

## Involvement of trichome and phytochrome in local adaptation along altitudinal gradients in *Arabidopsis kamchatica*

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Altitudinal gradients are among the most powerful 'natural experiments' for detecting ecological and evolutionary significance of phenotypic and genetic variation in organisms. As altitude-for-latitude model of temperature similarity show that equivalent migrations along altitude are eight hundredth of a latitudinal one, the steep environmental gradients along altitude can cause phenotypic and genetic differentiation. *Arabidopsis kamchatica* subsp. *kamchatica*, a perennial herb, occurs from 30 m to 3000m asl in and around the Japanese Alps within a limited latitudinal range. Our previous studies revealed local adaptation of the species along the wide-altitudinal gradients. Genetic variation along environmental gradients such as the altitudinal clines provides understanding to genetic basis of adaptive evolution. Here we report a screening for adaptive genetic variations in *A. kamchatica* along altitudinal gradients. Population genetic analyses suggested that *GL1* and *PHYB*, candidate trichome gene and phytochrome gene, respectively, are under diversifying selection and is associated with altitudinal adaptation.

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