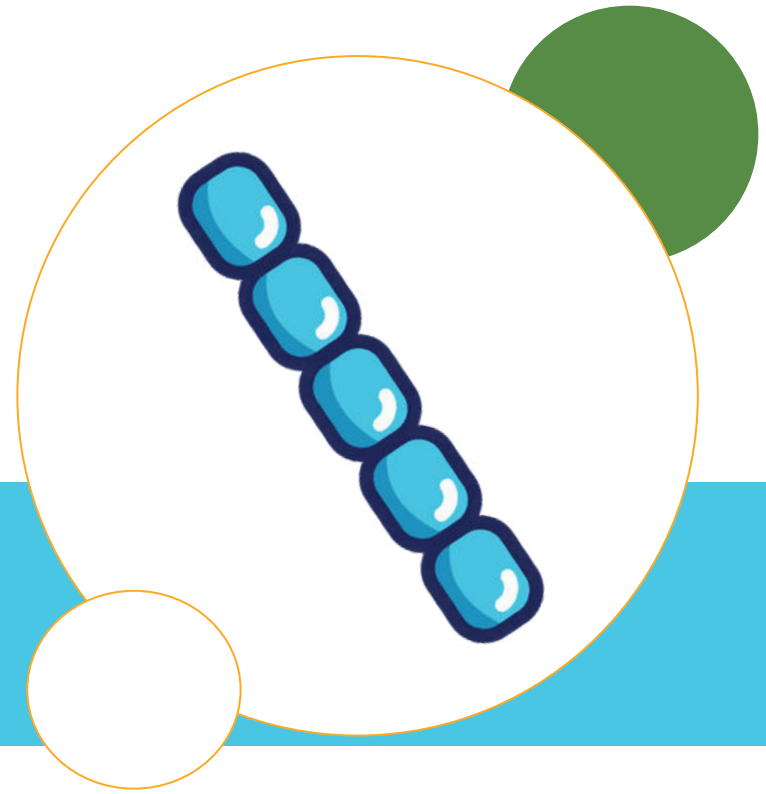
Meet the Microbe:

Streptomyces



streptos = twisted	*myces* = fungus	Bacteria

- Found in dry and non-acidic soil, *Streptomyces* secrete enzymes to break down organic waste and produce a compound called ‘geosmin’ which causes an earthy smell (especially after it rains!).
- ***Streptomyces griseus*** is important for antibiotic production. It produces streptomycin, which was used as the first treatment against tuberculosis.

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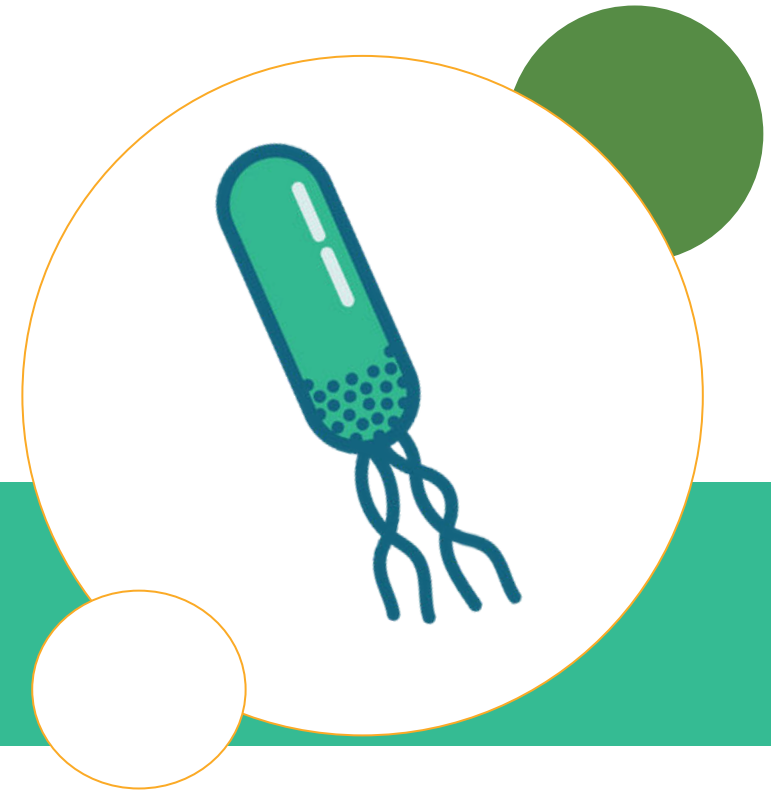
Meet the Microbe:

Pseudomonas



pseudo = false	*monas* = unit	Bacteria

- *Pseudomonas* is found in fresh water and moist environments like soil.
- *Pseudomonas* form biofilms (a sticky layer) which increases its antibiotic resistance. It can be naturally resistant to the antibiotic, penicillin.
- ***Pseudomonas aeruginosa*** is involved with food spoilage and produces a fruit-like or corn-like smell. It turns blue-green when exposed to UV light.

