



## HELICOBACTER SPECIES

### CLASSIFICATION

Order: *Campylobacterales*

Family: *Helicobacteraceae*

Genus: *Helicobacter*

- Gram-negative bacteria
- Curved to spiral in shape
- Optimal growth at 37°C and/or 42°C
- Motile and microaerophilic

### PREVALENCE

*Helicobacter* species can be found in many animals, including mice, rats, cats, dog, hamsters, ferrets and humans. This information document will concentrate on mainly mice and rats.

### DIAGNOSIS

PCR

Naturally acquired infections are persistent and the organism is chronically shed in faeces.

### DISEASE/CLINICAL SIGNS

*Helicobacter* species have co-evolved with their hosts and other commensal (normal) flora of the gastrointestinal tract, which minimises the risk of clinical disease in the majority of their natural hosts. Immunocompetent mice may not exhibit signs of clinical disease, but reports have been made of the following in immunocompromised mice:

- Liver lesions
- Inflammatory large bowel disease
- Possible gastritis
- Proliferative typhlitis (mucosal epithelial cell hyperplasia, neutrophilic infiltration)
- Chronic hepatitis

### STRAINS

Many species of *Helicobacter* exist, with at least 26 formally named species now included in the genera. *Helicobacter* species can co-exist with each other within the caecum and colon of animals so that one animal may have more than one *Helicobacter* colonizing the intestine. The most common ones found in mice are *H. hepaticus*, *H. bilis*, *H. muridarum*, *H. rodentium*, *H. typhlonius* and *H. rappini*. In rats, *H. hepaticus*, *H. bilis* and *H. troglontum* are commonly found.



# INFORMATION SHEET

## TRANSMISSION

- Oral-faecal
- Fomites
- Possible in-utero transmission

## INTERFERENCE WITH RESEARCH

Effects include but are not limited to:

- Hepatic tumours
- Hepatitis
- Hyperplasia in liver, and apoptosis
- Interference with experimental oncology
- Increased incidence of induced hepatocellular adenomas

## DURABILITY

Due to the number of different strains of *Helicobacter*, no general comment can be made except to say that the *Helicobacters* survive well at 37oC and 42oC in microaerobic (requiring only a little oxygen) and/or anaerobic (no oxygen required) conditions.

## CONTROL

Maintain regular health monitoring of supplier sub-populations and strict protocols for barrier colonies. Exclude wild mice from facility. Extreme care to be taken by testing transplantable tumour and cell lines before use.

## POST INFECTION

Re-stock with *Helicobacter* free mice where possible, or use methods such as embryo transfer or caesarean derivation (use in immunocompetent strains only; in-utero transmission may be possible in immunodeficient mice).

## BIBLIOGRAPHY

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