

SCIENCE EDITOR



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SCIENCE ADVOCACY IN A CHANGING POLITICAL CLIMATE
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On the cover: This photo of Engelmann's hedgehog cactus (*Echinocereus engelmannii*) was taken in 2013 at Coconino National Forest, near Flagstaff, New Mexico. The flowers of this cactus are bright and colorful and are followed by spiny, greenish fruits that turn red when they ripen. Photo taken by William Dahl, Executive Director of the Botanical Society of America (www.botany.org). More of his photos can be found at www.great-story.net.



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Making Connections: From Scientists (and Science) to Editors (and Publishing)

Tracey A DePellegrin

This issue brings several articles penned by scientists, as we continue to work to convey the breadth of their concerns to CSE members and to *Science Editor* readers.

We're launching a new series called An Editor's Perspective. These insightful articles provide a first-hand glimpse of scholarly publishing from scientific journal editors. These scientists deal daily with complexities that include interpreting reviews, making decisions on manuscripts, understanding ethical issues, and applying standards and guidelines not just around the science but related to the papers themselves.

In the series' inaugural article, Mark Johnston, CSE member, geneticist, and (full disclosure), *GENETICS* Editor-in-Chief, explains the benefits and challenges of using scientist-editors in an editorial model called peer editing. Second in this series, in the next issue, will be a piece by Dr. Joseph Loscalzo, who reflects on his 12 years as Editor-in-Chief of *Circulation*, published by the American Heart Association, and credits the journal editorial office for running a smooth and efficient journal operation, in turn allowing for a journal the size of *Circulation*, with 5,000 annual submissions, to succeed in its editorial and scientific missions.

I'm especially enthusiastic about this series because the more clearly we understand the perspectives and experiences from a journal editor's point of view, the better we can serve our organizations and our authors, editors, and reviewers. And because CSE members include journal Editors-in-Chief, they'll have an opportunity to hear a peer's perspective.

Whether hearing a specific suggestion for improving our manuscript submission systems (and working as a vendor to implement that feature), realizing the frequency of image manipulation (and coming up with a process to detect those problems), or receiving a request for a page charge waiver (because the author's funding was spent

conducting the experiments, and no money remained for page charges)—it's impossible to separate the science and the scientist from our own roles as problem solvers, advisers, editors, technology innovators, process creators, and valuable contributors to our own organizations. Many of their challenges become our challenges—but also present our opportunities to provide guidance and solutions.

CSE's members are affiliated with a range of organizations and expertise, from scholarly societies and journal publishers to manuscript submission vendors; from experts in typesetting, composition, and printing to science writers; from instructors in scientific communication to production editors; and from attorneys specializing in scholarly publishing to CEOs of start-ups seeking to stay ahead of the technology curve.

Speaking from experience, it's the connections I have fostered within the scientific communities served by the Genetics Society of America that make the most difference. Candid conversations with authors about their challenges in securing grants have led to a deeper understanding of the need to offer cost-effective publishing for our authors. Editor frustration with figuring out how to locate reviewers with narrow expertise led us to prepare tutorials for editors on our manuscript-handling software. Teaching workshops on how to get published led to one of our most popular editorials about early career scientists' experiences chasing journal impact factors.

And speaking of looking at publishing in practice, Lenny Teytelman, protocols.io founder and *Science Editor* editorial board member, advocates for peer reviews that are shared with others, whether via journals, blogs, PubMed Commons, or other means. Why is this OpEd important for our members? For one, it involves questions of process, ethics, and discussions with our own readers and communities on their preferences. It also means educating ourselves about issues of confidentiality and anonymity in peer review, and how we apply our knowledge in practice.

Looking for new reading material? We've published three book reviews, each worth a serious look. Leah Poffenberger, a graduate student in Science and Technology Journalism at Texas A&M University, discusses John Gluck's self-reflective book *Voracious Science and Vulnerable Animals: A Primate Scientist's Ethical Journey*. Barbara Gastel writes

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about two books focused on practical aspects of scientific communication. The first, W Matthew Shipman's *Handbook for Science Public Information Officers*, is a must read not just for public information officers but for scientific communicators in general, including those looking to promote the work of scientist-authors. The second, *Science Blogging: The Essential Guide*, features 26 bloggers each writing a chapter. Gastel points out that contributors such as *The Atlantic* science writer Ed Yong and science writer and *New York Times* columnist Carl Zimmer ensure the book's advice is top notch, plus a companion website enables updates to the ever-changing field of science blogging.

This issue's Ethical Editor column features attorney Debra Parrish on the timing of the U.S. Office of Research Integrity (ORI) investigations into research misconduct (and the release of those findings) as it compares to the timing of a scholarly journal's rights and responsibilities to take swift action to correct the literature, in particular when an article presents factual inaccuracies. This is a good read for editors who face situations involving juggling when and whether to issue corrections or retractions in the face of the release of findings from institutional investigations and ORI (federal) investigations into research misconduct, as well as the journal's own policies and standards.

We've profiled Resa Roth, who is new to both CSE and to our editorial board. Learn about Resa's background in veterinary science, her take on the BELS exam, and her ability to maintain a work-life balance. Plus she's a surfer!

Underscoring the value of shared insight and connections, the CSE Listserv offers members a quick way to ask questions, convey their own experiences, and help one another. In this issue, we launch a new column highlighting this key member benefit, where each issue we'll share some of the conversations taking place in an email forum between CSE members.

And finally, we present a must-read by Thomas J Hund and Peter J Mohler, faculty members at The Ohio State University. They tackle myriad timely topics in their article "Science Advocacy in a Changing Political Climate: Speak Up and Speak Well." They argue why it's critical to make scholarly articles and scientific findings accessible not just to other scientists, but to the public. The National Institutes of Health, one of the world's largest funders of biomedical research, is facing a proposed 20% budget cut predicted to be catastrophic to scientific progress (which means, of course, scientific publishing and many of our journals will be affected downstream—if labs close, if fewer papers are written—we need to be prepared). The level of widespread enthusiasm for the March for Science, a grassroots movement aimed at communicating the value of science to the public and to Congress, seems to indicate a large number of people who are interested in advocating for science, scientists, and tenets like evidence-based decision-making. Regardless of where each of us personally stands on the issues, as scientific editors, communicators, and those invested in those endeavors, it's necessary to fully understand the rapidly changing economic and political arena so we can effectively support our authors, readers, reviewers, and the public.

Have you had an observation, conversation, or finding that changed your perspective, process, or policy related to editing, publishing, or the support of your constituents and communities? We at *Science Editor* welcome your story. We intend to share these in paragraph or testimonial format, so please submit your ideas or articles to me at scienceeditor@councilscienceeditors.org.

As part of our mission, the Council of Science Editors "aims to improve communication in the sciences by educating authors, editors, and publishers." We're excited to announce our upcoming issue on Scientific Communication. Stay tuned for details and deadlines.

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Science Advocacy in a Changing Political Climate: Speak Up and Speak Well

Thomas J Hund and Peter J Mohler

Freedom, the first-born of science.

Thomas Jefferson

Thomas Jefferson's passion for science is well documented.¹ His published writings include important treatises on natural history and paleontology. He served as president of the American Philosophical Society for 18 years. Before sending Meriwether Lewis westward to explore the Louisiana Purchase, Jefferson arranged for his instruction in a variety of scientific disciplines, including medicine, in Philadelphia. Central to Jefferson's love of science was his belief that the discipline was the bedrock for a successful America.

Today, the American public largely embraces advances brought about by scientific research. At the same time, thanks to increased specialization, competition for resources, and real (and perceived) societal threats, our discipline is in danger of straying from Jefferson's higher ideal of science as a vital equalizing force in society. Scientists have become increasingly siloed from each other and, perhaps more alarming, from the general public. In neglecting the nobler aspects of the scientific profession, Jefferson might argue, beyond threatening our own livelihood, we serve as tacit accomplices to the gradual erosion of the fabric of our democracy.

In line with Jefferson's notion of the importance of science in our democracy, President Obama has issued a clarion call for scientists to engage the public—young people in particular. On the surface, such a dialogue should not be difficult. Federally funded science continues to produce transformative basic and translational breakthroughs with

tangible implications for human health and wellness.² For example, the incidence of heart disease is down ~68% and life expectancy has increased by almost a decade over just the past 50 years.³ According to a 2015 Pew survey, the majority of Americans hold a favorable view of the impact science has on quality of life (health care, food, environment).⁴ An overwhelming majority (>70%) also agree that government investments in engineering, technology, and basic science pay long-term dividends. On the other hand, the same survey revealed significant gaps between the views of the public and those of scientists on a range of specific scientific issues, including use of animals in research (47% of public in favor, compared with 89% of scientists, representing a 42-point gap), safety of genetically modified foods (51-point gap), and role of human activity in climate change (37-point gap). Some of this disagreement comes down to an unavoidable conflict of belief systems. It is, however, interesting to consider how much of the gap may be attributed to a breakdown in communication. For example, most biomedical scientists would view it as a contradiction for a person to advocate both *for* the benefits of science and simultaneously *against* one of the fundamental tools in biomedical science (e.g., animal studies). At the same time, it is reasonable for a layperson to view with skepticism the ethical bearings of a scientist or a scientist's ability to trace out the full ramifications of his or her discoveries (i.e., do scientists really know what they are doing?). The public may appreciate the end goals of science but not fully understand the steps (or time) required to attain those goals. Scientists may not necessarily feel a responsibility (or have the time or skills required) to make the work accessible to a general audience. The new perspectives that arise from scientific investigation often clash with widely held and long-established belief systems. This is perhaps best illustrated by the tension between scientists providing evidence for climate change and those who deny its existence. It is in these domains especially that scientists must excel when communicating to the public not only their findings but the mission of the research. Thus, the challenge for scientists in engaging the public and fulfilling our civic duty becomes twofold: 1) how do we push back against a vocal minority espousing antisience sentiment? and more importantly, 2) how do we better communicate with the large number of

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people who acknowledge the benefits of science and find it a worthwhile pursuit? To make inroads will require increased efforts by scientists and supporting institutions in outreach, advocacy, and communication.

Within the biomedical field, there has been growing acceptance that increased outreach and communication among scientists is an important endeavor.⁴⁻⁶ On top of that, a somewhat surprising 86% of 3,748 scientists surveyed in 2014 stated that they already interact with public audiences “often or occasionally.”⁷ The challenge then appears to be how to increase the frequency and, more importantly, efficacy of our outreach efforts. Higher Jeffersonian ideals aside, in reality there are few incentives for scientists to engage in community outreach activities or training. Furthermore, scientists do not necessarily excel at addressing a public audience. One approach then is to lend our skills to ongoing outreach efforts aimed at promoting early interest and knowledge of science among children. A growing number of STEM-related programs throughout the country may help lower the time and energy barrier for faculty involvement. For example, at The Ohio State University, the Translating Engineering Research to K-8 program converts targeted summer undergraduate research experiences into outreach activities for underserved K-8 Columbus classrooms.⁸ In a similar vein, Ohio State faculty regularly serve as mentors for students at the Metro Early College High School, a STEM-focused Columbus City school that requires a 10-week professional internship in an area of interest. On a larger scale, a fascinating and potentially game-changing effort may be found in the US Army’s Educational Outreach Program, a nationwide network (more than 45,000 participants in 2015) of Army-sponsored STEM programs aimed at increasing scientific literacy across the country (while promoting awareness of US Department of Defense STEM-related careers). Important unifying aspects of these examples are that 1) they provide accessible gateways to outreach for scientists (low energy barrier) and 2) the target audiences are underserved. Related to the second point, in line with the notion of science as an equalizing force in society, it is important that our message reaches beyond affluent, highly educated communities and into poorer rural and urban areas. Aside from spanning the socioeconomic divide, it is essential that we also reach across race and gender lines. Approximately half of all students who initially display interest in science change their plans within the first two years of undergraduate study.^{9,10} In general, underrepresented minority students are less likely than peers to complete undergraduate or advanced degrees.^{11,12} In a similar vein, women now represent half of medical school graduates. However, in these same academic medical centers, women represent only 21% of full professors, 15% of department chairs, and 16% of deans.¹³ For science to fulfill its potential as a vehicle for equality (and for the United

States to gain in global competitiveness and reduce the flow of high-skilled jobs to other countries), it is imperative that we fix the STEM pipeline for underrepresented groups by creating opportunities for participation and awareness before young people decide on a career path. Furthermore, we must not only expose and engage young minorities and women in science but strengthen our commitment to support them throughout their entire scientific careers. STEM programs aside, universities and departments across the country are finding creative ways to enhance scientific outreach to the public. For example, similar to many institutions, Ohio State now regularly hosts open forums to expose the public to the impact of research and technology on our everyday lives (e.g., “Science Sundays”).

Outreach efforts such as these are important but likely not enough by themselves to drastically shift the public discourse. Beyond public outreach, scientists must increase involvement in advocacy efforts to help frame public policy. This means scientists across the country must ramp up efforts to meet routinely with state and national representatives on both sides of the aisle to discuss the value of transformative biomedical discoveries on public health.² The vast majority of scientists agree that they should be active participants in public policy debates. However, too often we hear from our colleagues that time for science advocacy is trumped by another faculty meeting, teaching obligation, grant application, or animal protocol resubmission. We contend that this attitude is inconsistent with the long-term future of science and biomedical research in our country. There are valid concerns in this arena regarding the appropriateness of scientists wading into activism or areas beyond our immediate sphere of expertise.¹⁴ However, to avoid the public policy dialogue altogether for fear of stepping out of our comfort zone is not an option. It is imperative that we engage the public and policy makers. One avenue to pool our voices is to engage in advocacy efforts through our representative scholarly societies, which, through connections to Congress and events such as Capitol Hill Days, are able to organize to articulate the need for continued investment in science.

Finally, each of us must work on the simple task of better conveying the “what” and “why” of our research to our peers and the public. To maximize our impact, it is vital that we take measures to not only communicate but to *communicate well*.⁶ Importantly, we must do so without overselling the immediate impact on health, disease, or wellness. Fortunately, there are plenty of resources at institutions and online (e.g., compassonline.org); such formal instruction may be necessary or helpful for many of us. One vital effort each of us can undertake is reflection and practice: by continuously asking ourselves the “what” and “why” of our own research programs and refining our

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"elevator pitch," we will be better prepared to answer the same questions from others.

