



Plant Physiology[®]

Call for Papers

2021 Focus Issue on Sensors and Controllers: for and from Plants

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To submit an article, go to <http://pphys.msubmit.net/>

A characteristic of plant life is the ability to rapidly acclimate tissue function and to change body plans in response to changing conditions. Their responsiveness is underpinned by sophisticated signaling and metabolic networks. These networks are generally dynamic and flexible, requiring nondestructive methods for their analysis in the living plant. Over the last decade, substantial progress has been made toward their understanding through in vivo fluorescent protein-based biosensing of plant signaling, physiology, and metabolism. Recent developments have extended these strategies to rewiring of network components using the light-mediated switches of optogenetics (i.e., light-activated genes, proteins, and channels), providing novel options to actively control plant cell and tissue functions. Ironically, the optogenetic tools that have revolutionized bacterial, yeast, and animal research rely largely on light switches that are derived originally from plant photoreceptors. Both biosensors and optogenetic controllers rely on light and synthetic molecular switches for minimal invasive and specific monitoring or control of biological processes in vivo.

This focus issue on Sensors and Controllers will capture up-to-date views and perspectives of these and related developments and their applications and will highlight important gaps in the available techniques, approaches, and insights to catalyze future studies. Invited Updates will review areas that continue to add new and pertinent insights and highlight nascent and transformative areas that are now expanding rapidly. Additionally, we encourage submissions of primary research articles, reports, and short letters on all aspects of engineering and applications, especially as it applies to fluorescent biosensors and optogenetic switches for plants, novel optogenetic switches derived from plant sensors, novel approaches of using those proteins for monitoring and manipulation of cellular processes, as well as plant biological studies that shed light on in vivo signaling, physiology, and metabolism by exploiting sensors and controllers.

Contributing authors should indicate their interest in the cover letter when submitting papers online at <http://pphys.msubmit.net> by selecting "**Sensors and Controllers**" from the Focus Issue list in the online submission system. Articles published in *Plant Physiology* on this topic within 2 years before and after the Focus Issue publication date will be collected in an online Focus Collection.

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