



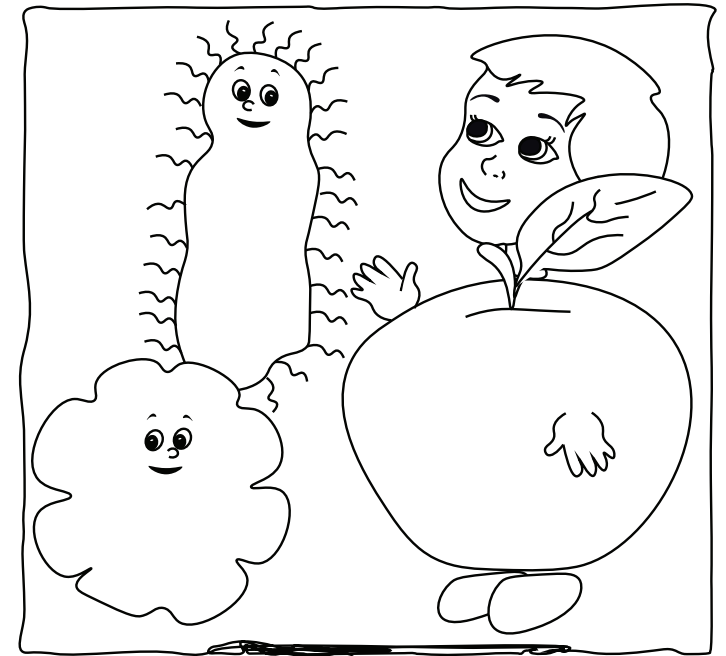
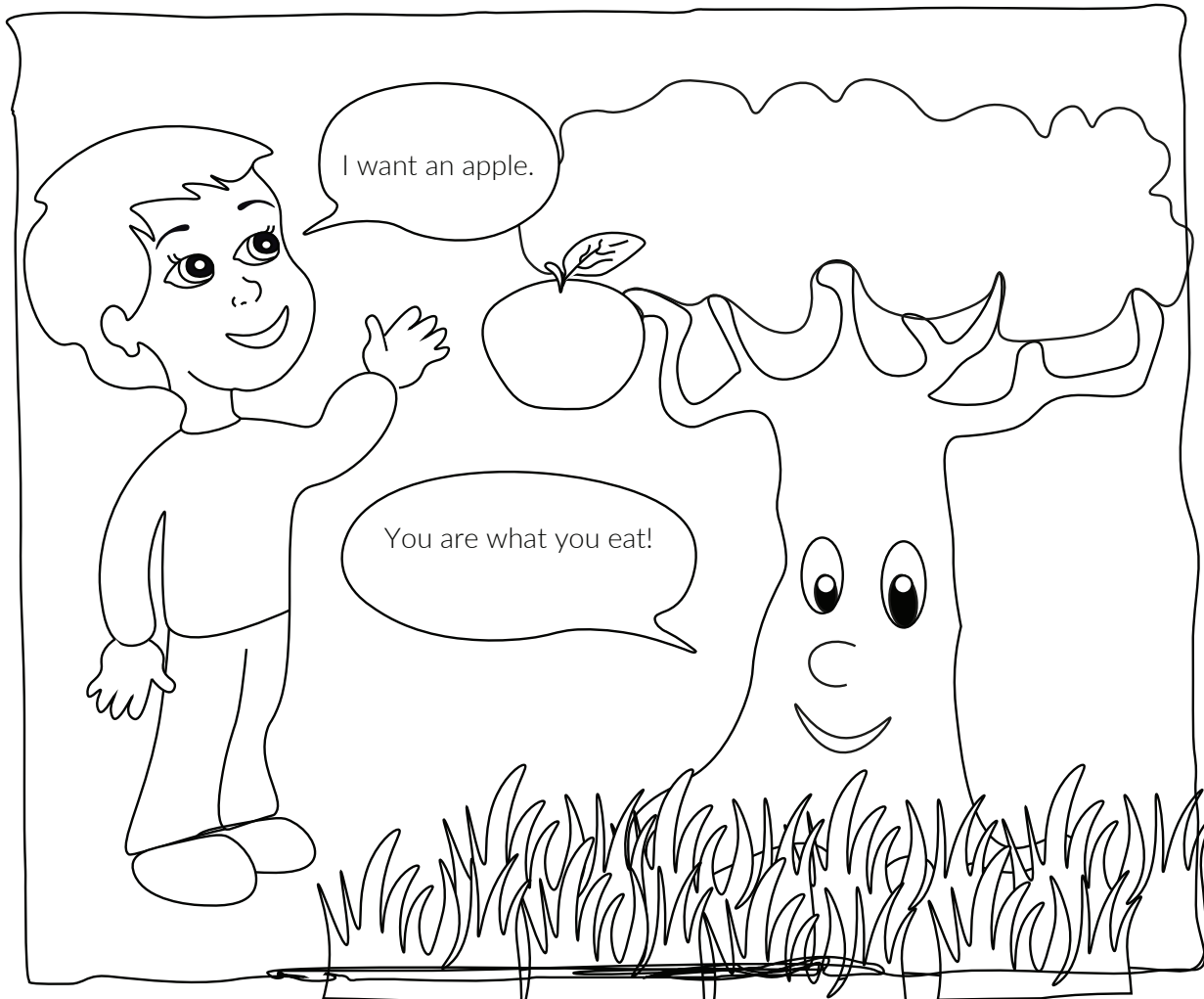
# Microbes, diet and beyond



