

Is MC1R polymorphism related with melanism in Balearic *Podarcis*?

Buades J.M.¹, Rodríguez V.¹, Terrasa B.¹, Pérez-Mellado V.²,
Castro J.A.¹, Picornell A.¹, Ramon M.M.¹

¹ Laboratori de Genètica, Departament de Biologia, Universitat de les Illes Balears, Palma de Mallorca, Spain
e-mail: jm.buades@uib.es

² Departamento de Biología Animal, Universidad de Salamanca, Salamanca, Spain.

Abstract: The two Balearic species of *Podarcis* genus (*P. lilfordi* and *P. pityusensis*) present great colour variations in populations, as melanic or non-melanic, light-coloured, green or brown. The adaptative role of the different pigmentation has been often discussed. Recently, mutations in the melanocortin-1 receptor (MC1R) have been reported to contribute to the diversity pigmentation in several species of fish, birds and mammals, but little information exists about the colour variation in lizards. The MC1R is a G-protein coupled receptor in melanocytes, which is involved in the regulation of pigments synthesis. Some studies demonstrate that MC1R loss-of-function mutations determine light-coloured pigmentation, while, gain-of-function mutations, cause dark-coloured pigmentation. The main aim of this study was to determinate if the presence of mutations in the MC1R gene is the cause of the observed pigmentation in the two Balearic species.

Samples were extracted from different insular populations. They were recollected according to their pigmentation, melanic individuals from Menorca (Aire) and from Mallorca (Sa Foradada), and non-melanic individuals from different populations from Mallorca, Menorca and Formentera (e.g. Punta Trocadores). Also, some populations with different dorsal and ventral colour pattern were selected. MC1R gene of all the samples were amplified and sequenced. The results of this study showed polymorphic regions in the MC1R gene in some of the analyzed populations; although the MC1R mutations found do not seem to be directly related with melanism in these species. Polymorphism in other genes, e.g. agouti, should be investigated to elucidate the complex variation of coloration that exhibits the *Podarcis* genus in the Balearic archipelago.