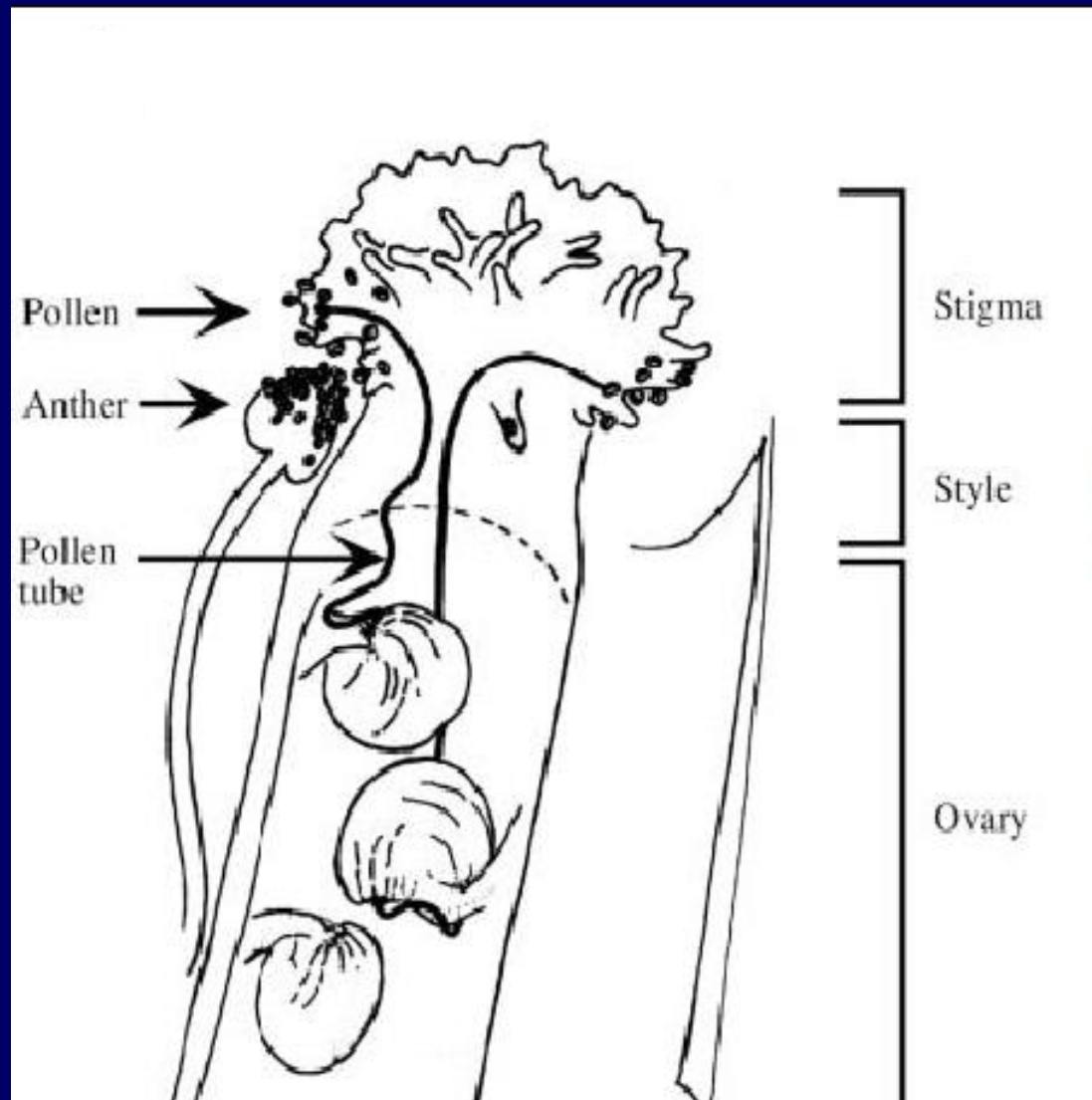




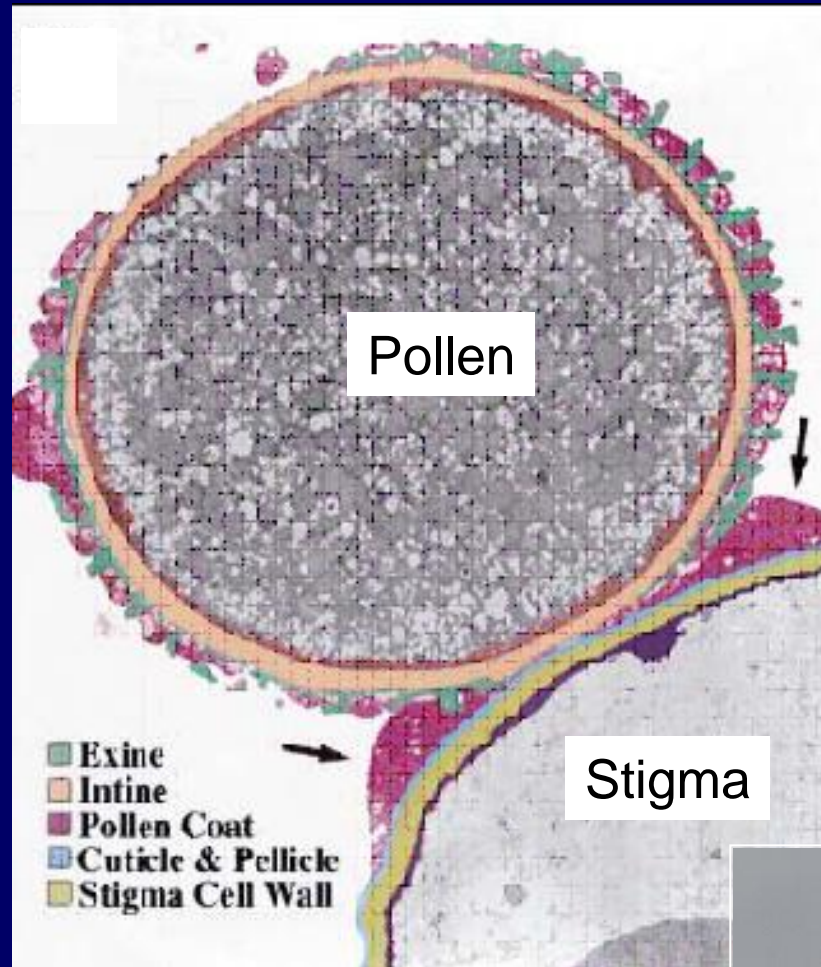
Global Climate Changes

Pollen-mediated Gene Flow