In an election year, as we survey the state of the union, it is interesting to reflect on our roles as scientists. We have outlined a vision for the scientist as not just a professional researcher but also as an ambassador for our discipline. We have described some of the daunting obstacles that limit the reach of science in society. Finally, we have outlined possible solutions and ongoing efforts to help improve connections between scientists and the general public. Time will tell whether such efforts will increase scientific literacy for our citizenry and improve the state of the union. But with wide economic, political, and social differences right now in the United States, we are in dire need of forces that serve to equalize rather than to disenfranchise our populace. More than ever, our country and, more broadly, our global community need science. As spoken so eloquently by Louis Pasteur, "Science knows no country, because knowledge belongs to humanity, and is the torch which illuminates the world. Science is the highest personification of the nation because that nation will remain the first which carries the furthest the works of thought and intelligence."¹⁵

Acknowledgments

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Forecasting the Growth of Preprints in Biology

Jessica Polka

Preprints, or complete scientific manuscripts posted online before journal-organized peer review, have been common in subfields of biology for a long time: the quantitative biology section of arXiv.org has been steadily growing for more than a decade. But since the emergence of new services that specifically cater to the life-sciences community (notably PeerJ Preprints and especially BioRxiv), the growth in new preprints posted per month has been marked (Figure 1).

Still, 900 preprints posted per month represent just 1% of the approximately 100,000 articles that appear in PubMed during the same time frame. So, does this recent growth represent a bubble, or is this the start of new way for biologists to communicate? The answer will depend on four factors.

1. Cultural change

In early 2016, Ron Vale, Harold Varmus, Daniel Colón-Ramos, and I organized a meeting at the Howard Hughes Medical Institute (HHMI) to discuss the role preprints could play in accelerating communication in the life sciences.¹ Called ASAPbio, the conference brought together junior and senior scientists, publishers, funders, and other stakeholders for a day and a half of discussion. Toward the end of the meeting, we asked attendees to state whether they would, in theory, support statements about the use of preprints. We were surprised to find the responses were overwhelmingly positive.²

Given the readiness to consider new ways of communicating scientific information we saw at this meeting, we decided to move forward to actively promote the productive use of preprints in the life sciences. We do this by convening stakeholders (funders,³ technological experts,⁴ and scientific societies⁵), providing information resources for scientists and others, monitoring policy changes, and enabling discussion online and in the real world.

This latter activity is particularly important: cultural change depends on more than just awareness and incentives. It occurs when individuals see a behavior practiced by their peers. In this case, that means colleagues in their labs,

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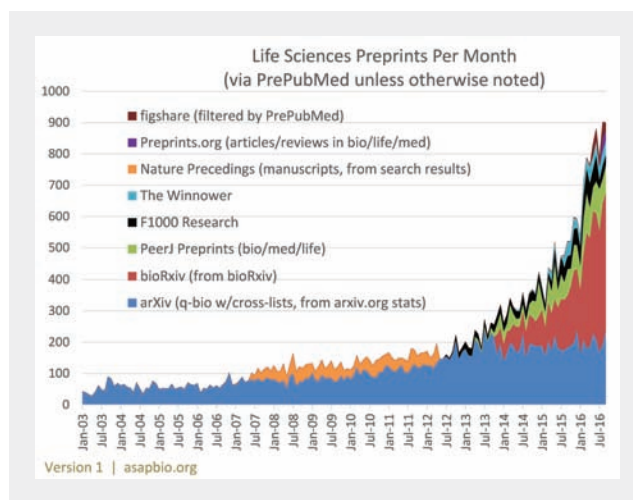


Figure 1. Life sciences preprints per month (via PubMed unless otherwise noted).

departments, and scientific societies not only posting but also talking about their preprints.

Cultural change also will emerge as preprints become incorporated into the educational pathway. For example, preprint journal clubs give students the opportunity to make constructive critiques that can help improve early versions of a manuscript, a process that is satisfying for both participants and authors.⁶

2. Preprint policies

Of all the groups represented at the first ASAPbio meeting at HHMI last February, the funders were arguably the most progressive. Preprints can offer a more up-to-date way to show reviewers an applicant's productivity, and they can also make the results of a funded research project publicly available as soon as possible. During the time a paper might otherwise be undergoing peer review, preprints give funding agencies more information to assess their grant-making strategy.

In January of 2017 alone, three major funding agencies (the Wellcome Trust, Medical Research Council, and HHMI) announced new policies that will allow researchers to cite their own preprints as evidence of productivity in grant applications or reports.⁷ HHMI has gone a step further: in 2018, it will not consider papers listed as "submitted"; these must instead be released as preprints to be considered as

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part of a review. Late last year, the National Institutes of Health also released a request for information to collect feedback about the use of preprints in grant applications and reports, which contained a list of standards that preprints would have to meet in order to be citable (such as preservation, attribution, links to other versions, etc.).

Funders are not the only institutions seeing the value of preprints. The Rockefeller University and the University of California, Santa Cruz, have both specified that preprints are welcome on applications to their tenure-track faculty positions. The New York University School of Medicine has changed the list of materials accepted for appointment, promotion, and tenure to include preprints.⁸

With concrete incentives—namely, the chance to accurately demonstrate productivity to earn a grant or land a job—researchers who are curious but hesitant about posting preprints will likely take the leap.

3. New players and infrastructure

Since the ASAPbio meeting, several other organizations have launched preprint services, including the Center for Open Science and preprints.org. The American Chemical Society has announced it will launch ChemRxiv. Public Library of Science (PLOS) has a stated interest in “ahead-of-publication posting.”⁹ Scientific societies and large-volume publishers stand to make major contributions to the number of preprints posted by giving authors the option to post their manuscripts to a preprint server at the time of journal submission.

The emergence of more preprint servers is great for innovation but potentially problematic for researchers looking for a comprehensive source of preprints. Furthermore, licensing, preservation, and screening standards are different across the existing preprint servers, inhibiting the development of uniform expectations for what preprints can contain and how they will change over time. Finally, it’s becoming increasingly difficult to access all preprints for text and data mining—and most sources provide no programmatic way to access the content anyway. For these reasons, ASAPbio is planning to launch a “Central Service” to aggregate, preserve, and facilitate access to life-sciences preprints.¹⁰

4. Preprints and scholarly journals

The trend in preprint growth prompts an important question: in an imaginary future when 90%, rather than 1%, of biology papers are first released as preprints, what role will journals play?

If biology is anything like physics, their role will be just as significant as it is now: 73% of older preprints on arXiv can be matched to a journal article on Web of Science.¹¹ The reason for this is simple: journal publication is crucial

for validating the work and signaling its value to those outside the authors’ immediate field. The internet makes the process of disseminating research results easy, cheap, and fast, but journals need not see this as encroachment of their territory. Rather, journals offer services that are infinitely more valuable and essential: the evaluation, curation, and organization of peer review.

Ron Vale, Tony Hyman,¹² and Jan Velterop¹³ have argued that separating the process of knowledge disclosure from evaluation is beneficial for authors. Going a step further, Bernd Pulverer pointed out that this decoupling may actually relieve the pressure on journals to conduct peer review as quickly as possible.¹⁴ With preprints, the quality of the peer review, rather than its speed, can be prioritized.

Most major journals in the life sciences will consider publishing manuscripts that have previously appeared as preprints.¹⁵ Medical journals have historically been more conservative in following the Ingelfinger rule. However, the culture is changing: in December 2016, the International Committee of Medical Journal Editors modified its recommendations to indicate that preprints need not constitute prior publication.¹⁶

Some journals have not only changed their policies to allow preprint posting but have gone further to enact editorial practices that take advantage of the system.¹⁷ For example, many biologists report being approached by editors inviting submission of their preprints. *PLoS Genetics* has formalized this process by creating “Preprint Editors”—three individuals whose job is specifically to invite submissions from preprint servers. These policies effectively turn preprint servers into a marketplace where authors and editors can more effectively match their papers to appropriate journals.

These developments are heartening signs that many stakeholders see the benefits of preprints and are ready to work together to accelerate scientific communication and the process of discovery. Funders, scientists, and especially journal editors will continue to play vital roles in defining a communication system that embraces both modern technology and the human need for curation—and in bringing this system to life.

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Implementing CRediT: An Interview with Cell Press's Gabriel Harp

Alison O'Connell  and Gabriel Harp

Cell Press's research journals led a pilot allowing authors to optionally make use of the CRediT Contributor Roles Taxonomy, integrated with Editorial Manager version 13.0. Gabriel Harp describes the experience here:

Q: How did Cell Press come to be involved with the CRediT taxonomy?

The genesis of the taxonomy was a 2012 workshop jointly hosted by Harvard University and the Wellcome Trust.¹ Emilie Marcus, the Editor-in-Chief of *Cell* and CEO of Cell Press, was involved in subsequent discussions that led to the creation of the taxonomy. At the time the taxonomy was rolled out in the spring of 2015, the editorial team reached out and asked me to coordinate making contributor roles an option for authors. The idea has always been that this project is cross-organizational, cross-publisher—the CRediT team talked with funding bodies, publishers, authors, and others to carefully develop the taxonomy. When it came time to decide our approach to implementation, we were thinking, “Do we want to wait and see what others do? Do we want to require use of the taxonomy?” We opted for the middle ground: making the taxonomy a recommended option for authors and actively seeking their input along the way.

Q: You piloted the CRediT taxonomy on some of Cell Press's journals. Could you explain how you went about selecting which titles to include in the pilot, and what exactly the pilot entailed?

We took a straightforward approach: we piloted the use of the taxonomy in all Cell Press research journals. The only exception was for the journals that we publish in partnership with societies; in those cases, each society decided whether or not to join the pilot.

ALISON O'CONNELL (orcid.org/0000-0002-9032-3983) is marketing manager at Aries Systems Corporation. GABRIEL HARP is senior product manager at Cell Press.

The pilot consisted of the following steps:

- Determine our approach to publishing the taxonomy
- Explain and promote the taxonomy
- Reach out informally to authors about it
- Formally survey authors who had used it
- Track all papers that used the taxonomy, as well as a breakdown of the rolls identified for each paper

At the outset, we decided to recommend the optional use of the CRediT taxonomy within the “Author Contributions” section of a manuscript. This section, which appears alongside the Acknowledgments, was itself optional in most cases. In other words, we had an optional taxonomy within an optional contributions section. Beginning in May 2015, we let authors know about this option via several channels: online guidelines for authors, letters sent during the revision process, a post on the CrossTalk blog, and informal communications with authors. The first paper to use the taxonomy appeared in May, and uptake has steadily increased since then. In December 2015 we decided to require the inclusion of the Author Contributions section, which has come to be seen as an important complement to the author list and the Acknowledgments. Since then, the frequency of the use of the taxonomy has doubled.

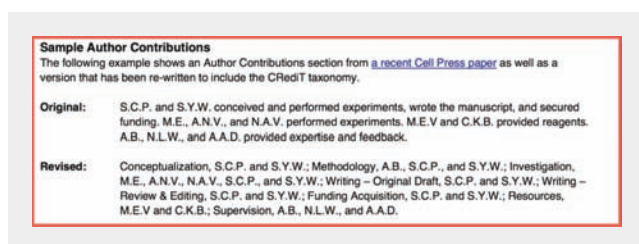
Q: Which roles did the pilot impact? The taxonomy applies to authors and other contributors. Who else within the workflow is impacted by the implementation, and how?

Thus far, the taxonomy in Cell Press papers has applied only to authors. Other contributors are mentioned in Acknowledgments sections. In terms of workflow, we needed to make sure that everyone on the Cell Press side—editors, journal associates, copyeditors, suppliers—was familiar with the existence of the taxonomy and was prepared to see Author Contributions sections that differ in format. Some would continue to take the standard, prose-based, descriptive approach, whereas those that use the CRediT approach would include author initials and the taxonomy terms.

We have a great team of copyeditors, most of them in-house, who place a lot of pride in copyediting these

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scientific manuscripts. We take care to ensure consistency, house style, and correct grammar and spelling—all while being extremely careful not to make any changes that could alter the meaning or voice of the author. We had to prepare the team that there could be two very different Author Contributions sections: one with the standard elements of a prose paragraph, the other with a list of terms and author initials. Because we check manuscripts carefully at various stages of the post-acceptance process, we needed to make sure that everybody—from the scientific editors handling the papers to the copyeditors and proofreaders—was familiar with the taxonomy and would not be surprised to see it in a paper. In this respect, internal communication was just as important as external communication. And implementation went much more smoothly than anticipated. We expected lots of questions from authors and internal teams, but that didn't happen. By and large, I've been surprised by the rate of adoption, and the smoothness of the process.



Q: What are the benefits you observed during the pilot implementation?

Thus far, authors who have used the taxonomy tend to view it favorably. To my surprise and relief, they generally report that the taxonomy is easy to use. This is really important to recognize. The publication of a research paper is often the culmination of years of work. As a publisher, we strive to make the journey as smooth as possible for our authors. Thus, whenever we introduce a change or a new step, whether big or small, we consider the potential impact on our authors. In this case, what we are hearing so far is that authors who use the taxonomy find it easy to apply, clear to understand, and important in its standardization of contributor roles. We conducted a survey of the first 100 authors who used the taxonomy at Cell Press, and I've discussed the results of the survey on the CrossTalk blog.²

Q: What questions or unforeseen issues came up during the pilot? How did you resolve them?

Not many! Throughout the course of the pilot we did encounter some questions: Should the taxonomy terms be

written with capital letters or lowercase? Should we ask for clarification from authors who use the term "Writing" rather than the two options laid out in the taxonomy, "Writing – Original Draft" and "Writing – Review & Editing"? Should we allow prose descriptions in addition to taxonomy terms? For all of these cases, we decided to defer to what authors provide. And our reasoning was simple: this is a pilot, and we are keen to observe—rather than to stipulate—how the taxonomy is put to use.

Q: Will you be making the recommendation to roll the taxonomy out more widely across journals within the Cell Press portfolio?

As I mentioned, we have already rolled the taxonomy out about as far as we can at Cell Press. The next conceivable extension would be to make its use mandatory, but we are not interested in doing so at this time. From our perspective, an optional approach to the taxonomy is best. Despite the steady uptake, the majority of papers do not use the taxonomy. The last thing we would want is to force a structure upon authors who might not be comfortable with it.

Q: What suggestions or best practices would you share with other editors considering piloting or adopting the CRediT taxonomy within their workflows?

