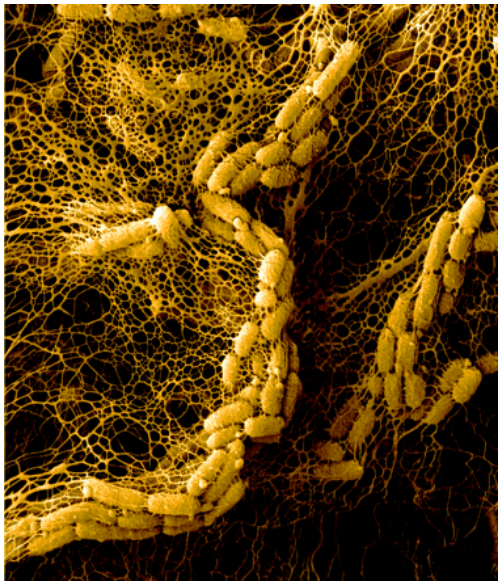
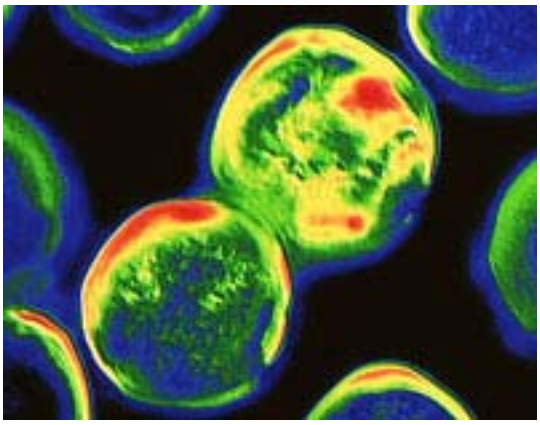
Alcanivorax borkumensis



Alcanivorax borkumensis is a helpful microbe that can eat oil and hydrocarbons in the presence of oxygen - it is called an alkane-degrader. Although it is well known from chomping on hydrocarbons in oil spills, it was first isolated from sediments of the North Sea, where lots of oil and gas wells are located. *A. borkumensis* is a rod shaped bacterium without flagella that obtains its energy primarily from eating alkanes (a type of hydrocarbon). It is aerobic, meaning it uses oxygen to gain energy, and it is halophilic, meaning it tends to form in environments that contain salt, such as salty ocean water. *A. borkumensis* is found naturally in seawater environments. It is more common in oceanic areas containing petroleum oil (whether from spills, natural fields, or other sources), although it can be found in small amounts in non-polluted water. It has been found across the world in various locations both in coastal environments and oceanic environments. It also can flourish in areas with heavy tides and other sea related currents/flow. It is found only on or near the surface of water. *A. borkumensis* can live in salinities ranging from 1-12.5% and in temperatures ranging from 4-35°C. The abundance of *A. borkumensis* in oil-affected environments is because the bacteria uses the compounds in oil as a source of energy, thus populations of *A. borkumensis* naturally flourish at oil spills or other similar locations. *Alcanivorax* is looking for a new home in an oily environment – anybody on the Gulf Coast interested?

Scientific Classification

Domain	Bacteria
Phylum	Proteobacteria
Class	Gamma Proteobacteria
Order	Oceanospirillales
Family	Alcanivoraceaea
Genus	Alcanivorax
Species	borkumensis

