

Common Brown Rat – *Rattus norvegicus*

Classification:

Kingdom:	Animalia
Phylum:	Chordata (having a notochord, dorsal nerve cord, postanal tail)
Subphylum:	Vertebrata (cartilaginous or bony vertebrae surround nerve cord)
Class:	Mammalia (endothermic amniotes, hair, mammary glands, & tetrapods)
Order:	Rodentia (unremittingly growing incisors, rats, mice, squirrels, prairie dogs, etc.)
Family:	Muridae (rats, mice, & gerbils)
Subfamily:	Murinae (Old World rats & mice)

Natural History

One of the largest **muroids**, it is a brown or grey rodent with a body up to 25 cm (10 in) long, and a similar tail length; the male weighs on average 350 g (12 oz) and the female 250 g (9 oz). Thought to have originated in northern China, this rodent has now spread to all continents except Antarctica, and is the dominant rat in Europe and much of North America—making it by at least this particular definition the most successful mammal on the planet after humans. With rare exceptions, the brown rat lives wherever humans live, particularly in urban areas. Selective breeding of *Rattus norvegicus* has produced the laboratory rat, a model organism in biological research, as well as pet rats.

Common Brown rats have **acute hearing**, are sensitive to ultrasound, and possess a very highly developed olfactory sense. Their average **heart rate** is **300 to 400 beats per minute**, with a **respiratory rate** of around **100 breaths per minute**. The **vision** of a pigmented rat is **poor**, around 20/600, while a non-pigmented (albino) with no melanin in its eyes has both around 20/1200 vision and a terrible scattering of light within its vision. Brown rats are dichromates which perceive colors rather like a human with red-green colorblindness, and their color saturation may be quite faint. Their blue perception, however, also has UV receptors, allowing them to see ultraviolet lights that some species cannot.

The brown rat is a true **omnivore** and will consume almost anything, but cereals form a substantial part of its diet. Martin Schein, founder of the Animal Behavior Society in 1964, studied the diet of brown rats and came to the conclusion that the most-liked foods of brown rats include scrambled eggs, macaroni and cheese, and cooked corn kernels. According to Schein, the least-liked foods were raw beets, peaches, and raw celery. Foraging behavior is often population-specific, and varies by environment and food source. Brown rats living near a hatchery in West Virginia catch fingerling fish. Some colonies along the banks of the Po River in Italy will dive for mollusks, a practice demonstrating social learning among members of this species. Rats on the island of Norderoog in the North Sea stalk and kill sparrows and ducks

The brown rat can breed throughout the year if conditions are suitable, with a female producing up to **five litters** a year. The gestation period is only **21 days**, and litters can number up to **14**, although seven is common. They reach sexual maturity in about **five weeks**. Under ideal conditions (for the rat), this means that the population of females could increase by a factor of three and a half (half a litter of 7) in 8 weeks (5 weeks for sexual maturity and 3 weeks of gestation), corresponding to a population growing by a factor of 10 in just 15 weeks. The **maximum life span** is up to **three years**, although most barely manage one. A yearly mortality rate of 95% is estimated, with predators and interspecies conflict as major causes.

Thoracic & Abdominal cavity of a rat, ventral view.

Organ System	Structures to Identify
Circulatory	Left Atrium, Right Atrium, Ventricles of heart
Digestive	Caecum, Esophagus, Liver, Pancreas, Small Intestine, Stomach, Submaxillary Salivary Gland
Excretory	Left Kidney, Urinary Bladder
Immune	Spleen, Thymus Gland
Reproductive	Epididymis, Glans Penis, Penis, Prostate, Testis, Vas Deferens
Respiratory	Diaphragm, Larynx, Left Lung, Right Lung, Trachea

