



# Macaques

## *Macaca mulatta (rhesus)*

## *Macaca fascicularis (cynomolgus)*

The Wisconsin National Primate Research Center is home to about 1,130 rhesus monkeys and 220 cynomolgus monkeys. The genus *Macaca* has 12 species and about 46 subspecies. Its range includes North Africa, Gibraltar, Asia from Afghanistan to China and Japan and all of Southeast Asia and India. These monkeys are medium to large, heavily built, and they range in color through various shades of brown to black. The species in residence here represent the rhesus and the cynomolgous macaque, also known as the crab-eating or long-tailed macaque.

### Our macaque colonies

The center has several active breeding colonies, a colony of older monkeys for studies related to aging, and a general research colony for other projects. All research is conducted under strict compliance with the Animal Welfare Act and USDA Guidelines for the Humane Care and Use of Laboratory Animals.

### Why use macaques?

Macaques are genetically very similar to humans. They especially share analogous neurological, reproductive and immunological systems with humans. Rhesus and cynomolgous macaques are not endangered in the wild and adapt well to captive housing. Research with rhesus and cynomolgous monkeys, as well as with other nonhuman primates, teaches us a great deal about primate biology. Animal studies can be better controlled and garner more consistent results than human studies, and are often precursors to human studies.

Scientists are always developing alternatives to using monkeys and other animals in research. Computer models are highly useful research tools, for example. In many cases, however, neither a computer nor a

lab dish of cells can take the place of a living, complex biological organism when examining a disease, or testing a vaccine or other therapy for effectiveness and side effects.

### About our rhesus monkeys

The rhesus monkey is an Old World primate species native to eastern Afghanistan, Pakistan, India, Nepal and parts of China. These monkeys can live up to 40 years in captivity. Our rhesus monkeys are mainly involved in projects such as developing an AIDS vaccine, understanding reproductive and genetic disorders, and exploring the effects of age-related health concerns. While too numerous

to list here, many of the projects are described on our web site, at [www.primate.wisc.edu](http://www.primate.wisc.edu).



### About our cynomolgus monkeys

The range of the cynomolgus macaque, is confined to Southeast Asia, including the Philippines. Cynomolgus macaques have the habit of inserting their hands in small burrows or holes to find crabs or other animals. In the mangrove swamps of their wild habitat, they have learned to feed on crabs and other small animals exposed by the low tide. They have a life span of about 30 years in captivity. The cynomolgus monkey is best known as the first preclinical test animal for the development of the polio vaccine. They are involved in WNPRC studies of infectious disease, reproduction and genetics.

## Frequently asked questions

### How is the monkeys' care regulated?

Regulations governing research animal care and use are very strict. Our animal care practices meet or exceed the requirements of the Federal Animal Welfare Act and comply with the USDA and Public Health Service's Guidelines for the Humane Care and Use of Laboratory Animals. Research projects and animal care policies are regularly reviewed by center personnel, university committees and federal government officials during site visits, including unannounced inspections. The center must also provide annual reports of all activities to the National Institutes of Health and United States Congress. The center is regularly reviewed and accredited by the Association for the Assessment and Accreditation of Laboratory and Animal Care - International (AAALAC-I).

### Does the research hurt the monkeys?

Most of our center's research is noninvasive—it does not harm the animal physically or psychologically. Typical procedures include ultrasound, blood draws, urine collection, tissue biopsies and noninvasive brain imaging such as fMRI—just as humans are tested in clinical settings. Such testing helps us not only learn more about the animals' basic biological processes for research purposes, but also helps us take better care of the monkeys themselves. Animal caretakers work patiently with the monkeys to train them to cooperate for procedures, and the monkeys get fruit rewards or other treats afterwards.

The monkeys must be treated humanely at all times. If they undergo invasive surgery—to remove a tumor, deliver an infant by Cesarean section, or test a new therapy, for instance—anesthesia is always used, just as it is for human surgeries. In addition, if an animal is terminally ill, a center veterinarian will do everything possible to make the animal comfortable, yet also has the responsibility to euthanize the animal before it begins to suffer from chronic pain or severe physical deterioration.

Monkeys may also be humanely euthanized to meet a research need; for example, to more closely examine the pathology of a novel virus such as Zika in various tissues and organs, or to evaluate the effects of a vaccine or other research intervention on all tissues and organs in the animal.

## A Day In The Life...

A typical day for a macaque at the Wisconsin National Primate Research Center consists of:

°Regular meals of monkey chow, plus snacks of apples, grapes, bananas and other fruit.

°Grooming: The monkeys, most of which are housed in pairs or groups, groom one another throughout the day. Grooming and social interaction are the main requirements of most captively housed monkeys.

°Ongoing enrichment activities: These include food puzzles, foraging boards, frozen treats, chew toys, mirrors, hammocks, swings, swimming pools and other engaging objects.

°Health care: The monkeys undergo routine physical examinations, regular dental care, pre- and perinatal care for mothers, and post natal care for infants as needed.

## Can I see the monkeys?

Public access to our animal housing areas is restricted. The animals know and trust their caretakers, but too many strangers in the animal areas can stress the monkeys, affect their health, and impede both animal care activities and research data collection. In addition, rhesus monkeys and humans can carry illnesses that, while often dormant or easily treatable in the carrier, can be extremely dangerous, even fatal if contracted by the other species. Our center veterinarians and animal caretakers are highly trained to prevent both themselves and the monkeys from transmitting such diseases.

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