Very recently, long filamentous so-called “cable bacteria” have been discovered in marine sediments that are able to generate and mediate the transport of electrons across centimeter-scale distances. This discovery implies that biological evolution has somehow produced an organic structure that enables a highly efficient electron transport over very large distances. These microbial conductive nanofibers (MCNF) have extraordinary electrical properties, including an electrical conductivity that is orders of magnitude higher than currently known biological materials.

The goal of this project is to gain a better understanding of the nature, type and function of the biopolymeric material that forms the core of the MCNF. The research activities will consist of an initial field sampling at a coastal site in Belgium and/or The Netherlands (to sample the cable bacteria), the cultivation of these marine microorganisms in the laboratory, micromanipulation of the cable bacteria, identification of the strain via PCR, and the application of analytical chemistry and biochemical techniques, including high resolution microscopy, chemical stains, conductivity measurements and enzymatic treatments to learn about the MCNF.

**Keywords:** microbial electricity, cable bacteria, microbiology, analytical chemistry

**Requirements:** A motivated MSc student with strong background and interest in microbiology, biochemistry and/or material science.

**More info:** [www.microbial-electricity.eu](http://www.microbial-electricity.eu)