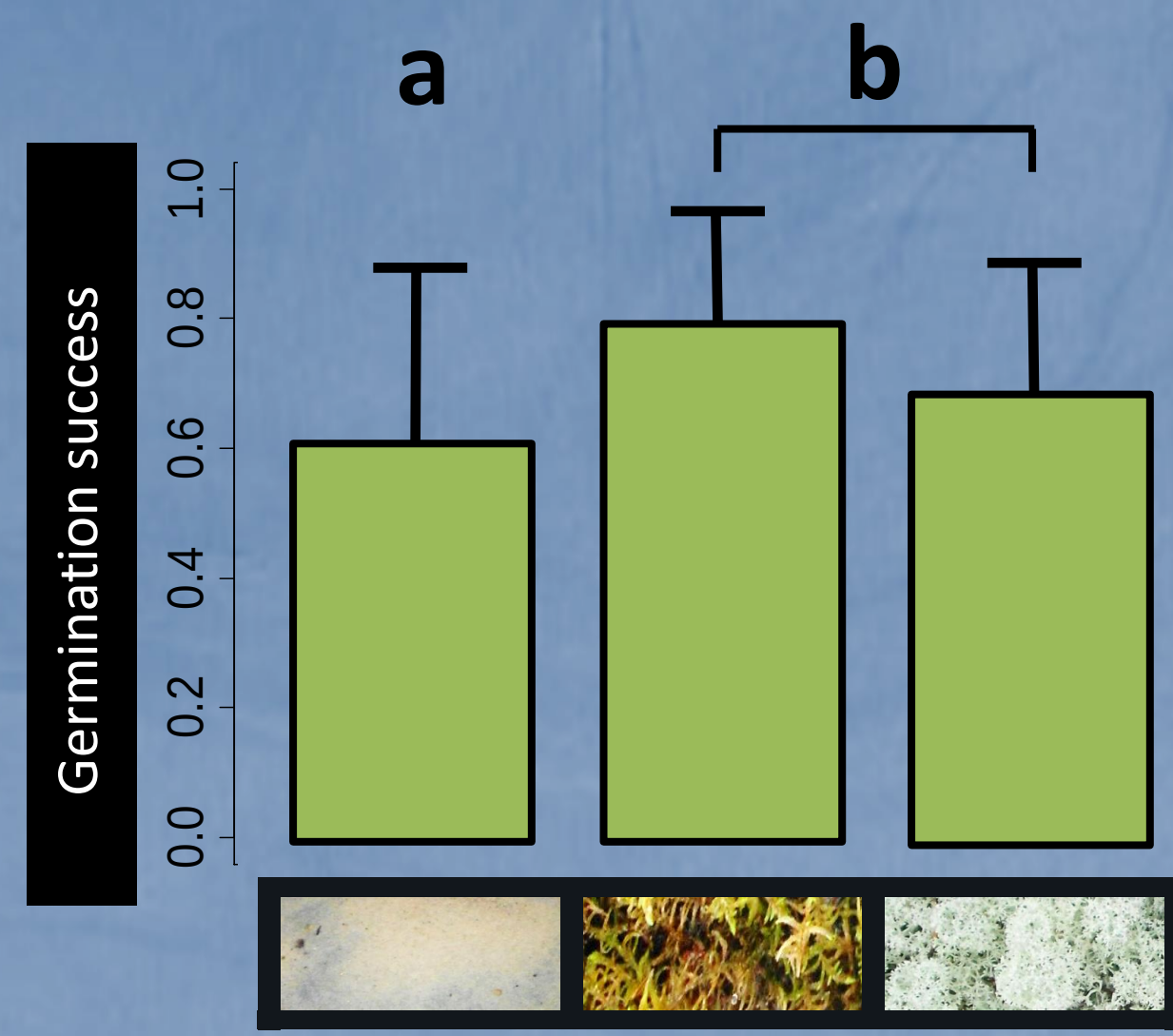
