

Scientists discover new kind of blue-green algae with carbonates in their cells

April 30 2012, by Bob Yirka

(Phys.org) -- Researchers studying organisms in Mexico's Lake Alchichica have discovered a new species of cyanobacterium that unlike any other ever found, has bony, intracellular carbonates. Up till now, specimens with such mineral deposits in their systems have, as the team explains in their paper published in the journal *Science*, had them on the outsides of their cells.

Cyanobacterium, known more widely as blue-green [algae](#), are a major part of planet Earth's many varied geochemical cycles. They take in [carbon dioxide](#) and give back oxygen and are believed to have been one of the driving forces that led to the evolution of other types of organisms that survive by breathing the oxygen they provide. Up till now, many types of [cyanobacterium](#) have been identified, both in the present and in the historical record, that have carbonate material on the outer edges of their cells that researchers believe is the result of [ocean chemistry](#) changes that caused the [microbes](#) to precipitate minerals out of their cells leading to calcified crystals.

This new species however, appears to be working in a wholly different way. Instead of the carbonate material building up as the cyanobacterium purge minerals from their cells, they appear to be using the bony material as a means of allowing them to anchor themselves to rocks on the bottom of the lake.

Because the mineral material - made up of calcium, magnesium, barium, carbonate and strontium (similar to that found in coral) found inside the

tiny organisms is not the same percentagewise as minerals in its local environment, the researchers believe the newfound species, *Candidatus Gloeomargarita lithophora*, is somehow able to manipulate the minerals inside its cells to produce the optimal bonelike material that allows the cyanobacterium to sit on rocks and other structures at the bottom of the lake, thus, providing them with a unique niche in which to survive.

Also, because it is not yet known whether the bony material inside the cells of the new species of cyanobacterium disperses when they die, researchers are considering the possibility that their new find may have played a role in early Earth history that until now, has never been identified. If the carbonates dissolve upon death, *Candidatus Gloeomargarita lithophora* would not have left any evidence of its existence behind.

The next step in the research will be of course to find out if the mineral structures inside their [cells](#) do disperse when they die, and then to discern if they may help fill in some of the many gaps that still exist in the ancient history of our planet.

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