

CANCER

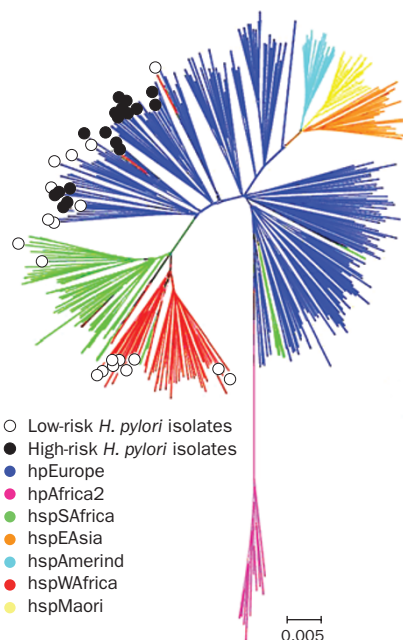
Helicobacter pylori ancestry associated with cancer risk

New findings published in *Gut* suggest that the disparity between the prevalence of *Helicobacter pylori* infection and gastric cancer rates that is seen in some regions of the world can be accounted for by the ancestral origin of the *H. pylori* strain.

Keith Wilson and colleagues investigated the ancestry of *H. pylori* strains in Colombia—gastric cancer rates are 25-fold higher in the Andean mountains than in the Pacific coast, despite the almost universal prevalence of *H. pylori* infection in both regions and a distance of just 150 km between the two. *cagA*⁺ *vacA* s1m1 *H. pylori* strains are more prevalent in the Andean mountains, but the difference in prevalence does not account for the difference in the gastric cancer rates. “We decided to investigate the ancestral haplotypes ... to assess whether there were more global bacterial differences between strains from patients in the two regions,” explains Wilson.

All individuals in the high-risk Andean mountains were infected with *H. pylori* strains of European origin, as were one-third of individuals in the low-risk Pacific coast. The remainder of individuals in the Pacific coast were infected with *H. pylori* strains of African origin. Interestingly, no-one was infected with strains of Asian or American-Indian origin.

Gastric biopsy samples were taken from each individual and lesion severity scored. Oxidative DNA damage was also assessed. More-advanced precancerous lesions and more-extensive oxidative damage was found in those infected with strains of European origin, regardless of where they lived. “These data imply that, in contrast to previous assumptions that host factors drive cancer risk amongst those infected with *H. pylori*, phylogeographic strain origin may play an important role



Phylogenetic tree of *Helicobacter pylori* strains, including isolates from the high-risk Andean mountains and low-risk Pacific coast in Colombia. Courtesy of K. T. Wilson.

in determining risk, independent of host factors,” says Wilson.

The researchers now plan to find the bacterial factors that account for the difference in pathogenicity between the *H. pylori* strains studied. They hope to use this information to help stratify infected patients according to their gastric cancer risk. “We also intend to study human host genomic factors and relate them to the phylogeographic origin of the strains, as well as the histopathology and DNA damage, as indicators of cancer risk,” concludes Wilson.

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Original article de Sablet, T. et al. Phylogeographic origin of *Helicobacter pylori* is a determinant of gastric cancer risk. *Gut* doi:10.1136/gut.2010.234468