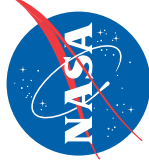


Conan the Bacterium Environment

National Aeronautics and Space Administration



Conan is so tough, it can even survive high levels of radiation.



Temperature



Sunlight



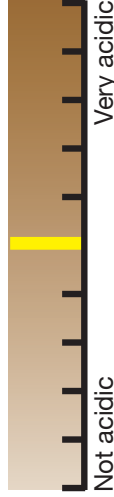
Pressure



Water Need



Acidity



Can be found

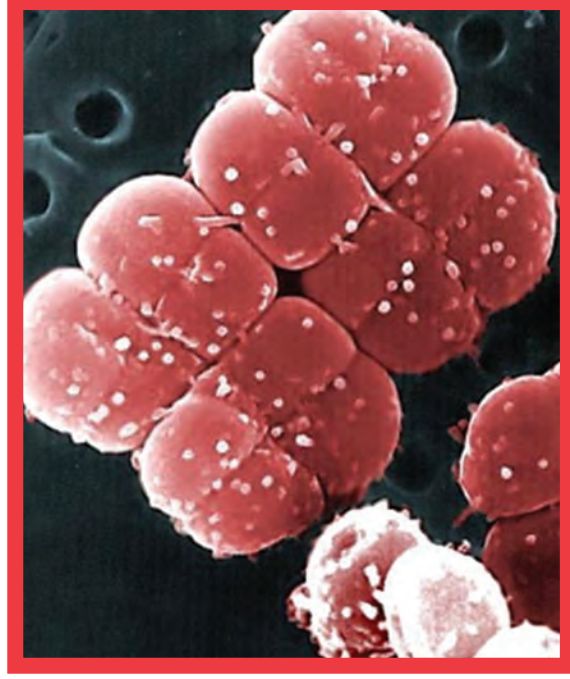


Fun Fact

Deinococcus radiodurans is listed as the world's toughest bacterium in The Guinness Book Of World Records.

CONAN THE BACTERIUM

Deinococcus radiodurans



the “terrible grain”

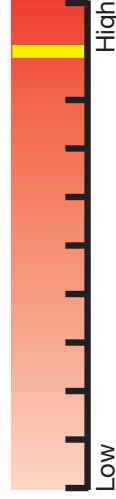
Peggy A. O’Cain and Margaret C. Henk,
Louisiana State University

Hot Sulfur Springer Environment

These tough organisms eat sulphur and are found in volcanoes and mudpots.



Temperature



Sunlight



Pressure



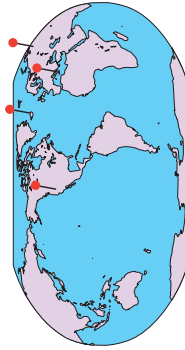
Water Need



Acidity



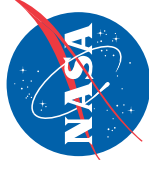
Can be found



Fun Fact

These tiny organisms can also be found in some hot spring spas in Japan. They're not dangerous to humans.

National Aeronautics and Space Administration



HOT SULFUR SPRINGER

Sulfolobus solfataricus



Sonja-Verena Albers

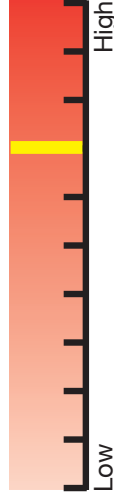
hot and acidic

Iron Eaters Environment

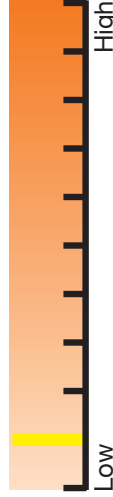
This organism “eats” iron and leaves behind rust.



