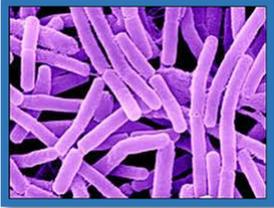
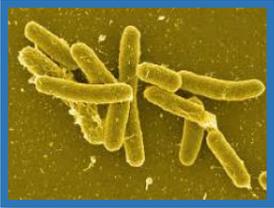


PFGE

(Pulse-field Gel Electrophoresis)



Why/When: PFGE is performed in the surveillance of retail foods and to monitor for outbreaks. When two or more bacterial isolates match in banding pattern, state epidemiologists are notified and they investigate. The investigation involves interviewing patients to determine if they have a common link (for example: they ate the same food or swam in the same pool). If a link is found, then an attempt is made to collect samples from the same source (this is not always possible as food is not kept long). If successful, the source sample is tested by the Environmental Microbiology Section. If a similar bacterium is found it is also tested using PFGE to determine if it has the same pattern (and therefore is the same strain) as the clinical isolates. This helps epidemiologists focus on preventing any more exposures.

PFGE for enteric bacteria – *Salmonella*, *E. coli* (STEC), *Shigella*, & *Campylobacter*, and coming soon....*Listeria*!!

Pure enteric isolates from General Microbiology (human/veterinary) or Environmental Microbiology (food/environmental) are suspended in agar plugs (jello-like matrix) and treated to release whole genomic DNA into the agar. A slice of this plug is enzyme-digested to cut up the whole genomic DNA into large and small pieces of DNA fragments. The fragments are run on a large horizontal gel and the DNA fragments migrate towards the positive node, separating as they move through the gel, smallest pieces migrating faster (and thus farther) than bigger pieces. Standards (St) are run with every gel. Samples are compared to each other and to previous isolates to identify potential matches. All data is submitted to PulseNet, a database maintained by the Centers for Disease Control and Prevention in Atlanta, GA. Data is provided to PulseNet from all states as well as other countries such as Canada and Mexico.

