Organic Process Research & Development

Editorial

pubs.acs.org/OPRD

Why Should We Care About Publishing?

Gerald Chan, biotech investor and philanthropist, recently reminisced on the golden age of academic biological research in the 1970s: "*complete freedom in exchanging research findings and forming collaborations. There were no lawyers, no invention disclosures, no material transfer agreements, and no technology transfer office. It was the last of the innocent times before the financial profit motive infiltrated science.*"

While the ecosystem for chemical science may differ from biological research then and now, the hurdles for publications (or other external disclosures) have generally trended higher, especially for those of us engaged in industrial R&D. There are of course valid business justifications for the "burdens" of internal reviews and approval for disclosure due to business realities, protection of intellectual properties being the most important one. Extra effort needed to publish an article has to be justified by the impact that it may have on the business as well as the general scientific community. This is an especially acute challenge for an industry that is undergoing major mergers and reorganizations, as has been experienced in the pharmaceutical industry in recent years. In addition, tight cost control measures and financial disciplines imposed on completed or terminated projects are becoming business necessities. It seems that it is becoming harder and harder to publish. This leads to a fundamental question:

Do the benefits of publishing still justify the extra effort for industrial chemists?

We opine that the answer is "Yes" and list the following reasons for the unconvinced skeptic.

1. ADVANCEMENT OF SCIENCE

Journals remain as the primary forum for recording and disseminating knowledge at the frontiers of human explorations. By publishing, we make known the results of our research to a greater audience and contributing to the body of human knowledge with the enhanced credibility through scientific peer review. Current readers of the journal and future generations can build upon what we have learned and advance humanity.

2. ATTRACTING, ENGAGING, AND RETAINING TOP SCIENTIFIC TALENT

Nothing builds respect and credibility better than published scientific accomplishment (i.e., through public scientific disclosure or patents) for an organization. The distinction and associated respect that is achieved by scientists through new and innovative scientific work elevates the corporate brand name of the employer, helps to attract, engage, and retain the scientific talent needed to sustain innovation. All scientists are motivated by scientific curiosity and accomplishment, and the energy that drives them is greatly enhanced through problem-solving, international community recognition, and mutual inspiration. Daniel Pink in his book "Drive: The Surprising Truth about What Motivates Us", describes the keys to motivation: (a) autonomy, (b) mastery, and (c) purpose. For the scientist, the ability to make scientific contributions by solving difficult problems and publishing the results resonances well with all three motivational keys.

3. FREEDOM TO OPERATE

This legal term has been used broadly and is associated with the concept of publishing in the open literature to establish precedence so the discoverers/inventors themselves will not be excluded from practicing the findings by future patent claims of third parties.

4. GIVING BACK

We shall not only be consumers of prior knowledge but also contributors to the repertoire. As scientists we have all benefited in our careers from reading and learning from primary research articles in journals like this one. Think about how much time and resource this has saved us, and imagine how many "wheels" we would have to reinvent were it not for the generations of scientists who have striven upon making their findings accessible to the public. Future generations of chemists will be able to replicate our successes and refrain from repeating our failures, allowing valuable resources to be used ever more effectively and efficiently to solve problems that really matter to human health and welfare.

5. STIMULUS FOR SCIENTIFIC COLLABORATIONS

By making our work known, we enhance the opportunities for forming mutually beneficial collaborations with potential partners, either in the academia or the industrial community, many of which might never happen without external scientific disclosure as a "nucleating event".

6. INCENTIVE TO BRING PROJECT TO COMPLETION

Lingering thoughts on uncompleted and intermittently active projects constitute a major source of anxiety. Commitment to writing a manuscript for publication provides added incentive to collect the necessary data, tie up the loose ends, and finish the project in a timely and quality fashion before moving on to the next challenge or "greener pastures".