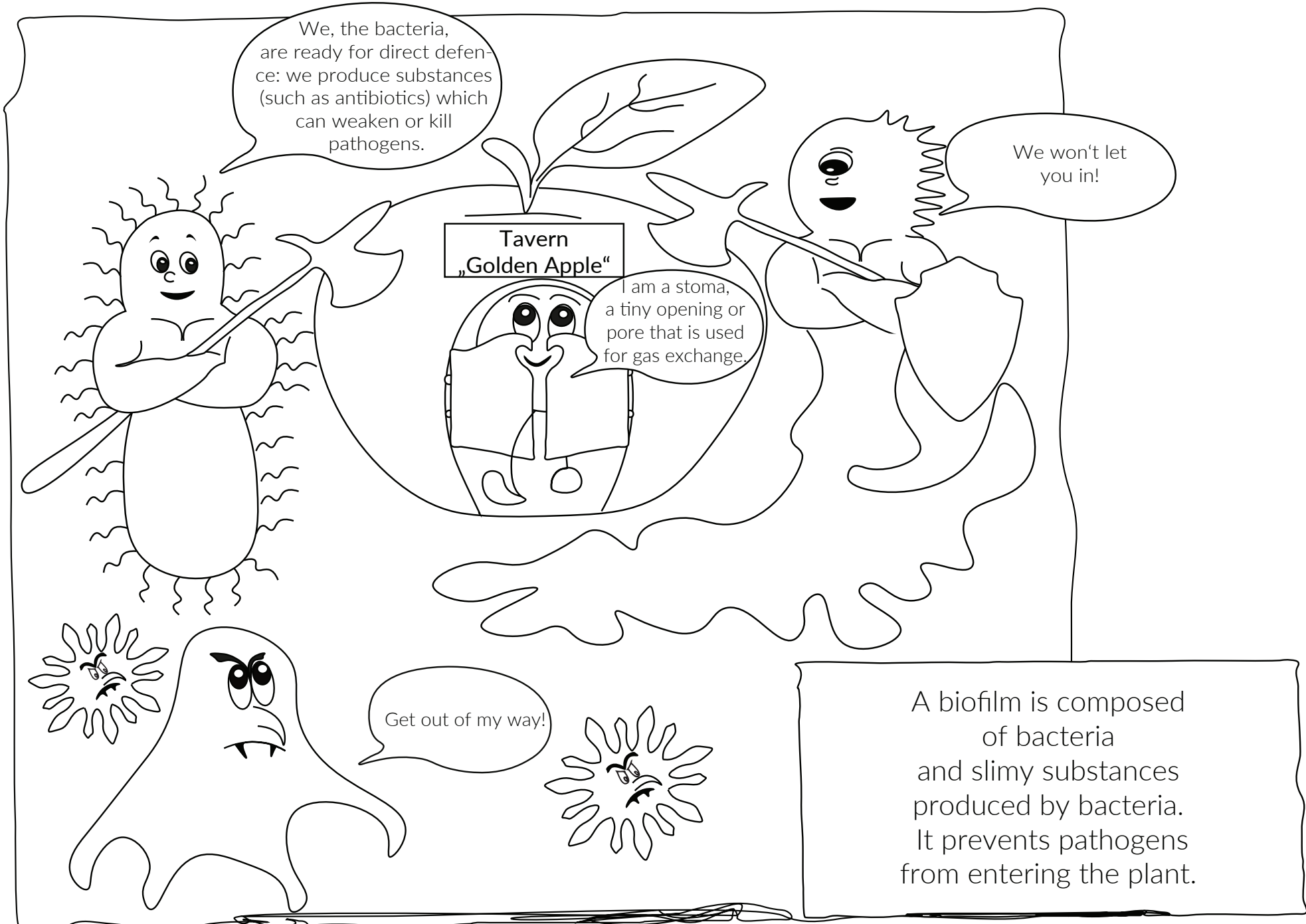
Microbes are everywhere in the food environment and often beneficial for us and the habitat they live in.

Discover the magical world of microbes with us in this colouring booklet and find out how helpful they can be!

# My apple is alive



When we eat fruits and vegetables, we consume their beneficial microbes too. By having a diversity of microbes in our bodies we strengthen our immune system, improving our ability to combat diseases.



We, the bacteria, are ready for direct defence: we produce substances (such as antibiotics) which can weaken or kill pathogens.