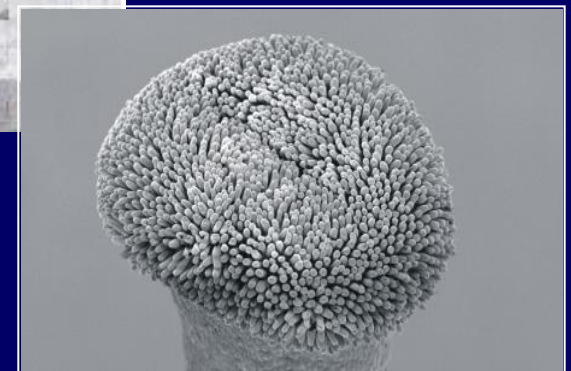
Pollination and Fertilization



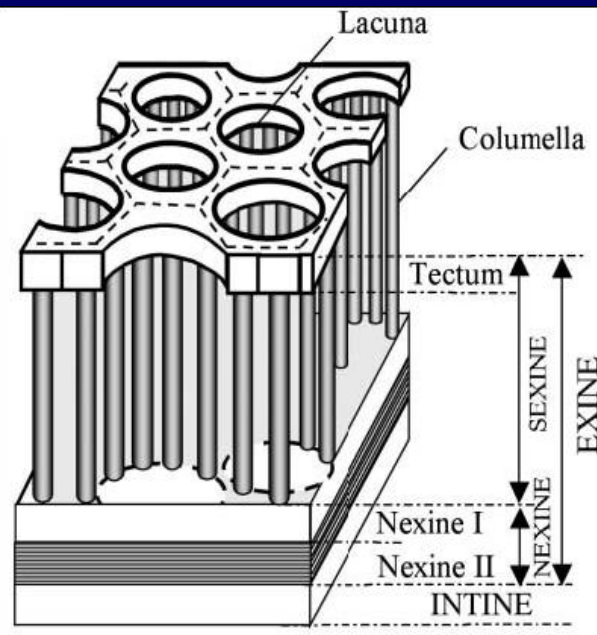
Pollen/Stigma Interactions



