Magnetotactic bacteria orientate themselves in the Earth’s magnetic field using magnetosomes, organelles containing magnetic crystals that are used by them as a compass.

**Results**

We cloned the MamC gene from two strains of magnetotactic bacteria, *Magnetospirillium gryphiswaldense* (MSR-1) and *M. magnetotacticum* (MS-1).

We first fused the MamC to eGFP and demonstrated in *E. coli* that the fusion protein was fluorescent. We have now transformed *E. coli* with the FbFP and we will soon fuse this with MamC and transform our magnetotactic bacteria!

We want to thank our supervisors Björn Hamberger, Adam Takos, Brian King, Eva Knoch and Pratik Shah who gave us ... Polny and Nanna Heinz who helped us with our outreach projects and all the other people that contributed to our project.

**Applications**

**Magneto Pharma**

Magnetosomes can act as shuttles for anticancer drugs which can be specifically directed by a magnetic field to their site of action in the human body. This would greatly reduce side-effects to other body tissues.

**Magneto Power**

Following the principle of a dynamo, anchoring a magnetosome to the rotating c subunit of the ATP synthase could create a magnetic field which is constantly changing. This would move the metallic ions in a conductor placed nearby and induce an electric current.

**Magneto Paint**

Attaching colorful and fluorescent molecules to the magnetosomes could give rise to an innovative type of paint with the ability to visualize the magnetic fields surrounding us in daily life.

**CPH Strain**

To give our project a unique Copenhagen (CPH) perspective, we looked for our own local strain of magnetotactic bacteria in the lakes around CPH.

We purified these bacteria from our lake water samples by their ability to speed along a ‘race track’ towards a magnet. We could see under a microscope that our bacteria were indeed magnetotactic.

Amplification and sequencing of the 16S Ribosomal RNA revealed that the collected water samples contained bacteria related yet different to previously isolated magnetotactic bacteria.

We have now transformed E. coli with the FbFP and we will soon fuse this with MamC and transform our magnetotactic bacteria!