Temperature



Sunlight



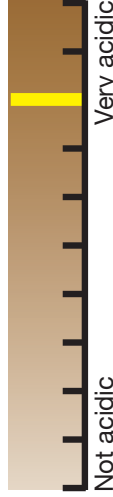
Pressure



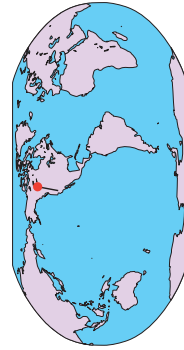
Water Need



Acidity



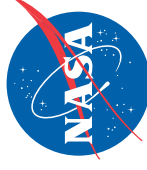
Can be found



Fun Fact

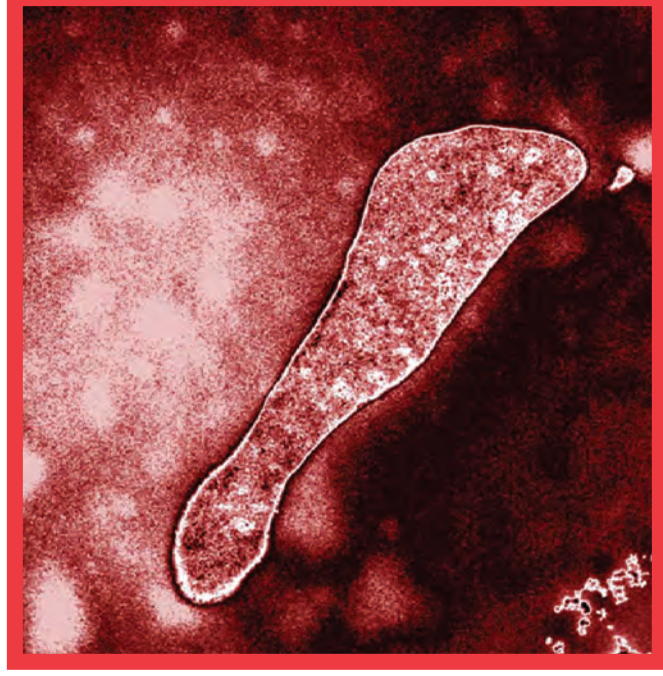
Early conditions on Earth would have been perfect for these acid-loving organisms.

National Aeronautics and Space Administration



IRON EATERS

Ferroplasma acidiphilum



Indumathy Jayamani

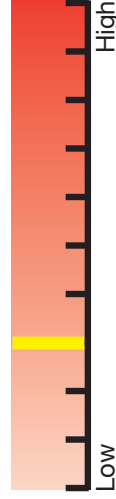
acidic miner

Penguins Environment

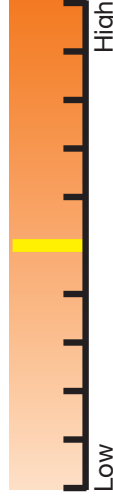
Many penguins live in large groups to keep warm.



Temperature



Sunlight



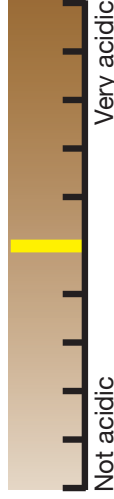
Pressure



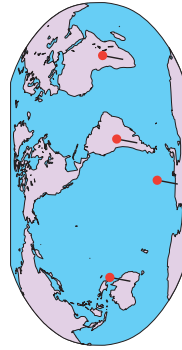
Water Need



Acidity

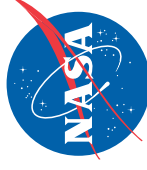


Can be found



Fun Fact

To get around in their environments, penguins swim and surf the waves and use their bellies as toboggans on land.



PENGUINS

Spheniscidae



Stan Shebs

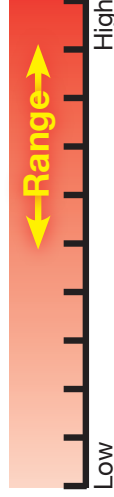
swimming birds

Pompeii Worm Environment

These worms can become about 13cm (5in) long and live on black smokers at the bottom of the ocean.



Temperature



Sunlight



Pressure



Water Need



Acidity



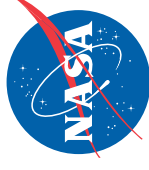
Can be found



Fun Fact

What looks like hair on the worm's back is actually colonies of bacteria, insulating the worm from the very hot temperatures.

National Aeronautics and Space Administration



POMPEII WORM

Avinella pompejana



hot tail, cold head

University of Delaware

Rocky Lichen Environment

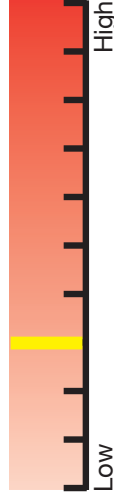
National Aeronautics and Space Administration



These tough organisms can freeze and then revive when temperatures increase.