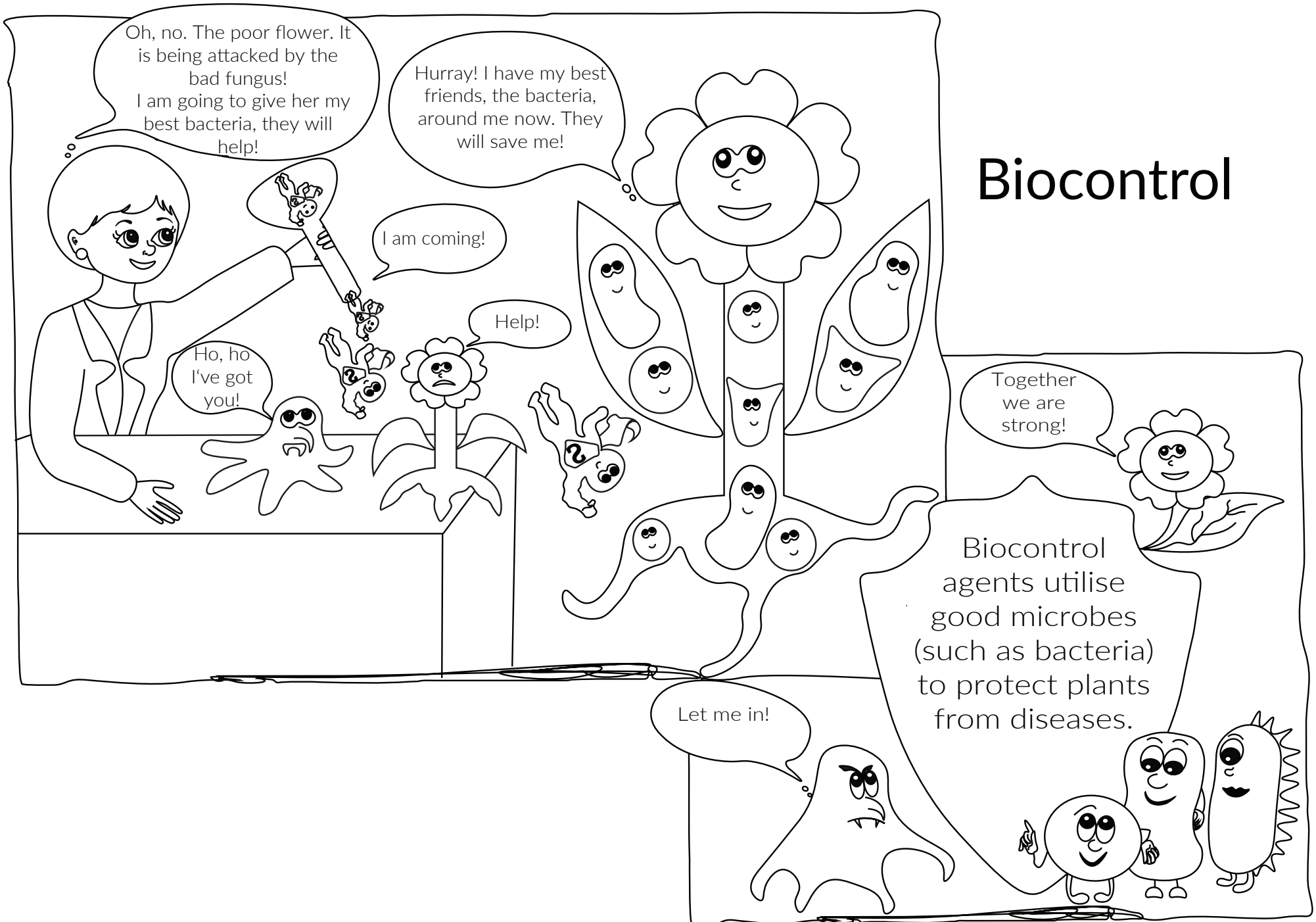
We won't let you in!

Tavern „Golden Apple“

I am a stoma, a tiny opening or pore that is used for gas exchange.

Get out of my way!

A biofilm is composed of bacteria and slimy substances produced by bacteria. It prevents pathogens from entering the plant.



Oh, no. The poor flower. It is being attacked by the bad fungus! I am going to give her my best bacteria, they will help!

Hurray! I have my best friends, the bacteria, around me now. They will save me!

Ho, ho I've got you!

I am coming!

Help!

# Biocontrol

Together we are strong!

