

Princeton University

Honors Faculty Members
Receiving Emeritus Status



June 2008

The biographical sketches were written by
colleagues in the departments of those honored.

Contents



Faculty Members Receiving Emeritus Status

| | |
|---------------------------------|---------|
| Robert Choate Darnton (2007) | Page 1 |
| Peter Raymond Grant | Page 5 |
| John Joseph Hopfield | Page 8 |
| William Louis Howarth | Page 10 |
| Hisashi Kobayashi | Page 14 |
| Joseph John Kohn | Page 18 |
| Ralph Lerner | Page 21 |
| Eugene Perry Link Jr. | Page 24 |
| Guust Nolet | Page 27 |
| Giacinto Scoles | Page 29 |
| John Suppe (2007) | Page 33 |
| Abraham Labe Udovitch | Page 36 |
| Bastiaan Cornelius van Fraassen | Page 40 |

Peter Raymond Grant



Peter Grant was born in London, England, in 1936, and studied biology at Cambridge University. He moved to the University of British Columbia in Canada for Ph.D. studies, and there met his wife Rosemary, also a biologist. They spent a year at Yale University, where Peter was a postdoctoral fellow with Evelyn Hutchinson, a leading ecologist of the day, and Rosemary was a research associate. Soon after their first daughter, Nicola, was born, they moved back to Canada. Peter taught at McGill University from 1965 to 1978. A few years after their second daughter, Thalia, was born, Rosemary was able to return to research, and Peter and Rosemary began a research program on the evolution of Charles Darwin's finches on the Galápagos Islands, work for which they are best known. They left Montreal for the University of Michigan in 1978, and came to Princeton in 1985.

In his Ph.D. research, Peter established a pattern of evolution of birds on islands that showed what happens when a species is released from competition from similar species. He followed this up with experimental tests of the importance of competition in ecological communities, using mice instead of birds because they can be experimentally confined to outdoor enclosures in a way that birds cannot. Having successfully completed a set of benchmark experiments, he then took on the ambitious task of explaining how new species arise in evolution. This is well known to be the fundamental basis for understanding the origin of biological diversity. Darwin had addressed the same issue in his famous book *On the Origin of Species*. The attempt was inevitably incomplete because Darwin was writing in the era before particulate inheritance (genes) was known. Since then, the problem has attracted much attention from evolutionary biologists working mainly in

museums or with model organisms in the laboratory. Peter and Rosemary took the problem into the field. Beginning in 1973, they chose to study a classical example of adaptive radiation. Fourteen ecologically different species of finches have been derived from a common ancestor in the Galápagos archipelago. The question is how and why did this occur? Their answer has been published in three books, the most recent one in 2008 (*How and Why Species Multiply*, Princeton University Press).

Peter and Rosemary Grant's research is unusual in two ways. First, they have worked together as a collaborative husband-and-wife team. Second, they pioneered the direct study of evolution by natural selection in a 35-year study of Darwin's finches on the Galápagos Islands. This research combines analyses of archipelago-wide patterns of evolution with detailed investigations of population-level processes of evolution on two islands, Genovesa and Daphne. The rewards have been rich. By marking individuals uniquely, after capturing and measuring them and taking a drop of blood for DNA analysis, they showed that small-scale evolution in beak size and shape can occur in less than one year. This is far faster than had previously been believed for long-lived animals like birds. Collaboration with colleagues at Harvard University identified at least two genes that are critically involved in beak development. These findings, combining ecology, behavior, and genetics, have opened up a new field of investigation of evolution as a process to be studied in a natural environment by observation and experimentation.

By studying pairs of species over many years, Peter and Rosemary showed that species experience a dynamic tension in the early stages of the speciation process, between divergence as a result of natural selection and convergence as a result of interbreeding and the exchange of genes. Their study further illuminated the process of speciation by demonstrating first that imprinting on paternal song and parental morphology is a prime determinant of mate choice, and second that hybridization nonetheless occurs when the imprinting

process is perturbed. The research established the genetic consequences of hybridization, and showed that hybrids experience unexpectedly high relative fitness under the ecological conditions that follow strong El Niño events. These findings reoriented thinking about the process of speciation in vertebrates and some insects by showing the importance of culturally transmitted factors in the early development of barriers to gene exchange prior to the origin of genetic incompatibilities. The study provides the most comprehensive model for the origin and diversification of species in which there is an interaction between natural selection and learning. The work, impressive in both breadth and depth, has influenced a generation of biologists and aided public understanding of evolution through their own publications, documentaries, and the widely read book, *The Beak of the Finch* (1994), which earned a Pulitzer Prize for its author Jonathan Weiner.

Peter served as chair of the Department of Ecology and Evolutionary Biology at the University of Michigan, and briefly as the chair of the newly founded department of the same name at Princeton. He was named the Class of 1877 Professor of Zoology in 1989. He was president of the American Society of Naturalists in 1999. His research has been recognized in many ways. He is fellow of the Royal Societies of London and Canada, foreign associate of the National Academy of Sciences, and a member of the American Philosophical Society and the American Academy of Arts and Sciences. He has been awarded four honorary degrees and, with Rosemary, the first E. O. Wilson prize of the American Society of Naturalists (1998), the Darwin Medal of the Royal Society of London (2002), and the International Balzan Foundation Prize in ecology and evolution (2005).