

# 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	<i>Salmonella</i> Typhi	<i>Salmonella</i> Typhimurium
<i>ratB, sivH, shdA</i>			
<i>Pseudogenes</i>			
<i>SPI-7, SPI-8, SPI-10</i>			
<i>Fimbrial genes</i>			
<i>Capsule genes</i>			
<i>Virulence plasmid</i>			
<i>STY3258</i>			
<i>STM2133</i>			
<i>ECK1674</i>			
<i>ECK4368</i>			

### 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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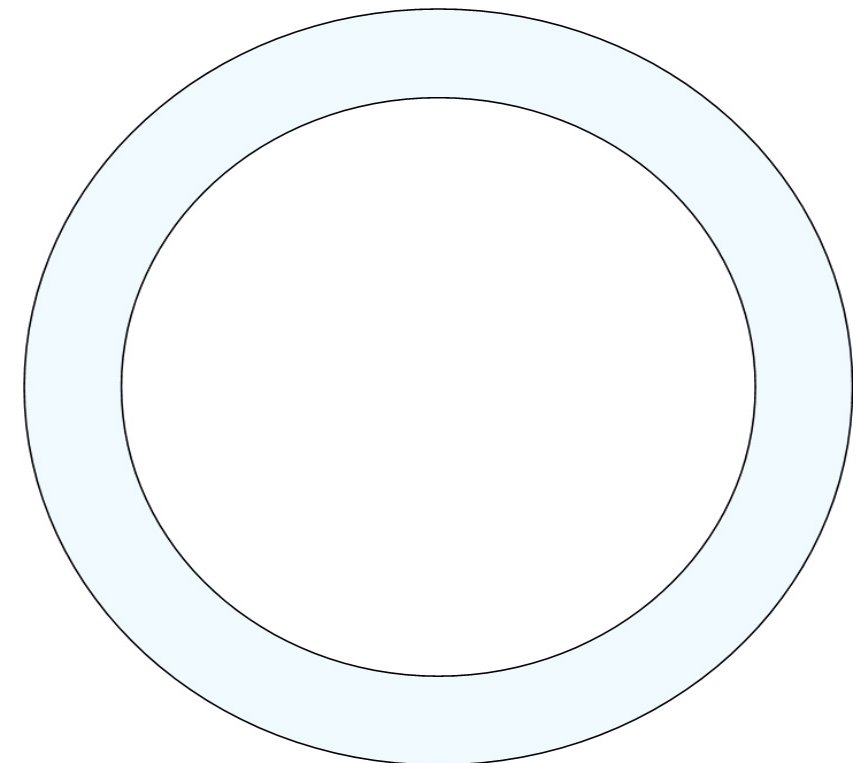


### Part 2: Instructions

Three of the genetic components below are critical to the *Salmonella* Typhimurium genome, which causes gastroenteritis (stomach pain and diarrhoea). Another three are critical to the *Salmonella* Typhi genome that causes typhoid fever. Decide which *Salmonella* genome you want to assemble and using the data collected from the information cards work out the correct genetic components for your bacteria. Cut out your chosen components from the accompanying sheet and attach them to the bacterial genome below.

