



Luca Telesca - Early Stage Researcher No. 1

Variation in shell composition and thickness with latitude and historical time

It is known that shell features can vary significantly within species, depending on where they live and these are all tightly linked to the local conditions. By studying the variability of these shells' characteristics from the same species in different environments, we can identify how local conditions affect shell production. Specifically, my project will investigate the natural variation of shell characteristics across a latitudinal gradient and over historical time in four commercial species: *Pecten maximus* (King scallop), *Mytilus edulis* (Blue mussel), *Crassostrea gigas* (Pacific oyster) and *Mya arenaria* (soft-shell clam).

I will examine the intraspecific variation of thickness, microstructure, mineralogical and organic content over the current latitudinal range and the variability of growth rate, showing the levels of shell production and physiological responses of these species to different environmental parameters.

The same features will be analysed in museum collections allowing us to obtain and compare historic data on shell variability over the last 100 years of changing environmental conditions. Moreover, three of these species occurred during the Pliocene epoch, providing further comparison and allowing us to address any evolutionary scale changes in the shell structure and composition over the last 4 million years.

Understanding how shell characteristics vary in the natural environment and over historical time is essential if we are to accurately predict how these species will react to the future climate change leading to increasing acidification levels.

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