

Vibrionaceae	V. cholerae	V. parahaemolyticus	V. vulnificus	V. alginolyticus
Gram Reaction	curved GNR	curved GNR	curved GNR	curved GNR
Atmosphere	facultative anaerobe: halophilic "salt loving"	facultative anaerobe: halophilic "salt loving"	facultative anaerobe: halophilic "salt loving"	facultative anaerobe: strict halophile
Sodium requirement	do not require	require Na for grow	require Na for grow	requires at least 1% NaCl, tolerates up to 10% NaCl
Motility	positive	positive	positive	positive
Oxidase	positive	positive	positive	positive
Nitrate reduction	positive	positive	positive	positive
String test	positive	positive	positive	positive
Gelatin	positive	positive	positive	positive
Metabolism	fermentative	fermentative	fermentative	fermentative
Sucrose	positive	negative	negative	positive
Lactose	negative	negative	positive	negative
VP	Classical: negative, El Tor: positive	negative	negative	positive
Antigenic structure	subgroups O1, O139 and non-O1: common H & O Ag; O1 & O139 agglutinate in O1 antisera, non-O1 does not	serotyped based on O & K antigens		
Infections	O1 & O139- asiatic cholera or epidemic cholera; gastroenteritis	2nd most common Vibrio associated w/gastroenteritis, "summer diarrhea" in Japan, water associated traumatic injury	2nd most serious Vibrio-associated infections, primary septicemia --> wound infections, cellulitis --> traumatic aquatic injury	least pathogenic species for humans, most frequently isolated in lab
Transmission	contaminated water or improperly preserved & handled food	contaminated seafood	consumption of shellfish	occupational hazard for fishermen and sailors
Virulence	cholera toxin (cholera toxin) powerful exotoxin causing hypersecretion of electrolytes & water out of intestinal cells, massive watery stools; 2 biogroups: classic, El Tor	Kanagawa phenomenon- most virulent strains produce heat-stable hemolysin, lyse human RBC in high salt mannitol medium (Wagatsuma agar)		
Management	treatment: fluid replacement, antibiotics; untreated: rapid fluid & electrolyte loss --> dehydration, hypovolemic shock, metabolic acidosis, death in hours		40-60% mortality rate within hours	
CULTURE: enrichment with alkaline peptone water with 1% NaCl, TCBS is a selective media for Vibrio (sucrose, H2S), good growth on BAP - medium to large smooth, opaque, iridescent colonies w/ a greenish hue, typically non-lactose fermenters on MAC, all susceptible to vibriostatic agent O/129				

recent consumption of raw seafood (oysters); recent immigration or foreign travel; gastroenteritis w/ "rice-water" stools--> severe diarrhea, loss of LOTS of water result in dehydration; accidental trauma during contact w/ fresh or marine water

	Aeromonadaceae	Enterocacteriaceae <i>Flasimonas shigelloides</i>	Campylobacteraceae <i>C. jejuni</i>	Campylobacteraceae <i>Helicobacter pylori</i>
Gram reaction	straight GNR	straight GNR	GNR, sea-gull wings	curved GNR
Environment	aquatic	fresh water, soil		
Motility	positive, 2 species negative	positive (polar flagella)	positive, darting	
Oxidase	positive	positive	positive	positive
Catalase			positive (most)	positive
UREA			negative	positive
Nitrate reduction			positive	
Hippurate hydrolysis			<i>C. jejuni</i> - positive <i>C. fetus</i> - negative	negative
Esculin hydrolysis	positive			presumptive ID in gastric biopsy- rapid urease reaction - Christensen medium - 2 hrs at 37 C, urea breath test - detection of urease activity, fecal Ag detection and PCR, transport in Stuart medium or cystein Brucella broth with 20% glycerol, CHOC or Brucella Agar with 5% horse RBC & Skirrow's, microaerophilic, capnophilic, 37 C, detection of Ab's - ELISA, IFA
H2S	positive			
LDC	positive	positive		
ODC	negative	positive		
ADH	positive	positive		
Indole	positive			
VP	positive			
Hemolysis	beta	gamma		
Q/129	resistant	sensitive		
Gelatin	positive	negative		
Inositol	negative	positive		
Growth in 6.5% NaCl	negative	negative		
Lactose	positive on MAC	positive (most)		
Glucose	positive			
Growth temperature	4-42 C	minimum 8 C	<i>C. jejuni</i> grow at 42 C	variable growth at 42 C
Infections	<i>A. caviae</i> , <i>A. hydrophila</i> , <i>A. veronii</i> , gastroenteritis- mild to cholera like diarrhea, <i>A. hydrophila</i> , wound infections- cellulitis (leeches), <i>A.</i> <i>veronii</i> septicemia- most invasive,	gastrointestinal disease, extraintestinal infections (occupational exposure), bacteremia/meningitis	<i>C. jejuni</i> - bacterial gastroenteritis, bacterial diarrhea, <i>C. fetus</i> - bacteremia (immunocomp), <i>Arcobacter</i> - diarrheal disease	duodenal ulcers, Type B gastritis, gastric carcinoma
Transmission	ingestion of contaminated water or contaminated seafood	occupational exposure, ingestion	direct contact by exposure to infected animals, ingestion of contaminated water, dairy products & improperly cooked poultry, person-to-person, sexual	
Enhanced recovery	from stools: ampicillin BAP, modified CIN, alkaline peptone water enrichment	from stools: inositol brilliant green bile salts agar	CAMPY-BAP, microaerophilic (5-10% O2), capnophilic (10% CO2)	