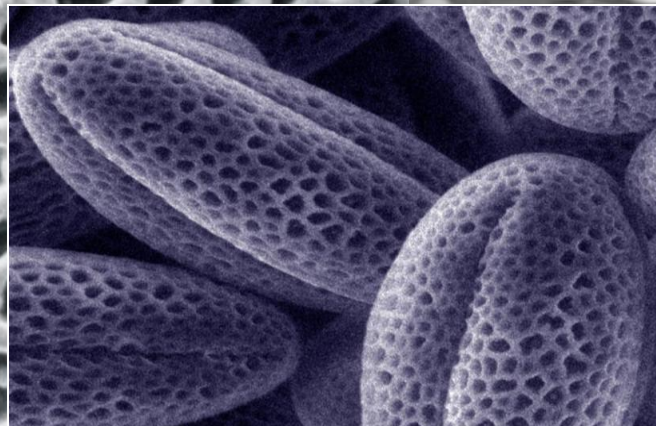
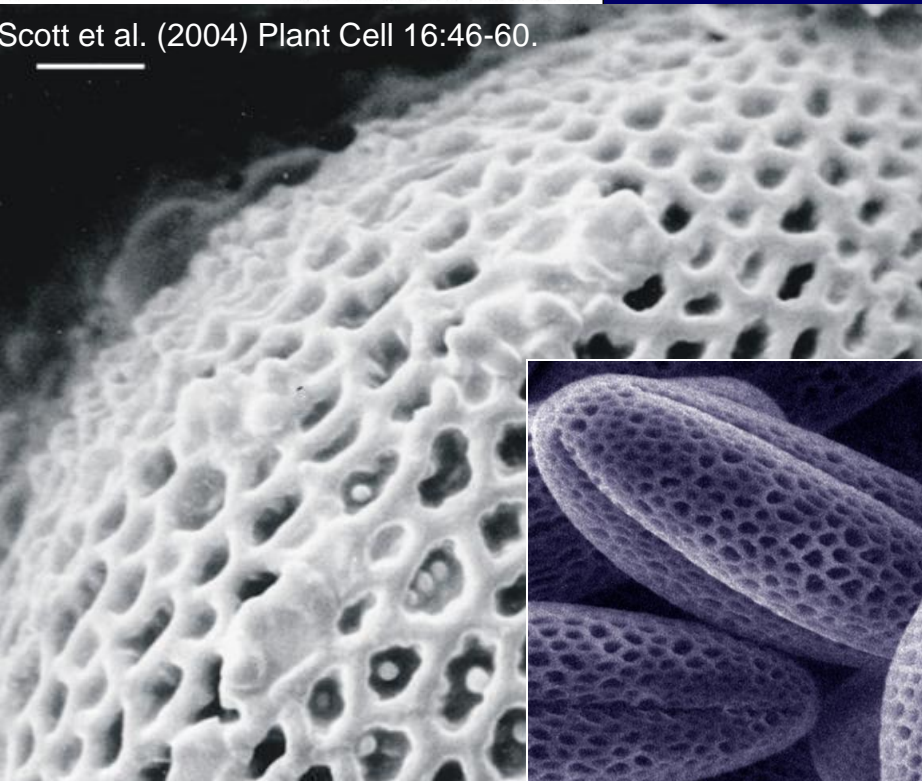
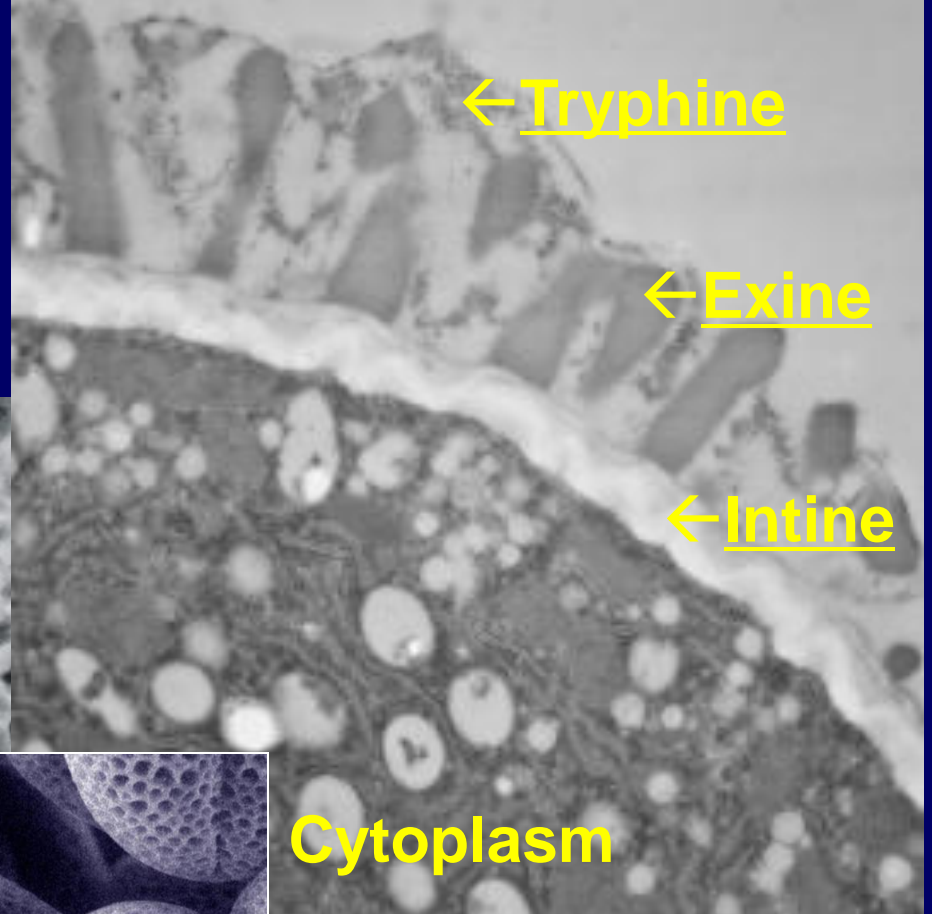
Edlund et al. (2004) Plant Cell S84-S97



