Editorial

Introducing artificial intelligence in the life sciences

Artificial Intelligence (AI) is playing an increasingly import role in science, business, and everyday life. In science, AI has significantly impacted a number of fields including, among others, image analysis or natural language processing and is spreading out to different areas beyond informatics including the life and biomedical sciences. Notably, AI is not a new discipline. The term was coined in 1956 and since then, AI evolved as a part of computer science and went through cycles of increasing and decreasing popularity. One of its sub-disciplines is machine learning (ML), which has a long history in the natural sciences (for at least three decades). A variant of machine learning termed deep learning (DL), which employs multi-layered (deep) neural network architectures, is largely responsible for the recent popularity of AI across different fields, spurred on by the increasing availability of "big data" in various areas, from which DL benefits. This is exemplified by the data deluge in online marketing, finance, or social networks. However, the life sciences and drug discovery are also becoming increasingly data-rich. Therefore, it is not surprising that ML and DL are currently receiving much attention in the life science arena for the extraction of knowledge from data and for a variety of predictions. Of note, the terms AI, ML, and DL are often synonymously used, but the AI spectrum encompasses much more than ML/DL such as expert systems, fuzzy logic, or robotics, which also provide opportunities for interdisciplinary research and applications in different areas.

In this context, "*Artificial Intelligence in the Life Sciences*" (*AILSCI*) has been conceptualized as a forum for rapid open access publication of AI approaches and applications in the greater life science arena including chemical and biomedical sciences as well as drug discovery. Given its intended broad coverage and interdisciplinary focus, *AILSCI* is designed to fill a void. Striving for high scientific quality and for evolving into a leading role in communicating AI-driven interdisciplinary research are central aspects of its mission. To these ends, a high-caliber Editorial Board plays a key role in supporting and shaping the *Journal* moving forward.

AILSCI provides a variety of article types (as further specified below). For *Research Articles* and *Communications*, primary data not residing in the public domain should be made available as an open access deposition upon acceptance to ensure reproducibility of the work. The *Journal* also offers the "Data in Brief" option for accompanying publication of data sets. Furthermore, custom code will play an important role in many AI studies. Similar to primary data, custom code should be made publicly available as a part of any research investigation where its use is essential for the main findings, hence ensuring reproducibility. During review, code should be made accessible and any restrictions to access should be specified. *AILSCI* partners with Software X, which

makes it possible to separately publish code originating from AI studies. New computational algorithms may be presented without code in *Methods* articles, as long as sufficient details (such as pseudo code) are provided to enable custom implementation. Such articles will be individually considered by the editors and flexibly handled.

By design, *AILSCI* aims to provide opportunities for communication of scientific work from academia, industry, and partnerships between commercial enterprises and academic institutions, which is another important part of its mission. While *AILSCI* promotes open science and data sharing, intellectual property and proprietary data constraint within the industry are well recognized. Such restrictions should, however, not preclude publication of interesting science from industrial environments. Therefore, the *Journal* also offers off-the-beaten path article types such as *Perspectives, Conceptual Analysis, Controversial Views, Methods*, and *Opinion* pieces that provide different formats for communication of new scientific developments, case studies, or thought-provoking approaches (even if preliminary), without the need for full data disclosure.

Such contributions are generally encouraged to broaden the spectrum of scientific publishing, reflect on the status of the field, and communicate science that departs from the mainstream. For example, for the further development of scientific approaches that are currently viewed as "revolutionary" and associated with hype, which certainly applies to AI, studies conclusively showing that complex methodologies do not offer advantages over simpler ones in specific application scenarios are of critical relevance, just as much as new breakthroughs are. It is also emphasized that the scope of *AILSCI* is not limited to computational studies, but includes reports of AI-driven experimental work, which are highly encouraged.

As another characteristic feature, *AILSCI* aims for short editorial handling and review times. Peer reviews will be limited to two or three per submission and referees will be asked to consider potential scientific merits of a study as presented, without calling for excessive and time-consuming revisions. If those are required to render a manuscript publishable, a timely Reject & Resubmit decision is typically beneficial to authors and provides several alternatives. Furthermore, "Your Paper Your Way" option alleviates formatting constraints until a paper is accepted. Taken together, these criteria aim to streamline the review and publication process.

Going forward, *AILSCI* will be indexed in Scopus, the Emerging Sources Citation Index (ESCI), CiteScore, and the Scientific Citation Index (SCI).

The editors and publisher are excited to launch "*Artificial Intelligence in the Life Sciences*" and sincerely hope that our authors will enjoy publishing their work in this new forum for AI-driven research.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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