Temperature



Sunlight



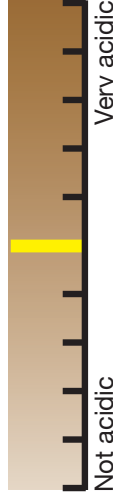
Pressure



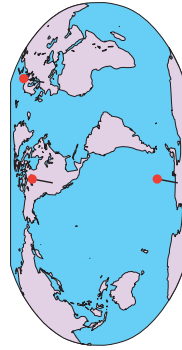
Water Need



Acidity



Can be found

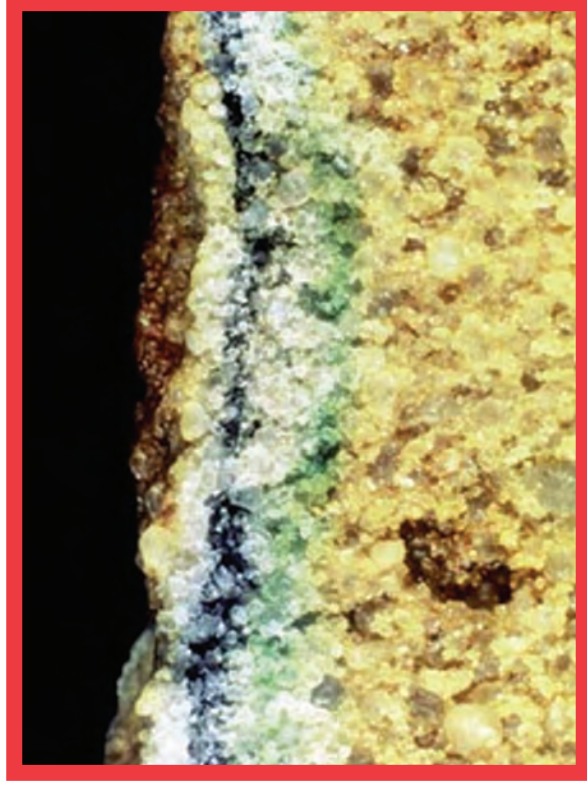


Fun Fact

Rock-dwelling organisms have been found as deep as we are able to drill into the Earth. Even 7 km (4 miles) under the ocean floor, these tough organisms are thriving!

ROCKY LICHEN

Endoliths



NASA

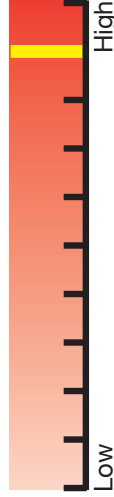
hidden in the rock

Rushing Fireberry Environment

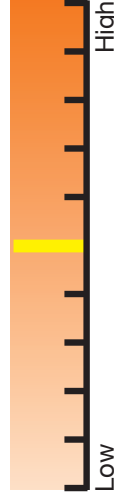
The hotter the better for this organism. It can survive in steaming volcano pools.



Temperature



Sunlight



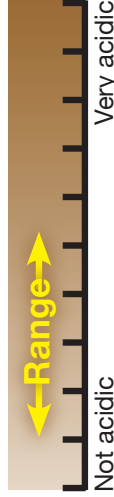
Pressure



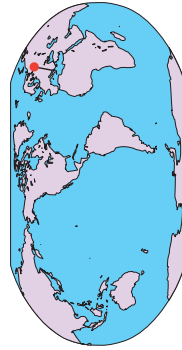
Water Need



Acidity



Can be found

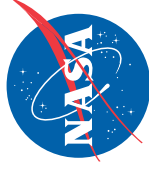


Fun Fact

This tiny organism gets the rushing part of its name from the fact that it is able to double the number of organisms in less than 37 minutes.

www.nasa.gov

National Aeronautics and Space Administration



RUSHING FIREBERRY

Pyrococcus furiosus

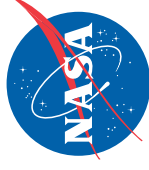


hot multiplier

Arch/Med/Des

Snottites Environment

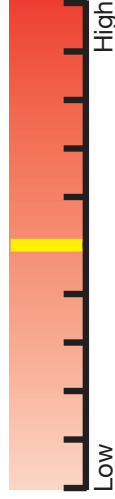
National Aeronautics and Space Administration



Snottites get their energy from sulfur in the water, not from sunlight.



