

Resource Summary Report

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Development of a doubled haploid mapping population of *Pyropia yezoensis* and measurement of the economic characters of blade

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Summary: *Pyropia yezoensis* is one of the most valuable and widely cultivated seaweeds across the world. However, there is limited data regarding its genetic background underlying complex economic traits. The molecular genetic linkage map of *P. yezoensis* was not constructed. The most probable cause was the lack of mapping population, which was the basic of linkage analysis. In the present study, a red-type and fast-growing pigmentation mutant Py-HT and a wild-type strain Py-LS who had enough variation for traits of interest at both DNA and phenotypic level were crossed under control. The heterozygote (heterozygous conchocelis) was identified among conchocelis colonies which were developed from single zygospore released from zygotosporangia of fertilized Py-HT blade, based on the result that 91.9% F1 gametophytic blades developed from the conchospores of heterozygous conchocelis were linearly sectored with 2-4 color sectors of parental colors. Afterwards, 57 chimeric blades with four color sectors were screened from thousands of F1 blades and 228 color sectors were separated according the boundaries of color sectors for single culture. A single zygospore released from zygotosporangia of one sector through selfing was selected and then developed into homozygous conchocelis, which was declared a double haploid strain. Finally, a mapping population with 148 strains obtained from 37 of the 57 four color sectored blades was developed, which was used for the construction of genetic linkage maps and analysis of quantitative trait loci of *P. yezoensis* blades.

Associated Publications: Huang L, Yan X (2019) Construction of a genetic linkage map in *Pyropia yezoensis* (Bangiales, Rhodophyta) and QTL analysis of several economic traits of blades. PLoS ONE 14(3): e0209128. doi: [10.1371/journal.pone.0209128](https://doi.org/10.1371/journal.pone.0209128)

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