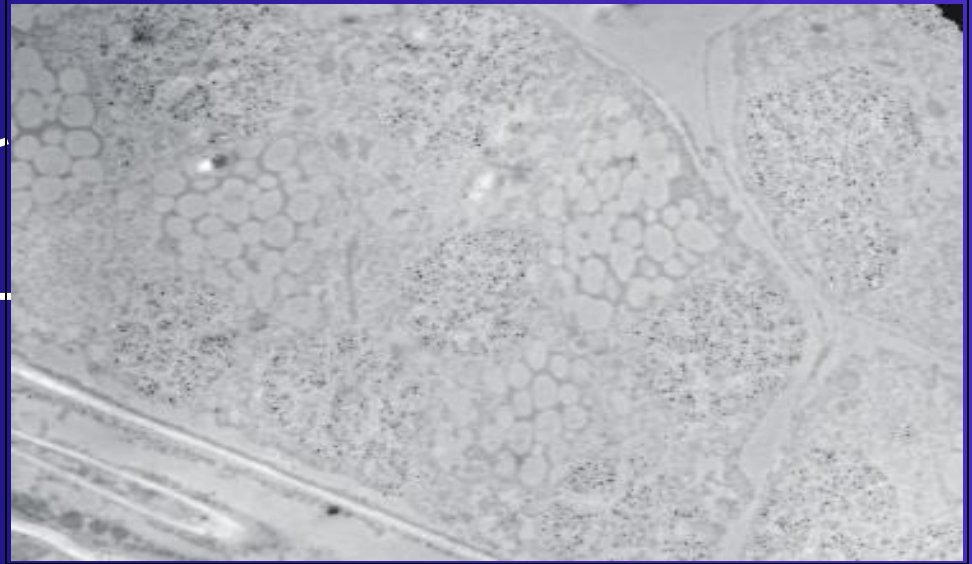
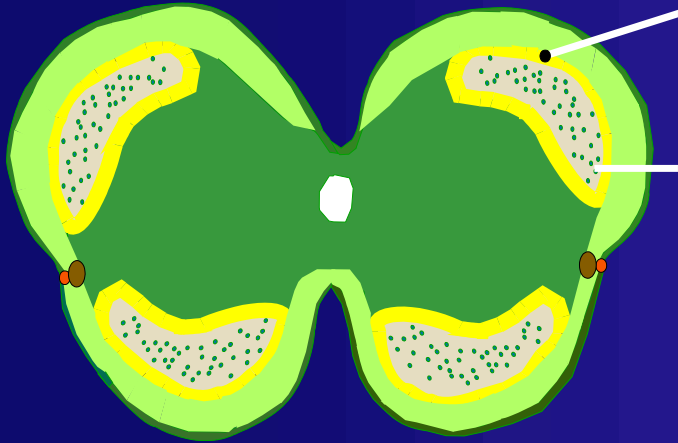
Brassica Pollen Cell Wall



