Ras gene mutations in *Mytilus galloprovincialis*: a novel molecular biomarker of petrochemical contamination for invertebrate species?

Inês Lima

Laboratório de Ecotoxicologia, CIIMAR.

Mussels are susceptible to a wide range of environmental toxicants, including carcinogens, and thus are often employed as bioindicator species. The aim of this study was to investigate the status of the *ras* gene in the invertebrate *Mytilus galloprovincialis* as a biomarker of environmental contamination by petrochemical products. We have isolated a *M. galloprovincialis* homologue of the vertebrate *ras* gene, which shows conserved sequence in regions of functional importance. A high incidence of *ras* gene polymorphic variation was observed, which may indicate the presence of a second *ras* gene. Following isolation of the *ras* gene, mutational damage induced by petrochemical products was evaluated in mussels chronically exposed to water-accommodated fraction (WAF) of fuel oil, and in mussels collected from reference and petrochemical contaminated sites along the NW coast of Portugal. *Ras* gene mutations were identified in codons 35 and 42 of two individuals collected from a petrochemical contaminated site. The characterised mutational alterations suggest that the mussel *ras* gene may provide a novel biomarker of genotoxicity caused by petrochemical contamination in an invertebrate species; however more studies need to be performed to confirm this hypothesis. To our knowledge, this represents the first report of a *ras* gene mutation in any invertebrate species.