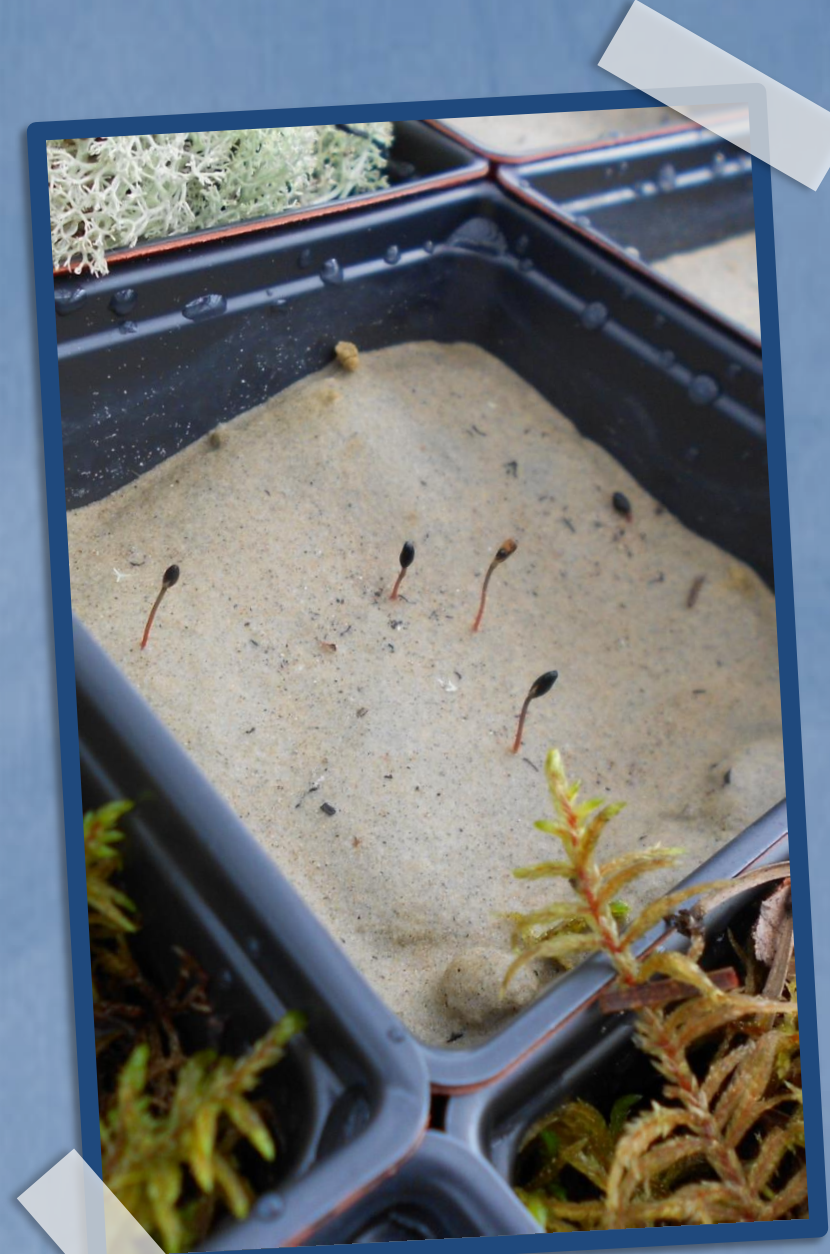
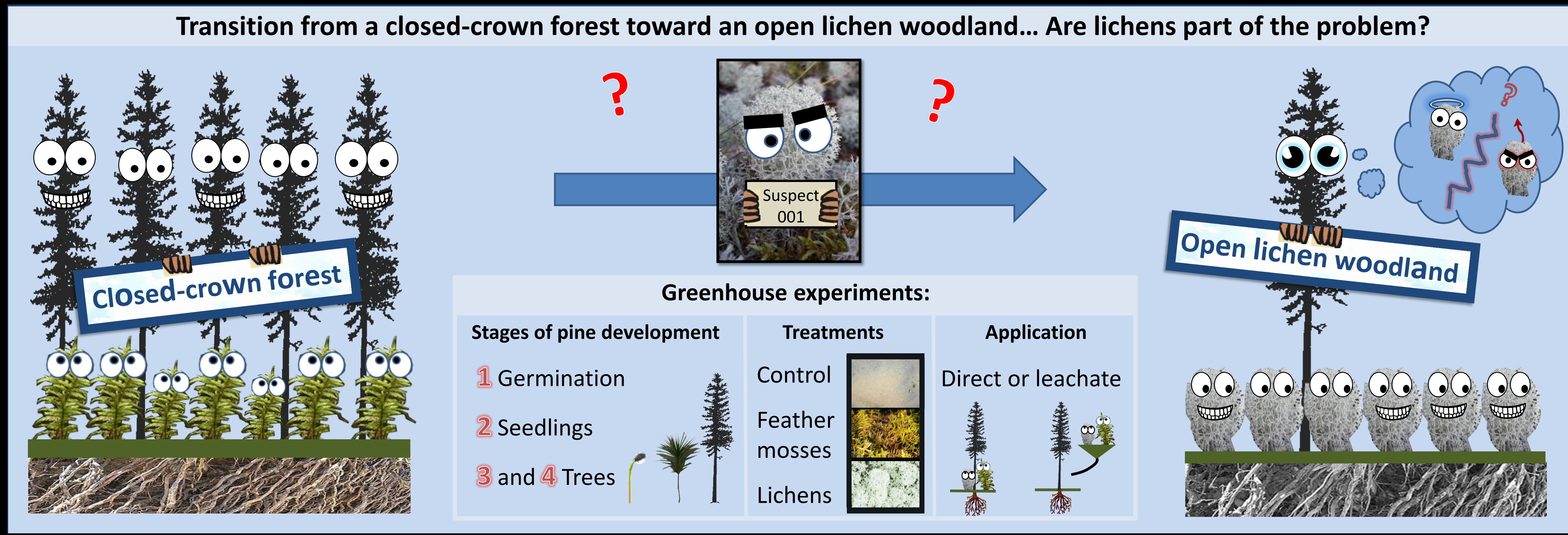