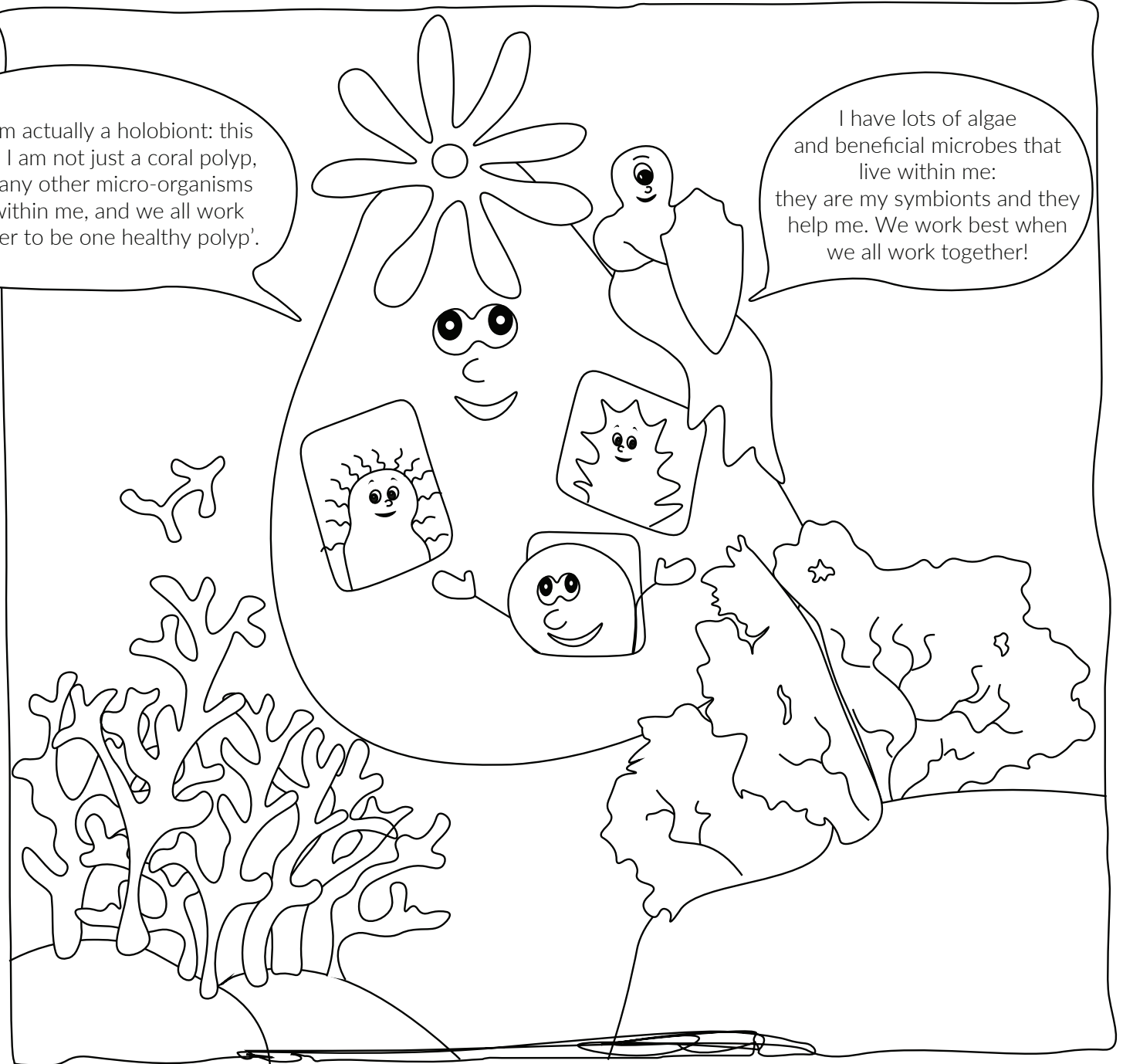
Biocontrol agents utilise good microbes (such as bacteria) to protect plants from diseases.

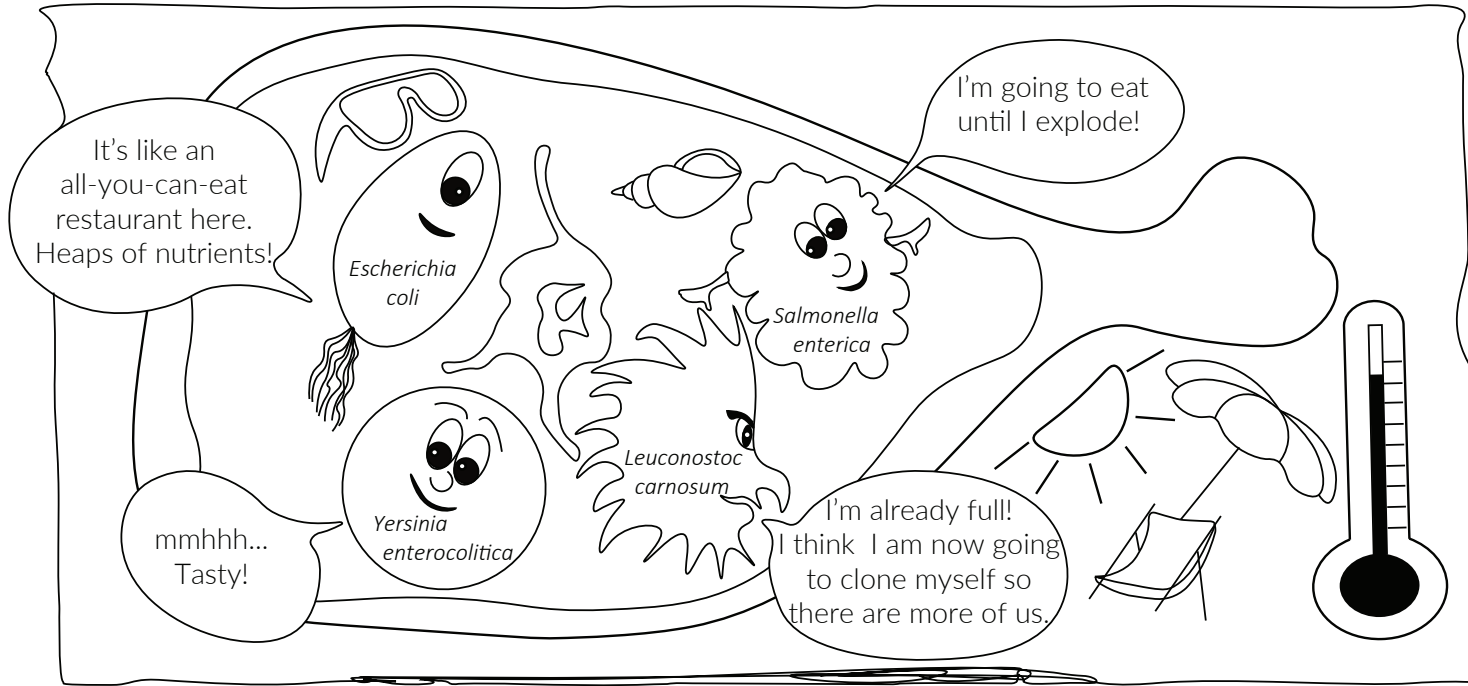
Let me in!

