***Institute of Ecology and Evolution (IE2)***

The Institute of Ecology and Evolution promotes and facilitates research and graduate education in ecology and evolutionary biology. The institute fosters a collegial and stimulating intellectual environment for world-class research in molecular evolution, evolutionary genetics, evolution of development, and microbial, population, community, and ecosystems ecology. IE² maintains close ties to the UO Departments of Biology, Chemistry, Computer Science, Geography, Geology, and Landscape Architecture, as well as the Institutes for Molecular Biology, Neuroscience, and Marine Biology. Together, IE²’s students and faculty are working in the laboratory and the field to address fundamental and applied questions about the organization and history of life on earth.

Researchers study a wide range of issues, but interests coalesce around a few major themes: microbial ecology; functional evolutionary and ecological genetics; evolution, development and genomics, and; conservation biology and global change.

Microbial ecology: Researchers study the causes and consequences of microbial biodiversity, and the interactions between microbes, other organisms and their environment. Using experimental, field, and theoretical approaches, they examine the factors that determine the distribution and abundance of microbes at local and planetary scales, the response of microbes to environmental change, and the role of microbial communities in ecosystem function and organismal development.

Functional evolutionary and ecological genetics: Research identifies the molecular genetic basis for new phenotypes and studying the evolutionary processes that drive adaptation. By combining evolutionary and computational analysis with functional molecular assays, researchers test hypotheses about the molecular mechanisms and evolutionary dynamics by which key biological features emerge. Hand in hand with these efforts, they also study the ecological significance of genetic variation in populations, communities and ecosystems. By combining approaches from molecular biology, biogeochemistry, and ecology, the researchers test hypotheses regarding the generation, maintenance and ecological consequences of genetic variation.

Evolution, development, and genomics: Research focus on how changes in developmental processes have evolved to produce new morphological characters. Using genomic analysis, genetic mapping, and molecular developmental biology, researchers are investigating the evolution of phenotypes ranging from the skeletal features of vertebrates to the existence of sex in worms.

Conservation Biology and Global Change: Researchers are interested in understanding how global changes in climate and atmospheric composition affect the structure and function of ecosystems and the processes of evolution. They study the effect of global change on microbial and plant diversity, on carbon and nutrient cycling, on host-pathogen interactions, and the evolutionary response of insects to changing climate.