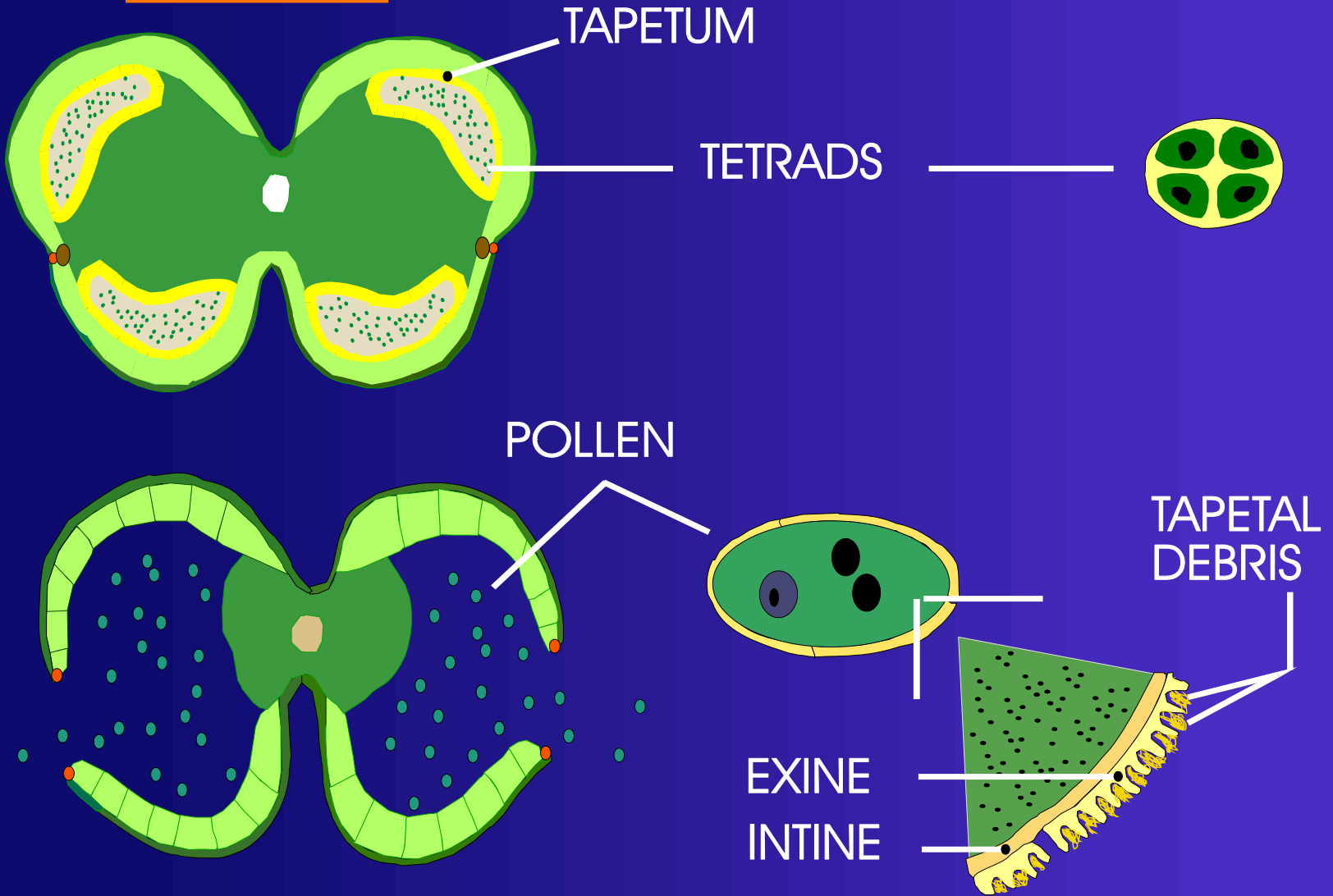
Scott et al. (2004) Plant Cell 16:46-60.