I am not  
alone,  
there is  
always a  
microbe  
supporting  
me

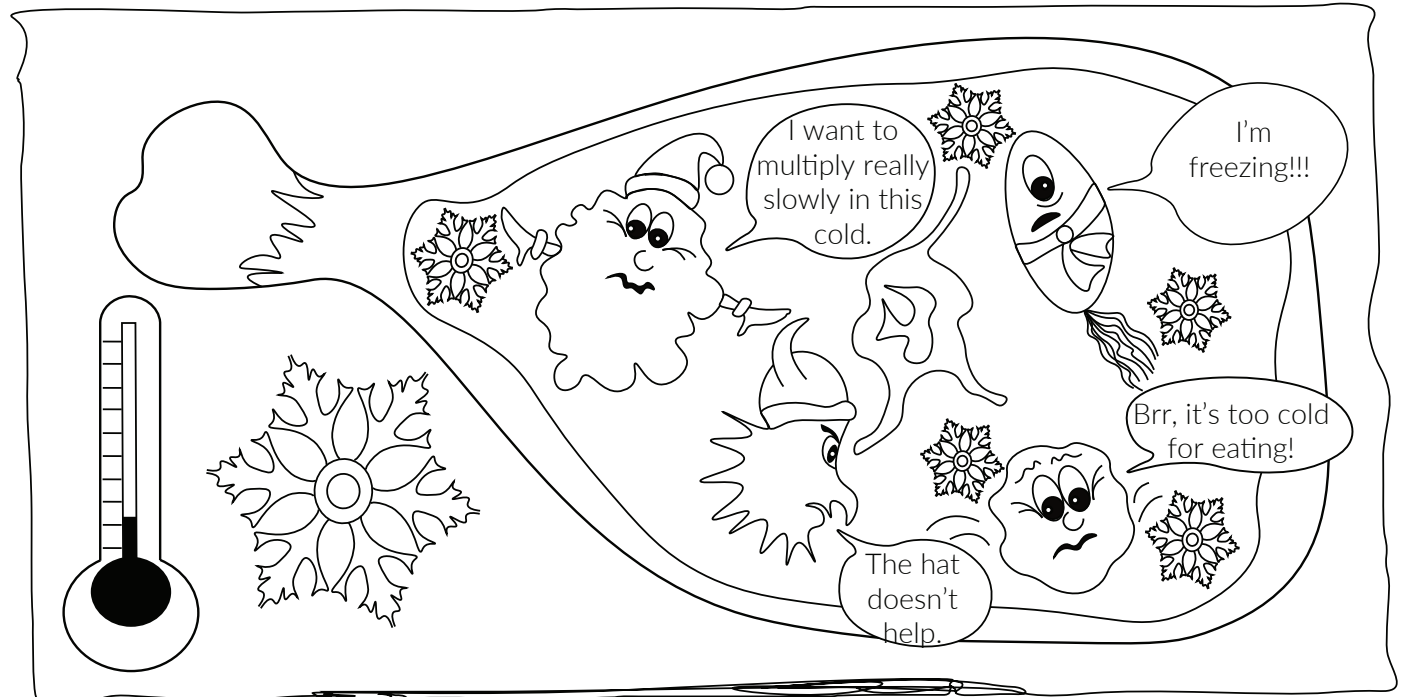
Hi! I am actually a holobiont: this means I am not just a coral polyp, but many other micro-organisms live within me, and we all work together to be one healthy polyp'.

I have lots of algae and beneficial microbes that live within me: they are my symbionts and they help me. We work best when we all work together!

