How do genes interact with each other on *L.monocytogenes* ?

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Listeria monocytogenes is a pathogenic bacterium, which is able to adapt and survive in several environments such as soil, water or food. To easily persist, bacteria form a web that allows them to stick to each other to a surface, and it is called biofilm. When people eat contaminated food this bacterium is capable to survive to digestion and allocate inside the human body where it can cause serious diseases. The concern about this particular bacterium comes from the fact that it is one of the main causes of death associated with food contamination in the European Union, costing millions of euros annually in medical care. Genes are segments of DNA that encodes proteins with functions on the cell. Nevertheless, environmental changes can trigger a change on the set of genes that are being expressed, allowing bacteria to adapt and survive different conditions.

Objectives

On my PhD project, I'm investigating the connection between a set of genes that influence the biofilm formation and adaptation of *L. monocytogenes* on different environments. Therefore, I will construct mutant bacteria that will be able to report the expression of those genes by fluorescence, detected by a specific microscope, in order to monitor their behaviour under specific environmental conditions. Concluding, I hope to understand how bacteria rearrange their characteristics in order to survive harsh conditions.

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