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Meet the Microbe:

Euglena

eu = good	*glena* = eye	Algae

- Found in fresh and salty water, *Euglena* has a distinct eyespot called a stigma which detects light. It uses chloroplasts for photosynthesis which remove CO_2 from the environment.
- ***Euglena gracilis*** is approved by the European Commission as a food supplement. It contains high levels of vitamins and carbohydrates.

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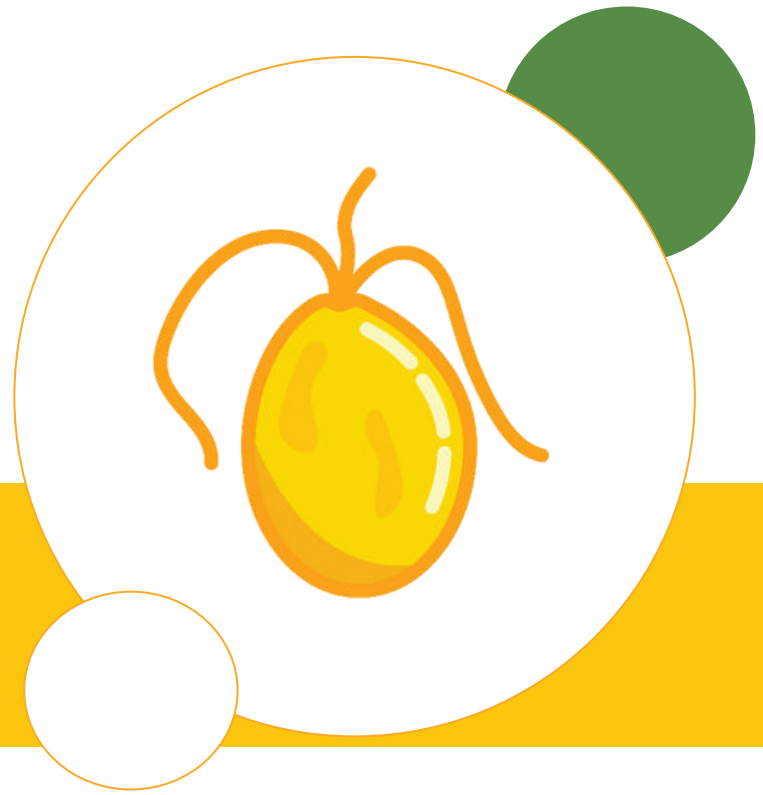
Meet the Microbe:

Prymnesium



Also known as ‘golden algae’

Algae

- *Prymnesium* are algae found in fresh or salt water.
- Norfolk focus – ***Prymnesium parvum*** can be found in the Hickling Broads. Occasionally, this species can have a sudden increase in growth, which is called a bloom. This can threaten the ecosystem as it produces a compound called ‘prymnesin’ which is toxic to fish.

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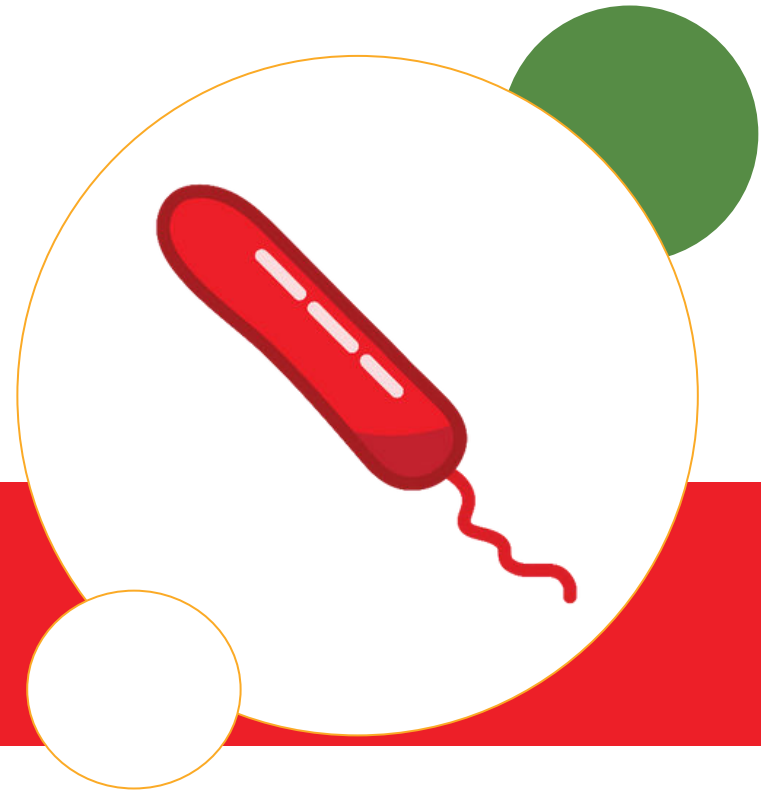
Meet the Microbe:

