

Dissolution of magnetite crystals in a magnetically responsive scuticociliate (Ciliophora, Oligohymenophorea)

Supplemental material

Movies S1. Light microscope movie focused at the edge of a hanging drop of a magnetically concentrated sample harvested at the Calanque of Méjean, Mediterranean Sea, France. The reversion of the bar magnet cause the magnetically responsive cells to swim in opposite direction. The movie was taken with a x63 objective using a differential interference contrast.

Movies S2-4. Confocal microscope movies of the superposition of z stack images of the MTB-grazers isolated from the Calanque of Méjean, Mediterranean Sea, France.

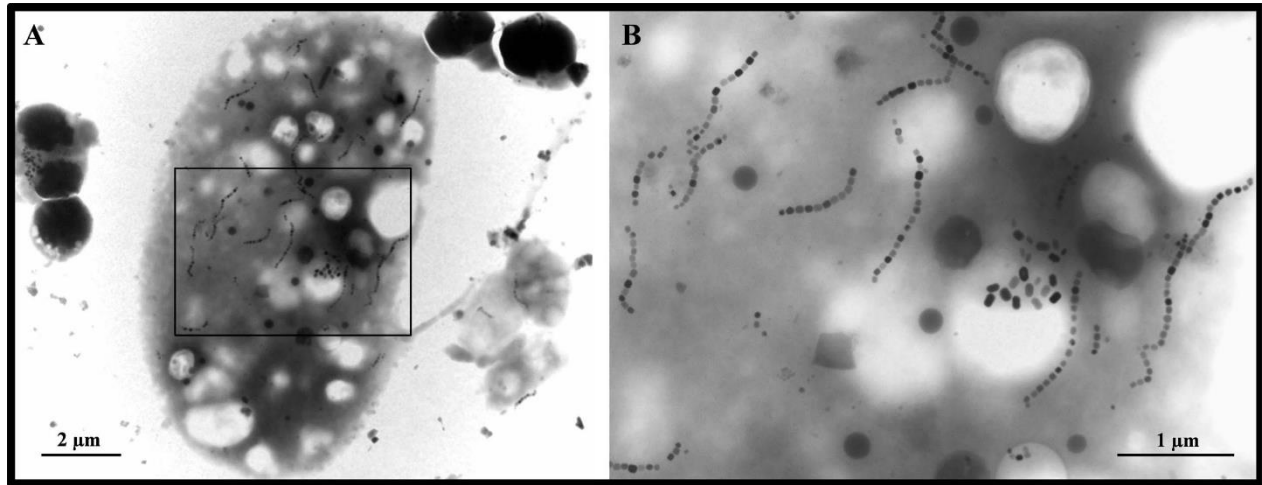


FIG S1. (A and B) Transmission electron microscope (TEM) images of a magnetic protozoan isolated from Lake Pavin, Auvergne, France, showing the presence of numerous magnetosome chains of different shapes aligned along the long axis of the organism. The size of this organism is typical of eukaryotic cells with a length of 12.1 μm and a width of 6.6 μm . The black frame in panel A shows where the higher magnification image in B was taken.