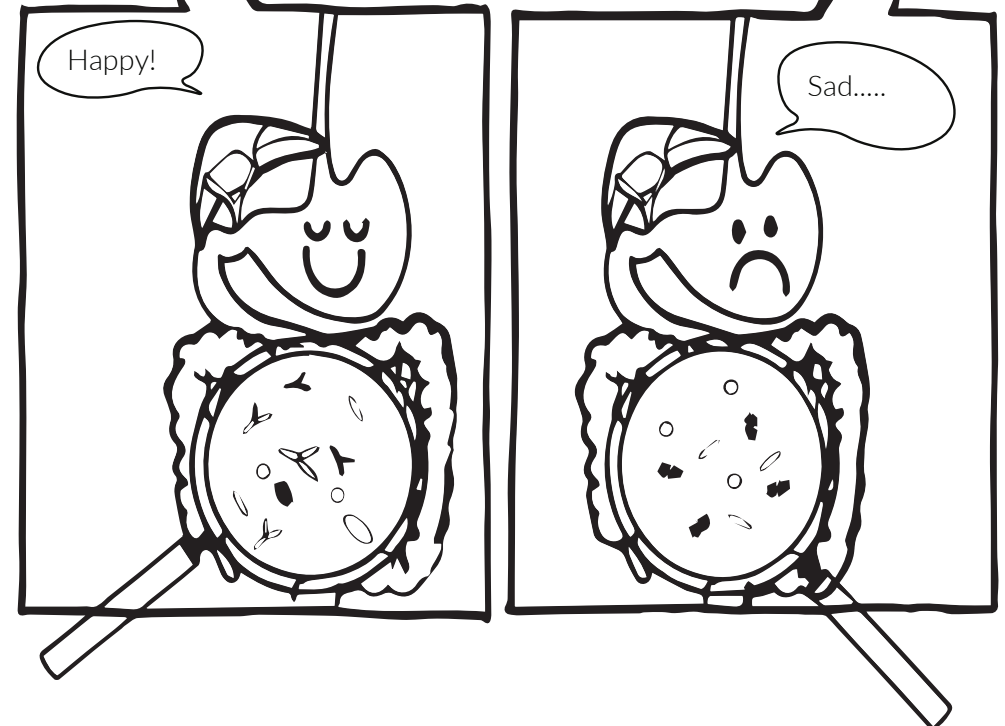
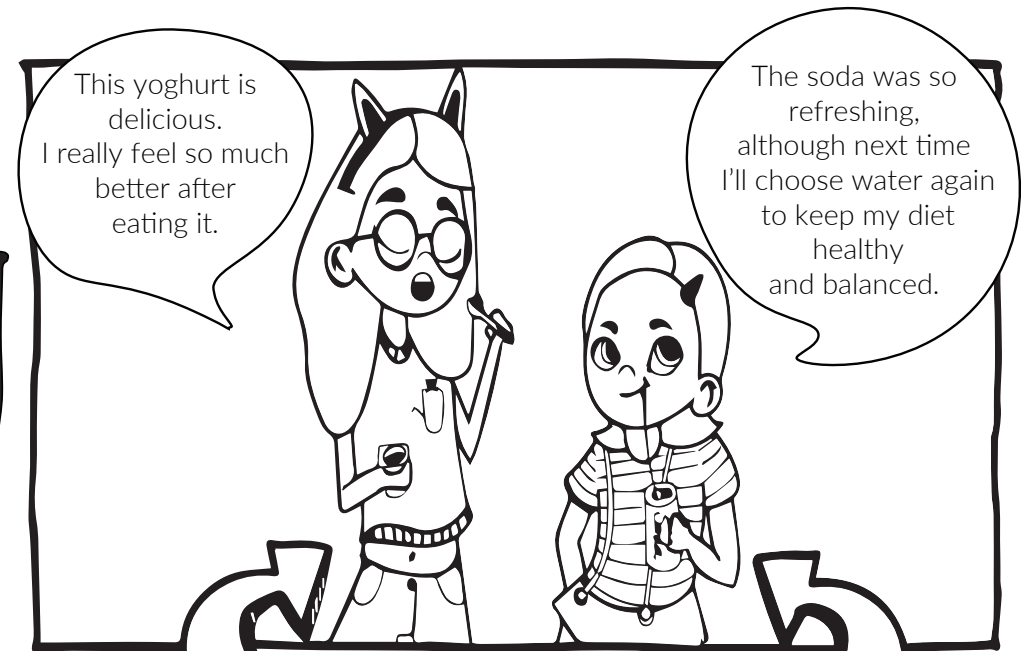




Microbes that utilise nutrients in meat are the cause of meat spoilage. Storage of meat in the fridge helps slowing down the growth of these microbes and meat spoilage.



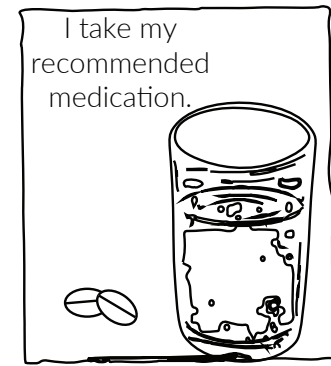
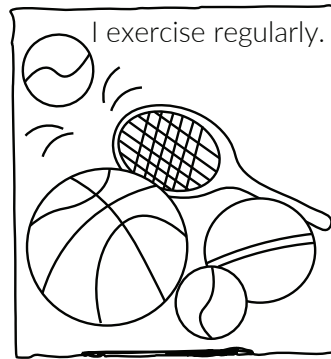
# Healthy diet, happy gut