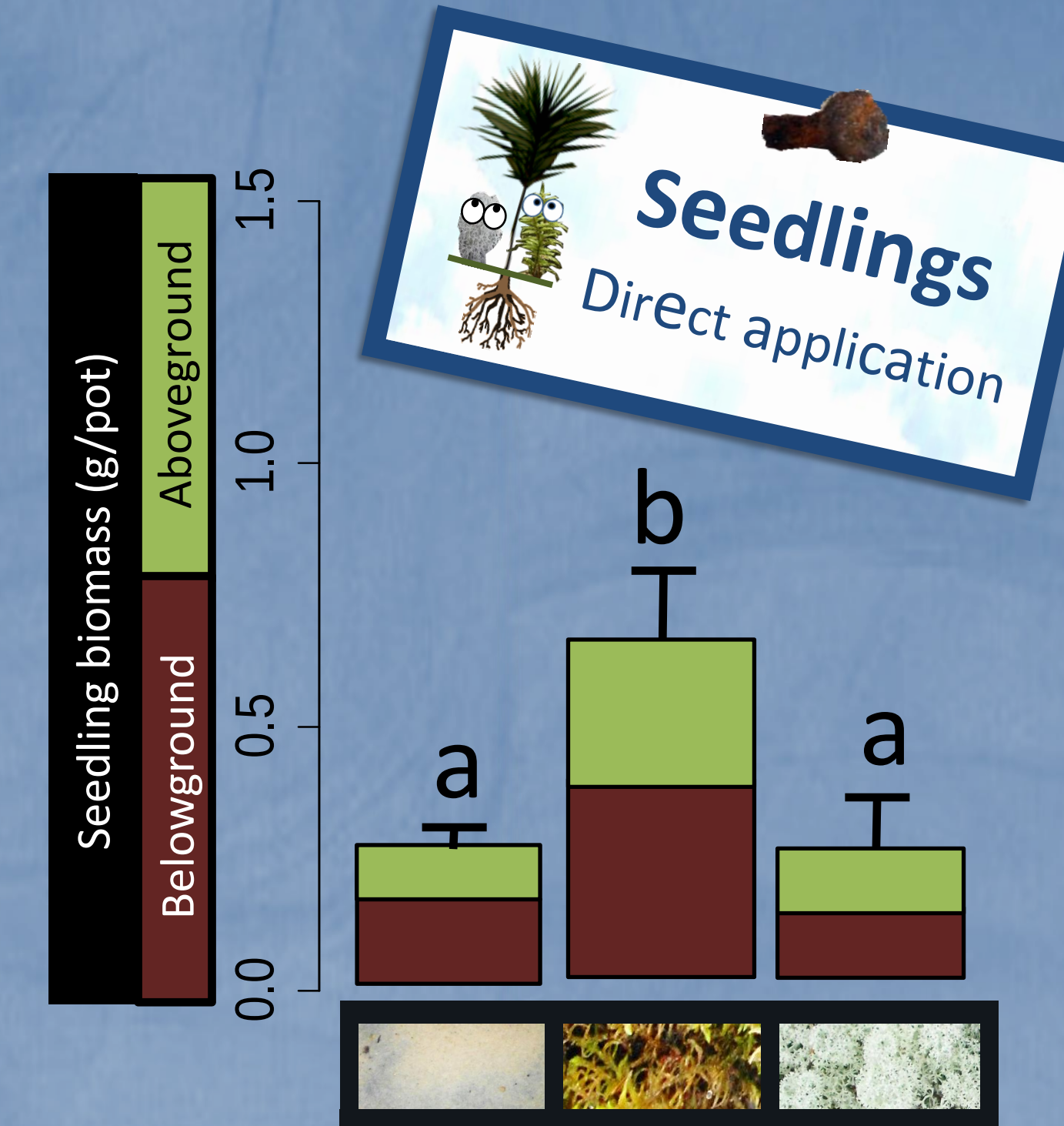