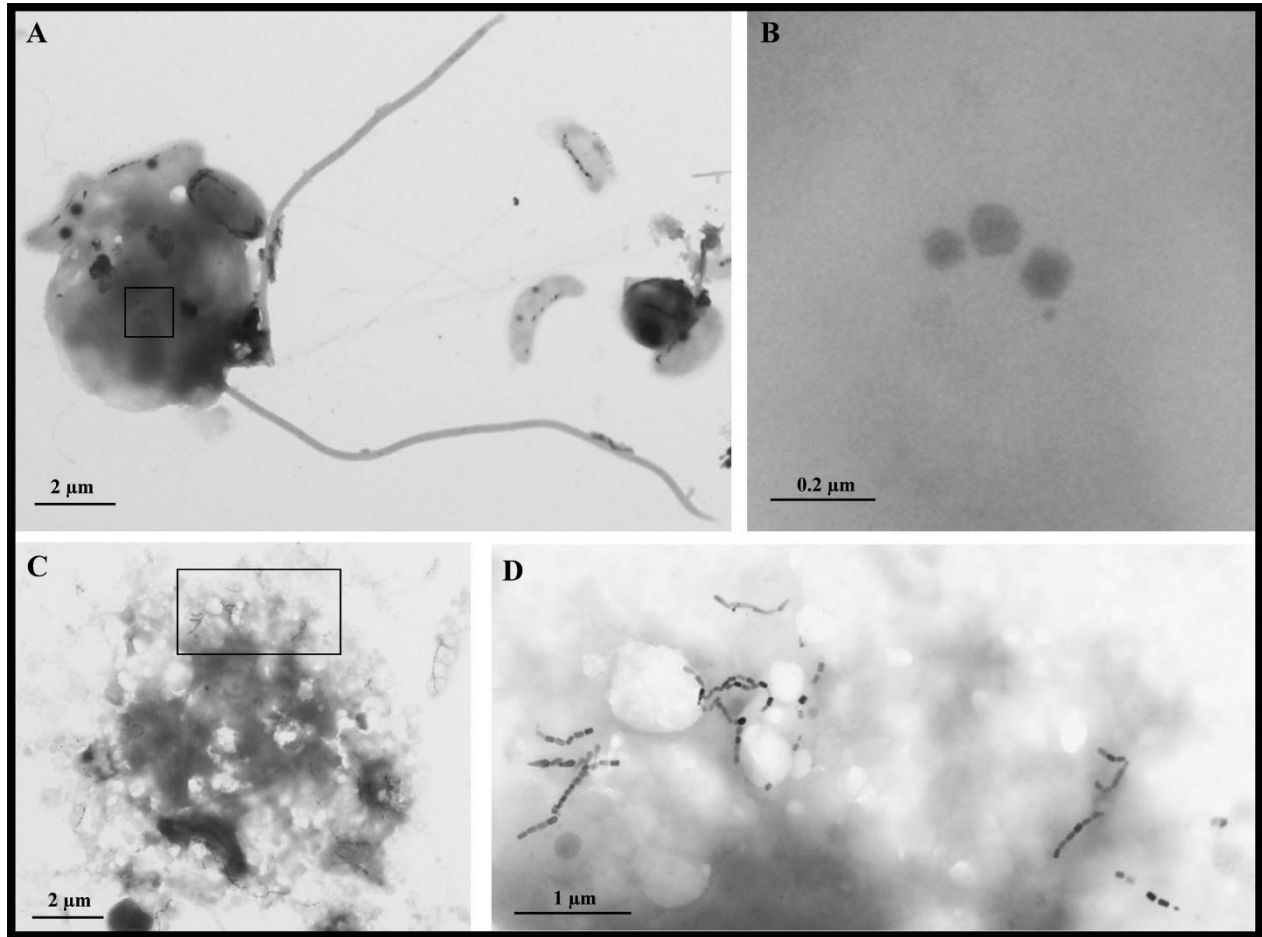


FIG S2. (A-D) TEM images of biflagellates that enriched in one bottle sampled from the Calanque of Méjean, Mediterranean Sea, France. In panel (A), the cell conserved its membrane integrity so the two thick flagella, typical of eukaryotic cells, can be observed. In panel (C), the cell exploded when it adsorbed on the carbon film of the TEM grid. The cells have an average diameter of 4.7 μm , they contain only few magnetosome chains explaining their weak magnetic response. Black frames on panels A and C show where the higher magnification images in B and D were taken, respectively.

