

*Helicobacter pylori* is a pathogenic bacterium that lives in the human gastrointestinal tract and infects approximately 50% of the world's population. This species is a significant risk factor in developing gastric ulcers and cancers, making it the second leading cause of cancer death globally. For the discovery of *H. pylori*, Barry Marshall and Robin Warren received the Nobel Prize in 2005, proving the breakthrough of the discovery and the importance of further research on the pathogenicity mechanism of this bacterium.

To survive, *H. pylori*, like other bacteria, must respond quickly to stress factors, such as a highly acidic environment in the stomach or the immune system's ability to release reactive oxygen species (ROS) in a process known as an oxygen burst. In response to stress, bacteria use the regulatory proteins that control gene expression and, consequently, the production of proteins that help them survive under harsh conditions. However, *H. pylori* possess only 16 regulatory proteins. Interestingly, over 900 non-coding RNAs (ncRNA) have been discovered in the *H. pylori* genome. The vast majority of these molecules have not been studied so far, and their role is unknown, but it is known that they may also play a regulatory role. ncRNAs are often expressed under certain conditions to facilitate rapid modification and adaptation of bacterial gene expression in response to a changing environment.

Our research indicates that the regulatory protein HP1021, which allows *H. pylori* to respond to oxidative stress, also controls the synthesis of specific ncRNAs. Therefore, we propose that HP1021 plays a role in ncRNA mediated regulation of *H. pylori* cellular processes. Our comprehensive experimental approach proposed in the project will elucidate the role of ncRNA in *H. pylori* response to oxidative stress and clarify the role of ncRNA in the control and function of the HP1021 regulon. Our project has the potential to fill a gap in knowledge about the exciting and still under-characterised species of bacteria, which is *H. pylori*.