

Abstract no.: 10.10

**Development and Application of a Novel
Peptide Nucleic Acid (PNA) Probe for the
Specific Detection of *Helicobacter pylori***

N. M. Guimarães, *† N. F. Azevedo,*‡ C. Figueiredo,† C. W. Keevil‡ & M. J. Vieira*

*Center of Biological Engineering, University of Minho, Braga, Portugal, † IPATIMUP — Institute of Molecular Pathology and Immunology of the University of Porto and Medical Faculty of Porto, Porto, Portugal, ‡ School of Biological Sciences, University of Southampton, Southampton, United Kingdom

The standard methods for accurate diagnosis of *Helicobacter pylori* infection consist in either culturing of the pathogen and/or concordant positive results obtained by histology and the rapid urease test or the ¹³C-urea breath test (UBT), as none of these diagnostic tests except bacterial culturing are 100% specific, fluorescence in situ hybridization (FISH) might be a good complement.

In this work, the development of a new peptide nucleic acid (PNA) FISH probe for the detection of *H. pylori* is reported. The 15-mer PNA probe was connected to an Alexa Fluor 546 dye and target a specific 16S rRNA sequence of the bacterium.

PNA probes are a recent technology that has been shown to provide for additional specificity and sensitivity in FISH procedures when compared to the standard DNA counterparts.

The probe was tested against several *H. pylori* and non-*H. pylori* strains, and was shown to be specific for the microorganism of interest. This technique was optimized for different types of supports such as slides, membrane filters, and also coupons of various materials where *H. pylori* was present. Tests performed showed a better sensitivity of the probe than the standard plating procedures for *H. pylori* detection. We are currently optimizing the application of this new probe for paraffin-embedded gastric biopsy specimens.

When completely optimized, this technique could be a useful method, as it is rapid, sensitive, and specific, for an even more accurate diagnostic of *H. pylori* infection, and could also be used for distinguishing *H. pylori* from other *Helicobacter* species.