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What is the importance of moulting in insects

A cicada during the moulting process. Image credit: Public domain animals such as insects, crabs and spiders belong to one of the richest animal groups of species, called arthropods. These animals have exoskeleton, which are hard, external coverings that support their bodies. Arthropods throw their exoskeletons as they grow, a process called ecdysis or moulting, and this behavior is controlled by a series of hormones and small protein molecules, called neuropeptides that allow communication between neurons. Other animals, such as rounded worms, also the sickle; and together with arthropods are classified in a group called Ecdysozoa. Since moulting is a common behaviour in ecdysozoa, it was previously assumed that its signaling components had evolved into the common ancestor of the lombrics and arthropods, although there are differences in moulting machinery between both groups. Here, De Oliveira et al. investigate the evolutionary origins of arthropod moulting machinery and find that some of the hormones and neuropeptides involved appeared long before the arthropods themselves. Database research has shown that important hormones and neuropeptides involved in arthropod moulting can be found in different animal groups, such as jellyfish, molluscs and starfish, confirming that these molecules evolved before the last common ancestor of lombrics and arthropods. These animals must therefore use hormones and neuropeptides in many processes not related to moulting. De Oliveira et al. also discovered that rounded worms lost most of these molecules, and that moulting in these animals should be guided by a different complement of hormones and neuropeptides. These results invite research into the role of hormones and neuropeptides in animals outside Ecdysozoa. They also show that signalling routes and processes are highly adaptable: two animals can use the same hormone in completely different processes, but on the contrary, the same behavior can be regulated by different molecules depending on the animal. This means that the evolution of a process and the evolution of its regulation can be decoupled, a result that has important implications for the study of signalling routes and their evolution. Skip to Main Content Skip Nav Destination RESEARCH ARTICLE| 01 August 2006 The process of insect molt was largely ignored by ecologi, although the importance of larval development is recognized. We measured the time lost in molt, based on growth rates in the surrounding stages, of two herbivore insects. Modeling from the penultimate to the final instar required a time presumably long in both species: 2.43 d in *Epirrita autumnata* at 12°C (average field temperature) and 3.58 d in *Galerucella sagittariae*. This included 43% and 50% of total time in development from the beginning of an instar at the beginning of the next. *Epirrita* mutang time increased from 1.00 d to 24° to 8.27 d to 6°; *Galerucella* requested 0.98 d to 24° and were unable to molt to 6°. The low temperatures have delayed the development of the larvae more than the larvae growing. The geographical distribution of insects can be hampered by their ability to molt at low temperatures. Journal Information *Oikos* is a journal published by the Nordic Ecological Society and is one of the leading ecology journals. *Oikos* publishes original and innovative research on all aspects of ecology. The emphasis is on theoretical and empirical work aimed at generalization and synthesis between taxa, ecological systems and disciplines. Documents should be well founded in ecological theory and contribute to new developments in ecology by reporting the theory of novel or critical experimental results. 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Humanity. why do insects need moulting. what is moulting in insects. importance of molting in insects

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