Plant High-Throughput Phenotyping and Functional Phenomics

Edited by Jen-Tsung Chen

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This book provides a series of comprehensive summaries highlighting the emerging achievements in the fields of plant high-throughput phenotyping that leads to constructing functional phenomics, one of the essential components of plant functional genomics. It presents broad aspects of methods, applications, and future directions. It offers an efficient way for readers to overview this crucial topic to realize the concept as a whole, to advance the design of their future experiments, and to inspire the exploration of the knowledge, which eventually leads to better crop development in the future by scientists, plant biologists, and crop breeders. It covers advanced tools for studying functional phenomics, including artificial intelligence, imaging, remote sensing, robotics, and aerial vehicle technologies, to empower crop speed breeding, particularly in the development of stress-tolerant future crops. The knowledge of this book supports the Sustainable Development Goals (SDGs) of the United Nations to develop climate-smart and sustainable agriculture for achieving zero hunger globally.

Dr. Jen-Tsung Chen is a professor of cell biology at the National University of Kaohsiung in Taiwan. He also teaches genomics, proteomics, plant physiology, and plant biotechnology. His research interests include bioactive compounds, chromatography techniques, plant molecular biology, plant biotechnology, bioinformatics, and systems pharmacology. He is an active editor of academic books and journals to advance the exploration of multidisciplinary knowledge involving plant physiology, plant biotechnology, nanotechnology, ethnopharmacology, systems biology, and drug discovery. He serves as an editorial board member and a guest editor in several reputed journals. He published books in collaboration with international publishers on diverse topics such as drug discovery, herbal medicine, medicinal biotechnology, nanotechnology, bioengineering, plant functional genomics, plant speed breeding, CRISPR-based plant genome editing, and artificial intelligence. In 2023 and 2024, Stanford University/Elsevier included Dr. Chen in the "World's Top 2% Scientists".

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