunity to truly promote and advance research.

Beyond the issues that the research community faces around the reproducibility of research, we must also consider the implications for the institution's stewardship over the totality of the research output. When our researchers do not have access to the underpinnings of the research, neither do institutions, and, in particular, our academic libraries. The result is an inability to collect the entirety of output in, for example, the institutional repository, to gain much-needed insight into the impact of the research as a whole and to properly safeguard and preserve the research for long-term access and usability.

The solution therefore lies in the provisioning of open platforms and endpoints that support the creation and sharing of research for our researchers while, simultaneously, granting the institution stewardship over the complete research output – the data, computational code and methods. Such tools also help speed the time from research to consumable knowledge, allowing researchers to engage with key knowledge objects in almost realtime.

With the partnerships above, we can now look at the continuum of needs from the individual researcher who must have the tools to conduct research, to the research community that must be able to reproduce the research, and to the research institution that must not only deliver the platforms to its constituents, but must collect, preserve and understand the impact of said research. Throughout this continuum, the research institution and the researchers themselves must be able to adhere to open science mandates from funders and ensure the openness of the research that is produced. Our vision is to support an open research ecosystem by delivering services that support the creation of research on the one hand, and the collection, dissemination, discovery and preservation of research on the other. Our work with Code Ocean, protocols.io and Arkivum, along with our current suite of EBSCO research tools, does just that.

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