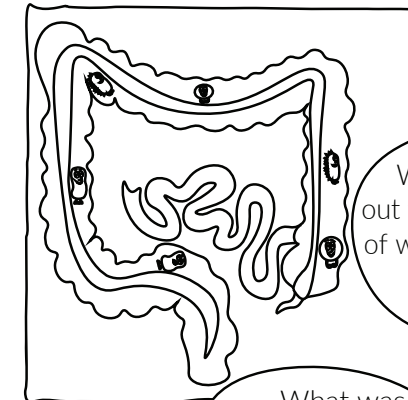
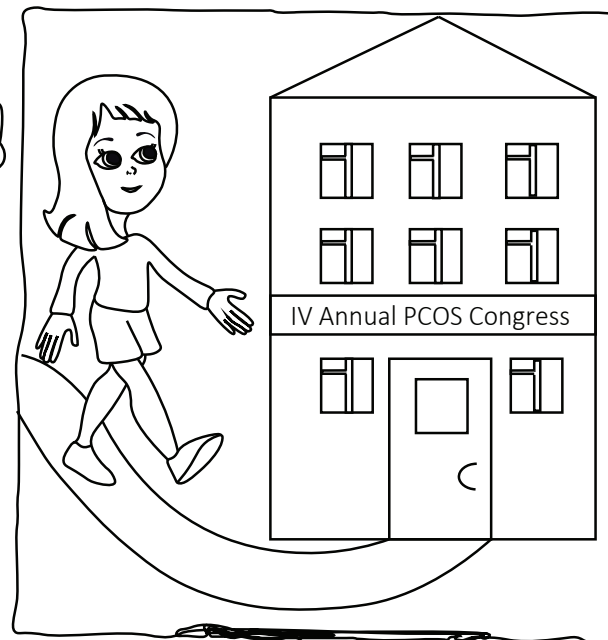
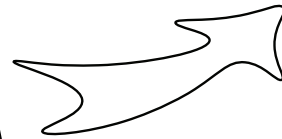
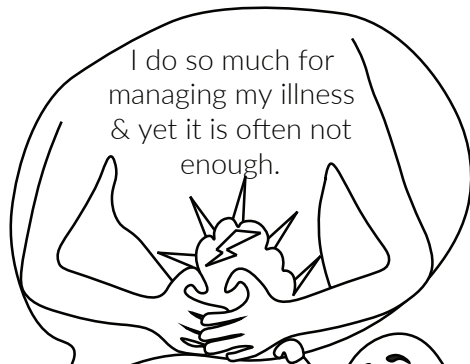
Yogurt has beneficial bacteria that helps keeping your microbiota diverse which is overall better for your health. Soda contains a lot of sugar and we can easily over-consume sugar: our microbiota and our bodies prefer complex sugars (starches and fibres) for optimal functioning.



# The latest news on polycystic ovary syndrome research

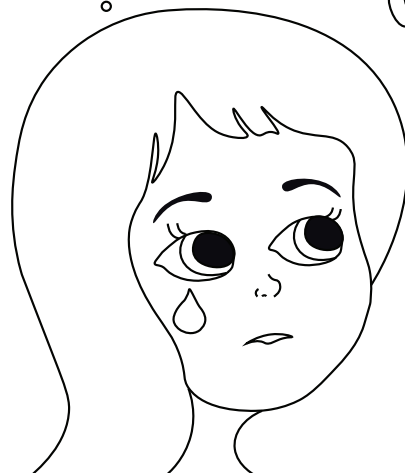


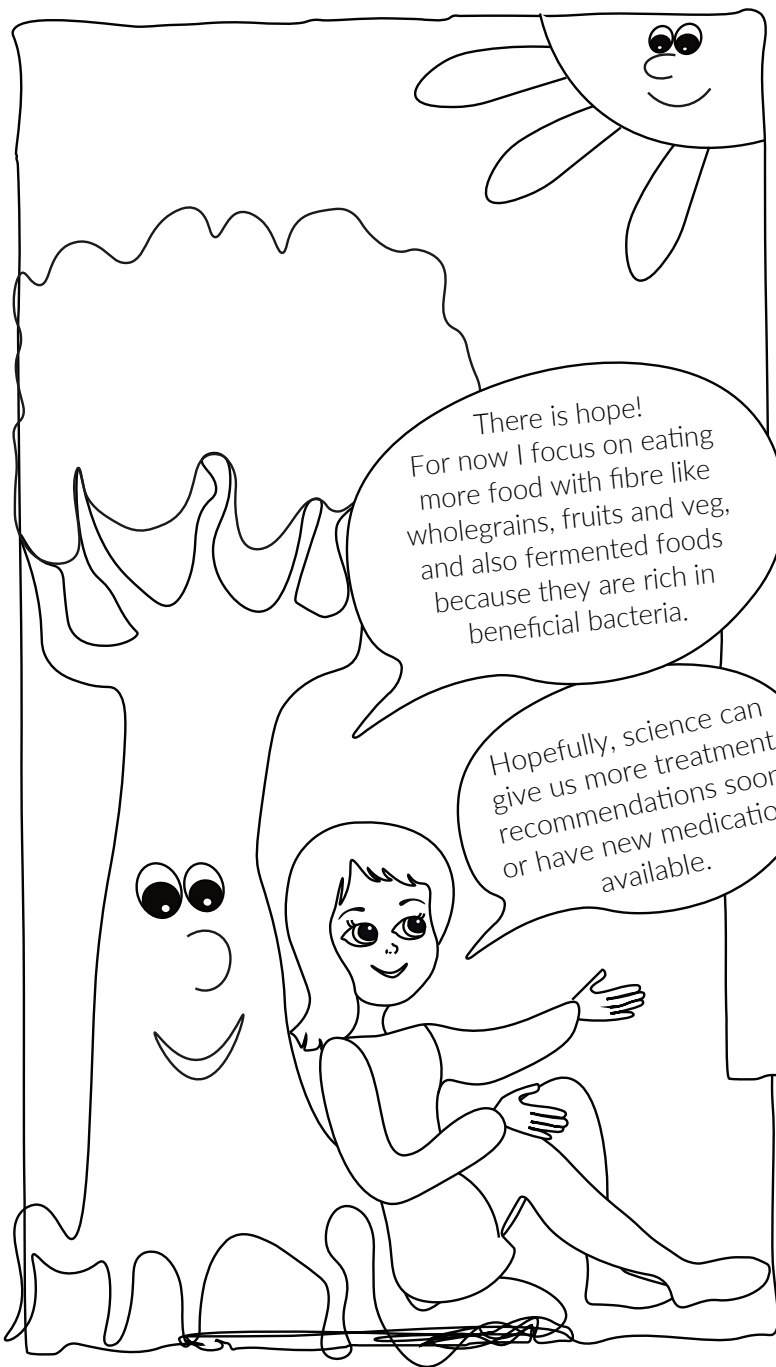
...sometimes diet and healthy lifestyle is only a small part of the picture of an illness.