Talk to authors, talk to readers, talk to funding agencies, talk to tenure committees—talk to anyone invested in the complex systems that swirl around credit, funding, and career development. Most would agree that we need to change the ecosystem; how to do so is another matter, but this taxonomy is a clear step in the right direction.

Update: Portions of this interview have been previously posted on Aries Systems' website. As of the time of this publication, the CRediT taxonomy is fully functional and available in Editorial Manager (see video³). The CRediT Steering Committee wants to hear from users about any terms that should be added to the taxonomy. Run this report⁴ and send your list of "other" entries to the CASRAI staff⁵ to help shape the future of contributor recognition!

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What Journals Can Do To Help Build Research Capabilities in Low and Middle Income Countries

MODERATOR AND SPEAKER:

Trish Groves

Head of Research, *The BMJ*
Editor-in-Chief, *BMJ Open*
London, United Kingdom

SPEAKERS:

Lila Castellanos-Serra

Senior Researcher
Center for Genetic Engineering
and Biotechnology
Havana, Cuba

REPORTER:

Emilie Gunn

Managing Editor
Journal of Clinical Oncology
Journal of Global Oncology
American Society of Clinical
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Alexandria, Virginia

According to Trish Groves, journals exist not only to publish good work but also to teach. This can be done simply, through instructions for authors, or more elaborately, through educational resources such as those discussed in this session.

Groves explained that waste exists at various stages of publication. This happens when

1. Research questions are not relevant to clinicians and patients.
2. Methods are not appropriate or robust or correct.
3. The final version of the publication is not available to others. This means authors conduct the work but do not end up publishing it.
4. A report is poorly written or not understandable (or both).

It is estimated that more than \$100 billion per year is wasted in these ways.

To address some of these issues of waste and teach authors to conduct and publish the best possible research, *The BMJ* launched the Research to Publication (RTOP) program. RTOP provides education for early-career academics in healthcare research (including authors and peer reviewers). The subscription-based program offers self-led modules to choose from. The modules teach authors how to write papers and also demystify what happens at a journal. There are 6 online courses, each of which takes about 40 hours to complete.

Concepts taught in the program include

- Study protocols and why they are important

- How to develop your research question to ensure that it has high scientific value and is relevant to immediate application, if possible
- How to write your paper (how to structure it, what to include in the various sections)
- Ensuring a good match between the research question and the methods used
- Reporting guidelines (e.g., CONSORT)
- Research integrity and misconduct, and how journals may respond in case of a problem

Next, Lila Castellanos-Serra pointed out that, in Cuba, health services are universally accessible and free. Medical education is also free, up to doctoral status. Despite this, scientific output is low for the number of health professionals, and there is little presence in international databases.

Medical Education Cooperation with Cuba (MEDICC) is a nonprofit organization working to use the Cuban experience to inform global health. It publishes *MEDICC Review*, an open-access, peer-reviewed journal about Cuban health care experiences and results.

MEDICC Review addresses gaps in writing skills through conferences and mentorships, organized in collaboration with the Cuban National School of Public Health and Pan American Health Organization. For two weeks, students attend classes full time to learn writing skills by actually writing a paper. The sessions consist of lectures and discussions, personal mentoring, intensive work on manuscripts, and additional reading to complement the course offerings. The course is not conceived as an end point but as the beginning of a collaboration between mentored authors and mentors.

The main subjects taught are

1. Science quality, addressing problems such as poor quality of methods and research, introducing Equator, with emphasis on good research and publication practices. *MEDICC Review* recently found that about 50% of the course participants did not have sufficient backgrounds in statistics.
2. Manuscript preparation and evaluation, including a description of common article types and basic writing skills (e.g., how to organize a paper).

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3. Tools for preparing and evaluating manuscripts. This includes quantitative studies in science and technology, bibliometrics, impact factor and h-index, as well as literature databases and search engines.
4. A discussion of ethics. Students learn what might constitute misconduct, including fraud, fabrication, plagiarism and self-plagiarism.
5. How to interact with editors and reviewers and how to decide where to submit your article.

By the end of the course, 26 of the 42 participants were ready or close to ready to submit a manuscript to a journal.

Journals have an active role to play in educating authors from low- and middle-income countries. Authors have an interest in seeing their research published in high-quality journals, and journals are of course interested in publishing the best research. Through educational programs such as RTOP and MEDICC, both authors and journals can benefit.

The Craft and Business of Language Editing and Copyediting

MODERATOR:
Jennifer Deyton

Senior Partner
J&J Editorial
Research Triangle Park, North
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SPEAKERS:
Katharine O'Moore-Klopf

Consulting Medical Editor
KOK Edit
East Setauket, New York

Kurt Spurlock

Quality Manager
American Journal Experts
Durham, North Carolina

REPORTER:
Jessica LaPointe

Managing Copy Editor
American Meteorological Society
Boston, Massachusetts

This informative session compared freelancing with working as an employee of an author-services company. The first speaker, Katharine O'Moore-Klopf, shared her expertise as a freelance author's editor. She described the work of an author's editor as formatting; grammar, spelling, punctuation, and syntax; transitions between topics; and organization and logical flow. She said she works mostly with nonnative English speakers to help polish their language. As an author's editor, she reviews the publisher's in-house style sheet and instructions for authors, as well as recent publications in the journal, and edits according to the preferred style.

She warned that some authors copy material from previously published work and may not realize this is a violation of publishing ethics. In certain cultures, such copying is considered a proper way to provide background on a topic. However, the editor must explain this is not considered ethical in US publishing. Instead, authors should be encouraged to write the material in their own words and to cite articles correctly.

O'Moore-Klopf recommended staying in touch with previous clients and using social media to keep professional networks informed regarding the types of materials being edited, compliments from authors, and current work. In addition to blog posts and LinkedIn status updates, freelance editors should create business websites tailored to potential clientele. She emphasized that author's editors should not simply list their qualifications in a LinkedIn bio, Twitter account, or Facebook page. Rather, they should tell a story about how they can help their clients. An editor must not promise the manuscript will be published and should refer authors to translators if needed. According to O'Moore-Klopf, a good editor suggests corrections rather than simply querying the author and uses the communication method that works best for the author (email, Skype, etc).

Continuing professional education is vital for an author's editor and can include annual meetings like CSE's; web-based instruction; audio conferences; online courses from an editorial freelancers association; university editing certificate programs; reading science, editing, and publishing blogs; and webinars.

Kurt Spurlock talked about what it's like to work with a large author-services company. On the business side, because the company is responsible for finding customers, the amount of available work is not entirely within an editor's control. This means that papers to edit could sometimes be scarce, though establishing—and maintaining—relationships with customers is itself a lot of work and may not appeal to every editor. In addition, basic business interactions such as securing customer payments are taken care of by the company, and there is consistency in what editors are paid. Editors enjoy the reliability of a paycheck that arrives on time and an accounting department to handle problems. Technological advantages of working for a company are that it provides the website interface for authors and editors use the same portal for uploading and downloading manuscripts as authors use.

Because the editor follows a consistent style from paper to paper and author to author, it's easier to build up speed and develop skill. Editing style and scope are explicitly defined in agreements between the company and the author and the editor. Quality control involves consistency and following the company's standards. Doing good work for the company builds the editor's reputation, and quality and timeliness are emphasized. The company also acts as a buffer between author and editor—if the author is unhappy with the work done by the editor, the company will handle the author's complaints.

On behalf of second-language English speakers, an audience member spoke about concerns of cost and timeliness when using an editing service and suggested authors use a service such as Grammarly, which is inexpensive and easy to use. O'Moore-Klopf cautioned that such programs cannot understand the nuances of language and ideas that a human being can handle much better. Finally, O'Moore-Klopf was asked how she set the pace when working with many clients, and she replied, "I have many years of experience, so I know how fast I can edit." She offers to do two rounds of editing to limit costs and asks to see the manuscript first so she can make a ballpark estimate and let authors know what to expect.

Enhancing Peer Reviewer Selection and Meeting Reviewers' Needs for Development, Feedback, and Recognition

MODERATOR:**Ingrid Philibert**

Senior Vice President, Field Activities, Accreditation Council for Graduate Medical Education
Executive Managing Editor, *Journal of Graduate Medical Education*
Chicago, Illinois

SPEAKERS:**Tamara Hanna**

Senior Acquisitions Editor, Editorial Development
American Chemical Society Publications
Washington, DC

Mary Warner

Assistant Director of Publications
American Geophysical Union
Washington, DC

REPORTER:**Barbara Biemeck**

Publishing Services Manager
Sheridan Journal Services
Waterbury, Vermont

As there is much discussion and scrutiny involving journal peer review these days, this session offered insights and ideas to develop effective processes for reviewer selection and retention. Ingrid Philibert opened with, "Why this session?" She noted the need to consider "the care and feeding of reviewers" because most scientific journals rely on peer review. "Journals compete for a finite number of peer reviewers." New reviewers need development, and all reviewers warrant greater recognition, as in the academic community, peer reviewers "do not get as much recognition as researchers." Philibert suggested peer-reviewer educational programs could make it easier for editors to select the right reviewers, evaluate peer reviewers more effectively, and keep meaningful data on all reviewers to make informed decisions. It's important to recognize both senior and junior reviewers and perhaps also to reward those who suggest another reviewer when they are first invited but cannot accept.

Tamara Hanna began by presenting findings of a recent Wiley reviewer survey regarding peer-reviewer goals and motivation. "Peer reviewers said they want to serve as reviewers to reciprocate and because it's expected." Surveyed reviewers sought to pay back the community for the review of their own work, she noted.

Hanna also shared information gleaned across American Chemical Society (ACS) publications, including reviewer

training and rating, as well as ways to expand the reviewer pool and leverage expertise to reduce reviewer fatigue. Steady growth in submissions is driving the growing need for reviewers at ACS, so the society educates reviewers who "typically learn on the job." Through ACS On Campus modules, junior reviewers learn what to do and what not to do. "We can get reviewers, but then editors don't necessarily use them. How do we get them to want these reviewers?"

ACS On Campus uses tools such as the Expertise Form, Reviewer Locator, and Reviewer History to help match needs and resources through input from those involved. Editors also rate reviewers on a three-point scale. By keeping detailed reviewer histories, ACS analyzes data on the use and productivity of reviewers. In her closing remarks, Hanna noted it's important to educate, encourage, and appreciate peer reviewers, and she shared the program's message: "We love reviewers!"

Mary Warner provided statistics from the American Geophysical Union (AGU) publishing program, which received 13,000 submissions and published 6,000 papers in 2015. Submissions at AGU were also on the increase in 2016 and are being handled by more than 100 editors and 450 associate editors, supported by 22 in-house staff. Peer-review goals include speed without sacrificing quality and an easy process for authors, editors, and reviewers: a first decision in fewer than 60 days (fewer than 30 days for "rapid publication") and a simple review form to guide authors and reviewers as they "click through the system." Potential reviewers have 48 hours to respond to an invitation before an alternate is contacted. The editor is notified as soon as two reviewers have agreed to review, and reviewers are notified of the final decision by email.

To expand the reviewer pool and address reviewer overload, AGU seeks to keep to the average of two to three reviews per year and attract more international reviewers to match the increase in worldwide author submissions. The program uses expertise and key words to help editors find appropriate reviewers in its database. Reviewers are encouraged to update their profiles upon login. Authors

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are encouraged to complete expertise profiles, as are AGU fall meeting presenters. At the AGU fall meeting and other conferences—and at universities in the United States, China, and Japan—reviewing workshops are offered.

AGU uses a five-star system to evaluate reviewers on timeliness and quality; editors can see each reviewer's history and staff can add notes regarding any concerns about the reviewer. To recognize reviewers, the program sends review information to ORCID; sends review-acknowledgment

letters upon request; thanks reviewers each year in the journal; hosts reviewer-appreciation receptions; and, for top reviewers, provides complimentary personal subscriptions to a journal of the reviewer's choice.

"It's important to provide feedback to reviewers to allow them to grow in reviewing skill," noted Warner. "Pay attention to your reviewers and appreciate their value—the peer-review process depends on reviewer participation and review quality."

Managing Editor-in-Chief Transitions

MODERATOR AND REPORTER:

Mary K Billingsley

Managing Editor
American Academy of Child and
Adolescent Psychiatry
Washington, DC

SPEAKERS:

Feng Chen

Assistant Director, Editorial
Development and China Strategic
Partnerships
American Chemical Society
Washington, DC

Judy Connors

Associate Director, Editorial
Services Managing Editor
The Drug Information Association
Horsham, Pennsylvania

Katherine Egan Bennett

Managing Editor, American
Society for Radiation Oncology
Dallas, Texas

Alice Ellingham

Director, Editorial Office, Ltd
Overton, Hampshire, United
Kingdom

Heather Goodell

Director, Scientific Publishing
American Heart Association
Dallas, Texas

Whether the process happens every two years or every ten, editor-in-chief transitions can affect every aspect of a publication, and managing that process effectively can mean the difference between a clean, smooth transition and a disruptive season of discontent. In this session, five expert panelists discussed the ins and outs of editor-in-chief transitions, from the minutiae of everyday decision making to the big picture of long-term strategy.

Heather Goodell started off the session with a tutorial on conducting an editor search. This process can take many forms and include a variety of stakeholders, from publication boards and outside search firms to editors who are encouraged to groom internal successors. Touching on the essential aspects of candidate review, from what to ask for in applications to how to conduct face-to-face interviews, Goodell stressed the importance of communication and outreach to keep organization leaders, members, and the editorial board informed and engaged in the process and to encourage “buy in” from them once the next editor is selected.

Next, Feng Chen presented an overview of necessary qualities and training for prospective editors-in-chief. As the captain at the helm of a journal's ship, the editor-in-chief must have certain key traits and qualities: strategic insight and vision to translate trends in the field into editorial direction;

strong team leadership to manage the team effectively and open mindedly, delegate responsibility, and partner with collaborators; effective decision making to consistently, fairly, and transparently move the journal's operations forward; and excellent communication skills to engage with the community and deliver sometimes difficult messages.

Continuing our stepwise tour through the process, Judy Connors then discussed the business logistics of transitioning a new editor-in-chief. Outlining the significant components of an editor-in-chief contract and emphasizing the need to manage expectations, Connors walked the audience through such important and nuanced topics as employment status, compensation, roles and responsibilities, and reporting structure. Establishing these parameters and documenting them early in the relationship between the society and the editor will set the tone and help prevent conflict down the road.

