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Genes and Behavior

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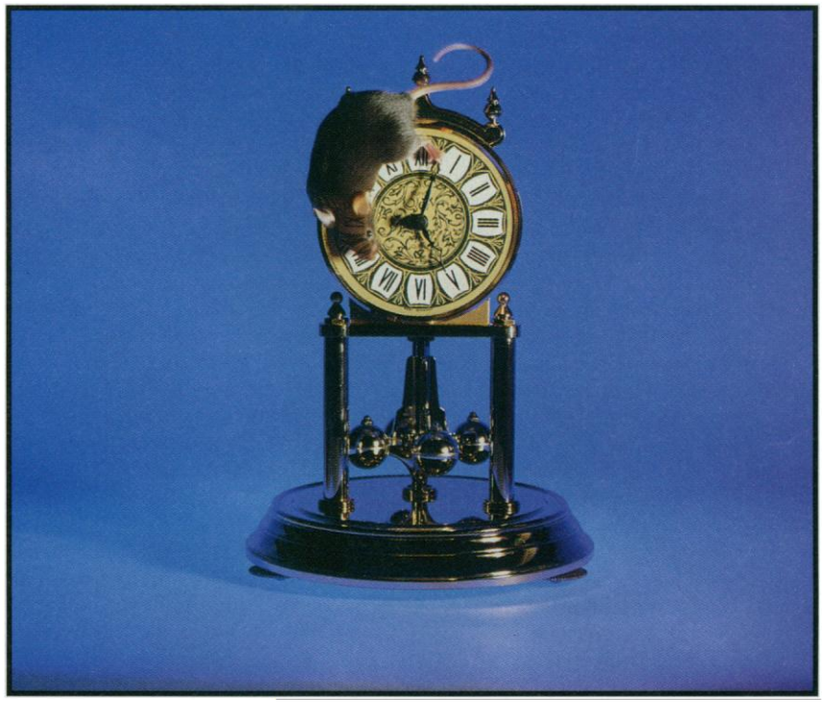

Mouse Illustration: Terry E. Smith

This is a tumultuous and transitional time in behavioral genetics. In the lay press, there is still hot debate over whether genes influence human behavior. Among scientists, however, it is a time of transition. Most researchers have moved beyond "nature versus nurture" debates; they agree that genes influence behavior in both humans and animals. Yet because any behavioral trait is likely to be affected by many genes acting in concert, untangling specific genetic influences on behavior has proved frustratingly difficult. Researchers in the field are now working to develop better methods for identifying behavioral genes and for working out (especially in animal models) the complex mechanisms by which these genes interact with each other and with the environment.

This issue of *Science* offers a review of behavioral genetics at this moment of transition. Charles Mann discusses the emerging consensus that genes do influence human behavior. Eliot Marshall and Constance Holden describe the frustrating search for the genetics of manic depression and alcoholism. Robert Plomin of Pennsylvania State University explores the genetic analysis of human behaviors from Alzheimer's dementia to violence. Even traits such as personality—traditionally in the realm of psychology—are yielding to quantitative genetic analysis, as Thomas Bouchard Jr. of the University of Minnesota discusses.

Our grasp of the genetic basis of behavior is more sophisticated in animals than it is in humans, as Marcia Barinaga reports. We are coming close to understanding the genetic basis of addictive behaviors in rodents, described by John Crabbe of the Veterans' Administration Medical Center in Portland, Oregon. The tools of molecular genetics promise great advances for understanding behavior in mice, as Joseph Takahashi of Northwestern University describes. James Thomas of the University of Washington (in a roundworm) and Jeffrey Hall of Brandeis University (in a fruit fly) illustrate the complex interactions among genes, environment, and the animal's development and morphology. Clearly, our understanding of the genetic basis of behavior, although still in its infancy, is advancing rapidly.

–Katrina Kelner and John Benditt