

Neoteny in Insects.

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Neoteny is a term used in biology to detect the phenomenon in which an organism maintains juvenile characteristics in the adult phase. It is the ability to retain the characteristics of images and youth throughout life [1-2].

Miastor metraloas Meinert 1864 (Diptera: Cecidomyiidae) larvae, for example, can reproduce from unfertilized eggs inside a large live larva. The new larvae grow as parasites in the body of their counterpart and when they are mature enough to emerge, the original larva dies. The offspring repeat the process so that the number of larvae continues to increase until they transform into adult insects [1-5].

Neoteny plays an important role in the evolution of species. By retaining juvenile characteristics, organisms can adapt to new environments and explore different ecological niches. O desenvolvimento destas características pode estar relacionado ao mau funcionamento da glândula tireoidea; fatores genéticos; exposição excessiva ao frio; ausência de luz ou falta de iodo no organismo. Neoteny is an interesting phenomenon that can be observed in some species of insects, such as ants. Worker ants maintain juvenile characteristics, such as underdeveloped wings, even as adults, in these cases. This allows them to be more flexible and adapt to different tasks within the colony [1-5].

Butterfly eggs, for example, often have complex designs, with a surface covered in numerous raised edges and veins. Many insects lay their eggs in the roots, in the shoots and tender tissues of plants, inside cereal grains, and even inside other animals. The location where insects lay their eggs, although varied, is by no means random. The objective of carefully choosing the laying location is always the same: depositing the eggs in the place where the newly hatched larvae are surrounded by food [1-6].

Neoteny also occurs in all members of the order Strepsiptera, in these insects, female development ceases at the puparium stage. In some other insects in Chironomidae (Insecta: Diptera), the adult resembles the larva, but this is not due to neoteny because complete metamorphic development is maintained, including a pupal instar. Their larviform appearance therefore results from the suppression of adult characteristics, rather than the pedogenetic acquisition of reproductive capacity in the larval stage [1-6].

References

[1] Araguaia M. [Internet]. São Paulo: Parthenogenesis, pedogenesis, polyembryony and polyovulation. Brazil School; @2024 [cited 2024 Feb 10]. Available from <https://brasilescola.uol.com.br/biologia/casos-especiais2.htm>.

[2] Wake DB. What salamanders have taught us about evolution. Annual review of ecology, evolution, and systematics. In:

Barrientos JA, eds. Practical entomology course. 1st ed. Alicante: Spanish Association of Entomology; 2009. p. 333-352.

[3] Hickman CP, Ober WC, Garrison CW. Integral principles of zoology. 13th ed. Madrid: McGraw-Hill-Interamericana. 2006.

[4] Souza CR, Lima T, Rezende R, Paschoal P, Piovezan R, Souza MI. Biology of Reproduction of some orders of insects [Internet]. Rio Claro: The review was presented to the Institute of Biosciences of the Universidade Estadual Paulista "Júlio de Mesquita Filho; @2013 [cited 2024 Feb 10]. Available from file:///C:/Users/USUARIO/Downloads/Biologia_da_Reproducao_de_algunas_ordens%20(1).pdf.

[5] Gullan PJ, Craston PS. Insects: a summary of Entomology. 3rd ed. São Paulo: Roca. 2007.

[6] Ernett RHJr. American insects. 2nd ed. London: CRC Press. 2009.