

How important is geographical isolation in speciation?

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A genetic study of island lizards shows that even those that have been geographically isolated for many millions of years have not evolved into separate species as predicted by conventional evolutionary theory. Professor Roger Thorpe and colleagues Yann Surget-Groba and Helena Johansson, at Bangor University, UK, reveal their findings April 29 in the open-access journal *PLoS Genetics*.

Since Darwin's study of the Galapagos Islands, archipelagos have played a central role in understanding how new species evolve from existing ones (speciation). Islands epitomize allopatric speciation, where geographic isolation causes individuals of an original species to accumulate sufficient [genetic differences](#) to prevent them breeding with each other when they are reunited.

Current day Martinique in the Lesser Antilles is composed of several ancient islands that have only recently coalesced into a single entity. The phylogeny and geology show that these ancient islands have had their own tree lizard (anole) species for about six to eight million years.

Capitalizing on the islands' meeting, the authors genetically tested the lizards for [reproductive isolation](#) from one another. In using selectively neutral genetic markers, the authors saw that these anoles are freely exchanging genes and therefore not behaving as separate species. Indeed, there is more genetic isolation between conspecifics from different habitats than between those [lizards](#) originating from separate ancient islands.

The findings reject allopatric speciation in a case study from a system thought to exemplify it, and suggest the potential importance of speciation due to differences in ecological conditions (ecological speciation). "The next step is to identify the genes controlling the traits influencing the process of speciation", said Roger Thorpe.

More information: Thorpe RS, Surget-Groba Y, Johansson H (2010) Genetic Tests for Ecological and Allopatric Speciation in Anoles on an Island Archipelago. PLoS Genet 6(4): e1000929.
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