



David Vendrami - Early Stage Researcher No.2

Quantification of natural variation in shell thickness and production across a latitudinal gradient and relation to environmental parameters and the underlying population genetics.

As you may know, since the onset of the industrial revolution, atmospheric levels of CO₂ have rapidly risen. One of the consequences of this phenomenon is that oceans are becoming more acidic and this may have a negative impact on those organisms with calcareous skeletons (such as shellfish, but also corals, and many more), because the degree of acidity of the ocean plays an important role in the ability of these animals to incorporate those molecules needed to build their skeletons. Unfortunately little is currently known about it and further studies are required to deepen our knowledge of this topic.

Variation in the degree of acidity (which is measured by the so-called pH) of the ocean exists naturally across a latitudinal gradient, which means that shellfish populations from different latitudes, face different water pH conditions. As a member of the CACHE network, I'll have the opportunity to study samples of shellfish coming from a latitudinal range that goes from Portugal to Sweden. In this way I'll be able to study how the variation in shell thickness and production observed in these samples, correlates with the different environmental conditions (such as pH, but also temperature) encountered at different latitudes.

More in the detail, I'm going to exploit the information encoded in the genome of these animals, to produce for the first time a truly pan-European picture of the population genetic structure within European coastal waters for all the four species of shellfish we're studying. Doing so, we'll have the opportunity to study also the relationship between the variation in shell thickness and production and the just-mentioned population genetic structure. In this way, we'll be able to increase our knowledge about how environmental factors and genetics interact to determine the ability of these animals to produce their calcareous skeleton and, as a consequence, our capability to formulate effective conservation strategies.

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