Alice Ellingham addressed the details of editorial workflow during an editor-in-chief transition. What is the timeline and how will the workflow transition? Is it a clean break, a staggered handover, or something in between? Ellingham outlined the pros and cons of various transition models and further considerations for editorial office operations, recommending automation over manual processes as much as possible and emphasizing the value of setting boundaries for both incoming and outgoing editors-in-chief.

Finally, Katherine Bennett covered key points in society and editorial office logistics during an editor-in-chief turnover. If organizational structure or workflow models are changing, promote the new model and try to obtain buy in from various stakeholders. Encourage editors to share the workload, delegate responsibility, and make connections with other editors-in-chief to create a peer group to offer advice and act as a sounding board. Promote communication among the editorial board members to increase cohesion and transparency.

In summary, an editor-in-chief transition is quite a bit more than that, having lasting implications for not only the journal and the editorial team but also the parent society and the field as a whole. Taking ownership of the process early on, setting an appropriate tone, and managing expectations will help the team prepare for the unexpected and progress more smoothly through the many microtransitions that happen along the way.

Open Access: Far More Than Just Making Research Results Available to Read

Kuntan Dhanoya



KUNTAN DHANOYA is the vice president of business development at Enago.

The 8th Conference on Open Access Scholarly Publishing was held in Arlington, Virginia, on 21–22 September 2016. Organized by the Open Access Scholarly Publishers Association (OASPA), this is the first time the conference was held in the United States.

OASPA's mission is "to support and represent the interests of Open Access (OA) journal and book publishers globally in all scientific, technical, and scholarly disciplines." OASPA has seen a dramatic growth in its membership over the past 7 years, when it was officially launched at a Wellcome Trust-sponsored forum. Its members now publish more than 160,000 articles a year.

The conference program was extremely well organized and packed with great back-to-back sessions on OA. Attended by scientific, technical, and medical professionals and OA advocates, the conference offered a range of insightful talks on technology, innovation, open data, reproducibility, discoverability, OA financial models, open peer review, data policies, evaluation, and open scholarship initiatives.

A common message that resonated throughout the two-day conference was the need for a cultural change to sustain the momentum of the OA movement. Heather Joseph (Scholarly Publishing and Academic Resources Coalition) kicked off day 1 with this powerful message and reminded all that public good¹ has been the core value of OA since its inception. In her talk "It's Not Easy Being Open," Joseph shared the challenges OA publishers and stakeholders face today, such as OA growth, which has been substantial but not easy because of the increasing number of stakeholders and complexity of goals and strategies. Should we fear this complexity may cause the OA movement to fail? Joseph pointed out that OA is experiencing a phase of predictable difficulty. It is in the middle of the bureaucratization stage—one of the stages of any social movement. Joseph drove home an important point: Open access does not exist simply for its own sake, but it should be used to achieve specific goals and advance the public good. Publishers should focus not only on collective action but on collective impact.² This thought-provoking keynote set the perfect tone for the rest of the event.

The first panel discussion on technology and innovation shed light on web-based, collaborative, and open-data measures. Alberto Pepe (Authorea³) gave a talk entitled

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"From Open Access to Open Science: Why the Paper of the Future Will Be Data-Driven" and noted that we are performing 21st-century research but writing papers using 20th-century tools and publishing in a 17th-century format. Authorea, a collaborative online-editing platform, allows open and transparent dissemination of research results with all data sources necessary to reproduce them. Dario Taraborelli (Wikimedia Foundation) presented "Citations Needed for the Sum of All Human Knowledge: Wikidata as the Missing Link between Scholarly Publishing and Linked Open Data."⁴ Wikidata is the first free knowledge base that anyone can edit and use to find provenance of source of data. Taraborelli stressed that publishers should 1) release open-citation data and 2) use licenses supporting content mining for citations. Highlighting the challenges of reproducibility and bias toward positive data, Katharina Volz (OccamzRazor⁵) addressed "Atomized Content—The Future of Scientific Information." OccamzRazor's mission is to accelerate scientific discovery by breaking scientific knowledge into the smallest possible units of information and understanding the relationships between them through machine learning and human curation.

MacKenzie Smith (University of California, Davis) gave the second keynote, "Financial Sustainability of Open Access Scholarly Journals at Scale." This was a fascinating talk based on a study⁶ investigating whether a large-scale

shift to OA publishing funded by article-processing charges (APCs) will be financially sustainable for large, research-intensive institutions in North America. What will be the financial ramifications of a wholesale shift to a model in which authors or institutions pay for publishing an article and not for subscription? The answer is complex. The study showed that library journal budgets alone in the United States would not be sufficient to cover all APCs for research-intensive institutions. However, author grant funds, which are already a major source of funding for publishing fees, could cover the difference. The model distributes APC payments derived from three potential funding sources: 1) library funds redirected from journal subscriptions, 2) research grant funds, and 3) other author-controlled discretionary funds.

Turning from APC to non-APC models, the second panel shared insights into viable financial models for transitioning from subscription to OA. Kamran Naim (Stanford University Graduate School of Education) is researching the Open Access Cooperative Publishing Study.⁷ His talk was "Flipping the Script: Building Cooperatives in Scholarly Publishing for Open Access." These cooperatives should be based on the principles of 1) a multi-stakeholder cooperative association of libraries, journals, societies, presses, and funders; 2) using existing allocations; 3) pooling resources; 4) transparency and metrics; and 5) standards. Caroline Edwards (Open Library of Humanities⁸) discussed "Building a Non-APC

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Business Model for Humanities Journal Publishing.” Open Library of Humanities is a charitable organization enabled by a library partnership subsidy model dedicated to publishing OA scholarship with no author-facing APCs. Arianna Becerril (Redalyc⁹) addressed the non-APC model in Latin America. “Latin America is not in transition to OA—it was born in OA.” This OA success story is based on cooperation, networking, crowdsourcing, open-source software and repositories, and government support.

The final session was show and tell, with 6 talks by representatives from a variety of publishing avenues, ranging from digital libraries, repositories, and journal houses to universities, OA journals, and reference-linking services. The speakers covered engaging topics such as the internationalization of Scientific Electronic Library Online¹⁰ Brazil journals, results from a journal-flipping project, Springer Nature’s data policies and how authors can take full advantage of data, PubMed Central’s interagency public-access efforts, the importance of OA in cancer research as a prime example of a public good, and how metadata ties everything together in science.

Day 1 also featured lightning talks in which 8 speakers presented posters on topics that fueled conversations with the presenters over breaks. The themes were “The Book Peer-Review Process—Who, What and Why”; “Rewarding Transparent and Reproducible Scholarship”; “Come Together Right Now: An Introduction to the Open Access Network”; “Not All Open Content is Fully Discoverable”; “Lever Press and Fulcrum: Open Monographs on an Open Platform”; “Improving Author Adherence to Reporting Guidelines”; “Finding a Data Sharing Solution with Dataverse”; and “15 Years of Interactive Open-Access Publishing.”

Day 2 kicked off with Hilda Bastian’s (PubMed Health¹¹/PubMed Commons¹²) keynote, “Openness and Consequences: Directions in Pre- and Post-Publication Peer Review.” Walking us through the benefits of open peer review, Bastian stated that the future of both pre- and post-publication peer review is open and collaborative. Open peer review will help expose reviewers’ conflicts of interest and journal bias as well as build critical skills and reputation. Looking at which factors are deterring open critique, Bastian pointed out lack of confidence, motivation, and time and fear of retribution. Stating a need for a cultural shift, Bastian highlighted the need to stop being concerned about the consequences of critique and to enhance our communications culture to be more collegial.

Next, a panel on evaluation discussed the challenges and solutions related to identifying critical contributions: recognizing the ecosystem behind a paper, author taxonomies, and contribution ontologies. Melissa Gymrek (University of California, San Diego) offered “Middle

Author Dilemma: How to Recognize Critical Contributions of Multidisciplinary Teams.” Gymrek suggested a few strategies for better recognition: 1) explicitly describe author contributions; 2) use smaller citable units (e.g., supplemental online material); and 3) cite sources that are not publications (e.g., source code or data). In her talk “Credit and Accountability—Tools for a Better Ecosystem,” Veronique Kiermer (PLOS Journals) shared some measures to change the evaluation culture, such as showing full citation distributions, adopting ORCID, and using systems such as CRediT.¹³ Kiermer raised points about moving to an author-centric view, acknowledging disciplinary differences and a cultural shift. Melissa Haendel (Oregon Health & Science University and FORCE11¹⁴) spoke on “Credit Where Credit is Due: Acknowledging all Types of Contributions.” Referring to the Open Research Information Framework¹⁵ (OpenRIF) and contribution ontology, Haendel discussed integrating the research landscape to acknowledge all contributions. OpenRIF, an open-source organization, aims to help link and classify data about people and their relationships to different scholarly products.

Drawing parallels between OA and open data, Meredith Morovati (Dryad¹⁶) touched upon the evolving needs, challenges, and possible solutions for adopting open data. In her keynote, “A Newcomer’s Perspective on Lessons Learned (or not) Toward Open Access Within Scholarly Communication,” Morovati made a strong case for open data and stated, “without open infrastructure for data, the scholarship which an article or an argument is based on is not there—it disappears.” For data to be open and accessible, it must be discovered by machines and understood by humans. Addressing the concerns that it is difficult and time consuming to work with data, Morovati observed that making data available is not complicated. Publishers should make their data policies clear and actionable. In fact, such practices enhance reputations and increase submissions, as seen in the case of the British Ecological Society. Most authors already support open data, and journals and publishers need to give their support. Innovating to make data affordable, Dryad (a nonprofit digital repository) has used the idea of APCs and introduced data-processing charges. Morovati insisted it is our responsibility to innovate, work together, and find solutions to support open data.

The final panel shared insights on Open Scholarship Initiatives. John Inglis (Cold Spring Harbor Laboratory Press) presented “bioRxiv: A Preprint Service for the Life Sciences.” Inglis highlighted that one of the top benefits of preprints is the acceleration of communication. Articles deposited in bioRxiv¹⁷ can be retrieved and readers can add public comments. bioRxiv also allows authors to submit papers to some journals with just one click. Jenna Makowski (Alexander Street Press) spoke about Anthropology

Commons, a repository of open primary sources critical to the study of anthropology. With a new business model, Alexander Street is funding its archiving initiative through an Open Archive fund based on royalties. Kathleen Fitzpatrick (Modern Language Association) addressed “MLA Commons & CORE: Networking Scholarly Communication.” MLA Commons is a web-based, scholarly communication, networking, and publishing platform. Connecting MLA Commons and Humanities Commons Open Repository Exchange (CORE), which is a library-quality repository system, Humanities Commons¹⁸ aims to provide its members a collective, cooperative, and sustainable platform for open communication and publishing.

The final keynote for the event was given by Jerry Sheehan (White House Office of Science and Technology Policy [OSTP]): “Going Open: Access, Data, Science, and Beyond....” Referring to the 2013 White House directive on public access to federally funded research and data, Sheehan noted that the Obama administration has been committed to openness and transparency for government information. OSTP works to advance initiatives related to science, technology, and innovation and turning the policy statements into actions. Given that open science is an enabler of science and not an end in itself, Sheehan explained that public (and open) access is meant to accelerate science and innovation. He stated that 16 US federal agencies have completed their public-access plans: these agencies cover 98% of the federal research and development budget. OSTP has also issued a memorandum entitled “Addressing Societal and Scientific Challenges through Citizen Science and Crowdsourcing.”¹⁹ More than 80 federal agencies have engaged more than 250,000 citizens in 700 challenges and led to more than 275 start-ups and thousands of new jobs. Turning the focus to open science discussions in international forums, Sheehan pointed out highlights from the Organization for Economic Cooperation and

Development and the G7 and G20 summits supporting efforts to promote open science. Sheehan acknowledged there is still much to do and reached out to the community for their suggestions and questions.

Overall, the two days at OASPA were immensely informative—the organizers did a fantastic job. The conference brought to light various aspects of OA publishing and key issues facing the OA publishing community. Talking with OA advocates about their efforts toward open science was a quite an educational experience. The conference served as a useful platform to discuss current events, while showcasing new ideas and collaborations. My takeaways were not just from the publishing point of view: this conference helped me identify ways in which Enago²⁰ can disseminate OA knowledge to the academic community worldwide.

Links

1. www.budapestopenaccessinitiative.org/read
2. www.collaborationforimpact.com/collective-impact
3. www.authorea.com
4. www.slideshare.net/dartar/citations-needed-for-the-sum-of-all-human-knowledge-wikidata-as-the-missing-link-between-scholarly-publishing-and-linked-open-data?cardname=player
5. www.occamzrazor.com
6. icis.ucdavis.edu/wp-content/uploads/2016/07/UC-Pay-It-Forward-Final-Report.rev_7.18.16.pdf
7. oa-cooperative.org/about.html
8. www.openlibhums.org
9. www.redalyc.org/home.oa
10. scielo.org/php/index.php?lang=en
11. www.ncbi.nlm.nih.gov/pubmedhealth
12. www.ncbi.nlm.nih.gov/pubmedcommons
13. casrai.org/credit
14. www.force11.org
15. www.openrif.org
16. datadryad.org
17. biorxiv.org
18. www.humanities.uci.edu/commons
19. www.challenge.gov/list
20. www.enago.com

On Using Academic Peers as Editors for Scientific Journals

Mark Johnston

For most of scientific publishing history, editors of scientific journals have been the authors' peers, fellow practicing scientists who volunteer their expertise (and their time) to carry out one of the most important tasks of science: filtering the literature, deciding which reports are worth readers' time. Of course there have been journals, such as *Nature*, founded in 1869, that employed full-time, professional editors, but for most of the 20th century (and before that) science, technology, and mathematics (STM) journals were largely not-for-profit operations that employed practicing scientists as editors, almost all of them working in academia.

As the scientific enterprise expanded after the Second World War, however, more journals with dedicated, full-time editors came onto the scene. And this has only accelerated: the Nature Publishing Group alone has launched 20 such journals since the turn of the century, seven in just the last three years.

Nevertheless, journals that enlist academic peer editors have remained a mainstay of STM publishing and are particularly prevalent in society-sponsored journals. And for good reason: practicing scientists make good editors. The editors of the journal I lead have always been practicing scientists, peers of the authors. As Editor-in-Chief of *GENETICS* for the past eight years, I have witnessed the advantages peer editing offers and seen some of the challenges it presents. I will describe some of those advantages and challenges here.

