Detection of Helicobacter Pylori in Patients

Thorough qPCR Strategy
High-Throughput Testing including DNA Isolation

Project Challenge
Helicobacter pylori is a Gram-negative bacterium which is found to be present in the stomach-lining of ~3 billion people around the world. Although the majority of individuals infected with the bacterium experience no symptoms, it is linked with chronic gastritis, gastric ulcers and can promote stomach cancer. The spread of H. pylori is not known, but person-to-person transmission by either the oral-oral or fecal-oral route are believed to be most likely. In the present project, Microsynth was asked to develop an assay for unambiguous diagnosis of H. pylori from oral biopsies and perform the testing of the biopsies. A major project challenge was to avoid the occurrence of false-negative results.

Project Realization
First, a thorough qPCR strategy was developed which allows the isolation and detection of H. pylori from human oral biopsies but simultaneously excludes the occurrence of false-negative results. False-negative results typically occur in case of poor isolation methods and the inhibition of a specific assay arising from sample impurities. A qPCR approach was chosen that is able to detect H. pylori but also a specific human DNA marker (positive control to rule out any isolation failures and/or inhibition effects). Extensive validation was performed by including both non-template controls and positive control biopsies provided by the customer. Second, DNA was isolated from biopsies by using a high-throughput protocol and samples were then analyzed in triplicate to assure the highest quality for the diagnosis. Finally, data derived from qPCR data were analyzed by Microsynth and reported to the customer.

Customer Benefits
“Microsynth helped us to define a thorough qPCR strategy and completed the project within the arranged time frame. Although the analysis did not match the expected outcome, the data can be fully integrated in our running research project and will build a sound basis for ongoing research in our lab.”

Dr. Roman Laske
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