

## Looking to the Future of Plant Biology Research

“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.”

Louis Pasteur

It is no exaggeration to say that we, as plant biologists, are witnessing the most explosive growth of information in the history of our science. Not only is this avalanche of information providing new insights into how plants work, but it is also creating entirely new scientific disciplines. Five years ago, when I accepted the challenging assignment of the editor-in-chief of *Plant Physiology*, the Arabidopsis genome project had just been completed, and proteomics and metabolomics were little more than poorly articulated concepts. Now, the various “-omics” have become a staple of *Plant Physiology*. The revolution in plant biology that we are now witnessing owes much to the widespread utilization of Arabidopsis as a model system for research at all levels, ranging from molecular biology to ecology. The impact of this diminutive weed has been phenomenal. Twenty-five years ago, Arabidopsis was known only to a handful of taxonomists, biochemical geneticists, and weed scientists. Its fame has spread well beyond the plant research community. I have recently discovered that Arabidopsis has been listed in the *Shorter Oxford English Dictionary*. Perhaps in the future it will become a household word!

Given the global needs for food and fiber projected in coming decades, the call for basic plant biological research has never been greater. The translation of knowledge gained with Arabidopsis to crops has been illustrated in many publications, including the *Plant Physiology* special issue (June 2004) solely devoted to

Translational Biology. It is a sad irony, therefore, that despite the success of Arabidopsis research and the establishment of an infrastructure for storing, collecting, and sharing Arabidopsis data, and the development of powerful new technologies (systems biology, chemical genomics, quantitative proteomics and metabolomics, high-throughput microscopy, etc.), funding for Arabidopsis research is not commensurate with the scientific advances. The inclusion of Arabidopsis in desktop dictionaries is just one step; greater efforts need to be made to demystify and publicize Arabidopsis research and to make it more comprehensible to the public and to our political leaders in Congress who are responsible for channeling funds to and away from basic research.

As part of *Plant Physiology*'s continued effort to bring the best and most innovative Arabidopsis research to the attention of its readers, I am pleased to present our sixth special issue devoted to Arabidopsis, coedited by associate editor Gloria Coruzzi and me. Given the fast-evolving landscape of Arabidopsis research, we have invited 11 prominent Arabidopsis researchers to write vision statements concerning the direction of the Arabidopsis revolution. The rest of the issue is devoted to new approaches for integrating Arabidopsis genome and function. Given the success of the Arabidopsis model and the development of new and powerful technologies, it seems that at this juncture in history, plant biology's goal of developing a comprehensive understanding of plants is limited not by imagination but only by insufficient resources.

Finally, I would like to take this opportunity to thank all the *Plant Physiology* reviewers, editorial board members, and our staff for their unparalleled dedication and professionalism. It has been a phenomenal five years for all of us. Together, we have been able to make *Plant Physiology* a shining star. I am positive that our journal will continue to flourish and prosper under Don Ort's new leadership.

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