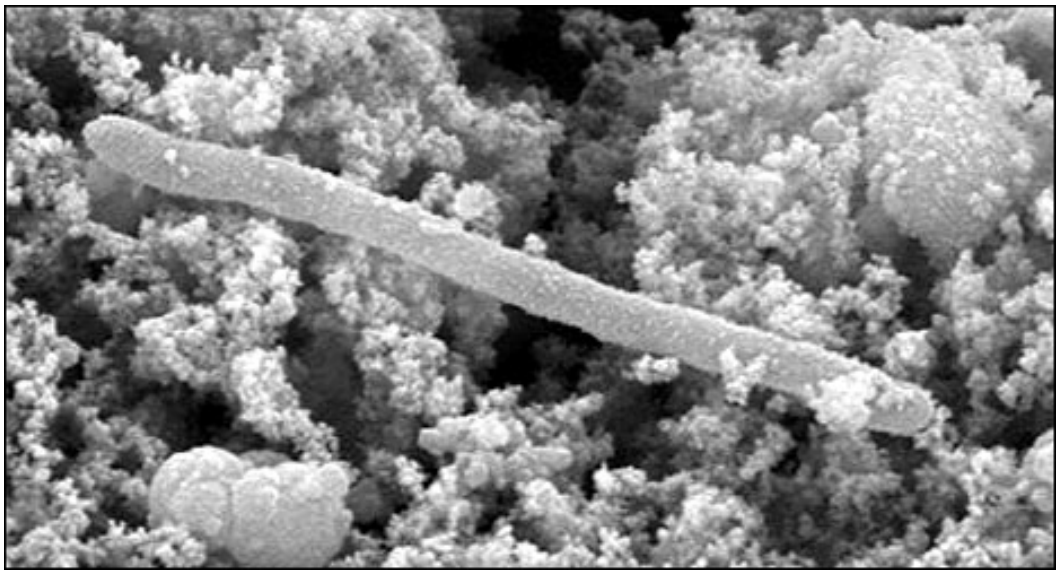


Archaeoglobus sulfaticallidus

Archaeoglobus sulfaticalldius likes to live in hot water, eating sulfate and producing stinky rotten-egg smelling sulfide gas. Archaeoglobus members are hyperthermophiles that can be found in hydrothermal vents, oil deposits, and hot springs. *Archaeoglobus* grow at extremely high temperatures between 60 and 95 °C, with optimal growth at 83 °C. They are sulfate-reducing archaea, coupling the reduction of sulfate to sulfide with the oxidation of many different organic carbon sources, including complex polymers. These archaeons are known to cause the corrosion of iron and steel in oil and gas processing systems by producing iron sulphide. *A. sulfaticallidus* is looking for a new home in hot water with someone who doesn't mind it smelling like farts.

Scientific Classification

Domain	Archaea
Phylum	Euryarchaeota
Class	Archaeoglobi
Order	Archaeoglobales
Family	Archaeaglobaceae
Genus	Archaeoglobus
Species	sulfaticallidus