# Lichens may prevent pine stand re-closure in the boreal forest:

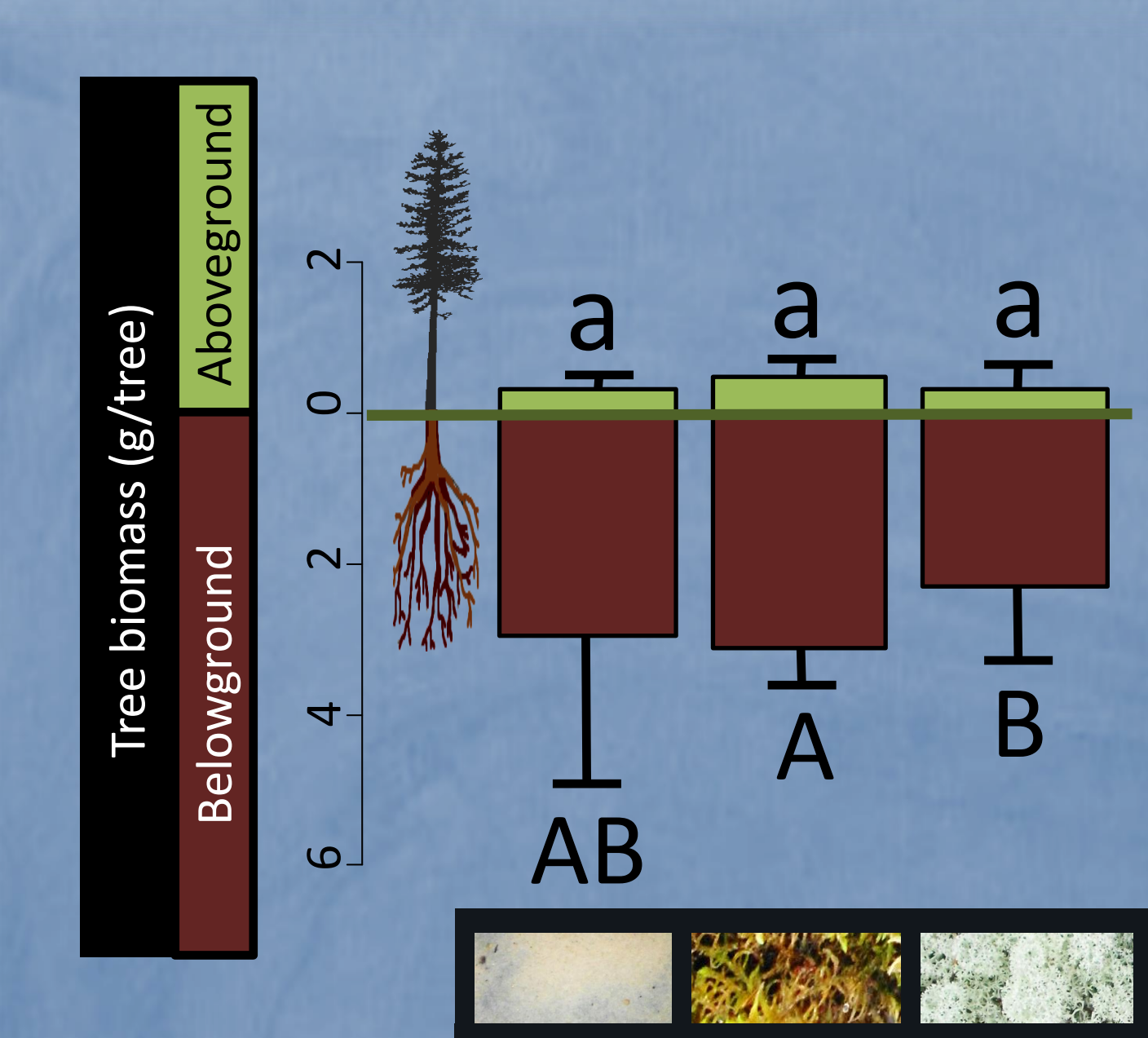
## Mechanistic analysis at different stages of pine development