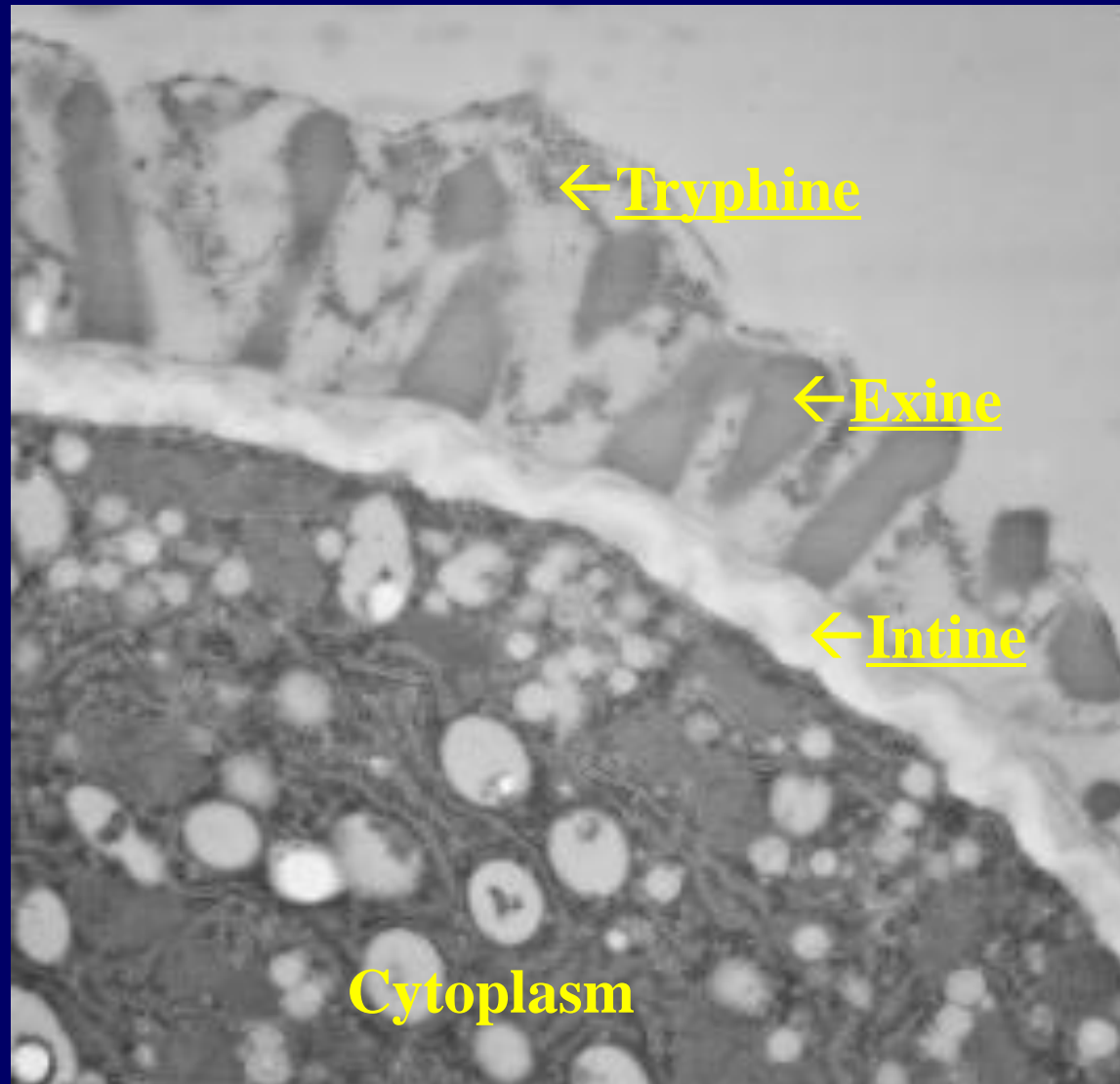
ANTHER



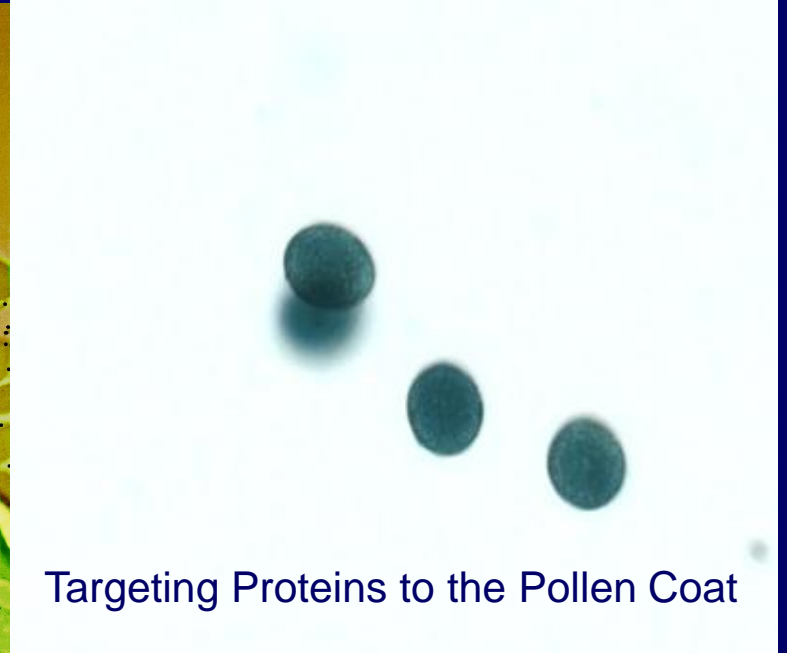
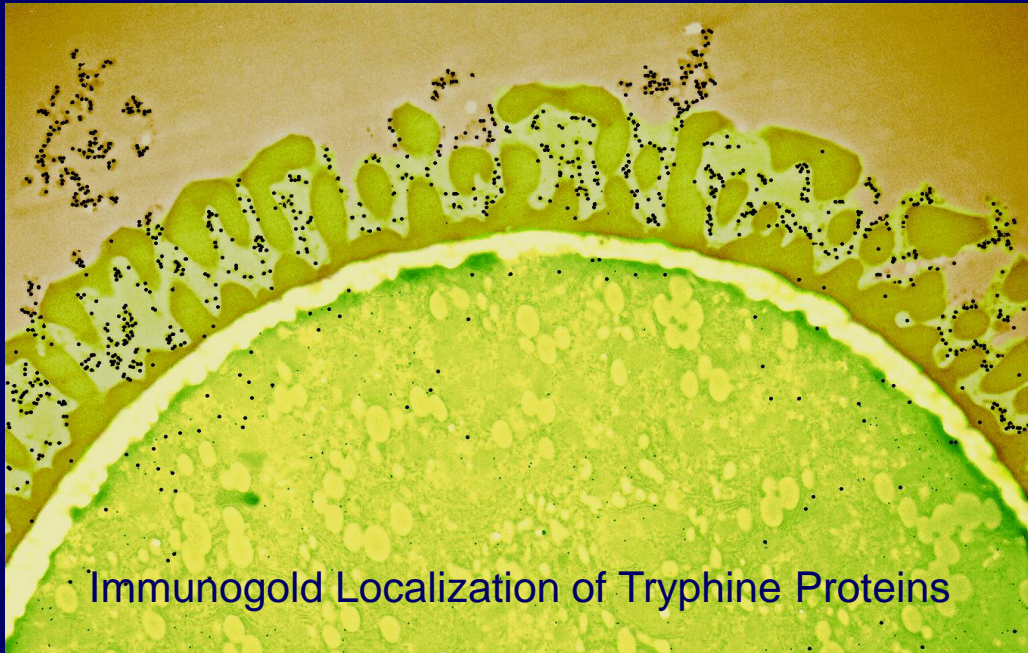
ANTHER



Tryphine Proteins are Derived from the Tapetum and
Intine Proteins are Derived from the Pollen

