

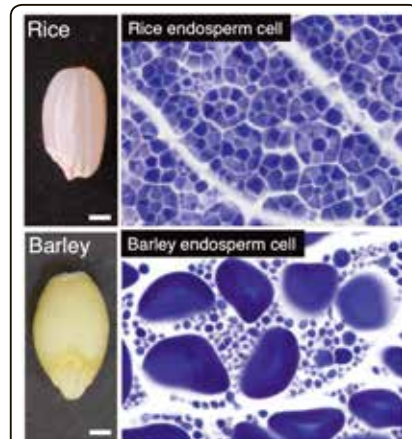
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## Dissection of the mechanism to determine starch grain morphology and Breeding new varieties with novel starch properties

Starch is a glucose polymer which plants synthesize as a photosynthetic product and is human energy source as a staple food. In addition, starch is used as food additives and industrial products (adhesives, printing improvers). Starch is synthesized as particles, so called “starch grains (SGs)” in plant cells.

The shape of SGs shows variations depending on plants species and limits the production efficiency and functionality of starch. However, details of the shape determination mechanism of SGs are not known. To understand the mechanism and to create new SGs with novel properties, I am now screening and analyzing rice and barley mutants defective in SG shapes.



Comparison of SGs of rice and barley. Endosperm sections are stained with iodine to visualize SGs.



In addition to the genetic analysis, I also conduct live imaging analysis of SGs. In the left figure, transgenic rice seeds in which amyloplasts (organelle synthesizing SGs) are visualized with green fluorescent protein.