Population monitoring and physiological trade-offs

The French lab has monitored urban and rural populations of side-blotched lizards (Uta stansburiana) in and around St. George, Utah, since 2010. We capture, mark, and recapture lizards from these populations every year in May and model their population dynamics, which we compare to individual differences in physiology.

Population physiology and genomics

We are currently studying genome-wide patterns of sequence variation among populations of side-blotched lizards to determine the genetic architecture of life history traits and the evolutionary consequences of urbanization. As such, we are analyzing population-level genetic diversity and structure over time to reveal insights for adaptive potential in urban environments.

Ecoimmunology

Ecoimmunology, a burgeoning field, presents promising tools that are stress-sensitive and can rapidly and more directly assess the health of individuals within a population. These immunological tools inform functional pathways that provide researchers with an understanding of not simply whether a physiological effect has occurred, but also the downstream health implications for individuals. We are actively applying and developing new ecoimmunology tools to address pertinent questions in ecophysiology.

Ecotourism and anthropogenic disturbance

In much of our research we examine whether current environmental changes affect animal physiology, life history trade-offs, and ultimately survival. We are focusing on interactions among stress physiology, energetics, reproduction and the immune system using a myriad of physiological, ecological, and genomic approaches to better understand the implications of anthropogenic changes on individuals and populations. Study species include side-blotched lizards in an urban landscape, ground squirrels in an alpine environment, marine iguanas in the Galapagos Islands, rock iguanas in the Caribbean, and polar bears in the artctic.