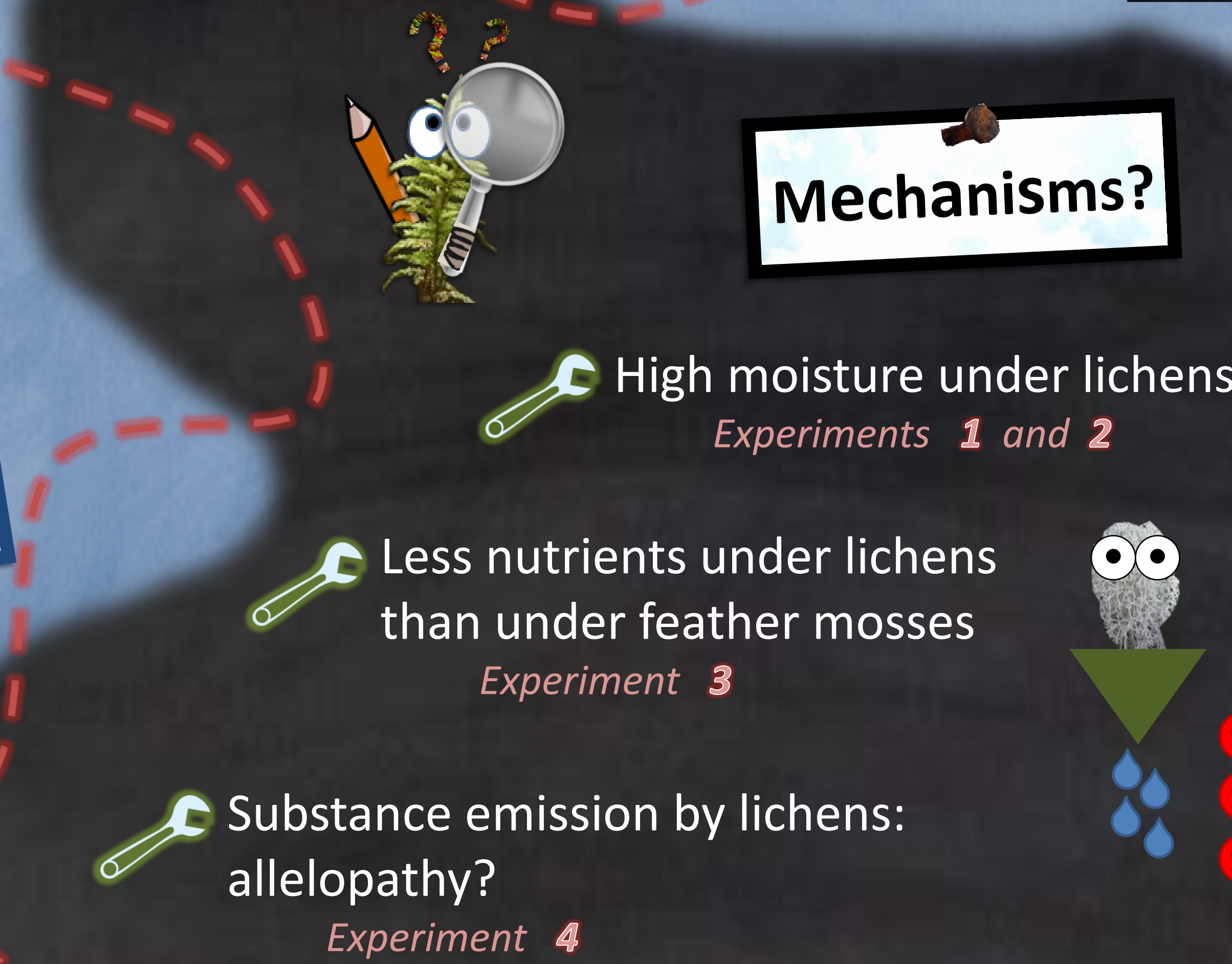
Positive effect of ground cover on pine germination