GENETICS, which last year celebrated its centennial, is published monthly, featuring about 300 articles per year. The journal represents the breadth of its field, serving authors and readers including basic scientists studying genetic mechanisms in well-studied experimental organisms such as fruit flies and yeasts; geneticists seeking to understand genetic variation and its consequences in populations of many organisms, including humans; and geneticists applying their expertise to livestock and plant improvement.

What advantages do peer editors offer? First, and perhaps most important, peer editors are experts in their

fields. Who better to recognize a significant development than someone who is actually involved in advancing the field? Who better to evaluate work in an area than an active practitioner? And because they're leaders in their fields, peer editors are invested in their discipline and seek to maintain high standards for it. Peer editors embrace their role as stewards of their fields.

Peer editors submit their own manuscripts for publication, so they know from their own experience how difficult it is to produce a compelling story that will survive reviewers' scrutiny. This gives them the perspective to adjudicate reviewers' criticisms and offer authors guidance on the changes to the manuscript that are necessary for it to merit publication in the journal. I witness this every day when I read editors' decision letters, which I have found to be clear, thoughtful, and fair. The peer editors of *GENETICS* strive to live by the editors' golden rule: do unto authors as you would have editors do unto you.

But the use of peer editors brings several challenges that must be met for this editorial model to be practicable. First and foremost, because academic editors are (usually uncompensated) volunteers, they have limited time to devote to their editorial duties. Their day jobs are their first priority. Journal leadership must understand that editorial duties are not editors' primary responsibility and must help manage their workloads. While a few editors can juggle several manuscripts simultaneously, I have found most editors prefer to handle only one or two at a time. Thus our journal must have a large stable of editors: our editorial board has a little more than 100 members, each reading and evaluating reviews, possibly consulting with other editors, and drafting decision letters.

Which brings a major challenge: the more editors a journal has, the harder it is to maintain consistency in decisions and a unified vision of the journal's scope. This requires frequent communication, and effectively communicating with a large editorial board is challenging. Many journals, including ours, attempt to meet this challenge by structuring the editorial board hierarchically. We have 10 senior editors (SEs), each of whom leads a section of the journal and collaborates with about 10 associate editors (AEs) to manage the review of manuscripts in a particular section. The SEs communicate with at least one of the AEs (often more) on every manuscript that passes through their section, and the AEs frequently consult the SEs when it comes time to make a decision on the manuscript. For some difficult decisions, multiple AEs

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are involved in the discussion with the SE. I have found these kinds of interactions help move editors toward a unified vision for the journal.

I speak with the SEs on a conference call every month or two to discuss issues of the journal's scope, to work through any problems we have encountered, and to consider new opportunities and potential new initiatives for the journal. This distributed structure of the editorial board fosters communication among editors that makes our decisions on which papers to publish more consistent.

Science being the collaborative enterprise it is, academic editors are often authors' colleagues. And with the specialization science demands, many editors work in a small world where they know many of the authors. Sometimes they consider the authors their friends. Needless to say, this can make it awkward for an editor to pass judgment on some manuscripts. This is perhaps the major downside of peer editing. Editors will usually declare a conflict of interest when they feel their ability to judge a manuscript is compromised by their relationship to the authors, but sometimes there really is no conflict; the editor just feels uncomfortable passing judgment on his or her colleagues. One way we try to mitigate this problem is to have every decision letter signed by two editors (usually the AE and the SE). This unity signals to the authors the decision was made collaboratively, as a result of deliberation among at least two (often more) editors.

While peer editors are well qualified to evaluate work in a field because they are experts actively involved in the development of that field, this brings another potential challenge for peer-edited journals: editors have skin in the

game, which runs the risk they might be less receptive to some new ideas that challenge current paradigms of the field. Editors might set too high a bar for a paper that questions accepted theory because they are immersed in the conventional thinking of the field. An editor may resist authors trying to take the field in a new direction. We try to forestall this potential problem by, again, enlisting several editors (at least two) in each decision. The SE reviews every decision of the AEs and can seek another editor's opinion if necessary. This process functions as a check-and-balance system to help ensure we are not too conservative in what papers we accept for publication.

Finally, there is the challenge of providing editors with enough incentive to take on a time-consuming, often difficult job that is usually uncompensated. Most editors serve because they feel a duty to support their profession. Of course they also benefit from the recognition that comes from being trusted by their colleagues to help set the standards of their field. But I think we as editors, across all fields, need to better highlight what an honor it is to be appointed a peer editor. Most peer-edited journals are sponsored by scientific societies, and it is the leadership of the society—recognized leaders in their field who were elected by the society's membership—who nominate the editors. Being trusted by the practitioners of your field to set the standards of the field is a high privilege, and we need to make sure it is recognized.

Peer editing is not the ideal editorial model for every journal, and it brings some challenges. But those challenges can be overcome, and I think the advantages peer editors offer justify the effort necessary to meet those challenges.

Editor as Educator

Michelle Yeoman

Like that of many *Science Editor* readers, my profession requires that I take on multiple roles. Sometimes I imagine that I am Gandalf at the pass, holding back the Balrogs of improper grammar and usage—"Thou shalt not pass"—banishing dangling modifiers. Other times my role focuses on diplomacy as I mediate between honoring the author's voice and meeting the readers' needs. More often, I find that to be an effective editor, I need to be an effective educator.

I recently edited an article for a non-native English speaker that was targeted for publication in an English-language journal. With some dismay, I realized the author had plagiarized entire paragraphs from published sources. Knowing the author may have been unfamiliar with publication standards, I highlighted the offending sections and requested the author reword the text in his own words. The author responded, "Thank you for your kind assistance. May I ask, how many of my own words do I need?"

I find that authors most often plagiarize when they do not fully comprehend the text they're citing or when they lack the vocabulary to express their ideas. These limitations can be particularly problematic when authors write about science, which requires its own particular language. Authors frequently say they lack the vocabulary to paraphrase a scientific text in their own words because they're still building their scientific lexicon. They may insert portions of copyrighted text into their writing (but without proper attribution), a practice called *patchwriting*.

After much discussion via email, I realized that my author had read the target journal's instructions for authors, which contained guidelines regarding plagiarism. Unfortunately, the instructions on proper citation and attribution that seemed explicit to me were not explicit to my author. To be an effective editor and educator, I needed to become fluent in the author's cultural context.

When reading about plagiarism and international scholars, one often encounters phrasing that implies a long-standing dichotomy between Western and non-Western perceptions of authorship. However, this view is somewhat simplistic. Western definitions of copyright are relatively recent, evolving within the last 200 or 300 years alongside the commercial needs of print publishers.¹ Even within Western culture, expectations of copyright and authorship may differ from academic norms. For example, government institutions such as the Centers for Disease Control and Prevention publish materials that are in the public domain and without copyright; these materials can be reproduced and distributed freely (however, as with many things in

life, certain limitations apply). In this case and others, the published materials are intended to serve a greater good by disseminating vital medical information, and the identity of the individual author is not paramount.

Another example of differing expectations of authorship occur in cento poetry (*cento* means *patchwork* in Latin), a genre in which poems are composed entirely of lines from other poems. Cento poetry is often used by students learning how to write poetry; lifting lines from famous poets can help students gain a feel for the rhythm, form, and structure of poetry, without the onus of creating an original piece.

Patchwork writing isn't limited to the cento genre, as it can be a highly effective strategy to learn the nuances of writing in English for students from cultures with different ideas of effective writing. For example, students in China are often encouraged to learn through rote memorization, and scholars are judged by the quantity of their reading and writing—not necessarily by the originality of their ideas.²

I Chia Chou, a researcher at the Wenzao Ursuline College of Languages, noted that patchwriting was a valuable educational strategy when learning to write in academic English. "Imitating good models allowed me to understand writing conventions in American culture [and] learn the elements of good text structure, how to use transition words, how to condense sentences and how to make paragraphs coherent," she wrote. "I learned not only to use more sophisticated vocabulary but also to more formally and coherently construct academic papers."²

Patchwriting served as an educational scaffold for Chou, enabling her to develop a contextual framework for communicating in English—much as cento poetry allows writing students to learn the rhythm and flow of poetry. In both examples, authors unfamiliar with the contextual terrain use patchwriting to navigate and communicate in a new language or form.

Although patchwriting may have merit in a draft, it certainly has no place in a manuscript's final version. How then to explain a fairly complex topic such as plagiarism to authors from different fields and cultural backgrounds? One strategy is to emphasize that patchwriting is an educational tool that is acceptable for a novice—one that may be acceptable in a draft but never in a final version. Another strategy is to emphasize *note-taking hygiene*. Sometimes authors plagiarize because they did not practice note-taking hygiene when reading source material, such as failing to insert quotation marks around text copied verbatim.

Perhaps the best strategy is to emphasize that patchwriting implies the author does not understand the

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paper being cited; after all, accurate, concise paraphrasing requires deep understanding of the text. It is a cultural universal that no one wishes to look stupid or ignorant.

When confronted with plagiarism, it can be easy to imagine authors are either duplicitous or willfully negligent. However, many authors wish to conform to ethical standards but lack knowledge regarding patchwriting and attribution norms for an English-language publication. Understanding

that attribution norms differ among cultures, fields, and even within subsets of fields can help editors and educators communicate more effectively with authors.

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As a Reviewer, Each Review is Yours, and Sometimes It Should Be Everyone's

Lenny Teytelman

Scientists periodically ask on social media whether they may post their review of a published paper, considering the review process was confidential and anonymous.¹⁻⁴ Is it necessary to ask the paper's authors for permission to post the review? Should the journal give a green light? Frequently, publishers and editors don't even know the answers or have clear policies. However, copyright law is straightforward in this case: the reviewer is the owner of the review. Unless the copyright is explicitly reassigned to the journal, the reviewer owns the content of the review and, therefore, has the right to share it.⁵

In September 2015, the Committee on Publication Ethics (COPE) online forum had a discussion around "Who 'owns' peer reviews?" with much informative commentary.⁶ Certainly, many will hesitate to publish their review because of the understanding it was an anonymous and confidential process. And even when copyright supports the legal publishing of a peer review, is sharing this review a breach of expectations, norms, and responsibilities?

Confidentiality

There are a number of reasons why confidential peer review is standard practice. First of all, scientists do not want to be scooped on their work; if a competing group discovers the submission, they can try to rush their publication. Second, disclosing the existence of the submission to a particular journal could harm its future publication chances if that journal rejects the manuscript.

At the same time, the significance of confidentiality is diminishing as the popularity of preprints grows. Moreover, after a paper is published, the confidentiality of the manuscript itself is a moot point.

Anonymity

The vast majority of research journals practice single-blind peer review. That is, the identity of the reviewers is hidden to readers and to authors, while the names of the authors

are known. The purpose of this type of policy is to protect reviewers from retribution from authors and to ensure the review is honest and complete.

Interestingly, one study suggests this anonymity actually makes no difference for the quality and may in fact make the reviews worse.⁷ Reviews themselves aside, open review has the potential to improve the publishing process and the progress of science.⁸ This is one reason why many scientists, including me, sign their reviews, and a number of journals encourage or even require open non-anonymous reviews (e.g., EMBO Press, *F1000Research*, *The BMJ*, *Nature Communications*, *PeerJ*, *eLife*, and *Plant Cell*).⁹⁻¹⁵

Again, after a paper's publication, anonymity of the submission and review process is no longer as important since the review has been considered and the editorial decision was made. The review can be posted openly on PubMed Commons or anonymously on PubPeer, and many journal websites make it possible to share the review as a comment directly on the article itself, whether the paper was reviewed for that journal or another one.

The Ethics of Publishing a Review

The biggest barrier to disclosing peer reviews after publication may have nothing to do with the legality, confidentiality, and anonymity issues. Is it a show of disrespect to the colleagues who authored the original papers to publish your review? In the journals that practice open review by default, authors and reviewers have a clear understanding. But what are the ethical considerations around sharing your review if the original authors don't expect you to do so?

Here, I repost my previous editorial, slightly revised, on this topic.¹⁶

Want to Be Ethical in Science? Speak Up.

What is the etiquette for disclosing an anonymous review you wrote? Because all of us have the natural sense that an anonymous review is supposed to stay anonymous, this is not a trivial question. Even I, an advocate of non-anonymous open peer review, see the problem of going public with something that was written in private at the request of an editor, with the understanding from the author and the journal that the review is both confidential and anonymous.

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I tracked an excellent and extensive discussion of this on Twitter,¹⁷ I listened, and I have been thinking hard about it for a few hours on an airplane. And the more I think about this, the more I believe it is deeply wrong to keep silent about a paper you reviewed and think is flawed. Yes, we have the responsibility to the author of the paper to be civil. But that author–reviewer contract stands in direct conflict with our responsibility to the scientific community.

Suppose I got the stimulus-triggered acquisition of pluripotency (STAP) paper to review. The STAP technique was a major publication that could not be reproduced by anyone and was retracted.¹⁸ Suppose I saw through it and outlined the fundamental flaws. Then the journal editor decided to publish it anyway. Can I make my review public? By keeping silent, I am honoring a single author and disrespecting a world of researchers. By keeping silent, I am letting students and postdoctoral researchers waste months or years chasing smoke. I have a responsibility to the countless scientists following up on the published work. I have a responsibility to science and society. I think my duties to science, society, and the world of researchers override my oath to the author.

Now we come to the question of the appropriate means of responding. Many whose work is questioned fire back with, “This is unprecedented! Why didn’t you contact me first? Why didn’t you write to the editor? Where is your civility? You didn’t follow the etiquette!”

But if regular publishing is hard, publishing a rebuttal is an agonizing ordeal.¹⁹ In a pair of online polls, I asked how often scientists get rejected on any given paper, compared to rejections for a paper challenging previously published results. The frequency of getting three or more rejections jumps from 14% to 37% (Fig.).^{20,21} By arguing for the via-editor/journal way, we are placing an extraordinary burden on the scientist raising the question.

Yes, we should be civil and focus on the science rather than personal motivations. We can’t accuse authors of misconduct unless we have clear proof of it. We don’t need to be aggressive or rude. But we have to be honest and

we have to encourage open and critical post-publication discussion. In discussions of this, I often see very different opinions on the “good” and “bad” ways to have post-publication discussion: Alerting the editor and trying to publish the rebuttal in the original journal is okay in some cases, but elsewhere it’s not. Publishing elsewhere is okay if it’s a journal, but not okay if it isn’t peer reviewed. Publishing a critique on a blog is okay, but disclosing your review on PubPeer is out of line.