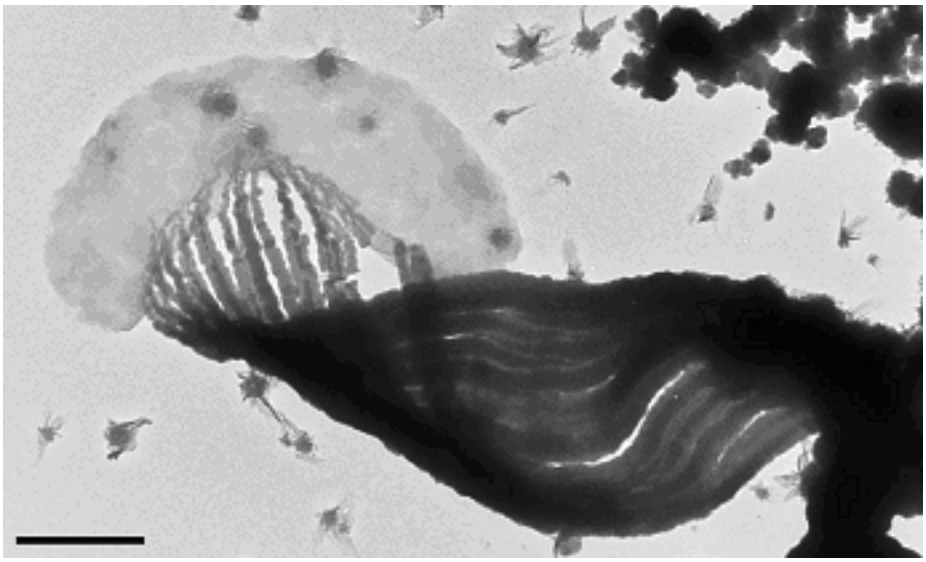


Desulforudis audaxviator

Desulforudis audaxviator is a citizen of the deep. *D. audaxviator* was originally found in deep gold mines in South Africa, almost 3 kilometers below the surface of the Earth, but it has also been seen in other deep mines in North America. Its name comes from a quotation from Jules Verne's novel *Journey to the Center of the Earth*. The hero, Professor Lidenbrock, finds a secret inscription in Latin that reads: *Descende, audax viator, et terrestre centrum attinges* (Descend, bold traveller, and you will attain the center of the Earth). Like Archaeoglobus, *D. audaxviator* is a sulfate reducing bacteria that produces stinky rotten-egg smelling sulfide gas, and it can also breath hydrogen gas. When conditions are not great for D. audaxviator, it has been known to form hard cysts and wait for better times. *D. audaxviator* is looking for a new home in a deep, dark environment.

Scientific Classification

Domain	Bacteria
Phylum	Firmicutes
Class	Clostridia
Order	Clostridiacaea
Family	Peptococcaceae
Genus	Desulforudis
Species	audaxviator



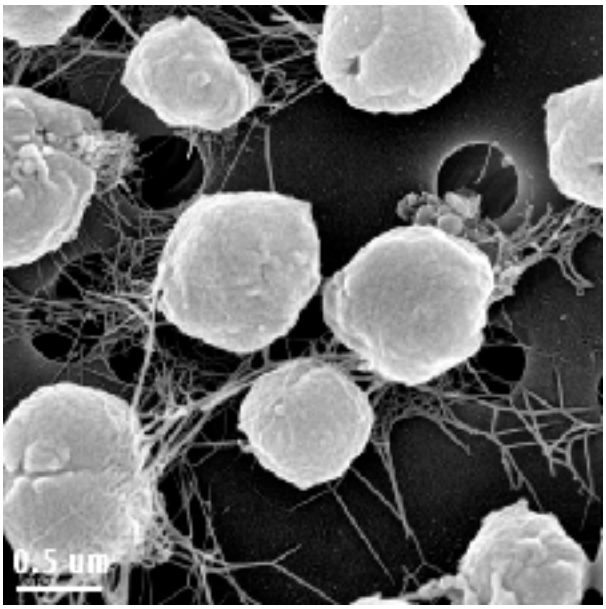
Mariprofundus ferrooxydans

Mariprofundus ferrooxydans is a fancy-pants microbe that produces beautiful twisted ribbons of rust. *M. ferrooxydans* like to grow in near neutral pH water at the bottom of the ocean in areas with lots of iron and a little bit of oxygen. *M. ferrooxydans* "breathes" iron and oxygen, and produces rust as a waste product. Shaped liked a kidney bean, *M. ferrooxydans* uses flagella to spin towards more oxygen, leaving behind a twisted stalk of iron. *M. ferrooxydans* grew up around Hawaii, preferring hot water spewing from underwater volcanoes. *M. ferrooxydans* is looking for a new home with lots of rusty nails.

Scientific Classification

Domain	Bacteria
Phylum	Proteobacteria
Class	Zetaproteobacteria
Order	Mariprofundales
Family	Mariprofundaceae
Genus	Mariprofundus
Species	ferrooxydans