Pine seedling growth was much higher in feather mosses than in lichens

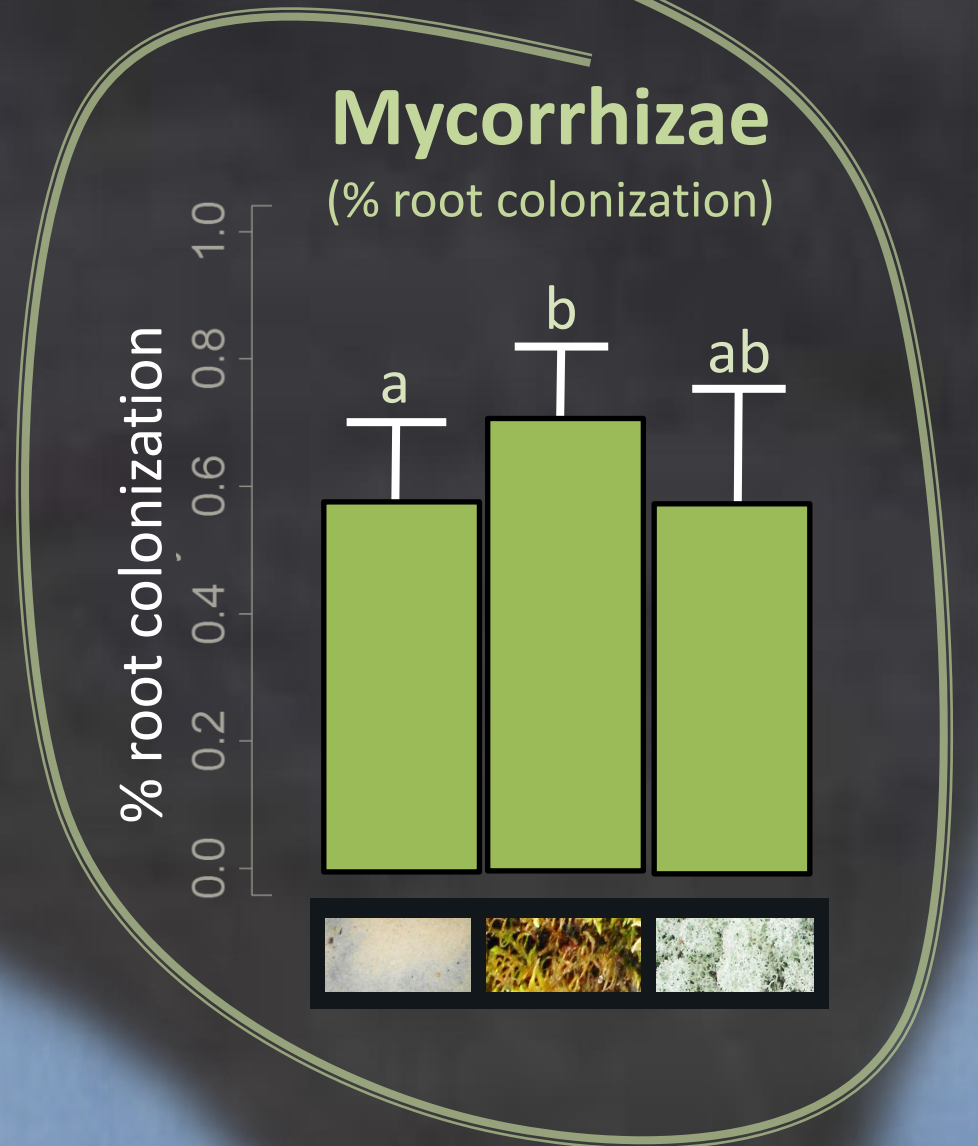


Negative effect of lichens on pine belowground growth

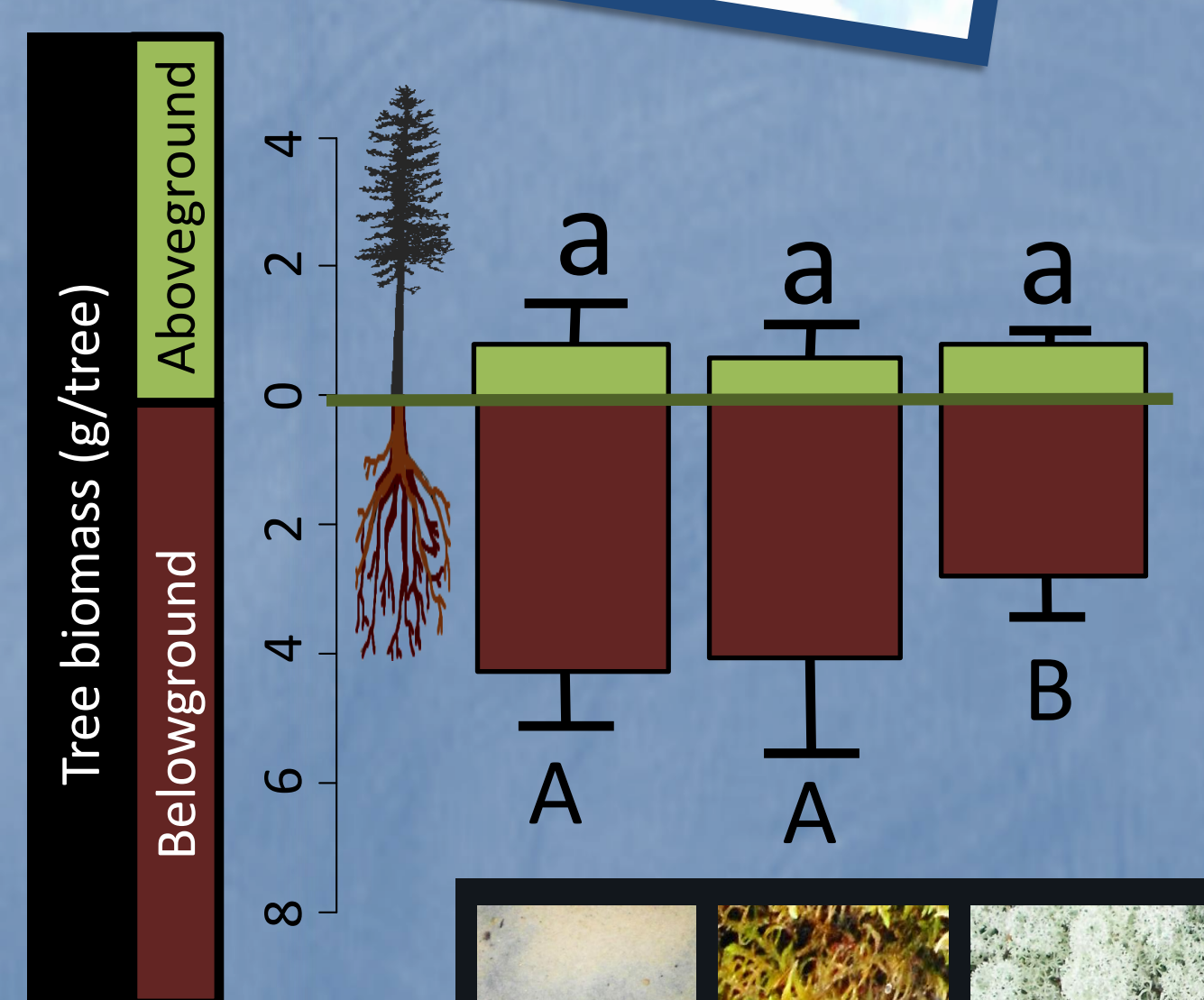


Direct or indirect effect via soil bacteria or fungi

Mycorrhization tends to be lower under lichens than under feather mosses



Negative effect of lichen leachates on pine root growth...



... And preliminary analyses suggest that lichen leachates contain usnic acid = allelochemical

### Take home message

Negative effect of lichens on pine growth via soil nutrients, moisture and chemical emission

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Lichens may prevent pine regeneration in open woodlands

To be continued...