

# THIRD CLASS VIBRIO SPP.



# General Characteristics of Vibrio

## The Vibrios:

- *Vibrios* are **gram-negative comma shaped**, curved bacilli, motile with a single polar flagellum ( 2\*0.5 micrometer diameter).
- Facultative anaerobes.
- *Vibrio cholerae* serogroups **O1** and **O139** are responsible of epidemic cholera.
- Serogroup **O1** is **non-capsulated** while **O139** is **capsulated**.
- They grow on different media **at high pH** (8.5-9.5) as **alkaline peptone** water media.
- **TCBS** is a selective medium.
- Oxidase and Indole positive.
- Reduce nitrate to nitrite.

*Vibrio spp.* (comma shape)





# ***Morphology & Physiology of Vibrio***

- Found in aquatic habitats.
- Genus *Vibrio*: Slightly curved rods.
- ***V. cholerae***, ***V. parahaemolyticus***, ***V. vulnificus*** are most significant human pathogens
- Broad temperature 18-37°C
- Grow on variety of media including:
  - MacConkey's agar
  - Selective/differential culture medium **TCBS** (**T**hiosulfate **C**itrate **B**ile salts **S**ucrose) agar
- ***V. cholerae*** grow without salt
- Most **other vibrios** are halophilic

# General Characteristics of Vibrio

- Similarities to Enterobacteriaceae
  - Gram-negative
  - Facultative anaerobes
  - Fermentative bacilli
- Differences from Enterobacteriaceae
  - **Polar flagella**
  - **Oxidase positive**

# Laboratory Diagnosis

- **Specimen Collection and Transport:**

- Stool specimens suspected of containing *Vibrio* species should be collected and transported only in Cary-Blair medium.
- Buffered glycerol medium is not acceptable, because glycerol is toxic for vibrios.
- Feces is preferable, but rectal swabs are acceptable during the acute phase of diarrheal illness.

- **Direct Detection Methods:**

- *V. cholerae* toxin can be detected in stool using an enzyme-linked assay (ELISA) or or Latex agglutination test.
- Microscopically, vibrios are gram negative, straight or slightly curved rods.
- When stool specimens are examined using dark-field microscopy, the bacilli exhibit characteristic rapid darting or shooting star motility.

## Selective Medium – TCBS

*V. cholerae* grows well on Thiosulphate citrate bile sucrose (TCBS) agar, on which it produces yellow colonies that are readily visible against the dark green background of the agar.

