Mutualism

Mutualism: Inter-specific relationship from which both species benefit

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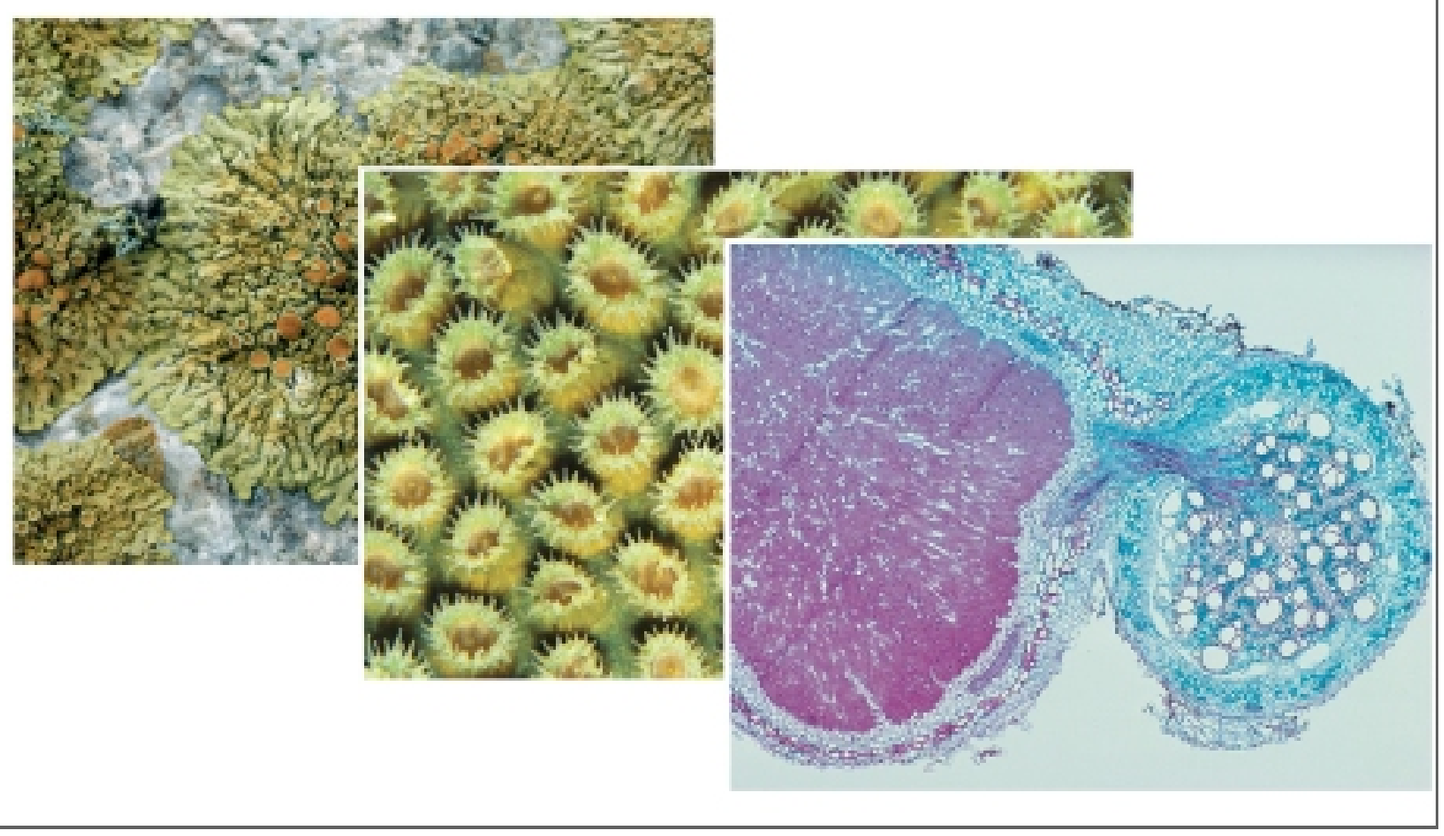
Symbiosis: Intimate (generally obligate) inter-specific relationships from which both partners benefit



Mutualism

Pollination by animals (ie birds, bees, moths, butterflies, beetles, ants, mammals)
Pollinators receive food rewards (nectar and pollen), plants have pollen moved to other flowers
How did this mutualism evolve? What are the origins?

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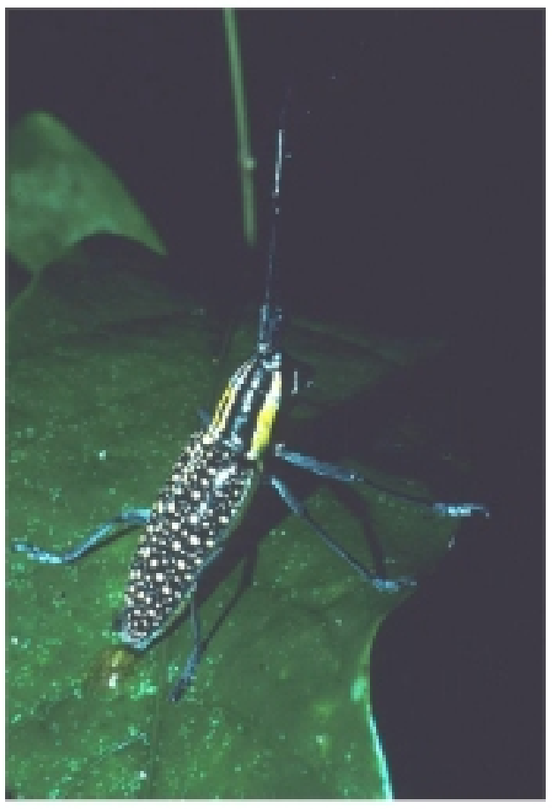

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By chance, some floral visitors were less damaging and perhaps even beneficial in moving pollen between plants, thus selecting for traits in plants that would minimize damage and cost and maximize pollen transfer

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2. Evolution of plant traits that minimize negative impact of insects
   a) protect ovules and pollen

Closed carpel to protect ovules

Defend pollen with chemical or physical defenses