Temperature



Sunlight



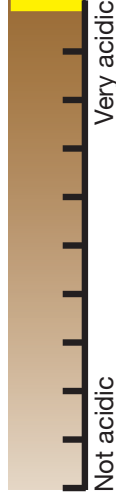
Pressure



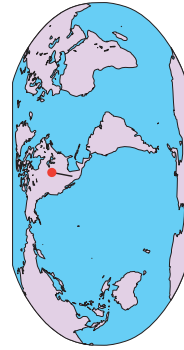
Water Need



Acidity



Can be found

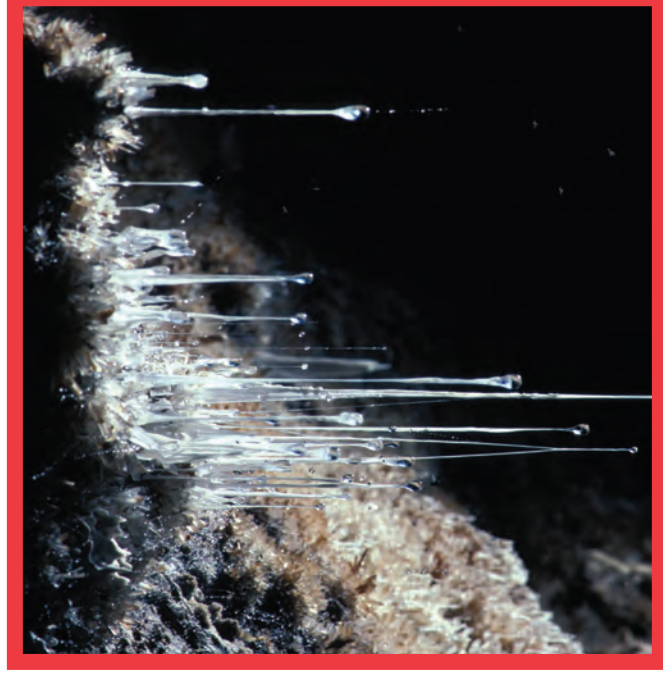


Fun Fact

These bacteria are so acidic, that one drop has been known to eat through clothes and cause third-degree burns on researchers.

SNOTTITES

Single-celled bacteria



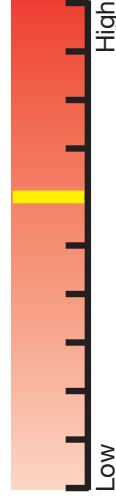
slimy cave drips

Spirulina Environment

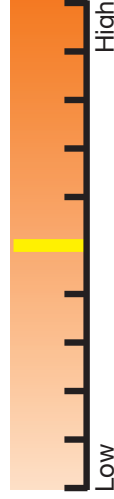
This organism is nicknamed Spirulina after its spiral shape.



Temperature



Sunlight



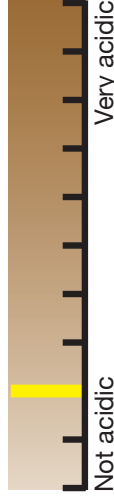
Pressure



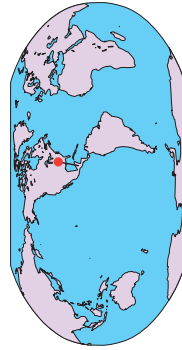
Water Need



Acidity



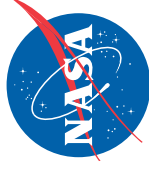
Can be found



Fun Fact

The Aztecs used Spirulina as a food source until the 16th century.

National Aeronautics and Space Administration



SPIRULINA

Arthrospira maxima



blue green algae

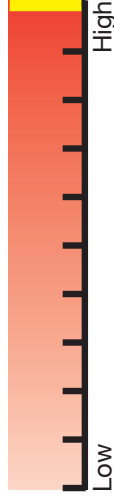
Globe Pequot Press

Strain 121 Environment

Strain 121 eats iron from the hydrothermal vents at the bottom of the ocean.



