

Going batty for jumping DNA as a cause of species diversity

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The vesper bats are the largest and best-known common family of bats, with more than 400 species spread across the globe, ranking second among mammals in species diversity.

Authors Ray et al., wanted to get at the root cause of this diversity by taking advantage of two vesper bat species whose genomes have recently been sequenced. They speculated that one cause of this [diversity](#) might be jumping elements in the genome, called DNA transposons, which are more active and recent in the [evolutionary history](#) of this family than any other mammal. Why and how this DNA transposon activity has increased in these bats is unknown.

In their study, published in the advanced online edition of *Molecular Biology and Evolution*, they examined the patterns of DNA transposons activity in the two vesper bat species genomes. They found that the timing of [bat species](#) expansion coincides with DNA transposon activity around 30 million years ago. DNA transposons, in turn, gave rise to the introduction of small RNAs, called microRNAs, or miRNAs, which can have a major effect on gene expression, and thus, evolutionary novelties. Says Ray, "Our results suggest that transposable elements have the potential to shift evolution into overdrive by rapidly introducing large numbers of small RNAs. Those small RNAs don't change the proteins that genes code for but instead impact how and when the genes are expressed, thereby allowing for rapid changes in the way organisms interact with their environment."

They further speculate that DNA transposons acted as a major evolutionary force in bat [species diversity](#) which coincided with a rapid and large shift in the Earth's climate from warm tropical conditions to a more temperate climate, called the Eocene-Oligocene transition, which occurred 33-34 million years ago.

Provided by Oxford University Press

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