

The unique life cycle strategy of Antarctic krill: Adaptation to a high latitude environment

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The polar pelagic environment is characterized by the extreme seasonal cycle of its environments such as day length, light intensity, sea ice extent and food availability. Possessing biological timing that guarantees regulation of their physiology and behaviour in response to seasonal cycles of environment is of particular advantage, and not surprisingly, many polar pelagic organisms have evolved endogenous rhythmic physiological and behavioural functions, which are synchronized with these cyclic changes. The polar environment is currently subject to the fastest warming on the planet affecting patterns of the polar marine environment (e.g. sea ice decline) as well as causing changes in water properties such as temperature rise and ocean acidification. In order to predict effects of these changes on ecosystems at species and community levels, it is of paramount importance to understand the basic principles of how the life cycle of key species is synchronized with their seasonal environment. The mechanisms leading to these rhythms, however, are far from clear. In this respect it is of fundamental scientific interest to understand the molecular basis of biological rhythms and clocks in polar pelagic organisms that have a central importance in polar pelagic food webs.

This talk aims to give an overview of daily and seasonal pattern in physiological and behaviour functions of the polar key species Antarctic krill, *Euphausia superba*, the drivers behind these patterns and their ecological consequences in general and in a changing environment in particular.

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