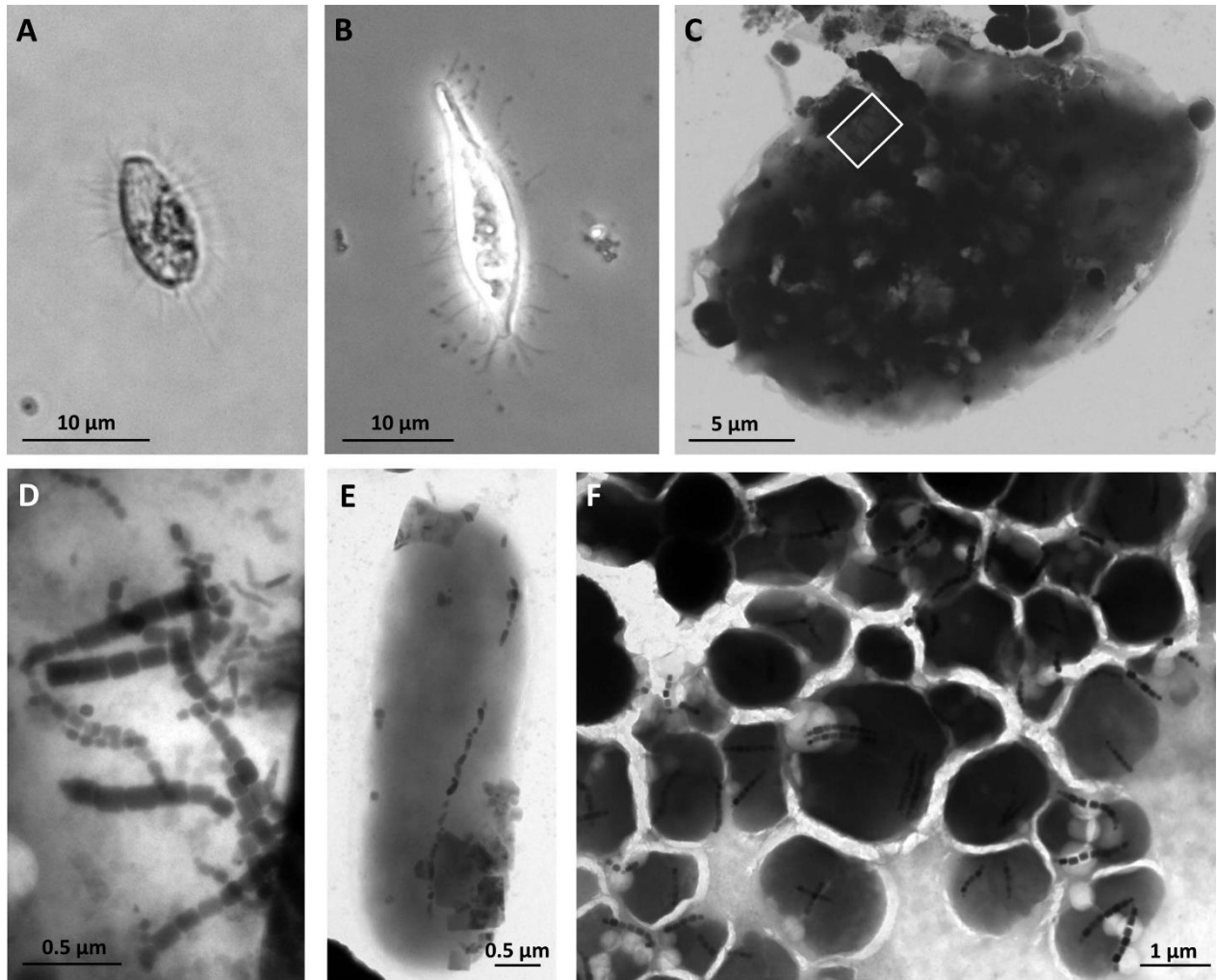


FIG S3. (A and B) Light microscope images of the two types of magnetic protozoa isolated from the Pointe Rouge Marina. (C and D) TEM images of the magnetic protozoan similar to the *Uronema*-related strain isolated from the Calanque of Méjean. Note the presence of three types of magnetosome particles (elongated prismatic, cuboctahedra and bullet-shaped). The white frame in panel C shows where the higher magnification image in D was taken. (E and F) TEM images of magnetotactic bacteria isolated in the same sample where the magnetic protozoa of the Pointe Rouge Marina were found. Note the presence of three types of magnetosomes: bullet-shaped particles biomineralized by large rods (E) and elongated prismatic and cuboctahedra crystals generally produced by magnetotactic cocci (F).