

Genomic evidence for parallel adaption to cities

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Abstract

Urban evolutionary biology is the study of rapid evolutionary change in response to humans and our use of lands to support city dwellers. Because cities are relatively modern additions to the natural world, research on urban evolution tends to focus on microevolutionary change that has happened across a few to many hundreds of generations. These questions still fall under the broad purview of evolutionary ecology. But the severity, rapidity, and replication of environmental changes that drive evolution in this context make it worthy of specific attention. Urban evolution provides the opportunity to study the earliest stages of evolution in a context that is scientifically interesting and societally important. The newness of urban populations and their proximity to natural populations also creates challenges when trying to detect population genetic change. In a From the Cover article in this issue of *Molecular Ecology*, Mueller et al. (2020) use whole genome resequencing data to address some of these challenges while exploring genetic changes associated with urbanization in 3 replicate urban-rural burrowing owl (*Athene cunicularia*) populations. Combining multiple approaches across these sample sites Mueller et al. find evidence for selection on genes whose function is related to synapses, neuron projections, brain connectivity, and cognitive function in general. That selection was parallel suggests brain processes were likely important for urban adaptation.

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