

It's a Real Zoo

Although the versatile bacterium *Escherichia coli* is probably the most popular laboratory "animal" these days, Caltech is still home to a sizable menagerie of other beasts. Ranging from the familiar (and not just rats and mice) to the exotic, these creatures are an invaluable resource to scientists investigating how life works. Portraits of some of Caltech's animals, along with their human co-workers, appear on these pages.



Demon, a barn owl, lives in an office in Beckman Labs, where he was raised by hand from a hatchling. Mark Konishi, the Bing Professor of Behavioral Biology, and his group breed and raise their own owls for studies of how they respond to sound in space and how their brains use this information to locate prey.



Dash, a macaque (one of a generation of monkeys born during the Watergate affair and named after the characters), works with Charles Hamilton, senior research associate in biology, in split-brain research. Hamilton is studying the behavior of macaques whose left and right cerebral hemispheres have been separated to see whether they have the same hemispheric specialization that humans have.

The immune system of animals can produce antibodies against an enormous variety of foreign substances. Thus rabbits, when injected with a particular foreign substance, conveniently produce antibodies that recognize that substance with quite exquisite specificity. John Richards, professor of organic chemistry, and his group use rabbits to generate antibodies against the enzyme beta-lactamase, which is responsible for penicillin resistance in an ever-increasing number of infectious microorganisms, and then study how the antibodies recognize slightly altered enzymes.



Rubber gloves are essential apparel when handling an electric eel that can generate a jolt large enough to knock you across the room. Henry Lester, associate professor of biology, is interested in the nerve-muscle synapse as an electrochemical machine. The electric eel, whose electricity evolved into a weapon from a navigational and prey-detection device, is "one giant synapse."





*This sea urchin (*Strongylocentrotus purpuratus*) has some characteristics that make it ideal for embryology studies. It lays enormous numbers of eggs that can be easily fertilized in the lab and that develop in seawater at a synchronized and rapid rate. Eric Davidson, the Norman Chandler Professor of Cell Biology, uses the sea urchin to study the mechanisms that turn an egg into an embryo.*



Associate Professor of Biology John Allman works with various kinds of primates – owl monkeys, tamarins, bush babies, lemurs, and macaques – in mapping the brain to determine how visual information is processed. Whole families of monkeys live under his care in Beckman Labs, but Sparrow, an eight-year-old capuchin, enjoys pet status and lives at Allman's home.



*The marine mollusk *Aplysia* (a.k.a. sea hare because of its ears) has built into its eye a 24-hour biological clock, or neuronal circadian oscillator, which drives its sleep-waking rhythm. Professor of Biology Felix Strumwasser studies *Aplysia* to determine the mechanism of that clock – its biochemistry and the cell types involved – which serves as a model for the two types of circadian oscillators in the human brain.*