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Catalyzing Chemical Bonding— the WIKI Way

The Internet has changed the way we access information. Now, technologies allow us to actively participate in the creation and dissemination of information itself. One such technology, named for the Hawaiian word for swift, is the WIKI. WIKIs are aptly named, given that these are collaborative web sites that can be edited in real time by virtually anyone. With WIKIs, as with any new technology, enthusiasm should be tempered with caution. Nonetheless, chemical biologists should embrace the opportunity to contribute content and offer their scientific judgment to these collaborative web sites. *ACS Chemical Biology* (*ACS CB*) understands the chemical biologist's need for a forum for collaboration, and that is why we continue to host our own WIKI.

At first glance, the success of a type of Web site with content that is often unattributed and unverified may seem counterintuitive. In 2001, when Wikipedia was founded, few would have anticipated the success of an encyclopedia that allowed anyone to write anonymously on any topic for no payment that could be read by anyone anywhere with no cost. Flash-forward to 2007. At the time of this writing, Wikipedia held more than 9 million articles in 252 languages, with over 2 million of these in the English language version (1).

These are impressive figures for any encyclopedia, either in print or online. In addition, the WIKI format can boast of immediacy, broader exposure, and the ability to surf through content, features lacking in the print format. For example, I noticed that information on lettuce tainted with *Escherichia coli* appeared immediately after an outbreak (2). As the article was "wikified" (which means that it was linked to other articles), I could seamlessly browse through the other articles of the encyclopedia. I've spent countless hours skipping from page to page, and in the process filling my head with bits of interesting and often useless information.

I first started editing content in Wikipedia because I felt there were inaccuracies in articles relevant to my own research. I soon began creating my own articles and learning the nuances of the WIKI markup. To an outsider, Wikipedia may seem like a chaotic entity; however, it is directed by policies and guidelines. These guidelines state that articles should be verifiable through balanced citations, written in a neutral tone, and noteworthy, not unlike a scientific manuscript (3). Of course, not all articles adhere to these standards, and editors constantly strive to improve articles and categorize content on the basis of quality. Although not an academic peer review, Wikipedia has instituted a peer-review system with the view that articles can be improved through collaborative efforts and constructive criticism (4).

Two focus groups on Wikipedia are of particular interests to chemists and biologists: the Chemistry and the Molecular and Cellular Biology Wikiprojects. Together, members of these projects, many of whom are scientists, determine which articles are most important for the project, rate and improve content, and solicit the opinions of experts in the field. These collaborative efforts continue to yield much-improved articles on topics in chemistry and biology on Wikipedia.

Still, most criticism revolves around the question "How much of online information is accurate and unbiased?" Verifying and maintaining accuracy are definitely a challenge with un-

moderated WIKIs, and there is clearly a lot of work to be done in this aspect. Some content, including the article on chemical biology in Wikipedia (and also the one on romaine lettuce), lacks a balanced treatment. Some articles need thorough copyediting. Despite these problems, when *Nature* compared a few scientific articles in Wikipedia with similar articles in the professionally edited *Encyclopaedia Britannica*, the number of inaccuracies was found to be roughly equal (5). That there were any inaccuracies is unfortunate, but not surprising. By now, we have learned to take *all* information from secondary online sources with a healthy dose of skepticism.

Why should the academic or industry scientist (or for that matter, journal editor) care about or contribute to WIKIs? First, we have an obligation to society. Wikipedia, for example, is now one of the top-10 most popular Web sites (6), and Wikipedia articles are often top hits in lists produced by online search engines. If anyone should present complex ideas to the general public, it should be scientists who are qualified to do so. Second, the collaborative model is here to stay, and the WIKI is a platform for establishing the effectiveness of this model. WIKIs facilitate real-life collaborations that are particularly useful in tackling problems requiring a multidisciplinary approach. Third, many of the unwritten rules of science are the guiding principles behind WIKIs. Scientists are (generally) civil and ethical and assume good faith in others, qualities required for a successful WIKI. Finally, contributing to a WIKI is not a radical jump; it is not as if we are new to posting thoughtful comments anonymously and for free, we just call it peer review!

Our own WIKI was started with the benefits of using the WIKI framework in mind. We offer the flexibility and ease of use of other WIKIs, with measures for attribution and moderation. Anyone registered at the Web site can post, and registration is free and easy. As a service to the chemical biology community, through the *ACS CB WIKI*, we host an interactive journal club, a glossary of terms relevant to chemical biology, as well as pages on topics and educational institutions we hope you will find interesting. Because a WIKI is, by definition, an evolving entity, we actively encourage your comments. Our hope is that our WIKI will serve as a fertile ground for fostering collaborative discussion in the multidisciplinary field of chemical biology.



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