These lines seem entirely arbitrary to me. As an example, my paper was ripped to shreds by another scientist-colleague in a publication. No one had reached out to me. I found the critique accidentally through my PubChase recommendations.²² I responded on PubMed Commons and on PubPeer.^{23,24} At least my response went to the corresponding author via PubPeer.

There is no rhyme or reason to personal opinions of what is and isn’t ethical for post-publication disputes. Post-publication commenting is certainly not traditional, but 30 years ago, there existed no web, no blogs, PubPeer, Twitter, and so forth. New traditions have been enabled today by technology. By asking people not to criticize, however, we undermine science. We hurt scientists. We hurt ourselves.

We must realize the criticisms are not about us—they are about the science. We have to learn to criticize each other’s work in a firm but civil manner. That can be done any way you like, whether through Twitter, the original journal, PubPeer, your blog, PubMed Commons, or other ways. While some are going to be mean and uncivil no matter where, I hope most can be respectful and focus on the science. Regardless, I think science is best served by scientists embracing post-publication critique.

Update: While reviewing this article prior to publication, Jonathan Schultz, Deputy Editor of *Science Editor*, asked the following astute question:

*“What is the benefit of acknowledging that the criticism posted on a published article originated as a *confidential*”*

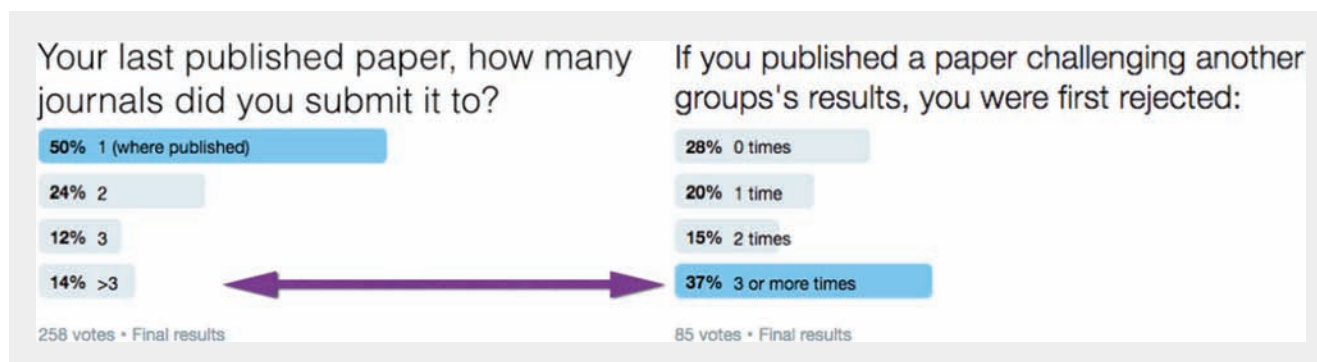


Figure. Results from an informal Twitter poll by the author, @lteytelman.

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review? And why not simply reword the criticism to be a true post-publication review of the published article (which is fine)?

I can only think of two reasons to announce that you were a reviewer and to repost the original review as is. One, as some type of admonishment of the journal for publishing the article (in spite of a recommendation by that same reviewer that the manuscript not be published). Two, to draw attention to a dubious change made by the authors after the manuscript was reviewed. Even in these cases, I think it's best to at first go through a journal's official process and for a reviewer to only post these unedited reviews in the cases where the journal has failed to act.

LT: I agree. What is important is sharing your review to help other scientists; how and where you do it is not nearly as critical.

Links and References

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Ethical Editor: Wait for a Federal Misconduct Finding before Correction?

Debra M Parrish

At a recent meeting for university and college attorneys, Kathy Partin, PhD, the current director of the U.S. Office of Research Integrity (ORI; ori.hhs.gov), indicated universities and journals should correct the scientific literature before ORI completes its review, regardless of whether the ORI makes a finding of research misconduct. Partin conceded that ORI sometimes declines to pursue cases in which an institution found research misconduct simply because ORI lacks the resources to prove a case.

Partin's comments were at odds with ORI's long-standing policy that journals "do not have a need to know about allegations of research misconduct." Historically, ORI has told institutions that ORI will not deem it a breach of the confidentiality required under federal regulations if an institution notifies a journal it has made a finding of research misconduct under the institution's research-misconduct policy. However, ORI has not indicated that institutions are entitled to provide such notice and maintains its position that ORI's review of the institution's findings are confidential.

Attorneys representing respondents often allege an institution's notice to a journal is a breach of the confidentiality required under federal regulations, they are confident the institution's flawed investigation will not support a federal finding of research misconduct, and any corrective action taken by the journal based on the flawed institutional investigation will be a regulatory breach that exposes the journal to significant legal liability. Based on these threats, some journals have deferred taking corrective action until after ORI completes its review. Such deferral, however, is inconsistent with the Committee on Publication Ethics (COPE; publicationethics.org) guidelines and ignores the distinction between a federal research-misconduct finding and a journal's right and obligation to maintain the integrity of its publication after it has published a paper it has reason to believe is flawed.

First, as noted above, many institutional findings do not result in a federal finding—often for reasons that have nothing

to do with the merits of the investigation and finding. Last year, ORI made the smallest number of research-misconduct findings in more than a decade. The popular press has reported ORI is in disarray, with the resignation of senior investigators and the director of one of the two divisions; the lack of a leader for greater than two years after the very public, excoriating resignation of the former director; the redirection of ORI to focus on plagiarism cases that can be opened and closed in short order; and the perceived modest sanctions imposed for cases involving significant research fraud.

Second, COPE guidelines indicate journals should take action after an institutional investigation, not after a governmental body decides whether certain conduct meets the federal definition of research misconduct. Many countries have only a nascent infrastructure for national oversight of such cases. Thus, deferring action until a national body has reviewed an institutional investigation is inconsistent with timely correction in most cases.

Finally, a significant distinction exists between ensuring the integrity of a journal's publication and a finding of research misconduct. Research misconduct typically includes an evaluation of a scientist's intent. However, whether an error is intentional or accidental is a secondary concern for a journal—the more significant issue is whether an article is factually correct. Thus, whether a federal authority finds research misconduct or that process is complete is not as relevant as whether an article is accurate.

ORI's current position—that journals should correct the literature before ORI completes its review—is not facilitated by ORI, which will neither confirm nor deny its review of a case. Although counsel for respondents (i.e., individuals accused of research misconduct) disclose ORI's ongoing review in an effort to forestall journal action, ORI typically neither confirms its review nor provides a timeline for its completion.

If ORI wants journals to take corrective action, it should tell institutions they can report their findings to journals, including sharing their institutional reports. Such clear instruction would provide journals with the information necessary to take action pending what is often lengthy agency review. ORI can facilitate a better partnership with journals, thereby enabling early correction of the literature, by acknowledging journals' need to know about research-misconduct allegations and investigations before agency review is complete.

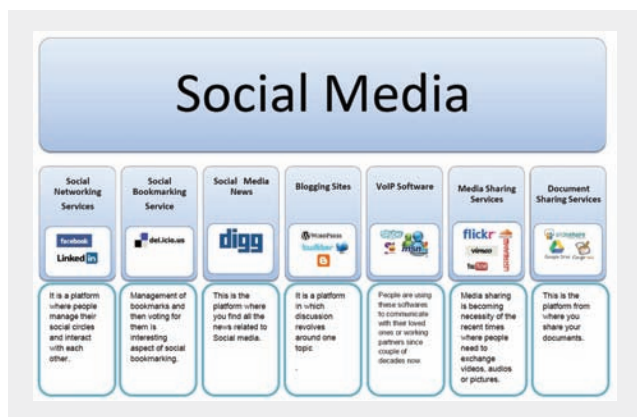
DEBRA M PARRISH is an attorney specializing in issues of research integrity. Parrish Law Offices are located in Pittsburgh, PA, and Washington, DC.

Gatherings of an Infovore*

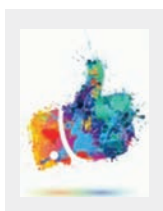
Barbara Meyers Ford

Science and Social Media

Scientists around the world have harnessed the power of all types of social media. This collection of articles and examples barely touches the surface of the very top of the tip of the iceberg.



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Social Media for Scientists/Scholars

Cold Spring Harbor Laboratory Library

LibGuides

Cold Spring Harbor Laboratory (CSHL) Library LibGuides provides an overview of social media, highlighting those intended specifically for scientists and scholars. It also describes CSHL's current social media presence. (cshl.libguides.com/c.php?g=474049&p=3243761)



Amazing Science Blogs

www.facebook.com/Amazing-Science-Blogs-1728161814169804/?hc_ref=PAGES_TIMELINE

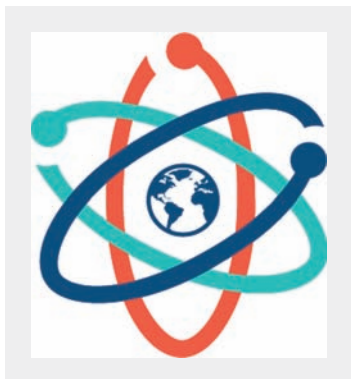


Tweet Your Science

@tweetyoursci

Teaching scientists to use Twitter so they can share their research with the world! Use our hashtag and #TweetYourScience!

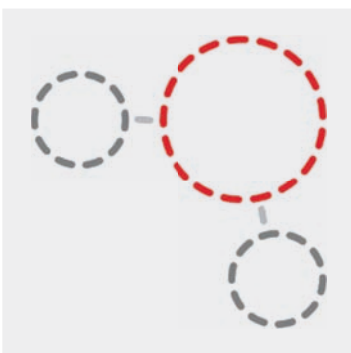
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March for Science

@ScienceMarchDC

#ScienceMarch supports scientists from all over the world!
twitter.com/bostonglobe/st...



Life Science Network

@lifesciencenet FOLLOWS YOU

A web platform dedicated to life sciences. Sign up at lifescience.net. Tweets by @apiljic.



What is SpotOn?

SpotOn is a series of community events for the discussion of how science is carried out and communicated online. Our flagship conference is the annual SpotOn London two day event, formerly called Science Online London, and now in its fifth year. We also host monthly SpotOn NYC events in NYC. SpotOn discussions fall into three broad topic areas—policy, outreach and tools—and this site collates the conversations and other archive material around all of the events.

If you have any questions or would like to contribute to the SpotOn site, please email us: SpotOn@nature.com.



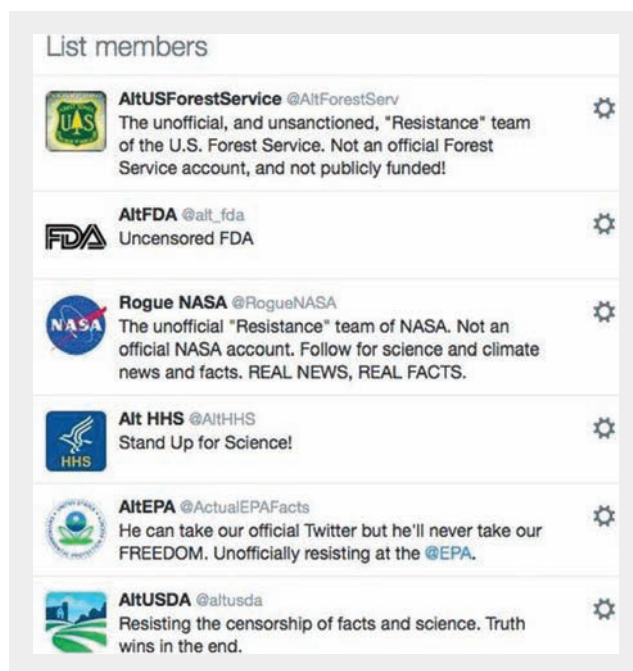
SenseAboutScienceUSA

@SenseScienceUSA

Advocating for evidence and transparency in science and society. Collaborates with @senseaboutsci. Runs @statsorg, @AllTrialsUSA (bit.ly/2axyveF).

"Rogue" Twitter

The latest use of social media by scientists has been the "rogue" Twitter accounts for various government agencies in response to the White House demand that they no longer share information with the public. Some of those are listed here.

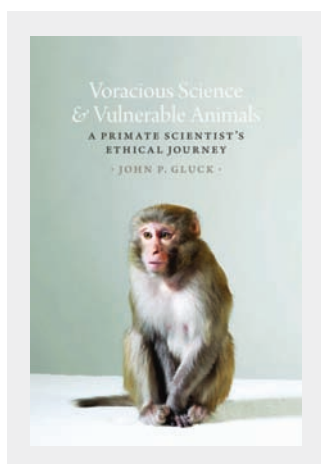


**A person who indulges in and desires information gathering and interpretation. The term was introduced in 2006 by neuroscientists Irving Biederman and Edward Vessel.*

Book Review: *Voracious Science and Vulnerable Animals: A Primate Scientist's Ethical Journey*

Leah Poffenberger

John P. Gluck. Chicago: University of Chicago Press; 2016. 360 pages. ISBN: 9780226375656.



There is no research more valuable than our own integrity and ethical coherence, and our treatment of animals is a direct reflection of our values towards life and one another," wrote John Gluck, PhD, in an essay in the *New York Times*. His essay, "Second Thoughts of an Animal Researcher," summarized his ethical journey from an enthusiastic animal researcher to passionate bioethicist.

A month after his essay appeared, on October 26, 2016, Gluck's book *Voracious Science and Vulnerable Animals: A Primate Scientist's Ethical Journey* was published. An expansion of his essay's content, this book is a courageous project that seems aimed at righting the wrongs of indiscriminate animal research he conducted in his early career. Gluck takes his reader to his childhood in New York, where his first love of animals was formed, and to his college

years, where compassion for animals was considered a hindrance to science. Ultimately, as a senior professor, Gluck comes to value animal research subjects as more than mere tools and becomes a champion for their welfare.

Each chapter of *Voracious Science and Vulnerable Animals* is named for a stage of Gluck's attitude toward research animals and their welfare. Like signposts, these chapter titles guide the reader through Gluck's journey, from "Erosion"—where his ingrained feelings about animals are challenged—to "Awareness," and finally, "Reformation." Through each step, Gluck maintains an admirable honesty about his internal struggles and, at times, his own shortcomings.

