

Acyrtosiphon pisum, pea aphid

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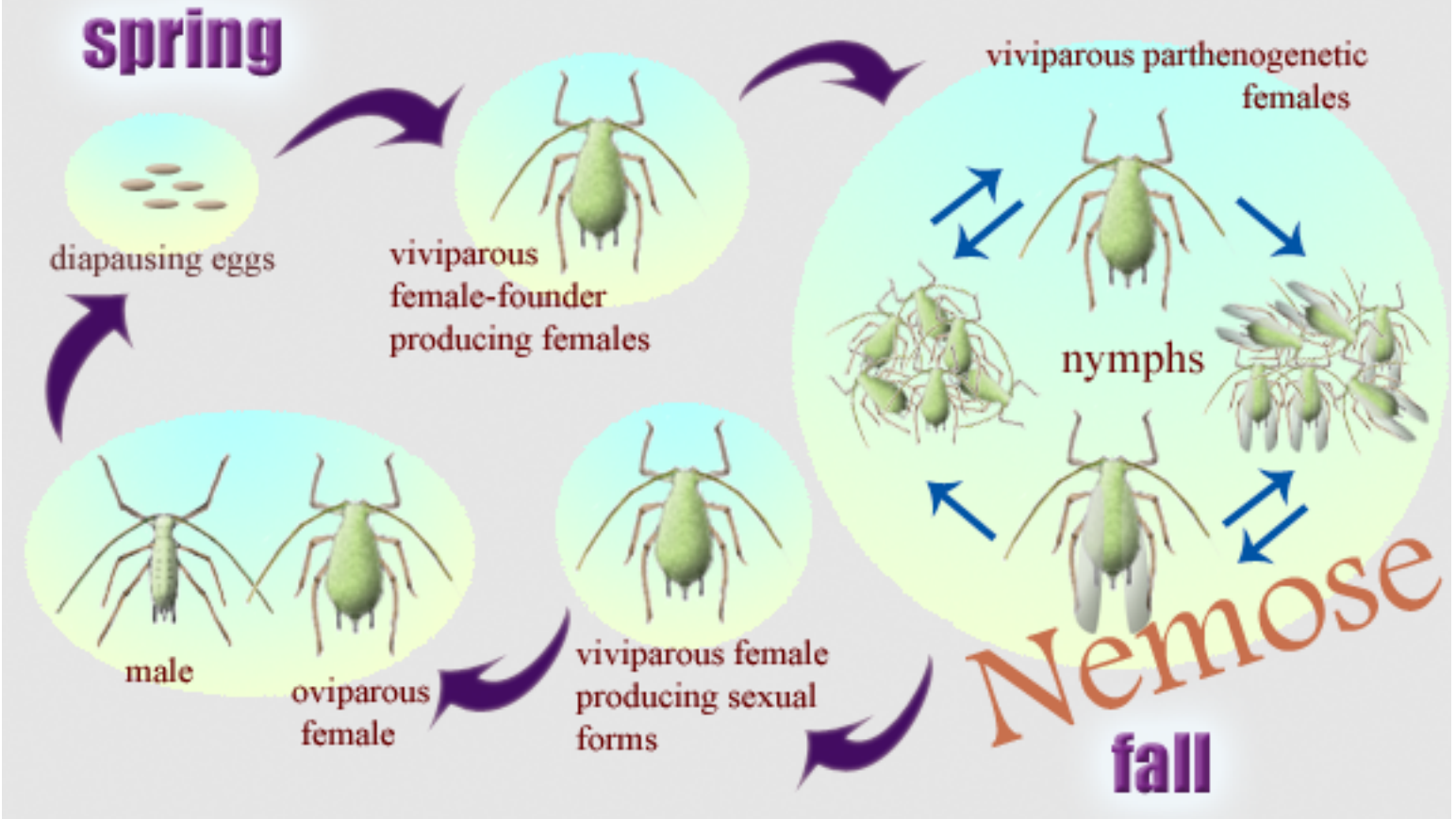
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Brief facts

- *Acyrtosiphon pisum* belongs to large group (~4,000 species) of insects, *Aphidinae* (aphids), which specialized in feeding on the phloem sap of plants.
- Aphids may cause losses of up to 30% in crops. Moreover, they are efficient vectors of many viral diseases in plants.
- In comparison to many other aphid species that are entirely host specific, the pea aphid is found on a few different families of plants which are the alfalfas, clovers, and field beans.
- *A. pisum* is the primary aphid used in laboratory studies because of its relatively large size and simplicity of rearing.
- *A. pisum* has a haploid genome size of approximately 300Mb on four holocentric chromosomes.
- Aphids provide excellent model for maternally transmitted symbionts. The primary symbionts, *Buchnera aphidicola*, inhabits specialized cells (**bacteriocytes**), and is required for host development, growth and

reproduction.

Aphid life cycle



Developmental stage (life cycle)

Life Cycle Stages

The life cycle of the pea aphid begins at spring and continues up to the moment when the insects start laying eggs for overwintering. In warm climates adult insects can continue feeding and parthenogenetic reproduction even in winter months.

- **egg**

in fall **oviparous** (sexual) females lay fertilized eggs that hatch the following spring; the total period of egg development is approximately 100 days; this period is considered as an embryonic **diapause**, a physiological

phenomenon of slow development under certain conditions; all insects that hatched from the eggs are females which reproduce by **viviparous parthenogenesis**

- **nymph** MeSH

each asexual adult female gives birth up to 4-12 female nymphs per day; nymph develops into mature female for 7-10 days; when the colony becomes overcrowded some winged females are produced; the winged insects migrate to infest other plants

- **adult**

there are following types of adults: asexual (**viviparous parthenogenetic**) females, which can be wingless or winged; sexual (**oviparous**) females, and **males**, which appear when temperatures become colder and light period shorter; life span of an adult is about 30 days

References

PubMed articles

- Le Trionnaire G et al. Shifting from clonal to sexual reproduction in aphids: physiological and developmental aspects. *Biol Cell*. 2008 Aug; 100(8):441-51. **PMID: 18627352**
- **PubMed: free full text articles about aphids**

Websites

- **Proposal to sequence the genome of the Pea Aphid (*Acyrtosiphon pisum*)**.
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nemose@live.com

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