

## Introduction to Microbiology

### Case Study *Campylobacter jejuni* and foodborne illness

Answers as discussed in the tutorial

1. Use information in your notes to describe the both colony and cell morphology of *C. jejuni*.

Gram-negative bacilli and can be spiral-shaped, S-shaped, or curved. Most exhibit characteristic corkscrew motility mediated by polar flagella.

Growth on enrichment agar produces small, grey 'creeping colonies'

2. Describe how you would carry out an enrichment for *Campylobacter jejuni*. You should mention the key components agar you would use and the temperature and time of incubation. There is a good outline procedure for enrichment on the website in the section entitled "Methods for Identification and Detection of *Campylobacter* - Culture-Based Methods".

The pathogen is isolated by culturing on selective media followed by incubation at 41.5°C for 44 hours under low oxygen (2%) conditions. Food and environmental samples require an additional pre-enrichment designed to facilitate the recovery of damaged cells. Enrichment is carried out using a selective enrichment broth medium which is incubated at 37°C for five hours. Clinical samples can be cultured directly onto selective media. Mention Temperature, Microaerophile, Enrichment media with antibiotics to suppress growth of other enterics, lysed blood and charcoal.

3. *C. jejuni* is described in the paper as being ubiquitous in the ambient environment, why is the characteristic unexpected?

A microaerophile therefore would not expect to grow in conditions of high oxygen and low CO<sub>2</sub>.

4. Key to survival are enzymes that allow *C. jejuni* to survive aerobic stress. Name two specific enzymes mentioned in the paper that help protect the bacterium from the toxic effects of oxygen. How might they work?

Two enzyme KATa and SodB. Latter is a super oxide dismutase catalyses conversion of toxic superoxide radical into molecular oxygen and hydrogen peroxide.

5. Using your knowledge of the role structural components in bacteria name and describe the mode of action of two structures that have been associated with the survival and pathogenicity of *C. jejuni*.

Structures such as the capsule and flagella which allow motility and maybe also secretion although we will return to this in the next section. Also LOS (don't just copy the acronym) which is lipooligosaccharide.

# Microbiology Case Study Answers

**M Carnoy**



**Microbiology Case Study Answers:**

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In a global taken by monitors and the ceaseless chatter of immediate interaction, the melodic elegance and psychological symphony created by the published term usually fade into the back ground, eclipsed by the constant sound and disturbances that permeate our lives. Nevertheless, nestled within the pages of **Microbiology Case Study Answers** a charming fictional treasure filled with fresh emotions, lies an immersive symphony waiting to be embraced. Constructed by a masterful composer of language, this fascinating masterpiece conducts viewers on a psychological trip, well unraveling the hidden melodies and profound affect resonating within each carefully constructed phrase. Within the depths of the moving review, we will investigate the book is central harmonies, analyze their enthralling writing style, and submit ourselves to the profound resonance that echoes in the depths of readers souls.

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