

*Helicobacter pylori* is a bacterium that lives inside our bodies, mainly in the stomach mucosa. *Helicobacter pylori* is so very widespread, that in some European countries even 4 in 5 adults are infected by this bacterium. Only a fraction of infected people do not suffer from any negative symptoms. Vey many develop chronic inflammation and peptic ulcers. Worse, *Helicobacter pylori* infection is linked to importantly increased risk of cancer disease, including stomach cancer and some kinds of lymphoma.

It is already known that microorganisms that live in a specific environment, including selected sites in human body (often called 'microbiome') compete and control each other. Thus, in this project we aim to bring new knowledge on how other components of microbiome control (or stimulate?) *Helicobacter pylori*. We seek to know how these other microbes may influence development of *Helicobacter pylori*-related diseases. Other bacteria (e.g. probiotic ones) and viruses may have an impact on *Helicobacter pylori*. These viruses are mainly bacteriophages, i.e. bacterial viruses, able to infect and destroy bacteria. Bacteriophages also produce specific enzymes that are able to destroy bacteria even without the presence of a virus. Thus, in this project, we also search for new enzymes that might kill *Helicobacter*.

In a long term, this project will contribute to novel therapies useful in combating *Helicobacter pylori*-related diseases. These therapies will make use of microbiome and its unique products (enzymes). This possibility is of a great importance in the antibiotic resistance era that we must face.