7. DISCOVERING THE "HOLES" IN OUR RESEARCH

The process of writing a report, especially one that is to be submitted to the external scientific review process, brings together all of the pieces of work that may have spanned multiple experiments in multiple laboratories over considerable time. This process can expose the "holes"—poor experimental design or logic, the inevitable lack of more experimental data, or unsupported or insufficiently supported conclusions—and stimulate the author to design critical experiments and/or delve into the literature for scientific insight, creating fertile grounds for scholarly work. It is often the case that new and innovative ideas come to mind as a result of pulling all the pieces together during the writing of a manuscript for

Published: May 15, 2015

DOI: 10.1021/acs.oprd.5b00099
Org. Process Res. Dev. 2015, 19, 559−560

publication. It is the vigorous exercise of writing that transforms the experimentalist into a "scholar".

8. PROMOTE DISCOVERIES WE HAVE MADE

A new chemical reaction not widely known is almost equivalent to one never discovered. One never knows if a particular finding will lead to an idea that will change the world even if only stumbled upon by another scientist separated by time and seas.

9. INFLUENCING THE INDUSTRY OR REGULATORY ENVIRONMENT

If you work in a regulated environment (e.g., the pharmaceutical industry), external publications provide an avenue to influencing regulators and the regulatory process such that continuing scientific improvements are not only possible but also encouraged. Scientific thought leaders from industry are often sought out to help interpret existing regulations or develop new ones; such leaders are forged from the "fire" of recognized scientific accomplishment, facilitated through scientific publications. One does not become a scientific/industry thought leader by fiat or declaration.

10. BULK OF THE WORK MAY HAVE ALREADY BEEN DONE

It is very possible that upwards of 90% of the work toward the publication has been done and captured in internal technical reports. If this is the case, completing the work, rewriting and reformatting toward journal publication, and bringing it through the disclosure approval process may not take as much as time one might have feared.

11. FREE QUALITY CHECK

The rigor of peer review process of most journals provides a tried and true quality control mechanism for the written work so that the literature citation, background information, experimental details, the science, and concluding arguments are sound and properly presented.

12. ORGANIZE ONE'S THOUGHTS BETTER

Planning for an eventual publication at the onset of a research project may lead to higher quality research being conducted. We recall several times that we have uncovered relevant literature only during the manuscript preparation. Earlier awareness could have helped the execution of the research project had we encountered it earlier. To prepare for a journal publication, one has to frame the work appropriately for the general readership, a process considerably different from that intended for an internal technology transfer report. This process often offers a more comprehensive and balanced perspective of the totality of the work and can lead to new ideas.

13. PREMIUM FOR A "CAREER INSURANCE POLICY"

Scientists who have established an external presence through publications tend to have more options during dramatic events such as corporate strategic changes, site closings, merger/acquisitions, and down-sizing. A common regret by job searchers is that they missed the opportunity to strengthen their resumes with more publications. While you may be a reliable problem solver and an incredibly creative innovator, if there is little to no external awareness of your work, your marketability is severely diminished; this is particularly true if there is a desire to transition from industry to academia.

Undoubtedly, you will find other and more personal reasons to publish that motivate you to go over the activation barrier that is often associated with words like tedious, bureaucratic, and uninspiring. As wisely stated by Thomas Edison, "*Genius* is one percent inspiration, ninety-nine percent perspiration", data presented in a publication (preferably OPRD) with a little additional perspiration may well serve as the shoulders to enable a future giant to see further (with apologies to Sir Isaac Newton).

Tony Y. Zhang
Steven W. Baertschi

AUTHOR INFORMATION

Present Address

T.Y.Z.: Small Molecule Design and Development, Eli Lilly, Indianapolis, IN 46285.

Notes

Views expressed in this editorial are those of the authors and not necessarily the views of the ACS or other organizations.

ACKNOWLEDGMENTS

The authors wish to thank Professor Victor Snieckus for an insightful review of the manuscript.

DOI: 10.1021/acs.oprd.5b00099
Org. Process Res. Dev. 2015, 19, 559−560