Gluck began his career in animal research as a psychology student at Texas Tech University in 1964, two years before the passage of the Animal Welfare Act, which attempted to regulate the treatment of animals in research. Psychology research in animals was a new frontier that promised to teach psychologists about the human brain. Gluck worked with mice—the first study he worked on required removing part of a mouse's brain and observing its behavior afterward. With no prior training, Gluck was required only to watch a procedure before he got to try his hand at brain surgery. His first few subjects didn't survive.

One summer, Gluck had an internship at the University of Wisconsin, where he became passionate about primate research. Gluck describes the atmosphere of the lab group as a "family," an environment that was welcoming and encouraging of creative research techniques—creative often equating with extreme. Returning as a grad student to Texas Tech, where there was no primate research center, didn't excite Gluck, and he later transferred to the University of Wisconsin for graduate school.

At the University of Wisconsin, Gluck worked under Harry Harlow, who is known for social isolation experiments with primates. Gluck writes of the distressing scene of pulling an infant monkey away from its mother to place it in isolation, subjecting it to a life of painful solitude. Often, however, the language used when speaking of these monkeys attempted to remove any human emotion—a practice Gluck attempted to adhere to rigidly. Reports were sterilized, and justifications

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were made: the research will benefit humanity and therefore it's acceptable.

After earning his PhD at the University of Wisconsin, Gluck accepted a position at the University of New Mexico to start his own primate research lab. He saw it as following in the footsteps of mentors such as Harlow, but he began to lose his enthusiasm for animal research. Bret Snyder, an outspoken veterinarian, was instrumental in changing Gluck's outlook.

After completing a fellowship in clinical psychology, Gluck developed an interest in working with humans in a clinical setting, and his distaste for animal research grew. He began questioning his graduate students extensively as they developed experiments, challenging them to assess both the necessity of their research and the harm involved. He was criticized by his colleagues for this "therapy"—his questions perceived as scientific coddling.

Gluck began to struggle in secret with his ethical dilemma—he finally saw the primates in his research center as more than just research tools. Although reluctant to let down his mentors and give up his status as a primate researcher, Gluck could no longer justify keeping his lab open. He found a study for half his primates and a home at a National Institutes of Health facility for the others and dedicated himself to bioethics. After a year-long fellowship at Georgetown University, where Gluck was surrounded by bioethicists, he returned to the University of New Mexico to start the Research Ethics Service Project, dedicating himself to furthering the welfare of animals in research.

In some ways, Gluck's journey deep into primate research serves as a cautionary tale about allowing the

pressure of mentors, peers, and our environments to cloud our own judgment. In writing about his time as an animal researcher, Gluck shares the moments he felt something was wrong with his area of research but chose not to speak out. For Gluck, whenever he began to have misgivings, a desire for success and approval assured him he was on the right path.

Gluck's honesty about his own shortfalls as an animal researcher—like the time he forgot to feed a young monkey for several weeks—adds a level of credibility to his writing. Rather than point fingers at his mentors or his peers as unethical scientists, he frankly discusses his own role in a research environment that regarded animals as products instead of thinking, feeling creatures.

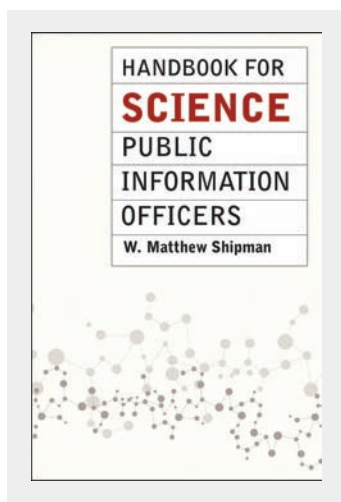
The narrative of Gluck's journey through the ethical pitfalls of primate research is poignant and refined. He tells a well-crafted, detailed story, bringing his readers into his emotional conflict. When he mentions particularly disturbing lapses in animal welfare standards, he doesn't dwell on the emotional aspects: he permits his readers to simply observe and allow their own ethics to guide their feelings.

However, in the final chapters of the book, the narrative seems to unravel as Gluck pours his efforts into debunking ethical arguments favoring unrestricted animal research. He makes well-crafted arguments, but the number of opinions he attempts to address might overwhelm his reader.

In *Voracious Science and Vulnerable Animals*, Gluck increasingly encourages his readers to consider the ethics involved with our relationships with animals. His journey—and willingness to admit his own mistakes—creates a meaningful dialogue for researchers and other citizens alike.

Book Reviews: *Handbook for Science Public Information Officers and Science Blogging: The Essential Guide*

Barbara Gastel



Handbook for Science Public Information Officers. W. Matthew Shipman. Chicago: University of Chicago Press; 2015. 144 pages. ISBN-13: 978-0-226-17946-9.

Scientific writings such as journal articles increasingly reside within dynamic science-communication networks containing news releases, blog posts, and more. Thus, greater understanding of such media and greater adeptness with them may serve many science editors and publishers well. Two recently published compact volumes—*Handbook for Science Public Information Officers* and *Science Blogging: The Essential Guide*—provide insight and instruction regarding such media. Both books also can be enjoyable reading for those broadly interested in the craft of science communication.

Handbook for Science Public Information Officers is intended mainly to guide science-communication professionals at universities, government laboratories, and other research institutions in informing lay audiences. Written by W. Matthew Shipman, a public information officer at North Carolina State University, this readable book provides practical advice on various aspects of this role. Among the topics discussed are deciding which research to publicize, encouraging and advising scientists in publicizing their work, writing news releases and blog posts, attracting media attention, illustrating stories with photos or videos, using social media in popular science communication, employing metrics to gauge whether communication goals are being met, and communicating in crisis situations. In addition to offering guidance, the book conveys a sense of norms in the science public information field.

Content in this book may aid different members of the science-editing and science-publishing communities in different ways. Members providing publicity for journals may find direct application for much of the advice. The book also might assist them in coordinating their work with that of public information officers at authors' institutions. Author's editors whose activity extends into publication advising may find the book helpful in guiding authors on interacting with public information officers, talking with reporters, and blogging about their work. Science editors whose activities include teaching the communication of science may well find some of the content useful to share. Editors seeking illustrations to accompany text may appreciate the appendix listing government and other websites containing



Science Blogging: The Essential Guide. Edited by Christie Wilcox, Bethany Brookshire, and Jason G. Goldman. New Haven: Yale University Press; 2016. 270 pages. ISBN-13: 978-0-300-19755-6.

BARBARA GASTEL teaches science communication and related subjects at Texas A&M University and is the main contributor to the AuthorAID blog (www.authoraid.info/en/news).

science-related images for potential use. Also, for those thinking of working in science public information, the book provides a sizeable glimpse of common activities and shows one public information officer's mindset.

Many mindsets, personalities, and styles enliven *Science Blogging: The Essential Guide*, consisting of 26 chapters by science bloggers. Produced with support from the Alfred P. Sloan Foundation and the National Association of Science Writers, the book includes among its authors such prominent science writers as Carl Zimmer and Ed Yong. Chapter topics range from establishing a blog and developing an audience to ethical considerations, uses of storytelling and science art in blogs, blogging at different career stages, and blogging about controversial topics.

For readers in science editing and publishing, the most useful chapter may be that on institutional blogging, by Karl Bates, director of research communications at Duke University. Among his points: Blogging is a flexible, affordable way to share information with the public; "most blogs thrive on being both frequent and brief"; and although blog posts may be informal in style, having them edited is advisable. Other chapters that may be of particular interest

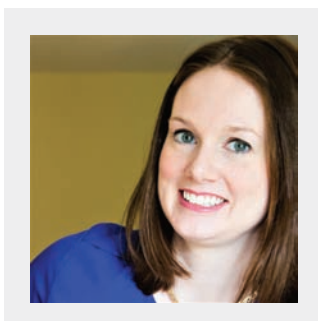
include one on blogging at scientific conferences and one, by public information officer Shipman, on metrics for blogs. Among the blogs by chapter authors, the blog Better Posters (betterposters.blogspot.com), by Zen Faulkes, may especially interest science editors and their constituencies.

Inevitably, a book such as *Science Blogging* is somewhat out of date by the time it appears. However, much of the core guidance seems likely to remain valid, and the skills that make the authors successful bloggers help make the chapters good reading. Also, the book's companion website (www.theopennotebook.com/science-blogging-essential-guide), which has links to many resources, may serve as a ready venue for updates. Science editors who oversee blogs at their publications or institutions, who edit blog posts, or who themselves blog may find the book and website interesting and useful.

Combined, these two books occupy about 3 cm of one's bookshelf or a modest amount of memory in one's e-reader. But they can expand the perspectives and skills of many in science editing and related realms. Such broadening may serve us well as the network of media for communicating scientific research continues to evolve.

New Member Profile: Resa Roth

Tracey A DePellegrin and Resa Roth



Resa Roth is a new CSE member and our newest member of the *Science Editor* editorial board. She is a freelance editor and writer with experience in the biotech, medical, and pharmaceutical industries.

TAD: Welcome to CSE and to *Science Editor*! First I want to discuss your background, which includes a certificate in technical writing and editing from the University of Washington as well as a bachelor of science in zoology from Washington State University. Can you tell me a bit more about your path to science writing and editing?

RR: For a substantial portion of my life, I had envisioned that I would grow up and become a veterinarian. I entered into my undergraduate studies with loads of hands-on experience as a veterinary assistant and planned to complete a degree in zoology as a prerequisite for vet school. I applied for the WSU vet school early-admission program during my second year of college, and I was not accepted. This was discouraging, particularly because the interviewing committee wanted to see higher grades in science than I had received thus far. Science was actually always my weakest subject; I excelled at English, math, and foreign language (Spanish), but at the time, I could not see a career for myself in those fields. As I made my way through college and also worked in the vet school anesthesia department, I decided that perhaps I did not want to be a vet after all. Dealing with potentially terminal outcomes on a regular basis, including sharing news of cancer to pet owners, seemed like it might be too challenging for me. I'm a perfectionist to a certain extent, and I'm sure I would constantly wonder if I had made the correct decisions to affect the best patient outcomes.

I truly admire both human and animal doctors for their ability to navigate these difficult situations.

I learned about the field of technical writing and editing after I completed my undergraduate degree. It sounded like a great direction for my career—which at the time did not have much direction—because I could combine my passion for science with my writing skills that came more naturally. The concept of communicating information effectively to a target audience is such a worthwhile endeavor, in my opinion.

TAD: Were there elements from your veterinary work that you brought forward to your current career?

RR: Yes, definitely. My experience in the medical field (veterinary medicine has so much overlap with human medicine) has been invaluable. I've learned so much medical terminology and information about disease processes and treatments; I would say my veterinary experience has helped me tremendously with medical editing.

TAD: Right now you're working as a freelance editor for the Yeast Resource Center at the University of Washington. What's that like?

RR: I primarily edit proteomics abstracts for their online database. It has actually been a fantastic opportunity because I can work from home, and at the same time, I am able to care for my young family full time. I especially appreciate having the opportunity to copyedit some very interesting and potentially groundbreaking abstracts. Many of these abstracts describe projects that are aimed at treating diseases or shedding light on serious health issues. The projects are funded annually by the National Institutes of Health, and it is my responsibility to clean up the project abstracts and titles and provide periodic updates to ensure their accuracy, which in turn helps solidify their continued funding. The Yeast Resource Center is a great example of a collaborative site where researchers from all over the world work in partnership to build an even greater whole—in this case, an understanding of the protein complexes in the yeast *Saccharomyces cerevisiae*.

TAD: Did you need to know genetics or proteomics beforehand? I'm always interested in how versatile we as editors and writers have to be to learn new topics.

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- RR:** I took both a general genetics course and an introductory biochemistry course in college to fulfill my degree requirements, but that is the extent of my knowledge. I understand the very basics, which luckily has proven to be enough to do my job. To ensure that I am making the proper edits, I frequently rely on web searches to learn more about any topic that is a bit unclear to me.
- TAD:** I see that you received your BELS certification last year. A few folks have said that they'd like to take the plunge, but the preparations and exam seem daunting. Do you have any advice?
- RR:** I would say to go for it! It is important to have a basic understanding of science, but they don't expect you to be an expert in every field (physics, chemistry, etc.). The BELS website describes various books and resources that are good to review in order to prepare. I found it useful to purchase the *AMA Manual of Style* and basically read it from cover to cover. *Scientific Style and Format* was an extremely helpful resource as well; I picked certain sections to focus on as opposed to reviewing the entire manual. I probably spent an hour a day for a month or two preparing for the exam. (Someone who is already very familiar with these resources may not need to spend as much time as I did preparing.) I felt that the exam was challenging, yet doable, and it is nice to know that when you have earned the credentials, it means you have reached a certain level of competency. It was also helpful to take the practice exam (available online); nonetheless, because the official exam has more questions, there is a broader variety of material covered. For me, the most difficult part of taking the examination was ensuring that I moved through it at a pace that allowed me to answer all of the questions. It's a good idea to remind yourself of the average amount of time you have to complete each question.
- TAD:** Following up, what has been (or what do you think will be) the most valuable part of your certification?
- RR:** Interestingly enough, I initially learned about the certification while browsing a list of job openings for Fred Hutchinson Cancer Research Center. When I came across a job I was interested in, the list of qualifications stated that they preferred someone who had obtained the BELS certification. So, certainly it is desired by some employers. Now that I'm certified, I think it's something that I can bring to potential employers to help demonstrate my proficiency in editing. And on a personal level, becoming certified has improved my sense of confidence as an editor.
- TAD:** You mentioned taking a CSE short course this year and you're planning to attend our annual meeting. You've also jumped right into volunteering for the *Science Editor* Board. What would you like to get out of your experience with CSE?
- RR:** I hope to gain a network of peers to learn from and share information with, as well as gain an even greater understanding of the field of scientific editing—it is so diverse, with an abundance of opportunities. By attending meetings (as you mentioned), watching webinars, and reading/contributing to *Science Editor*, I hope to continue learning and keeping up to date with emerging developments in our dynamic editorial climate.
- TAD:** You co-authored a book, *Exploratory Search: Beyond the Query-Response Paradigm* (White and Roth, 2009), that won an Excellence Award from the Puget Sound Chapter of the Society for Technical Communication. It's a nice scholarly dive into a process most people don't take the time to think about. Are there portions you think CSE members and those in our field could benefit from? Do you have any tips for how to become better users of search engines?
- RR:** Graduate students of computer or information science will benefit the most from the book; it primarily serves to define exploratory search as an emerging field. The target audience is those who design search engines, not the searchers themselves. The book helps engineers support ill-defined information needs or exploratory tasks on the web. In the future, we should expect even more intuitive computers, including computers that don't resemble PCs at all—this probably sounds familiar (smartphones, etc.)!
- TAD:** Can you tell our readers something that might surprise us about you?
- RR:** I worked at a dairy farm for a while during college. It was quite smelly, but there was something invigorating about being outside in the weather during all of the seasons' extremes. I think manual-labor jobs can be very satisfying, but obviously as one's body ages, the work becomes more difficult. Even though I enjoy working outdoors, I think having a desk job is ideal—mental stimulus is something I cannot live without. These days, I volunteer at a local horse rescue organization to get my fix of animals, outdoors, and weather extremes.
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CONTINUED

TAD: What are some of your favorite pastimes?