Shewanella



Named after scientist: *James Shewan*

Bacteria

- *Shewanella* is found in aquatic habitats including salt water but can also survive extreme conditions such as high temperature and high pressure.
- ***Shewanella oneidensis MR-1*** is involved in cleaning biohazardous sites as it can help recycle iron, manganese and trace metals in a process called ‘bioremediation’.

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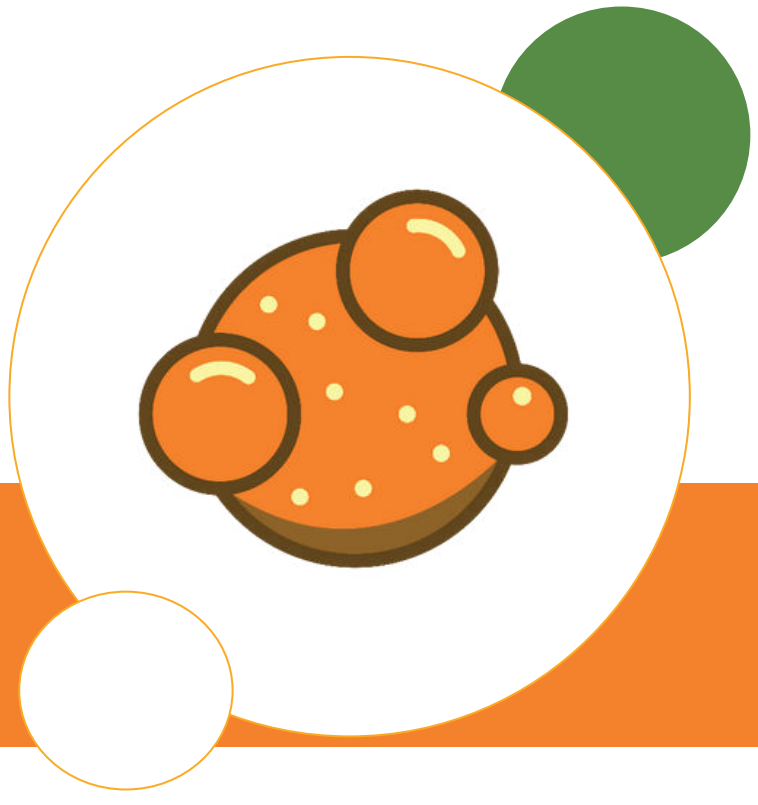
Meet the Microbe:
Saccharomyces



saccharo = sugar	*myces* = fungi	Fungi

- *Saccharomyces* can be found on virtually every surface. They are a probiotic and harmless commensal microbe living in the gut.
- ***Saccharomyces cerevisiae*** is well studied and was the first eukaryote to get full genome sequencing. It is often used for producing alcoholic beverages like wine and beer, being known as the ‘worker yeast’.