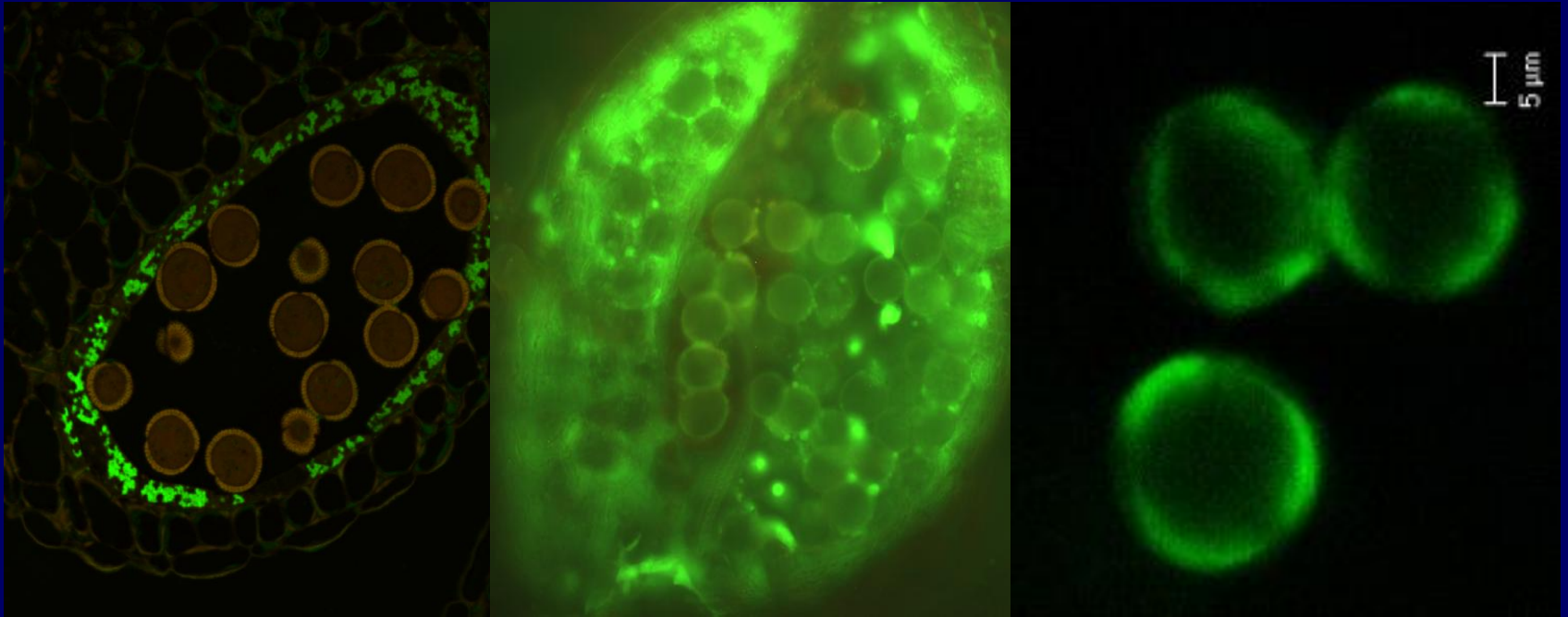


Targeting Proteins to the Brassica Pollen Coat



Foster et al. Modifying the pollen coat protein composition in Brassica. (2002) Plant J 31:477-486.

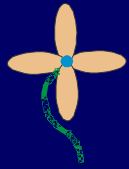
Targeting Proteins to the Arabidopsis Pollen Coat



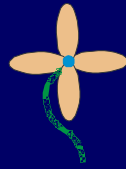
Work in Progress

- Characterizing tapetal oleosin-like protein targeting process in Arabidopsis.
- Characterizing targeting/function of Arabidopsis pollen tryphine proteins.
- Characterizing targeting/function of proteins within the Arabidopsis pollen grain.
- Characterizing stigma cell wall proteins.
- Characterizing genes involved in cereal reproduction.
- Identify putative inhibitor/enabler proteins to modify pollen/stigma interactions.

Potential Pollen Coat Targeting Strategy to Prevent Outcrossing



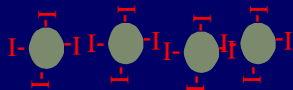
X



Plant expressing pollen coat **Inhibitor** 'Self-incompatible'



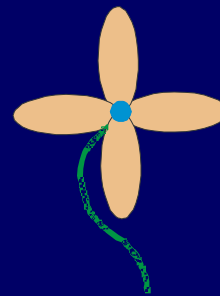
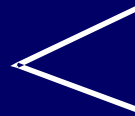
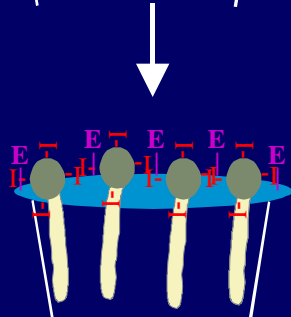
Plant expressing stigma surface **Enabler** ♂



— Pollen coated with **Inhibitor**



— Stigma expressing **Enabler**



- Self-fertilization occurs
- Hybrid seed produced
- Outcrossing prevented
- Incrossing possible

Self-fertile hybrid plant expressing pollen **Inhibitor** and stigma **Enabler**

Acknowledgments

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Hazim Alkhani
Kathryn Oliver

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André Laroche
François Eudes
Mohsin Zaidi
Frances Tran
Christine Gagnon



Canada 