

Analyses of morphology, physiology, and microbial diversity after a recent dietary switch in a lizard.

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Although evolution is commonly considered a slow process, recent evidence has shown that organisms can show dramatic and measurable phenotypic responses after introductions to novel environments in relatively short time spans. We have previously shown how lizards (*Podarcis sicula*) have rapidly evolved differences in head morphology, bite strength, and digestive tract structure after experimental introduction onto a small island in the Adriatic Sea, Croatia. Despite the short time scale (36 years) since this introduction, the introduced lizards became omnivores and evolved caecal valves in the hindgut, a structure rarely observed in lizards. These changes in morphology and performance parallel those typically documented among species and even families of lizards in both the type and extent of their specialization. Here, we present novel data on 1) the morphology of the cranium and its muscles using μ CT scanning and 3D geometric morphometric approaches, 2) the digestive physiology of the two populations, and 3) the diversity of the microbiomes in the hindgut using metagenomic sequencing approaches.