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Plant Science Horizons: Advancing Global Plant Research for a Sustainable Future

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Plant biology underpins ecosystem function, agricultural productivity, and global food security. Recent advances in molecular biology, genetics, ecology, and computational science have expanded our understanding of how plants grow, adapt, and interact with their environment. In recent decades, remarkable progress has been made in understanding plant biology, from molecular signaling pathways and genetic regulation to ecosystem-scale interactions and environmental adaptation. These advances have transformed plant biology into a highly interdisciplinary field, integrating genomics, biotechnology, ecology, and computational approaches to address some of the most pressing challenges of our time.

Plants continuously adjust their growth and development in response to changing environmental conditions. These responses are governed by integrated regulatory networks involving gene expression, metabolism, signaling pathways, and interactions with biotic and abiotic factors. Understanding these processes is essential for both fundamental plant biology and the development of more resilient and sustainable agricultural systems. These processes are influenced by complex regulatory networks, including gene expression, metabolic pathways, and interactions with biotic and abiotic factors. As recent research highlights, plant systems function through highly coordinated signaling and adaptation mechanisms that enable them to withstand stresses and climate change. Understanding these mechanisms is essential not only for advancing basic research but also for improving agricultural productivity and sustainability.

Faced with global challenges such as climate change, population growth, and environmental degradation, plant biology has entered a new era. Emerging technologies, such as genome editing, high-throughput phenotyping, artificial intelligence, and systems biology, offer unprecedented opportunities to strengthen crop resilience, optimize resource use, and develop sustainable agricultural practices. These innovations are transforming our approach to plant research, leading us toward integrative and translational solutions that bridge the gap between laboratory discoveries and field applications.

In this context, we are pleased to present Plant Science Horizons, an international, peer-reviewed, open-access journal dedicated to promoting research in all areas of plant science. The journal was created with the ambition of providing a dynamic platform for disseminating high-quality, innovative, and high-impact research, contributing to both fundamental understanding and practical applications.

Plant Science Horizons covers a wide range of topics, including plant physiology, molecular biology, genetics, biotechnology, plant-microbe interactions, crop science, and environmental biology. By fostering interdisciplinary research, the journal aims to encourage collaboration among scientists working at different scales, from molecular mechanisms to ecosystem processes, and across diverse scientific fields. One of the journal's core missions is to promote open and equitable access to scientific knowledge. All articles are published in full open access, ensuring the free dissemination of research results to the international scientific community. The journal is supported by a dedicated editorial team of experts from various disciplines within plant science. Through a rigorous double-blind peer review process, we ensure adherence to the highest standards of scientific quality, transparency, and ethical integrity. Our editorial philosophy prioritizes fairness, objectivity, and constructive evaluation, guaranteeing that each manuscript is assessed solely on its scientific merit.

In addition to publishing original research articles and reviews, Plant Science Horizons aims to provide a platform for emerging perspectives, commentary, and ideas that stimulate scientific dialogue and innovation. By encouraging diverse forms of scientific communication, the journal strives to reflect

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the evolution of plant science and its growing role in addressing global challenges.

We believe that the future of plant science lies in collaboration, openness, and innovation. By connecting researchers from different disciplines and regions, Plant Science Horizons aspires to contribute to a global knowledge exchange network that accelerates discovery and its application. Our goal is not only to publish research, but also to support the development of a vibrant scientific community dedicated to advancing plant biology for the benefit of society.

To mark the launch of the journal, we invite researchers, academics, and practitioners worldwide to submit their work and participate in building an inclusive and rigorous forum for plant science research. Together, we can push the boundaries of plant biology and develop sustainable solutions to address the challenges of today and tomorrow.

Conflict of interest

The authors declare that they have no conflict of interest.

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