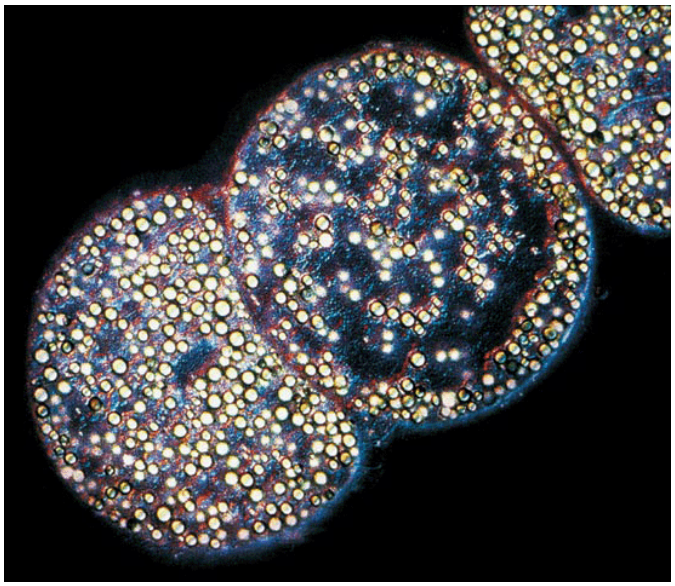
Methanocaldococcus jannaschii



Methanocaldococcus jannaschii is one a tough little microbe. As a hyperthermophile, it likes to live in salty water that is 85 degrees Celsius (that's about 185 degrees Fahrenheit), and it can even survive in water that is hotter than that. So, next time you are preparing a pot of boiling salty water to make some pasta, think about what it must be like to survive in such hot water! *M. jannaschii* was first discovered back in the early 1980s at hydrothermal vents at the bottom of the ocean. Back then, hydrothermal vents had only recently been discovered, and scientists were very curious to know what kinds of life might be found in those 'extreme' environments. Specifically, they were very curious to find out if microbes might be involved in the formation of methane gas that was measured in the hot fluids spewing out of the seafloor. Sure enough, some clever folks were able to grow *M. jannaschii* is hot culture media that contained abundant hydrogen and carbon dioxide gases. *M. jannaschii* gains energy from combining hydrogen and carbon dioxide and converting them into methane gas – a process called methanogenesis. One gas that *M. jannaschii* does not like, though – oxygen. Even the smallest exposure of *M. jannaschii* to oxygen in the air is bad news for these microbes (think of the scene in the Wizard of Oz where the wicked witch of the west cries 'I'm melting!'). These microbes have bundles of flagella – basically like little tails that the cells can whip about to 'swim'. Wondering about the name? *Methanocaldococcus* refers to the cells being small ball-shaped cells ("cocci") that make methane, and the *jannaschii* part is kind of like a family name, as the cells are named after the late Holger Jannasch, a scientist that was involved in describing the hydrothermal vents. M. jannaschii is looking for a new home in a bath of hot water.

Scientific Classification

Domain	Archaea
Phylum	Euryarchaeota
Class	Methanococci
Order	Methanococcales
Family	Methanocaldococcaceae
Genus	Methanocaldococcus
Species	jannaschii



Thiomargarita namibiensis

When you hear the word 'microbe', what are some of the first words that you think of? Small? Tiny? Microscope? Awesome? Well, prepare to be amazed – *Thiomargarita* is a 'microbe' that you could see with your own eyes (well, if you could go down to the bottom of the ocean)! *Thiomargarita* is a mighty giant among the teenies, clocking in at up to three-quarters of a millimeter (that's about 1/32 of an inch). *Thiomargarita nambiensis* looks like little white balls connected in a string. Other species of *Thiomargarita* occur on their own, but they are still giants. Why are *Thiomargarita* so big, and what's with the name? Well, if you were to look at *Thiomargarita* close up and with fancy microscopes, you would see that a large part of the cell is just a big balloon full of liquid, while the rest of the stuff that makes up the cell is concentrated on the periphery. These microbes can 'breathe' nitrate, which they concentrate inside the balloon to eat later on. When they are 'breathing' nitrate, they are also eating sulfur to get energy, and they store the sulfur in little globs on the periphery of the cell – this is what gives the cells their off white color. These microbes were first discovered by a team of German scientists in some super stinky mud collected off of the coast of Namibia, Africa. If you were to translate *Thiomargarita*'s name from Greek and Latin, you would roughly get 'sulfur pearl of Namibia'. Tada! *T. namibiensis* is looking for a glamorous new home in some stinky mud.

Scientific Classification

Domain	Bacteria
Phylum	Proteobacteria
Class	Gammaproteobacteria
Order	Thiotrichales
Family	Thiotrichaeae
Genus	Thiomargartia
Species	namibiensis