

Genome Sequence of *Helicobacter suis* Supports its Role in Gastric Pathology

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Helicobacter (H.) suis colonizes the stomach of more than 60% of slaughter pigs. It has been associated with chronic gastritis and ulcers of the pars oesophagea in pigs, and with gastritis, peptic ulcer disease and mucosa-associated lymphoid tissue lymphoma in humans. Up to now, little is known about virulence-associated genes of this micro-organism. This study describes the first genome sequence of two *H. suis* strains: *H. suis* strain 1 (type strain = LMG 23995^T) and 5, both isolated from the gastric mucosa of swine. After performing a draft pyrosequencing assay and assemblage, the genome was annotated by cross-mapping with three well-investigated *H. pylori* strains. As some virulence factors may differ between both species, *ab initio* annotations of the *H. suis* genome were performed as well. Comparison with the *H. pylori* genome revealed that all genes described to be essential for gastric colonization are present in the *H. suis* genome. Homologs of genes encoding the proinflammatory and immunodominant *H. pylori* neutrophil-activating protein (HP-NAP), the apoptosis-inducing γ -glutamyl transpeptidase (HPGGT), and some type IV secretion systems were also identified in *H. suis*. Sequences coding for outer membrane proteins involved in adhesion to gastric cells, such as *H. pylori* adhesin A (HpaA), an adherence-associated lipoprotein AlpA, and HorB were present in *H. suis* as well. *Ab initio* analyses unveiled the presence of several genes encoding stress proteins and toxin entities of the toxin-antitoxin modules *hipAB* and *phd/doc*. In conclusion, although genes coding for some important virulence factors in *H. pylori*, such as the cytotoxin-associated gene A protein (CagA) and the vacuolating cytotoxin (VacA), were not detected in the *H. suis* genome, homologs of other genes associated with colonization and virulence of *H. pylori* and other bacteria were present. This study adds further evidence that *H. suis* may play a role in gastric pathology.