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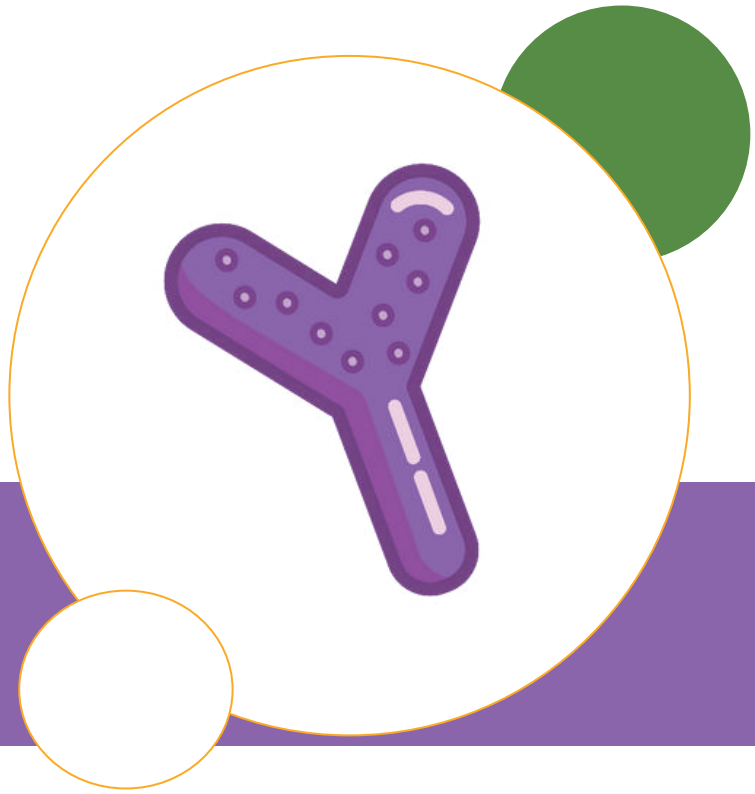
Meet the Microbe:

Bifidobacterium



bifidus =	Branched	Bacteria
in two parts	V- or Y- shape	

- *Bifidobacterium* is found in the gastrointestinal tract. It can make up to 60-70% of the gut microbiota at birth and about 10% in healthy adults.
- *Bifidobacterium* strains such as ***Bifidobacterium bifidum*** are beneficial to gut health and found in fermented foods (e.g. yogurt, cheese). They can be used to treat ulcerative colitis and irritable bowel syndrome (IBS).

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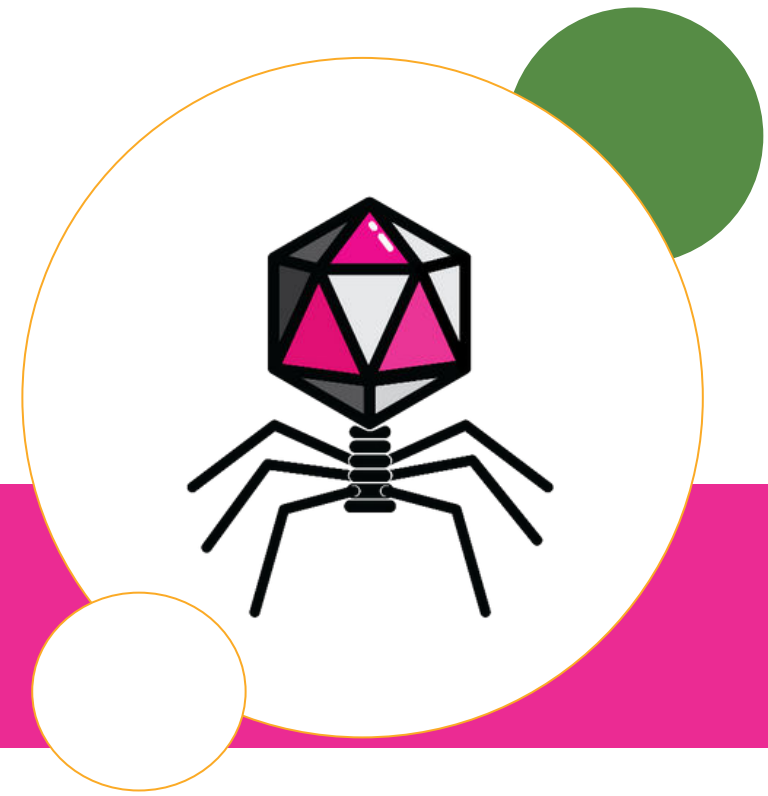
Meet the Microbe:

Bacteriophage



bacterio = bacteria	*phage* = to devour/eat	Virus

- Bacteriophages are up to 100x smaller than an average bacterium. Each type of bacteriophage kills different bacteria without affecting humans. ***Phage therapy*** involves using bacteriophages to fight off bacterial infection.
- Its genetic material is found inside a protein shell called a ‘capsid’, shaped like an elongated icosahedron (20 equilateral triangular faces!).

