

# Genes-4U

## IL-1 beta C-511T , Helicobacter pylori and Gastric cancer Risk

(Interleukin – 1 beta)

The IL-1beta gene encodes IL-1beta, a potent pro-inflammatory cytokine and powerful inhibitor of gastric acid secretion that plays a major role in initiating and amplifying the inflammatory response to *H. pylori* infection (1). A polymorphic allele with a T instead of a C at position -511 of the regulatory region of the IL-1B gene (IL-1beta -511T) is associated with increased IL-1beta production (2). *H. pylori* infection in individuals with these alleles may therefore result in increased production of gastric IL-1beta, leading to severe and sustained inflammation, gastric atrophy, and hypochlorhydria, and ultimately to the development of gastric carcinoma (3). The odds ratio for developing gastric cancer rather than gastritis was 1.8 for the -511T allele compared to C-511 homozygotes, but drastically increased up to an odds ratio of 87 when combined with helicobacter genotypes at the vacA s, vacA m and Cag A loci (4). The highest risk was seen in IL-1beta -511T carriers infected with *H. pylori* of the vacAs1 genotype (odds ratio 87) whereas the odds ratio for *H. pylori* vacAs1 genotype alone was only 17. IL-1beta -511T carriers infected with *H. pylori* of the vacAs1 genotype represented 66% of the gastric carcinoma patients (4).

**Thus, genotyping for both the host polymorphism (IL-1beta -511T) and the *H. pylori* bacterial polymorphism at the vacA s, vacA m and Cag A loci identifies a significant subset of individuals at high risk of developing gastric cancer, preventable by eradication of *H. pylori*.**

### References

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(3) Machado JC, Pharoah P, Sousa S, Carvalho R, Oliveira C, Figueiredo C, et al. Interleukin-1b and interleukin-1RN polymorphisms are associated with increased risk of gastric carcinoma. Gastroenterology 2001;121:823-9 (PMID: 11606496)

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