Biofilm Brainhub

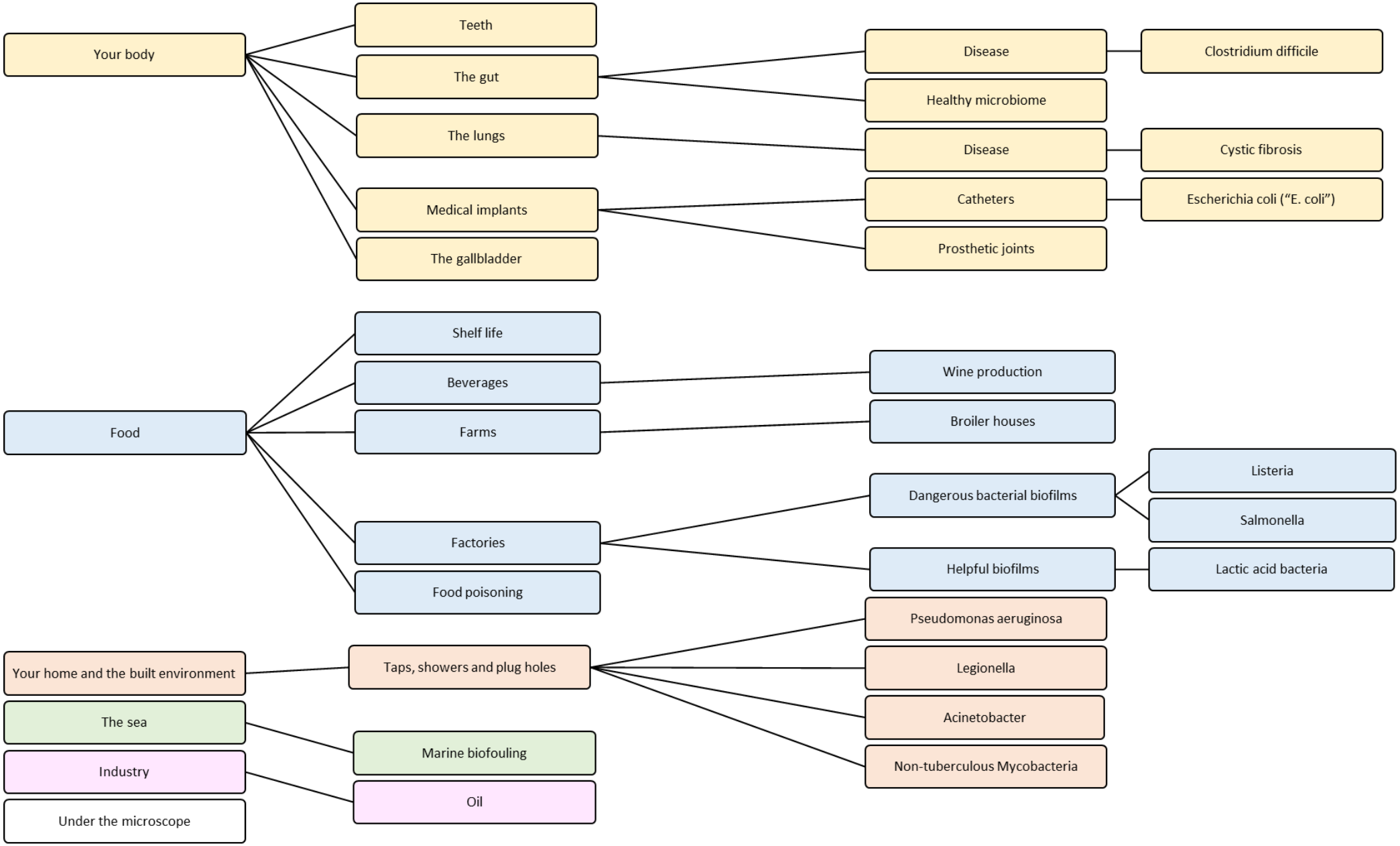
Content template example

[*Listeria*]

Please indicate which category (or categories) the topic falls under (see next slide). The topic may come under multiple layers, for example, if it is about a specific organism.

Front page (1st layer)	2nd layer	3rd layer	4th layer
			Listeria

Front page (1st layer) 2nd Layer 3rd Layer 4th Layer



Lay introduction (a couple of sentences, child friendly):

Listeria is a bacterium that can be found in the natural environment: you will find it in soil, water, plants and animals. However, *Listeria* can cause serious illness in people and animals if they eat or drink the bacteria.

Because of this, it is important to control *Listeria* in the food industry, including farms and factories. *Listeria* causes trouble in food-factories because it can form biofilms on equipment, drains and floors. Living in a biofilm, *Listeria* is protected from disinfectants and cleaning, so it is very difficult to kill properly.

One species of *Listeria* is particularly dangerous to humans: *Listeria monocytogenes ("L. mono")*. *L. mono* food poisoning can be deadly, especially for pregnant women, elderly people and babies.

More detailed content (a paragraph or two, a lay adult)

Listeria monocytogenes ("*L. mono*") biofilms have been linked to many outbreaks of deadly food poisoning and has the highest mortality rate of all bacterial food poisoning. Biofilms can allow the bacteria to survive in harsh conditions, including in the presence of disinfectants, but can also release bacteria into the environment and cause wide-spread contamination.

It can be difficult to track the source of contamination when there is biofilm involved. This is because biofilms can form in hard-to-reach and unusual places.

Recently, the largest and most deadly outbreak on record (2017-2018) was in South Africa, and caused more than 1000 cases of disease.

Another recent (2018) outbreak spread across Europe and the UK, in frozen vegetables including sweetcorn. This was thought to be caused by biofilm on factory machinery.

A scientific summary and any citations or web sources so audience can find out more if they want to (non-specialised scientific audience)

Listeria, like most other bacteria, can form biofilms either on their own or join biofilms made up of multiple organisms.

Some reasons for *Listeria* persistence are known, for example, genetic resistance to disinfectants, biofilm formation in difficult-to-clean areas, and recontamination of areas from fresh sources. However, current research is investigating the role of the microbial community of factories to see how other bacteria might influence *Listeria* survival and persistence.

Exact transmission routes around factories have not been elucidated. Scientists are also investigating the genome sequences of *Listeria* found in food factories to try and answer questions about persistence. This research will help inform biocontrol strategies and give us a better understanding of the challenges faced by the food industry.

Images: if providing images please provide links to websites they are from and/or who they belong to.

[Image details here]