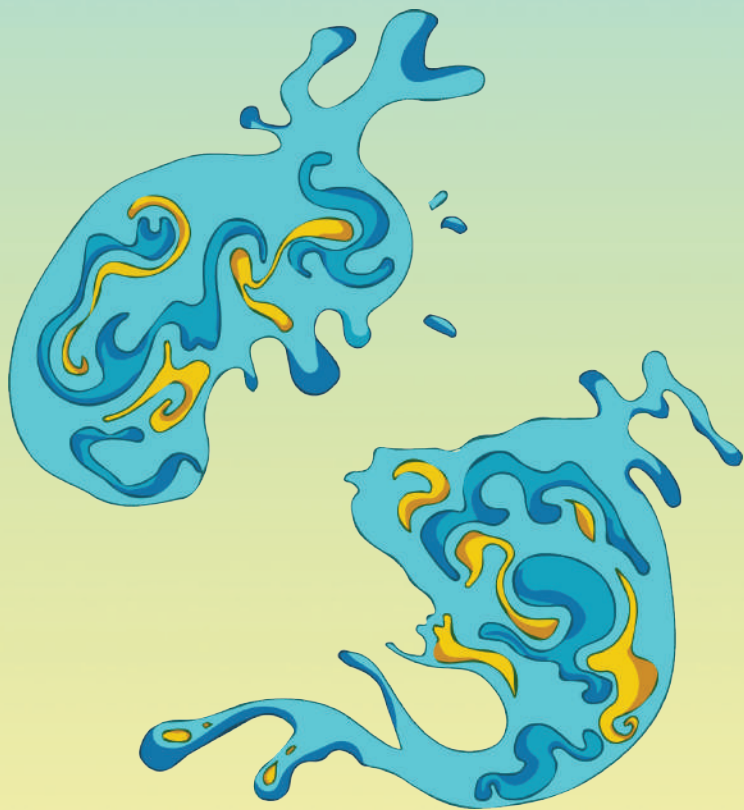


BIO MIE

a bacteria picture book



Vibrio

gram negative

Teams using *V. fischeri*:
UCopenhagen

Vibrio fischeri can be found globally in marine environments, often in a positive relationship with marine animals. It is most famously known for its symbiosis with the hawaiian bobtail squid, giving the animal counter-illumination camouflage that keeps it from casting a shadow on the ocean floor at night. Decaying organic debris is the source of life for free-living *V. fischeri* cells. It produces light by oxidizing a reduced flavin mononucleotide and a long-chain aldehyde by diatomic oxygen with the help of several enzymes. This metabolic pathway is regulated by an operon system. *V. fischeri* was the original bacteria that was studied to discover quorum sensing. Quorum sensing is a way for bacteria to communicate involving the production, detection, and response to extracellular signaling molecules. In 1970, Kenneth Nealson, Terry Platt, and J. Woodland Hastings noticed that this bacteria luminesces only when the population had increased significantly.

Teams using *V. parahaemolyticus*:
MIT MAHE

Vibrio parahaemolyticus was discovered in 1950 as a causative agent in foodborne disease following a large outbreak in Japan. It is a halophilic bacterium, meaning it thrives in extremely salty, warm climates within marine or estuarine environments. It is commonly found free swimming or attached to underwater surfaces. Iron is an indispensable material in the growth and metabolism of this bacteria. Iron regulates a lot of the virulence factors in *V. parahaemolyticus*, and hence, it has many additional surface proteins, called siderophores, whose sole responsibility is to uptake iron into the cell. Furthermore, quorum sensing regulators are required for metabolic fitness in this bacteria.

V. parahaemolyticus is a pathogenic microbe that causes gastroenteritis, wound infections, and in more severe cases, sepsis. It is also pathogenic to fish, where it causes vibriosis. It is a gram-negative bacteria that has caused a lot of disease outbreaks, and is still a leading cause of foodborne illness associated with seafood consumption.

A collaboration between

