

Electronic supplementary Materials (EMS), Alpine Botany 2021

Flower preformation in the nival plant *Ranunculus glacialis* L.: shoot architecture and impact of the growing season length on floral morphogenesis and developmental dynamics.

Stephanie Mauracher and Johanna Wagner*

Institute of Botany, Faculty of Biology, University of Innsbruck, Sternwartestraße 15, A-6020 Innsbruck, Austria

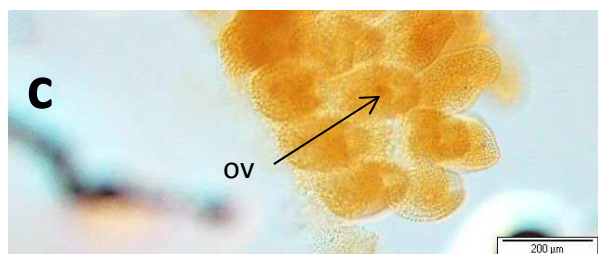
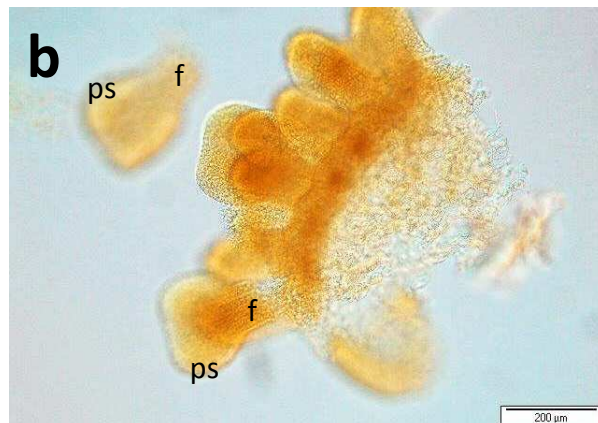
* corresponding author. E-mail address: johanna.wagner@uibk.ac.at

EMS Fig.1 a-c *Ranunculus glacialis* before onset of winter conditions in late autumn

(a) Belowground bud (ramet)

(b) Stamens out of a terminal flower bud. Filaments (f) and pollen sacs (ps) are have differentiated

(c) Carpels out of a terminal bud with ovule primordia (ov).



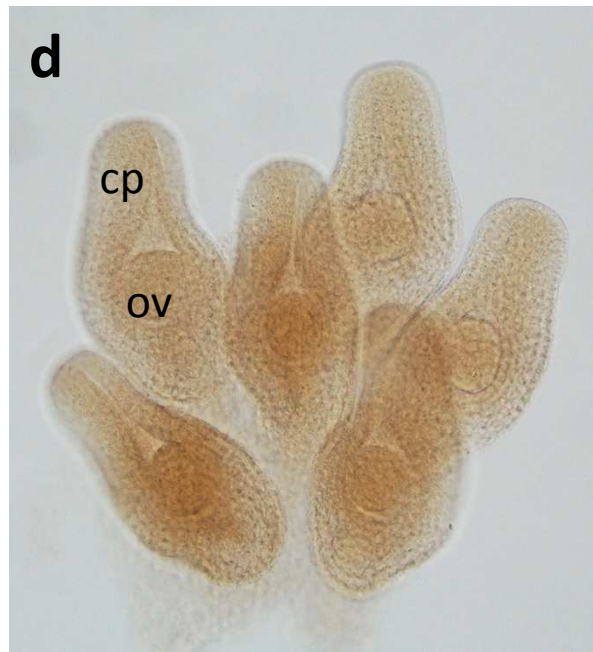
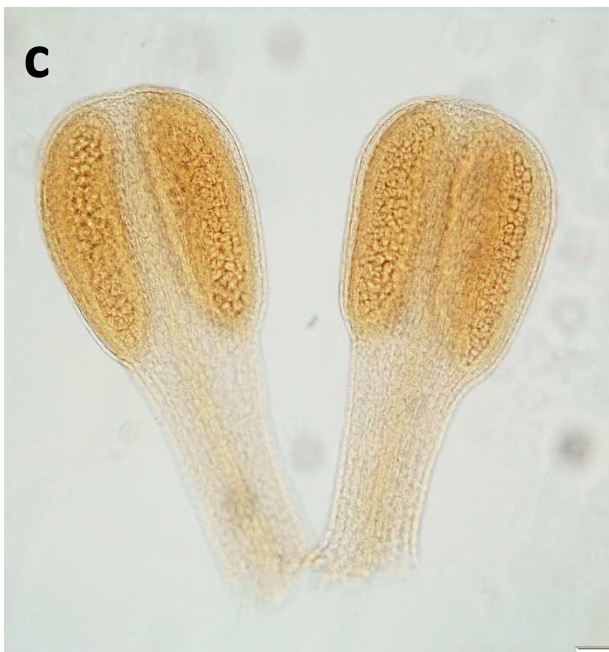
EMS Fig.2 a-d *Ranunculus glacialis* at the time of snow-melt

(a) Study site in the foreland of the Hintertux Glacier (2650 m a.s.l.). Plant individuals with several ramets emerging from the snow along the rim of the snow patches were labelled.

(b) *R. glacialis* individual few hours after snow melt. After overwintering belowground, leaves and flowering shoots have begun to sprout under the thinning snow cover. As soon as plants become snow-free, chlorophyll synthesis starts. Flower buds are protected by sepals, which are densely covered with dark-brown villous hairs (arrow)

(c) Stamens on the day of snow melt. Within the pollen sacs, microspore mother cells have formed which will undergo meiosis during the following days.

(d) Carpels (cp) on the day of snow melt. Ovules (ov) are still in an premeiotic state.



EMS Fig.3 a-c *Ranunculus glacialis* 12 days after snow-melt

- (a) *R. glacialis* individual 12 d after snow melt. Several ramets have developed an inflorescence. Stem leaves hide the view to the basal leaves beneath. Most flower buds are still tightly closed, first terminal buds begin to open.
- (b) Stamen out of a terminal bud in a postmeiotic state. Within the pollen sacs, uninuclear pollen grains are visible.
- (c) Carpel out of a terminal bud with the ovule shortly after meiosis. The single integument (in) begins to surround the nucellus (nu). st immature stigma.

