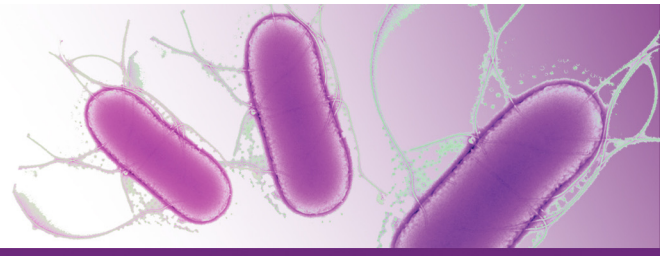
Build a bug

Research and assemble a *Salmonella* bacterial genome



Part 1: Instructions

Using the information cards provided to research the function of genetic components which contribute to the virulence of two *Salmonella* serotypes. Summarise the information in the table below. This will be needed for the second part of this activity.

Genetic component	Function / Role	*Salmonella* Typhi	*Salmonella* Typhimurium
ratB, sivH, shdA			
Pseudogenes			
SPI-7, SPI-8, SPI-10			
Fimbrial genes			
Capsule genes			
Virulence plasmid			
STY3258			
STM2133			
ECK1674			
ECK4368			

Glossary

Serotype or Serovar: A serotype or serovar is a group of microorganisms classified together based on their cell surface antigens. The *Salmonella* genus of bacteria contains over 4400 serotypes, including *Salmonella enterica* serovar Typhimurium (*Salmonella* Typhimurium), *S.* enterica serovar Typhi (*Salmonella* Typhi), and *S.* enterica serovar Dublin (*Salmonella* Dublin).

Operon: A cluster of genes that act as a functional unit, interacting and regulating the production of specific polypeptides.

Putative: Assumed or hypothetical.

Plasmid: A circular piece of DNA that replicates within a cell independently of the chromosomal DNA.

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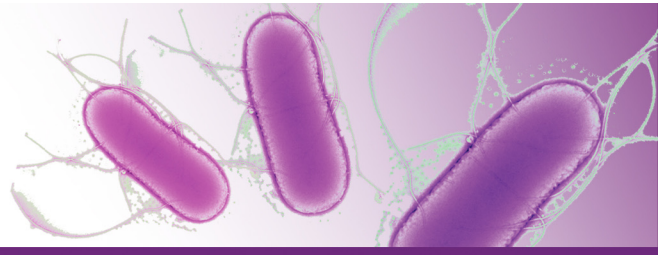

Part 2: Instructions

Three of the genetic components below are critical to the *Salmonella* Typhimurium genome, which causes gastroenteritis (stomach pain and diarrhoea). Another three are criticial to the *Salmonella* Typhi genome, which causes typhoid fever. Decide which *Salmonella* genome you want to assemble. Using the data collected fom the information cards work out the correct genetic components for your bacteria. Construct a model genome using three different colours for your chosen genetic components and one colour to represent the rest of the *Salmonella* genome. Tape your model to the box below and label the components.

Choose <u>three</u> of the following genetic elements to assemble your chosen bacterial genome:

- ***ratB, sivH, shdA*** ☐
- ***Pseudogenes*** ☐
- ***SPI-7, SPI-8, SPI-10*** ☐
- ***Fimbrial genes*** ☐
- ***Capsule genes*** ☐
- ***Virulence plasmid*** ☐
- ***STY3258*** ☐
- ***STM2133*** ☐
- ***ECK1674*** ☐
- ***ECK4368*** ☐

This genome represents *Salmonella* _____

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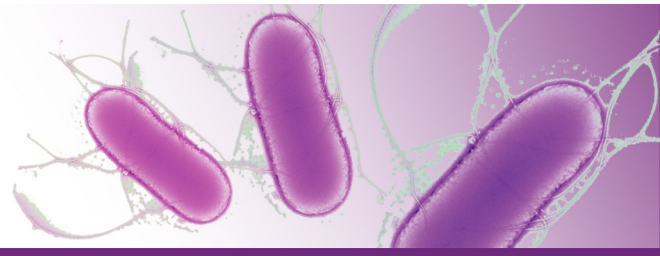

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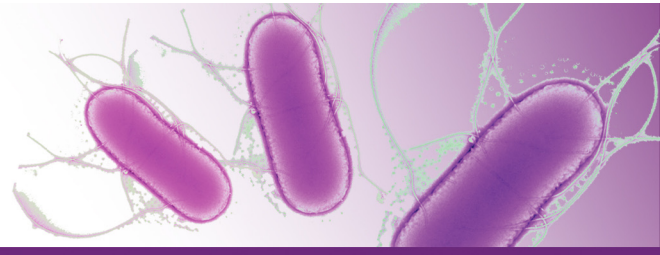

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Choose <u>three</u> of the following genetic elements to assemble your chosen bacterial genome:

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