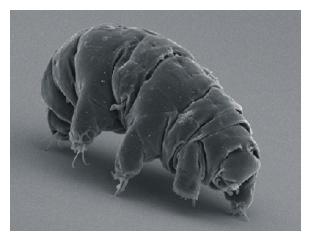
Tardigrades

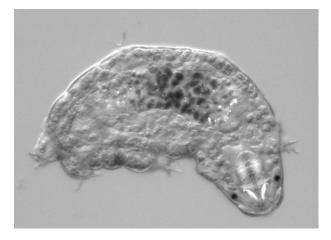
What are they?

Tardigrades are tiny animals. They are also called water bears. They are invertebrates, which means that they have no bones underneath their skin. Each tardigrade has eight legs with claws on the ends. Tardigrades are most closely related to another group of animals called velvet worms. They are also closely related to a group of animals that includes beetles, butterflies, crabs, lobsters, spiders, and scorpions.

There are over 700 different species of tardigrades. Some species live in your backyard. Others live on the tops of tall mountains, or at the bottom of the deep ocean, or at the South Pole on Antarctica. Most species need to live in water. If the water dries out, tardigrades can also dry out without dying. Instead, they stop moving and curl up into a dried-out ball called a tun. They can survive as a tun for years in deserts, in ice, and even in space. If the tun is carried to a nice, wet place, the tardigrade rehydrates and starts to move around again.



SEM image of a tardigrade in active state. Photograph from Chokraje et al. 2012. Licensed under CC BY 2.5 via Wikimedia Commons



View of feeding tardigrade under a microscope. Dark spots in the body are algae being digested. Photo by Willow Gabriel.

Sources:

Bordenstein, Sarah, Science Education Resource Center at Carleton College "Tardigrades (Water Bears)."

Accessed 20 February 2015. http://serc.carleton.edu/microbelife/topics/tardigrade/index.html
Goldstein, Bob, and Mark Blaxter. "Quick Guide: Tardigrades." Current Biology 12(2002):R475.

http://tardigrades.bio.unc.edu/tardigrades/

Schokraie E, Warnken U, Hotz-Wagenblatt A, Grohme MA, Hengherr S, et al. "Comparative proteome analysis of Milnesium tardigradum in early embryonic state versus adults in active and anhydrobiotic state." PLoS ONE . 7(2012):e45682. doi:10.1371/journal.pone.0045682

Viruses

What are they?

Viruses are the smallest things that can infect animals and plants. They are so simple that they need to hijack the cells of other animals to complete their life cycle. Some scientists do not count them as living beings, but others do. There are many kinds of viruses with many different shapes. The printed virus is a rhinovirus, or one of the kinds of viruses that can give you the common cold.



TEM (transmission electron micrograph) image of a smallpox virus. Image from the Center for Disease Control, ID #1849

Head Louse

What is it?

If you have ever had lice, these animals lived in your hair. Head lice are small insects that only live on human scalps. Head lice can only live on humans. Other mammals and birds have their own species of lice.

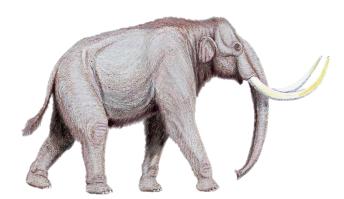


Photograph of a head louse, taken by KostaMumcuoglu.

Mammoth

What is it?

Mammoths were relatives of today's elephants. The printed tooth is a small molar from a mammoth that lived in Florida about 2 million years ago. Mammoths ate plants and used to live across the United States. They went extinct about 10,000 years ago.



Reconstruction of what a mammoth might have looked like when it was alive, based on skeletons and mummified mammoths. Drawing by Dmitry Bogdanov.

Small Mammal (*Plagioctenoides*)

What is it?

The printed tooth is a molar from the lower jaw of an animal called *Plagioctenoides*. What the rest of the body of *Plagioctenoides* looked like is still a mystery. Based on the size of its teeth, scientists estimate that individuals of *Plagioctenoides* weighed about as much as a nickel. Based on its tooth shape, scientists think that *Plagioctenoides* ate insects around 55 million years ago in Wyoming.



Estimated life size of an animal of *Plagioctenoides* based on size of fossilized teeth.