# Morphological convergence in the inter-holdfast coalescence process among kelp and kelp-like seaweeds (Lessonia, Macrocystis, Durvillaea)

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## Resumen

In brown macroalgae, intraspecific holdfast coalescence has only been studied in two species of Lessonia (Lessonia spicata and Lessonia berteroana). In both species coalescence followed the same general pattern: once the connection between holdfasts was established, the contact areas showed significant cellular morphological modifications. Typical epidermal cells became polygonal and similar to cortical cells. In addition, coalescence involved the de novo formation of secondary plasmodesmata, establishing a direct cytoplasm connection within neighbouring cells, where dense materials, vacuoles and organelles can be observed. In the present study, we demonstrate intraspecific holdfast coalescence in two additional kelp species, Lessonia trabeculata and Macrocystis pyrifera, as well as in the kelp-like seaweed, Durvillaea antarctica. The process of holdfast fusions in these species is similar to that described previously and suggests that this is a generalized phenomenon among kelp and kelp-like brown algae. In addition, the formation of cytoplasmic connections between genetically different brown algal individuals is shown for the first time.

## Palabras clave

**Palabras clave de autor:**Brown algae; Coalescence; Durvillaea; Lessonia; Macrocystis; Plasmodesmata
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