

## COMMENTARY

The Scientific Conversation,  
Well Written

The previous issue of *Cellular and Molecular Gastroenterology and Hepatology* featured a provocative commentary from my colleague James Goldenring bemoaning the disappearance of the scientific conversation—the vigorous, sometimes competitive, often thrilling hashing out of ideas by members of the research community that is essential to scientific progress.<sup>1</sup> Dr Goldenring focused on the decreasing opportunities for in-person discussions of unpublished work or, as he described it, “the collegial interaction of rival ideas discussed by human protagonists in the flesh.”<sup>1</sup>

I agree with Dr Goldenring, but would like to suggest that the scientific conversation can be written as well as oral, and that opportunities for energetic and contentious written conversations, far from stagnating, have increased and are more important now than ever. I define the scientific conversation broadly. To my mind, the exchange of scientific ideas occurs in published primary research articles as well as commentaries, letters to the editor, blog posts and online groups such as the new AGA Community forum, and, yes, grant applications and grant and manuscript reviews. The ideas put forth in these settings are not only critically important to the success and failure of individual investigators, but to the future of the scientific endeavor as a whole.

The desire and ability to write well, to put forth a persuasive and coherent argument, is at one level a key component of individual funding and publication success, but at another level shapes future funded research and the value of the written record as a whole. Sadly, as any study section participant or journal editorial board member can attest, the importance of the written scientific conversation often is not matched by its quality and rigor. Although the give and take of scientific ideas occurs in many settings, bad writing is always the metaphorical equivalent of a brick wall. For the individual investigator, a poorly constructed, overly dense, or confusing grant proposal is unlikely to score well, and a less-than-crystal-clear manuscript may fail to motivate reviewers to think of paths to an acceptable revision—even if the work and ideas are groundbreaking, or could be with appropriate input. On the flip side, the inability or unwillingness of reviewers to argue effectively for or against a grant or manuscript can lead to funding bad science (or not funding good science) and to reports that provide a shaky or incomplete foundation for future work. Apathy is as much the enemy of the written scientific conversation as poor writing, and an uncritical or inarticulate response to submitted or published work can only lead to scientific stasis. *Cellular and Molecular Gastroenterology and Hepatology*, similar to most journals, strives to publish high-quality reports, but relies on the writers of reviews,

editorials, and letters to the editor to offer, as Dr Goldenring puts it, “competing views of science.”<sup>1</sup>

Although writing difficulties are a particular problem for non-native speakers of English, writing well is a learned skill for everyone, one that receives far too little attention. The most obvious place for the scientific community to intervene is at the graduate school level, with similar opportunities provided to postdoctoral fellows and faculty. (Note, however, that there are many published reports of successful programs aimed at high school and college students.) A combination of formal and informal approaches may be most effective. Graduate programs should consider mandating writing seminars, with the option for skilled students to place out; either the verbal score on the Graduate Record Examination or a writing assessment at matriculation could identify students at particular risk of writing deficiencies. An advisee of mine, a talented non-native English speaker who believes his poor writing is an impediment to long-term scientific success, made the interesting suggestion that a general undergraduate writing course (not a scientific writing class per se) would be most useful for students with below-par scientific writing abilities, the idea being that clarity and skill in scientific writing will naturally follow general writing facility. Graduate programs also should consider giving added weight to writing skills during qualifying examinations. In the same way that committees require students with knowledge deficiencies to take additional coursework, poorly written proposals would trigger mandatory remediation in scientific writing. Individual Development Plans, now mandatory for graduate students, could provide an opening for student/mentor discussions to develop strategies for improving writing skill and increasing participation in scientific discourse.

Informally, coaching from PhD thesis mentors or, if necessary, institutional or other professional writing tutors, is key. Many students write grant applications and manuscripts, and mentors need to assume responsibility (as most do) for editing this work and providing feedback on the writing as well as the science. (Note that because students who are foreign citizens may have few grant options, mentors need to make a particular effort to provide these students with writing opportunities.) When mentors are unable or unwilling to provide writing support, they should push students to seek help at campus writing centers. Encouraging students to read their own writing aloud, critique other students' written work, craft letters to the editor, write review articles, and (with journal permission) participate in manuscript reviews also contributes to their education in the form and the substance of the written scientific conversation. Most importantly, mentors should serve as role models, attending, if necessary, the writing seminars often offered by faculty development offices and vigorously participating—via thoughtfully crafted and critical commentaries, letters to the editor, and online forum posts—in scientific debates.

Writing is part of the scientific conversation, the lifeblood of the scientific endeavor, and increasingly a make-or-break scientific skill. What are your individual and institutional experiences as students and mentors engaging in and teaching the written scientific conversation? How can we—the scientific community—enhance the quality of written scientific debate? We invite your feedback (to *Cellular and Molecular Gastroenterology and Hepatology* or on the AGA Community forum).

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## Reference

1. Goldenring JR. What ever happened to the scientific conversation? *Clin Mol Gastroenterol Hepatol* 2016;2:251–252.

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### Conflicts of interest

The author discloses no conflicts.

### Most current article

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