

Listing of Methods

Fukao T, Bailey-Serres J (2008). Submergence tolerance conferred by Sub1A is mediated by SLR1 and SLRL1 restriction of gibberellin responses in rice.

[Proc Natl Acad Sci USA 105:16814-16819](#)

Introduction to article

Rice crops can be devastated by flooding, but certain strains are able to resist the stress of several days of submergence. A gene, *Sub1A-1*, isolated from a submergence-resistant strain of rice, when transferred to sensitive rice strains, is sufficient to confer resistance. The response to submergence is known to be mediated by plant hormones ethylene, abscisic acid, and gibberellin. Fukao and Bailey-Serres sought to understand how the expression of *Sub1A-1* affects the response to these hormones.

Experiments and methods

- **Fig. 1A,B:** Measurement of plant height in various strains before and after submergence
- **Fig. 1C:** Measurement of viability of various strains after submergence
- **Fig. 2:** Measurement of abscisic acid breakdown products separated by gas chromatography and quantitated by mass spectrometry
- **Fig. 3A:** Measurement of germination efficiency by counting appearance of shoots
- **Fig. 3B:** Measurement of time to flowering, time to seed maturation, and percent floral units bearing seeds, all by observation
- **Fig. 3C:** Measurement of shoot length
- **Fig. 4A,B:** Measurement of RNA levels of genes *SLR1* and *SLRL1* indicative of response to gibberellin, by quantitative RT-PCR
- **Fig. 4C,D:** Measurement of RNA levels of genes *SLR1* and *SLRL1* indicative of response to gibberellin, by Western blot
- **Fig. 4E:** Measurement of shoot length in the presence of gibberellin inhibitor
- **Fig. 4F:** Measurement of shoot length in the presence of exogenous gibberellin
- **Fig. 5A:** Measurement of RNA levels of genes *Sub1A*, *SLR1*, and *SLRL1* after exposure to ethylene, by quantitative RT-PCR
- **Fig. 5B:** Measurement of RNA levels of genes *SLR1* and *SLRL1* after exposure to ethylene, by Western blot
- **Fig. 5C:** Measurement of shoot length in the presence of combinations of gibberellin and a precursor to ethylene