RR: I would be an avid surfer if the ocean wasn't several hours away! I do enjoy surfing when I have the opportunity (during vacations usually). Also, I've always loved running, and after having kids, I signed myself up for some half-marathons. From there, I became interested in triathlons; I try to complete a few sprint-distance triathlons each year. I also enjoy hiking, camping, and cross-stitch.

TAD: What do you like about being a science editor?

RR: I've always loved language, and I truly found my passion when I discovered that as an editor, you can enhance the readability of documents—and consequently, information can be better understood by more people. At the same time, I love science because it is often related to the discovery of something new, and it is key to understanding the world around us. Being a science editor is the best of both worlds!

CSE Email List Discussion: Multiple First and Last Authors for Journal Papers

This column is the first in a regular series covering the Council of Science Editors' email distribution list, in which members ask and answer one another's questions. It's a key member benefit (www.councilscienceeditors.org/membership/benefits/) and emphasizes the value of our expertise and experience—and provides a platform for members to help fellow members. Thanks to Tony Alves for tackling this issue's question on how to handle requests for multiple first and last authors.

Original Question:

We have published papers with 2 individuals identified as "first author" and/or 2 individuals identified as "senior author" or "last author." The relevant footnotes usually state "these authors contributed equally to this work." We recently received a paper in which 4 first and 4 last authors have been identified. This seems excessive. I am interested to learn how other journals have handled this situation. Are there any policies on how many first and last authors can be identified?

D'Ann Finley, PhD, Assistant Editor, American Journal of Clinical Nutrition

Responses:

Try CRediT?

1. The notion of using author order as a way to indirectly signal the level of contribution seems problematic. Explicit author recognition using the CRediT taxonomy (docs.casrai.org/CRediT) seems like the way to go.

Richard Wynne, VP Sales and Marketing, Aries Systems

What Does Sequence Really Mean?

2. Some of these strange listings may result from the perverse ideas of promotion and tenure committees, who not sometimes try to specify a particular level of authorship, as contrasted with "just authorship."

Ingrid Philibert, PhD, MBA, Senior Vice President, Field Activities and Executive Managing Editor, Journal of Graduate Medical Education, Accreditation Council for Graduate Medical Education

3. That number does strike me as excessive. I've seen plenty of examples of the type of footnote you describe,

indicating some sort of equal contribution or co-senior authorship, but "first" and "last" really should refer to the sequence alone, and trying to have eight different authors occupy the lead position in a collaborative effort makes the idea of "first" or "lead" essentially meaningless. It may just be that different funding agencies for these authors each require that the author have some senior position on the work being funded, and that they're all trying to artificially milk the most out of a single paper. I'm not aware of current journal policies that impose a specific limit on this, but it's worth considering.

On a related note, I have seen examples of multiple authors wanting to be the corresponding authors on a single paper, for a similar reason ("I can only get the grant if I'm listed as a corresponding author..."), and have seen journal policies specifying that there can be only one corresponding author.

Dan Moran, MA, Publishing Services Group Leader, Sheridan

4. I agree with Richard and Ingrid. This one seems a bit excessive. I can't really think of any journals [that] have proscribed limits on the number of first or last authors but I know that many journals ask authors to declare their level of contribution. Here's an example aacrnjournals.org/content/authors/editorial-policies (scroll to bottom of page) and the taxonomy to which Richard is referring (docs.casrai.org/CRediT) does this as well.

Kelly A Hadsell, Managing Editor, KWF Editorial

5. On request from the submitting author, our journals allow an "equal contribution" designation for two (and only two) authors of a manuscript. Their position in the author list isn't relevant. We do not allow multiple corresponding authors, however.

John Humpal (no affiliation given)

6. The Journal of Pediatrics has a similar policy as John's journal—1 corresponding author and an option of including the footnote of "contributed equally" for a maximum of 2 authors, regardless of where they are located in the author list.

Monica Helton, Managing Editor, Journal of Pediatrics

CONTINUED

How about the ICMJE Guidelines?

7. Can we just ask authors to give authorship criteria using Uniform Requirements for Manuscripts Submitted to Biomedical Journals (www.icmje.org/icmje-recommendations.pdf) to give uniformity to assigning authorship criteria?

Authorship credit should be based on:

- 1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data
- 2) drafting the article or revising it critically for important intellectual content
- 3) final approval of the version to be published

Authors should meet at least one criterion from conditions 1, 2, and 3. We usually insist authors use the above model even if they have used their own terms to give authorship.

Dr. A Singh, Director (Scientific Affairs), Etorium Journals

8. The Uniform Requirements from ICMJE actually require that ALL of the conditions listed above are met, as well as a new one, added by ICMJE in 2013:
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Beth Anderson, Managing Editor, Annals of Family Medicine, American Academy of Family Physicians

9. The Journal of Neuroimmune Pharmacology uses the following:

The International Committee of Medical Journal Editors has recommended the following criteria for authorship

- Authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3.
- When a large, multi-center group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript (Flanagin et al., 2002). These individuals should fully meet the criteria for authorship defined above and editors will ask these individuals to complete journal-specific author and conflict of interest disclosure forms. When submitting a group author

manuscript, the corresponding author should clearly indicate the preferred citation and should clearly identify all individual authors as well as the group name. Journals will generally list other members of the group in the acknowledgements. The National Library of Medicine indexes the group name and the names of individuals the group has identified as being directly responsible for the manuscript.

- Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.
- All persons designated as authors should qualify for authorship, and all those who qualify should be listed.
- Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

The Journal of Neuroimmune Pharmacology requires one or more authors, referred to as "guarantors," be identified as the persons who take responsibility for the integrity of the work as a whole, from inception to published article, and publish that information.

Increasingly, authorship of multi-center trials is attributed to a group. All members of the group who are named as authors should fully meet the above criteria for authorship. The order of authorship on the byline should be a joint decision of the co-authors. Authors should be prepared to explain the order in which authors are listed.

Robin Taylor, Managing Editor, Journal of Neuroimmune Pharmacology

10. I just looked up the update of 2015 in ICMJE recommendations. As mentioned by Kelly, the aacrjournals.org is using the criteria given in 2007; same as we are. We now want to start using the 2013 ICMJE criteria. Is the interpretation given below correct to use in the journals and display on the journal website?

ICMJE recommendations—2007

Authorship credit should be based on:

- 1) substantial contributions to conception and design, OR acquisition of data, OR analysis and interpretation of data;
- 2) drafting the article or revising it critically for important intellectual content
- 3) final approval of the version to be published.

Authors should meet conditions 1, 2, and 3.

As used in the Journals: Authors should meet at least one criterion from groups 1, 2, and 3.

CONTINUED

Group 1

- a) substantial contributions to conception and design
- b) acquisition of data
- c) analysis and interpretation of data

Group 2

- a) drafting the article
- b) revising it critically for important intellectual content

Group 3

- a) final approval of the version to be published.

ICMJE recommendations—2013/2015 update (In 2013 many “and” were replaced by “or”)

- 1) Substantial contributions to the conception OR design of the work; OR the acquisition, analysis, OR interpretation of data for the work;
- 2) Drafting the work OR revising it critically for important intellectual content;
- 3) Final approval of the version to be published; AND
- 4) Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

For use in the Journals: Authors should meet at least one criterion from groups 1, 2, 3, and 4.

Group 1, Substantial contributions to:

- a) conception of the work
- b) design of the work
- c) acquisition of data for the work
- d) analysis of data for the work
- e) interpretation of data for the work

Group 2

- a) drafting the work
- b) revising it critically for important intellectual content

Group 3

- a) final approval of the version to be published.

Group 4

- a) agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Dr. A Singh, Director (Scientific Affairs), Edorium Journals

An Interesting Algorithm to Try?

11. This doesn't help the OP, but as far as resolving these situations at the *laboratory* level, I am a fan of this algorithm for deciding authorship and order of authors—kosslynlab.fas.harvard.edu/files/kosslynlab/files/authorship_criteria_nov02.pdf.

June Oshiro, PhD, Editor, Section of Scientific Publications

12. That is a very impressive document/algorithm! It would be interesting to know if this algorithm allows for multiple first authors (e.g., anyone who accrues over 600 points is a first author) or if it is strictly “the highest number of points gets the first authorship position” even if two people only have a 1 or 2 point difference!

Rhea-Beth Markowitz, PhD, Director, Office of Grant Development, Georgia Cancer Center, Augusta University



The Year in Highlights



Resources

- *Science Editor*: A new journal platform created with an intuitive interface and searchable content; in 2016 CSE's valued quarterly adopted a continuous publication model to best serve its readers. The redesigned print journal dropped into mailboxes with new page layouts while retaining CSE's signature, eye-catching covers.
- *Scientific Style and Format*, 8th edition: CSE's go-to reference for authors, editors, publishers, and translators
- CSE's trusted Resource Library:
 - CSE's White Paper on Publication Ethics
 - Sample Correspondence for an Editorial Office—a toolkit for editors to access and use
 - Checklist for Instructions to Authors
 - Retraction Resources

Education

- Webinars: Live or downloaded from the archive, CSE's webinar program delivered education, information, and certificate credit right to members' desktops. The 2016 program:
 - "Recognition for Peer Reviewers"
 - "It's 2016, Do You Know Where Your Metadata Is?"
 - "Building a Pipeline of Future Authors, Reviewers, and Editors"
 - "I Demand a Recount: Investigating and Correcting Indexing Errors"
- 4 CSE Short Courses and 34 sessions and panels at CSE's 2016 Annual Meeting
- With three 2015 and 2016 graduates, there are now over 50 candidates completing requirements for their CSE Publication Certificate.
- New in 2016: The CSE Short Course in Publication Ethics went on the road!



Networking

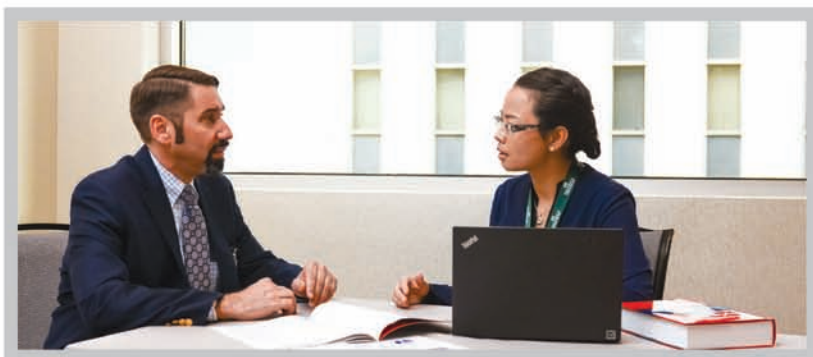
- CSE email discussion list: Your link to share with and learn from an entire network of your science editing colleagues
- CSE Book Club: Science editors make the pick and meet up on goodreads.com
- CSE President's Letter: CSE news and events reported monthly by CSE's president



- CSE's Annual Meeting:
 - Denver hosted 457 attendees and 20 exhibitors, providing nonstop networking and education—and breaking an attendance record
 - Thirty-two sessions, four short courses, three forum panelists at the Future of Scholarly Publishing forum, and one bestselling author, Deborah Blum (*The Poisoner's Handbook*)
 - Three early-career professionals were awarded a CSE scholarship, sponsoring their attendance at the CSE Annual Meeting
 - Affordable headshots for editors at any stage of their career
 - Editors-in-chief connect at their annual roundtable breakfast

Career Development

- Networking, short courses, sessions for early-career professionals, the keynote, and an opportunity for an updated professional headshot, all in one can't-miss event—the CSE Annual Meeting
- The Committee on Professional Development: developing year-round opportunities for CSE members to build their network and their careers
- CSE Short Courses: Highly regarded education that builds science editors' résumés and fulfills requirements for completing CSE's Publication Certificate
- CSE's Short Course in Publication Ethics on the road—first stop: Washington, DC in fall 2016



Collaboration

- In an agreement with ABEC (Associação Brasileira de Editores Científicos), CSE enrolls Brazilian editors in CSE's Certificate Program and brings CSE's Short Courses to ABEC's workshops in Brazil.
- CSE resources are promoted at ISMTE North America, ISMTE Asia Pacific, ABEC, and SSP in 2016.
- CSE signs its first translation agreement with ASEP (Russian Association of Science Editors and Publishers) for CSE's widely respected White Paper on Publication Ethics.
- CSE shares information and meeting space with AJPP (African Journals Partnership Program) for AJPP's two-day annual conference in Denver, welcoming new journals from Kenya and Rwanda to the program.

In the Year Ahead:

- CSE's Annual Meeting
Sheraton San Diego
May 20–23, 2017
- CSE Mentorship Committee:
Expanding CSE's commitment to its members throughout their careers
- CSE Short Course #2 on the road:
Stay connected to find out the course's content, date, and location.
- Full-time students are about to learn that CSE has built an even better membership package!
- Sample Correspondence section update:
CSE's sample letters collection organized by subject and recipient makes a great resource even easier to use.
- CSE's White Paper on Publication Ethics:
Expect a 2017 update of scientific journal publishing's highly respected resource.



You've just reviewed the highlights of CSE's 2016 activities and programs.

Each is keyed to CSE's mission—to serve editorial professionals in the sciences by providing a network for career development, education, and resources for best practices.

**If you're not a CSE member now,
this is the perfect time to join!**



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