

OUR FRIEND AND FOE

Research on rodents to improve livelihoods

Rodents are the most successful mammals, second only to humans.

A handful of species can cause serious agricultural and health problems for people. Rats eat and damage pretty much all agricultural crops in the field. By gaining access to food stores, they can contaminate food with their faeces and urine and transmit diseases. Research at NRI aims to understand rodents through research on their biology, behaviours and ecology.

Nose

The rat's sense of smell registers not only average scents, but also the presence of chemicals that denote a change in atmosphere or the emotional state of other rats. Rats breathe through their noses where air passes past a patch of skin rich with smell receptors and olfactory neurons, which are tipped with

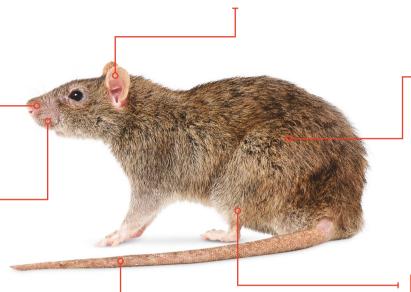
hair-like structures called cilia.

Whiskers

The rat's whiskers are the first step in a highly sensitive sense of touch. Whiskers brush over the ground, obstacles, food, and other rats. When a whisker touches an object it bends the follicle which sends a message to the rat's brain.

Ears

Rats can hear ultrasound, detecting noises up to 90,000Hz, that's twice as much as dogs, and 4 times as much as humans. To communicate to one another, they also produce squeaks, whines and clicks unheard by the human ear.



Rats use their tails for balance. They climb ropes and anchor

branches, and their tails help them balance. Their tails also

keep them cool by expanding and contracting blood vessels to

chains, they walk along fences and telephone wires and

Reproduction

The brown rat can breed throughout the year if conditions are suitable, with a female producing multiple litters a year. They reach sexual maturity in about five weeks.

Legs

Brown rats are powerful swimmers and strong burrowers. Rats can swim underwater for up to 30 seconds, and above water for 72 hours. Rats can also jump 2 feet high and 4 feet to the side.



A rat can enter any opening that's half inch / 1cm or more







Nobel prizes were based on research with rats

THERE ARE **MORE THAN**

regulate body temperature.



TYPES OF RODENT IN THE WORLD

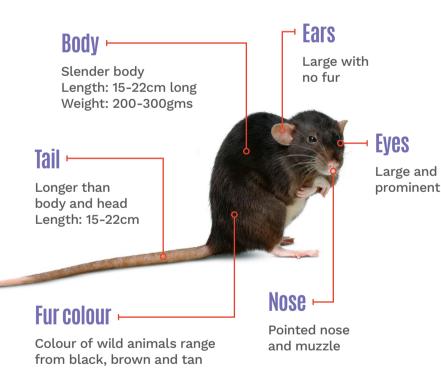
RATS ARE LITTLE ADVENTURERS

They were one of the first animals to make the trip to outer space!

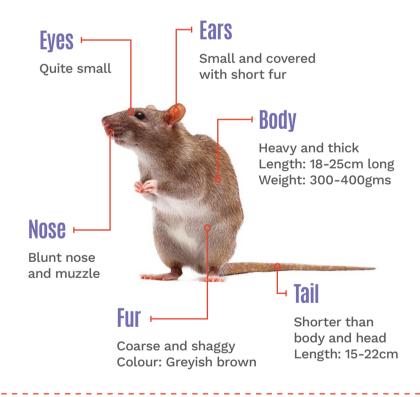


Biological Differences

Ship rat - *Rattus rattus*



Brown rat - Rattus norvegicus



Scary Rat Facts



Rats can swim underwater for 30 seconds, long enough to enter through drains and toilets

Approx number of droppings of a single rat is 25,000 per year, 68 per day

22 DAYS



DISEASE CARRIERS

Rats carry at least 60 communicable diseases. Rats can transmit disease through their urine, faeces or dead carcasses including: Rat-Bite Fever.

Plague, Leptospirosis, Salmonellosis, Hantavirus Pulmonary Syndrome, Tularemia and Lassa Fever

Friendly Rat Facts

The African giant rat has been trained to use their acute sense of smell to detect landmines

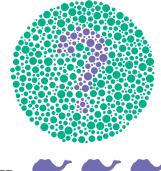


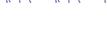


MOST RAT SPECIES CAN SURVIVE LONGER THAN A CAMEL WITHOUT WATER

and are colour blind

Rats have very poor eyesight















/company/natural-resources-institute

