Plant Physiology Sees the Light

Since 2010, *Plant Physiology* has published the Founders Review annually to highlight the work of preeminent scientists. Founders Reviews offer in-depth perspectives on their research, its historical and contemporary advances, and its contributions to the fundamental understanding of plants. These reviews arise from the invaluable and unique perspective of the researchers whose inputs have been major driving forces in the development of their fields of study.

With this issue of *Plant Physiology*, it is with special pleasure that we welcome the 2014 Founders Review "Phototropism: Some History, Some Puzzles, and a Look Ahead," contributed by Winslow Briggs. For more than 50 years, his research has focused on understanding how plants detect and respond to changes in their surrounding light environment. In particular, he made a series of breakthroughs in understanding the mechanism of phototropism, a phenomenon that has received much attention since the seminal work of Charles Darwin almost 1.5 centuries ago. Although the search for the photoreceptor responsible for phototropism began well before the publication of Darwin's work *The Power of Movement in Plants* (Darwin, 1880), its identity continued to elude plant biologists until Winslow's pioneering work in the late 1990s. His studies uncovered the molecular nature of a key group of photoreceptors, the phototropins, which function as blue light-activated kinases. Of course, phototropins control phototropism, but their contributions extend to a wide range of responses important for plant survival, including stomatal opening and chloroplast movement. Winslow's studies led to the discovery of the light, oxygen, and voltage (LOV) domain, a versatile flavin-binding module that is widespread throughout nature and controls a diverse range of enzymatic activities, including the kinase of plant phototropins, by blue light. The discovery of the LOV domain and its mechanism of light activation have greatly enhanced our understanding of fundamental photobiological processes in plants and also in fungi and bacteria. These seminal advances have fed an explosion in research that extends well beyond plant biology; for example, feeding developments in so-called optogenetics by providing a molecular framework for the design of molecular "light switches" to control cellular activities and in generating small, oxygen-independent, protein-based fluorescent reporters.

For us, both having worked with Winslow at various times, it is a pleasure in reading the article to recognize his delight in the exploration of science. This review is eminently readable and a thoughtfully compelling argument for pure, blue skies research (no pun intended, of course).

LITERATURE CITED

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