

EDITORIAL

What is *The Plant Cell*?

Few things focus the mind like being asked to take on a major new responsibility. Since agreeing to assume the editorship of *The Plant Cell*, I have often found myself pondering the question that heads this month's column. Formulating a proper answer is essential if the expectations of the journal's diverse stakeholders are to be met. In 14 short years, *The Plant Cell* has established itself as the journal of choice for many authors of ground-breaking research articles in plant biology. To consider how and why the journal has reached this distinguished position is interesting and instructive, but the question of more immediate relevance as biology surges into the 21st century is: What do plant biologists expect from their journal today?

My attempt to answer this question is grounded in the realization that plant biology today is no mere collection of disparate disciplines, each with its own level of investigation (e.g., molecular, cellular, organismic, inter-organismic, etc.), that additively comprise a loosely defined super-discipline. We are now in the midst of a major remaking of the very nature of biological research, in which all classical levels of investigation are being applied *integratively* for deep exploration of fundamental questions, not the least of which is "what is life and how does it work?" The foundation for this revolutionary change in approach and perspective is the unifying power of genetics, which is being applied full bore to nearly the whole range of important questions in biology today. The genetics/genomics revolution began in earnest with the advent of recombinant DNA and DNA sequencing technologies in the mid-1970s and by now has brought any and all willing biologists under the same big tent, permitting powerful new synergies and fostering truly incredible discoveries that were hardly, if at all, dreamed of 30 years ago. This revolution is being fueled by a seem-

ingly endless parade of new genomics tools and approaches, amplified and complemented by diverse approaches that permit manipulation of genotypes with unparalleled precision.

Although biology is rapidly becoming a single, unified discipline, its subdisciplines still remain familiar and recognizable: they include (but are not limited to) the classic, formal disciplines of biochemistry, cellular biology, physiology, developmental biology, genetics, and evolutionary biology. Though each of us may be expertly trained in only one, two, or (rarely) three of these, we all share an almost compulsive desire to understand the full breadth of plant biology integratively and holistically, not only for its own sake (e.g., to answer the question, what is a plant?), but also in order that we might more fully comprehend the context and essence of the particular molecules, mechanisms, and processes that so intimately interest us individually. Though each of us tends to have a given focus and sphere of interest, there is much truth to be found in the simple observation that "we are all biologists now."

In this context, we should ask not only what is *The Plant Cell*, but more importantly, what **should** *The Plant Cell* be? Our present answer is embodied in the journal's updated statement of scope: "*The Plant Cell* publishes novel research of special significance in plant biology, especially in the areas of cellular biology, molecular biology, genetics, development, and evolution. The primary criterion for publication is *new insight that is of broad interest* to plant biologists, not only to specialists. The presentation of results should be appropriate for a wide audience of plant biologists." Undoubtedly, this statement will evolve again in future, as dictated by the further development of the discipline of plant biology.

The diversity of expert-based subdisciplines within the discipline of plant biology

creates new challenges for a journal that purports to cover much of the breadth of biology, even if it limits its scope to a particular group of organisms, in our case plants. Historically, editors deemed it sufficient to employ two reviewers expert in the same field to evaluate a given manuscript. No longer. It is increasingly necessary to identify multiple reviewers, each expert in perhaps one of the two or three fields represented in a single manuscript. Moreover, editors increasingly feel challenged to identify appropriate expert reviewers and to evaluate reviews of manuscripts that address multiple fields or use diverse approaches in the same study. Multi-disciplinarity is arguably the greatest emerging challenge facing journals today. Most, if not all readers would undoubtedly be able to describe multiple publications in front-line journals that are excellent in one respect, while falling disappointingly short in another, despite the best efforts of the journal's editors. *The Plant Cell's* commitment to readers and authors is to apply uniformly high standards to all aspects of all submitted manuscripts, to the best of our abilities.

To succeed, we as a community of plant biologists must work together across boundaries more closely, effectively, and cooperatively than we ever have before. This means that when any of us is asked to review a manuscript, we will accept the assignment and carry it out with relish, while maintaining a sense of responsibility to the community at large. As authors, each of us needs to take responsibility to present our most important discoveries in a manner that is accessible to a wide spectrum of plant biologists and that clearly states and experimentally supports the major conclusions of the work, to the highest standards of experimental evidence, analysis, and interpretation. The Editorial Board at *The Plant Cell* commits to rendering fair, evidence-based decisions rooted in high qual-

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ity reviews and thoughtful editorial evaluations that are respectful of the serious efforts of both authors and reviewers and that are cognizant of the very high expectations of our readers.

What standard should be met for a research article to be published in *The Plant Cell*? First and foremost, the focus of *The Plant Cell* remains BIOLOGY. To be considered for publication, advances must provide new understanding and insight of a significant nature into the biology of plants, as judged by the peer review process and the expertise of the editorial board, taking account of all the complexities in the nature of biology discussed above. Although this definition of scope consciously excludes incremental or confirmatory advances, it would be a mistake of huge proportions to diminish in any way the importance of such advances in biology (tenure and promotion committees, please take note!). The journal's focus also intentionally and unapologetically excludes articles that describe important technical advances or resource developments, unless they also present a significant biological advance. Again, this has nothing to do with their importance or their likelihood to generate citations (which is quite substantial), but with the fact that

purely technical advances are not our charge—they are already being handled expertly by other high-quality journals.

A question commonly arising is whether *The Plant Cell* should treat genomics manuscripts in a special manner. Genomics is essentially a set of tools and approaches within the fundamental discipline of genetics, useful for addressing fundamental questions at a more global and comprehensive level. We will evaluate articles involving genomic approaches against the same benchmark as any other manuscript, i.e., does the work significantly advance our understanding of BIOLOGY? Many articles presenting genomic-level analysis meet this standard and are clearly appropriate for publication in *The Plant Cell*.

A common misunderstanding about the scope of *The Plant Cell*, which touches directly on the perceived appropriateness of certain genomics-oriented articles, is that the journal seeks to publish only "hypothesis-driven" research. How that idea might have arisen is difficult to explain; simple inspection of our statement of scope finds no mention of such an arbitrary limitation. Similarly incorrect is the belief that the generation and sophisticated analysis of DNA sequence data does not comprise experimental research. As one of the

greatest biologists of the 20th century said, "Nothing in biology makes sense except in the light of evolution!" (T. Dobzhansky). Can comparative studies, properly designed, break new ground? Can they lead to novel understanding of plant biology? Absolutely! The field of evolutionary biology has been explicitly added to our statement of scope to lay to rest any misconceptions about the appropriateness of evolutionary approaches for publication in *The Plant Cell*.

Finally, I would like to close this column by thanking all editorial staff and editorial board members, past and present, for creating and then fostering what has become the premier research journal in plant biology. It will be a difficult act to follow, but I will do my level best to meet your highest expectations. To be at least moderately successful, I will need all the support, advice, and contributions I can get from the community of plant biologists, and so I want to take this opportunity to solicit your ideas, your criticisms, and your perspectives. They are all welcome. You know how to reach me.

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