EDITORIAL

2022 Awards in the Journal of Plant Research

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The Botanical Society of Japan honors excellence in publications of the Journal of Plant Research through the Best Paper Awards and the Most-Cited Paper Award every year. We are proud to announce the 2022 recipients.

Best paper awards

Two papers were selected among regular papers published in 2021.

Namba and Nakayama (2021) described a new genus and species of shell-attached green alga, Annulotesta cochlephila (Kornmanniaceae), from clausiliid land snails. Certain algae species are known to grow on shellfish shells in aquatic environments. However, there are few reports regarding algae that grow on land snails. In this study, authors collected green algae growing on the shells of six species of door snails (Clausiliidae) from nine localities in Japan and conducted morphological observation and molecular phylogenetic analysis. The morphology of the green algae is similar to certain members of Kornmanniaceae, but clearly distinguishable form by unique ring-like structures on the cell wall surface that are frequently observed in the collected samples. The 18S rDNA phylogeny indicated that the green algae form a clade that is distinguishable from other described species in Kornmanniaceae. They also found that no other algae species form visible colonies on clausiliid shells suggesting the presence of specificity between the alga species and clausiliid shells. This paper emphasized the importance of field observation in different microhabitats for algal systematics.

Plants respond to light and gravity by deforming their organs, which has significant adaptive functions, as seen for example when petioles are twisted to adjust leaf blade

Maki Katsuhara kmaki@okayama-u.ac.jp orientation toward light sources. Twisting movement has long been regarded as an important component of plant tropism (Darwin and Darwin 1880). Yet, despite its importance, twisting is relatively poorly studied compared to bending, partly due to the lack of rigorous quantification methods to measure twisting at each part of the petiole. While conventional studies have relied on a rough estimation of the twisting angles as observed by the naked eye, with arbitrary choices of observation angle, in their paper, Otsuka and Tsukaya (2021) present the first rigorous quantification of the 3D twisting angles of Arabidopsis petioles, which follow the current trend of remarkable improvement in macro-scale bioimaging technology. More specifically, the authors used light sheet microscopy and in parallel they developed a MATLAB script to mathematically separate twisting and bending from 3D data. Based on their measurements, they reported that while bending was localized at the basal part of the petiole, twisting was distributed along the entire petiole, which likely hints at the mechanistic differences behind bending and twisting. To this end, their report not only expands our toolkit and knowledge of the holistic understanding of plant tropism including twisting, but also may solicit its application by others to increase biomass production, if applied to crop species.

Most-cited paper award

Shibata and Sugimoto (2019) was published in the special issue "Toward unveiling plant adaptation mechanisms to environmental stresses" published to commemorate the JPR symposium held in 2017. This article outlines the key transcriptional regulators controlling cell fate and/or cell growth of root hairs. In the acquisition of nutrients, microbe interaction, and plant anchorage, root hairs have important roles. Root hairs also provide an excellent model system to study cell patterning, differentiation, and growth. Arabidopsis root hairs have been thoroughly studied to understand how plants regulate cell fate and growth in response to environmental signals. The authors summarize recent results and





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also discuss how plants integrate phytohormonal and environmental signals, such as auxin, ethylene and phosphate availability, and modulate the level of these transcriptional regulators to tune root hair development.

Maki Katsuhara Editor-in-Chief, Journal of Plant Research

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