**Helicobacter pylori**

*Campylobacter pylori*

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Bio 1407 - 04 Spring

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**Genome Structure**

*H. pylori* is composed of a single circular chromosome with 1,667,867 base pairs, containing about 1590 coding regions.

**Cellular Morphology and Ultrastructure**

*H. pylori* is non-spore-forming gram-negative bacteria. It is a spiral shaped organism with 4 to 7 flagella. The cellular morphology may be helical or curved. Cells transform to coccoid forms with age.

**Cell Metabolism**

It has a potent multisubunit urease enzyme that enables it to survive in acidic pH conditions and colonize the gastric environment.

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**Distribution**

*H. pylori* infects more than half of the world's population, and can be found almost everywhere.

**Habitat**

The natural habitat of *H. pylori* is the gastric mucosa of the human. It is microaerophilic, and grows well under conditions of reduced oxygen tension found in the stomach.

**Nutrition**

*H. pylori* is a heterotrophic, parasitic bacterium. Because it is a single celled bacteria, it does not have a need to transport nutrients within itself. It absorbs its nutrients across its plasma membrane.

**The Circle of Life**

*H. pylori* is most commonly passed from host to host through a fecal-oral or oral-oral route. The cell enters the mouth and travels down the esophagus, until reaches the stomach. Once it is in the stomach, it rapidly enters the mucosa and multiplies itself through binary fission. *H. pylori* can then be passed through the digestive system and excreted through the anus in feces. If contaminated feces gets in the food or water supply, the circle will then be completed!

**Pathogenic**

Widespread infection of *H. pylori* causes asymptomatic gastritis in all infected humans. It also causes symptomatic diseases such as gastritis, 70 – 80% of gastric ulcers and 90% of duodenal ulcers, and the majority of cases of gastric adenocarcinoma.

**Treatment for *H. pylori* infections**

A tri-antimicrobial regimen which consists of bismuth subsalicylate, tetracycline, and metronidazole taken over a two week span, has proven to be about 90% effective.

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**REFERENCES:**

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**Helicobacter pylori**

*(Campylobacter pylori)*

- **Domain Eubacteria**: Because it has no nuclear membrane, no organelles (except for ribosomes), and its genetic material is found within a single strand of circular chromosome.

- **Kingdom Bacteria**: Because it is a unicellular microorganism that lacks a nucleus. It also has no membrane bound organelles.

- **Phylum Proteobacteria**: Because it is a Gram-negative (stink pink) bacterium. Its outer membrane of lipopolysaccharides, rather than peptidoglycan as found in Gram-positive bacteria. *H. pylori* use flagella for movement.
Class Epsilonproteobacteria: Most of the bacteria within this class inhabit the intestinal tract of mammals. They can either be symbionts (either benefiting or not affecting the host) or parasites such as *H. pylori*.

Order Campylobacterales: This order is composed of mesophiles, meaning they live in moderate temperatures (10°-50°C). The human stomach, which is the habitat for *H. pylori*, falls within this range.
**Helicobacter pylori**
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- **Family Helicobacteraceae**: This family is characterized by the helical shape of its members.

- **Genus Helicobacter**: Members of this genus live in the acidic mammalian stomach by producing urease. They are all flagellated and can move quite fast. This genus was once part of the *Campylobacter* genus but was later made into its own group.

- **Species Helicobacter pylori**: *H. pylori* is the most widely known species of the Helicobacter genus. It is pathogenic to humans.
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1. *H. pylori* invading mucous layer
2. *H. pylori* neutralizing surroundings using the enzymic activity of urease
3. *H. pylori* colonizing mucous layer
4. *H. pylori* causing inflammation, mucosal degredation, and cell death
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Helicobacter pylori
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