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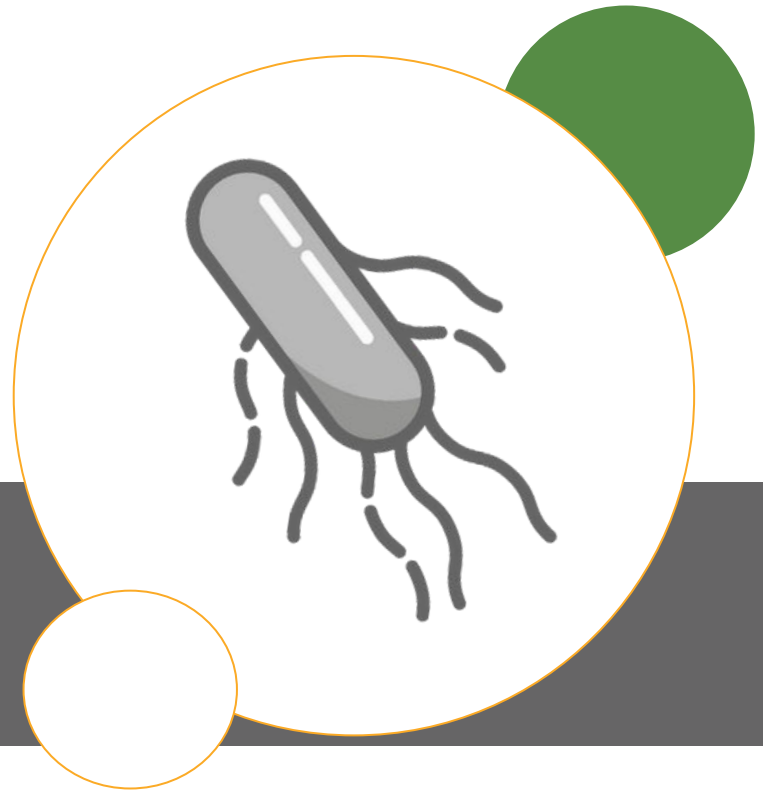
Meet the Microbe:

Escherichia coli (E. coli)



Named after scientist: *Theodor Escherich*

Bacteria

- *E. coli* is usually harmless and can be found as part of the gut microbiome in the lower intestine and colon.
- However, certain *E. coli* strains found in raw and undercooked meat or in faecal matter produce a powerful toxin, known as the ‘Shiga toxin’. Consumption of these contaminated foods can lead to food poisoning.

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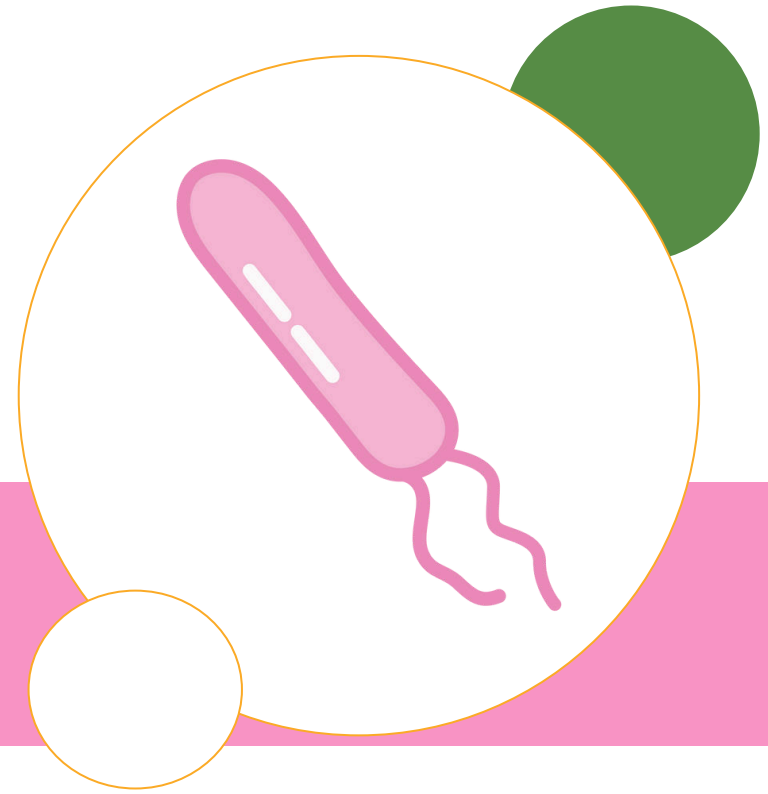
Meet the Microbe:

Rhizobia



rhiza = root	*bios = life*	Bacteria

- These bacteria are found both within the soil and inside root nodules of leguminous plants such as peas, beans and clover.
- Through a process called ‘nitrogen fixation’, the rhizobia convert nitrogen gas from the atmosphere into a form that plants can use to grow, such as ammonia. In exchange, the rhizobia gain energy and nutrients from the plant. This is an example of a symbiotic relationship.

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