Temperature



Sunlight



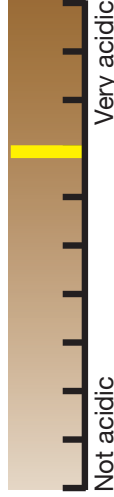
Pressure



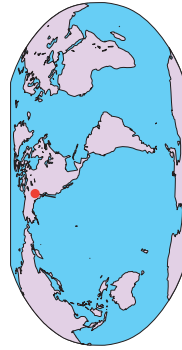
Water Need



Acidity

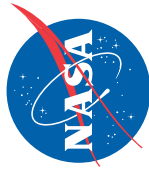


Can be found



Fun Fact

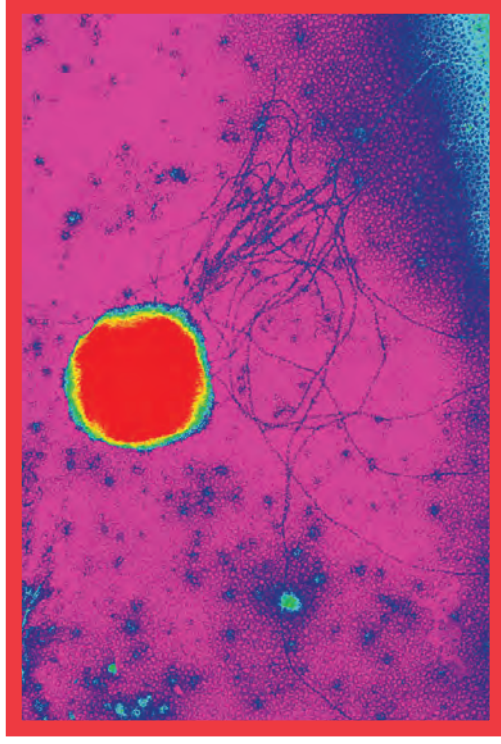
Prior to the 2003 discovery of Strain 121, a fifteen-minute exposure to these temperatures was believed to kill all living organisms.



National Aeronautics and Space Administration

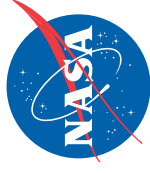
STRAIN 121

Geogemma barossii



hotter than hot

All About Water Bears



These tough organisms have been exposed to the vacuum of space for 10 days and still survived!



Temperature



Sunlight



Pressure



Water Need



pH (acidity)



Can be found



Fun Fact

The Water Bear can actually hibernate without water for at least 10 years. Once it gets a drop of water it wakes up, good as new.

WATER BEAR

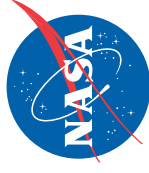
Tardigrade



the survivor

Watermelon Snow Environment

National Aeronautics and Space Administration



Sunlight helps the algae turn the snow into water that it can use to grow.



Temperature



Sunlight



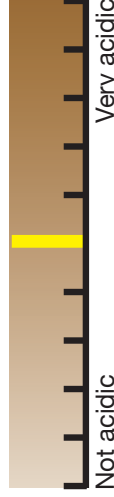
Pressure



Water Need



Acidity



Can be found



Fun Fact

This algae actually smells like fresh watermelon! For many years hikers thought it was a mineral causing the reddish color.

WATERMELON SNOW

Chlamydomonas nivalis

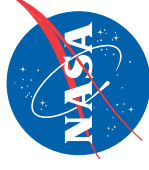


snow algae

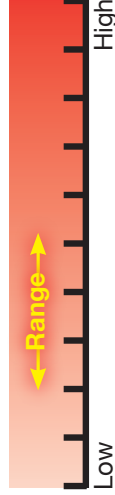
Will Beck

Wood Frogs Environment

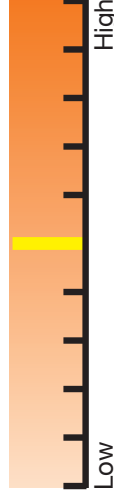
National Aeronautics and Space Administration



Temperature



Sunlight



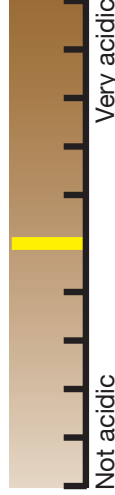
Pressure



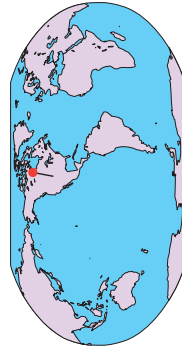
Water Need



Acidity



Can be found



Fun Fact

These frogs survive cold temperatures by hibernating in a frozen state. When the weather warms, they thaw and resume their lives.

WOOD FROGS

Rana sylvatica



freezing frogs

Yeti Crab Environment

Bacteria coat the hairs of the crab and eat many of the toxic minerals in the environment.



Temperature



Sunlight



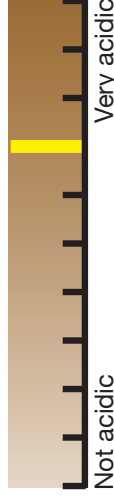
Pressure



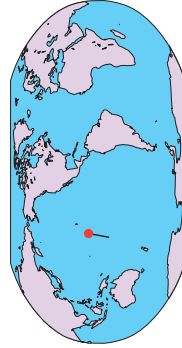
Water Need



Acidity



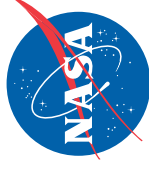
Can be found



Fun Fact

The Yeti Crab lives on the deep, dark ocean floor where sunlight never reaches and is completely blind.

National Aeronautics and Space Administration



YETI CRAB

Kiwa hirsute



furry lobster

Census of Marine Life