### Choose **three** 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



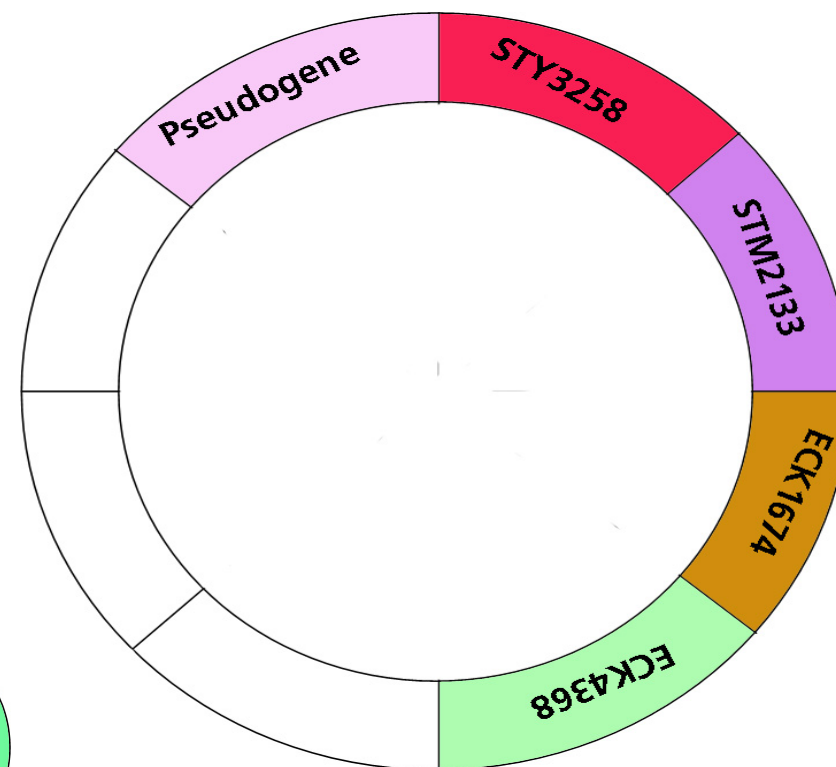
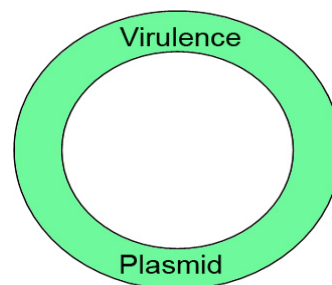
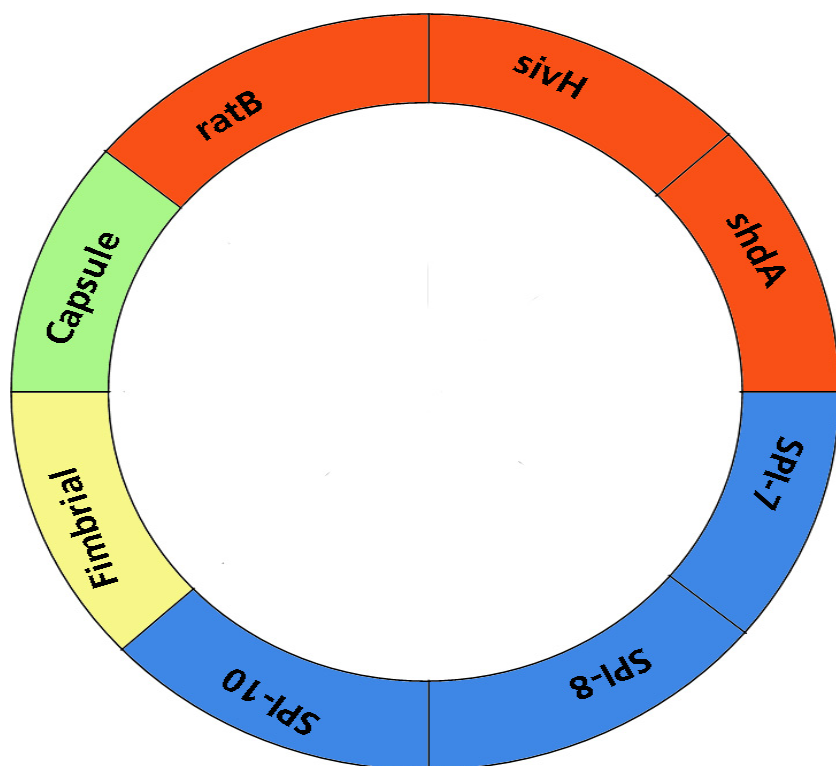
This genome represents:  
*Salmonella* \_\_\_\_\_

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## Genome assembly components



# Build a bug

## Research and assemble a *Salmonella* bacterial genome



### Part 1: Instructions

Using the Genome Scholar tool 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	<i>Salmonella</i> Typhi	<i>Salmonella</i> Typhimurium
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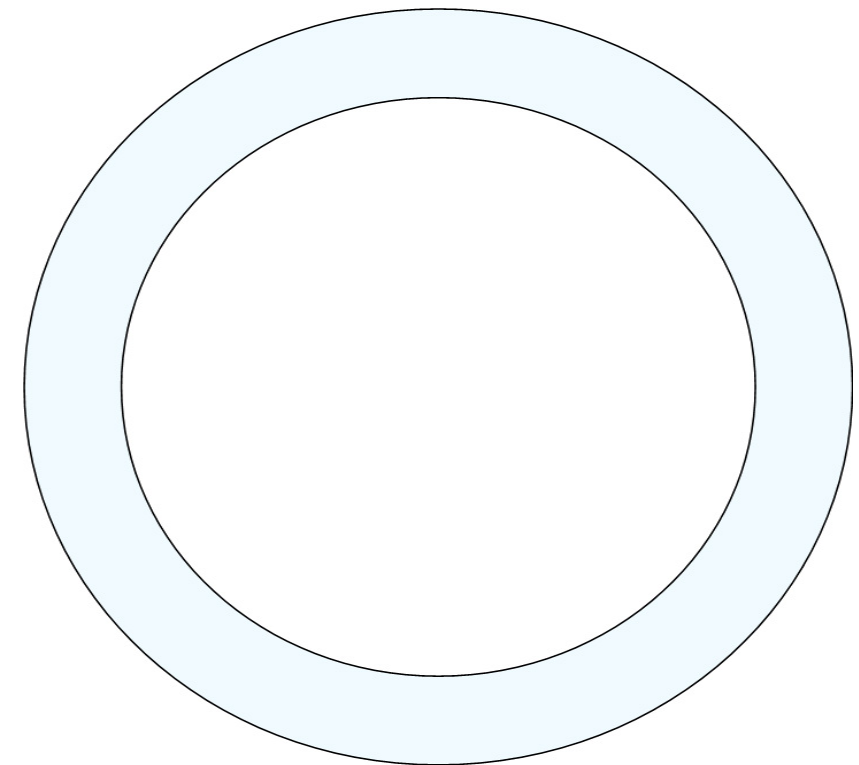


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