

# [Biology, functions and the evolution of magnetotactic bacteria essay](https://assignbuster.com/biology-functions-and-the-evolution-of-magnetotactic-bacteria-essay/)

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Biology, Functions and the Evolution of Magnetotactic bacteriumsBacterias can be identified in all over the Earth surfaces such as oceans, lakes, sweets, aquatic vent blowhole etc. Although there are broad truths bacterial groups present, it is understood that each group of bacteriums have their distinguishable and outstanding features alone to themselves. Magnetotatic bacteriums, is one of such bacterial group identified to be holding unusual built-in behavior of pointing themselves with the magnetic field lines of Earth ‘ s magnetic field. To execute this undertaking, these bacteriums are composed of a alone biological science, which significance is elaborated in the current essay. In add-on, the essay besides discusses about the general biological characteristic of the bacteria, endurance demands and physical development of their magnetic crystal and industrial and historical of import etc. These bacteriums belong to the polyphyletic group and were ab initio identified by Richard P.

Blakemore in 1975 2 . Normally found in Western Australia, they besides can be identified on deposits and wood holes of deep ocean floor. As they tend to travel towards North and South Poles, they show some sort of alliance with the earth’s magnetic field. This response to magnetic field is suspected chiefly due to their alone biological science and composing. It is understood that the physical visual aspect of the magnetic bacterium plays an of import function in their forte of motion and reaction of magnetic field, and hence required to be looked in to detail. These bacteriums cells are spherical in form with 1µm in diameter 1 . They have the two packages of scourge extended from the exterior of the cell wall.

This scourge helps them to swim in the aquatic environment. These scourges were connected straight to the disc shaped construction. Inner cell of the bacteriums contain two ironss electron of opaque crystal like atoms. When ascertained these atoms help to distinguish the magnetic bacterial cell from other microbic civilization. Their intra cytoplasmatic membranes are organized as cysts. The crystal like units found in the membrane cysts and synthesised by the membrane. Based on their biological science, there are five morphologically different types of magnetic bacteriums and can be observed in the Earth surface.

These can be separated from their environment by their different magnetic responses. As a consequence of their physical visual aspect, the biological characteristic of these bugs is considered to be really alone from other bugs on Earth surface. The motion of these micros describes as biomagnetic compass.

This specialist motion for this bacteria due to the presence of alone granules called magnetosomes, which are Fe rich membrane bounded atoms. Each cell contains these Fe rich atoms. Normally these Fe rich atoms are arranged in a concatenation molded orientation, called as magnetosome ironss 3 . Most of the Fe rich atoms in magnetic bacteriums contain ferrous magnetic magnetic iron-ore. There are two different types of Fe profusion, such as Fe oxide and Fe sulphides.

Capable to germinate separately, their motility is non a map of single cell, but as a group. As anaerobiotic bugs they lives in the environment has no O. Some of them are able to lives in the really limited O environment. This wont helps them to last under the dark H2O, deposits and boggy bed. These bugs are besides closely related to the nonmagnetic photosynthetic, non S purple bacteriums, they have the common ability to organize the inter cytol.

Most of the magnetic bacteriums have the fresh H2O and Marine home ground 7 . Different environment of magnetic bacteria has different populations. The clay deposits comparatively have the high scope of organic substance ; the magnetic bacterial population is higher than the other topographic points, and besides the higher scope of magnetic bacterial growing around the toxic anoxic passage zone 4 . Furthermore their motility will assist them to happen the foods rich environments. The magnetic bugs use the scourge to happen the safest topographic point to populate and better clime to reproduce their following coevals. In recent old ages, fossils records shows the magnetic bacterial dead cells besides aligned in the concatenation shaped construction. It is believed that has some of the oldest bug home grounds yet to be found 5 . The dead cells besides aligned in the deposits like towards the North poles.

This bacteria is non a pathogenic, nevertheless the other bugs attached to the magnetic bacteria is infective. This infective bacteria uses the magnetic field to aim their host cells. Some of the magnetic bugs are toxic due to their Fe rich inter cellular substance and hence non used in medical patterns.

The Sulfur, Fe, and comfortable are the most unsafe metal ion in the magnetic toxic bugs. The nature of the infective bug of the magnetic is non harmful to human. The earlier magnetic bacteriums are non utilizing the O for their energy beginning ; O is toxicant for their activity. They are utilizing the visible radiation as a beginning to acquire their energy by photosynthesis 6 .

After their diverseness they were grouped in the gm negative gamma protobacterum, because their ascendants were photosynthetic but they are non making photosynthetic after they evolved. Recently they found some of the magnetic bacteriums can populate in the O limited environments. These bacteriums like to populate in the H2O where meets up with the O rich H2O and O less H2O, because so merely use the synthesised concatenation nano atom act as nano- sized magnet that will assist the magnetic bacteriums to passively do a move to North poles and South poles. To sum up this essay discusses some of the general biological characteristics, endurance of environmental demands and physical development of the unusual Magnetotic bacterium. Specific attending was paid to understand the biological composing and its relevancy to bring on Magnetosism. It is clear that the ferric rich cell construction is one of the chief grounds of the bacteriums to aline towards the North Pole.

Although these bacteriums inherits really unusual, yet interesting features, its application in industrial and natural universe still at its babyhood. It is emphasized that farther research is needed for any usage of industrial applications, in peculiar to turn to the toxicity in medicines. Mentions1Frankel, R. B. , Blakemore, R. P.

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