

# Selfing Syndrome

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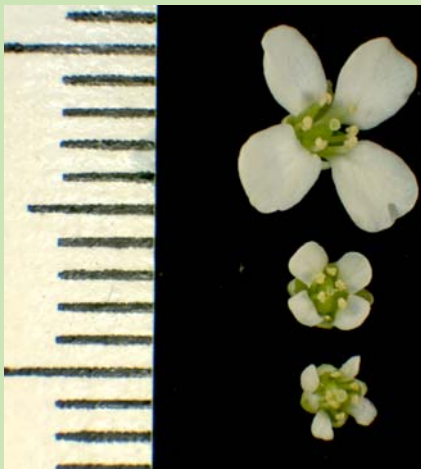
The shift from outcrossing (SI=selfincompatible) to self-fertilizing (SC=selfcompatible) is classically regarded as one of the most prevalent evolutionary transitions in flowering plants (Stebbins 1950)

Colonizing species that disperse over long distances are generally self-compatible (Bakers rule 1955)

So far the transition from SI to SC seems to be a one-way road. The change in mating system generally results in

- changes in flower morphology like reduction of petal size or loss of petals,
- changes in production of volatiles,
- changes in pollen/ovule ratio. That means predominantly less pollen production in selfing species, and
- changes in the position between anthers and stigma.

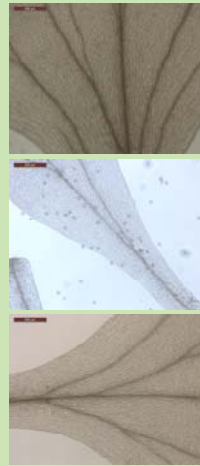
These changes are sometimes called the "Selfing Syndrome". These morphological changes result in new taxonomic species.



*Capsella grandiflora* SI

*Capsella bursa-pastoris* SC

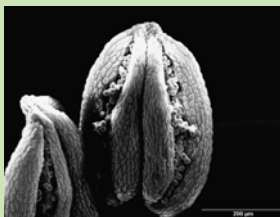
*Capsella rubella* SC



Smaller petals in the SC species are predominantly a consequence of lower number of cells.



Change of petals to stamens seems to be a consequence of a mutation in MADS box gene.



In *Capsella* the SC species have an 8fold less number of pollen in one flower.



SI

*C. grandiflora*

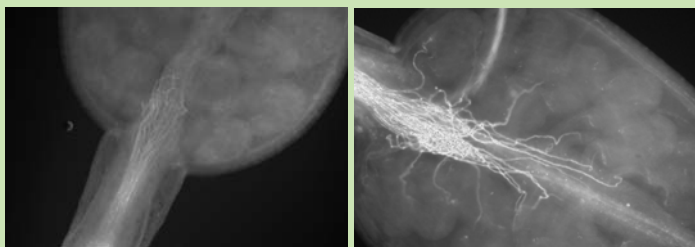
Longer style and less incised fruit might result in a more easy pollen deposition on the stigma for pollinating insects.



SC

*C. rubella*

Shorter style and more incised fruit might result in more easy pollen deposition of own pollen within one flower.



Pollen of selfing species germinates much quicker than pollen of outcrossing species.

It is a challenge to understand the transition SI → SC as well as the molecular basis for the selfing syndrome.