In the future we hope that we can have more treatment options available such as pills with beneficial bacteria.

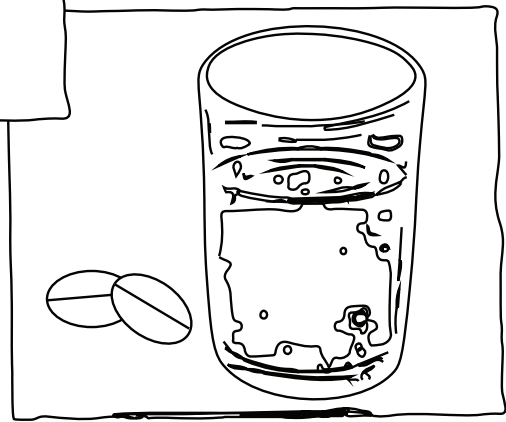
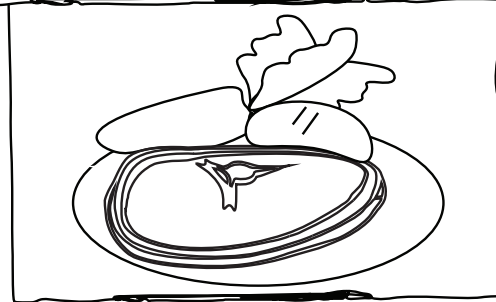
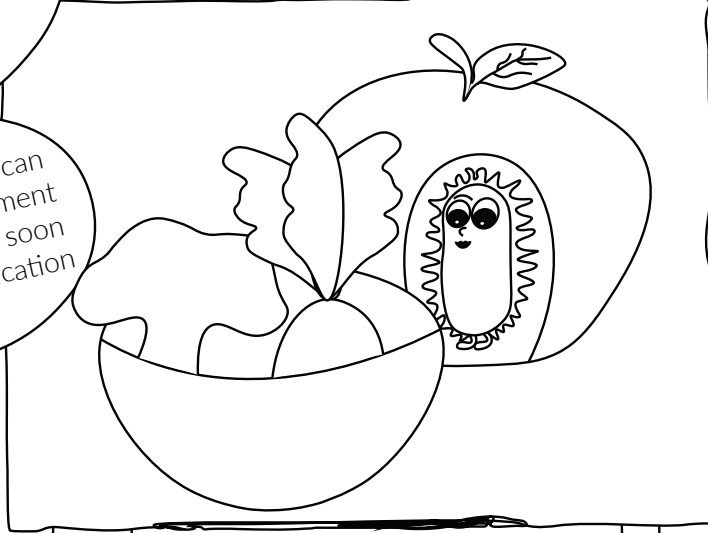
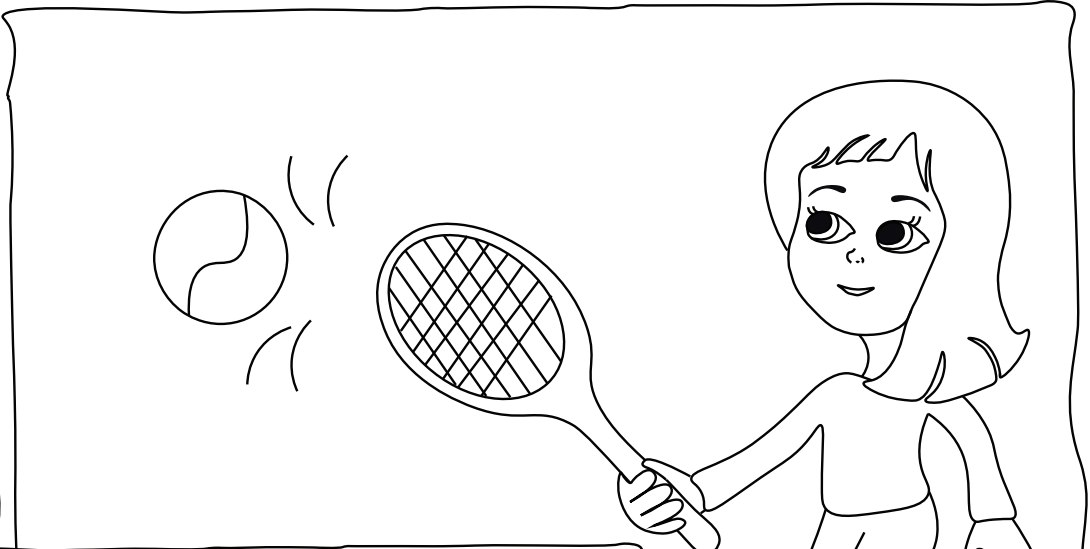
We have found out that gut microbes of women with PCOS are changed.



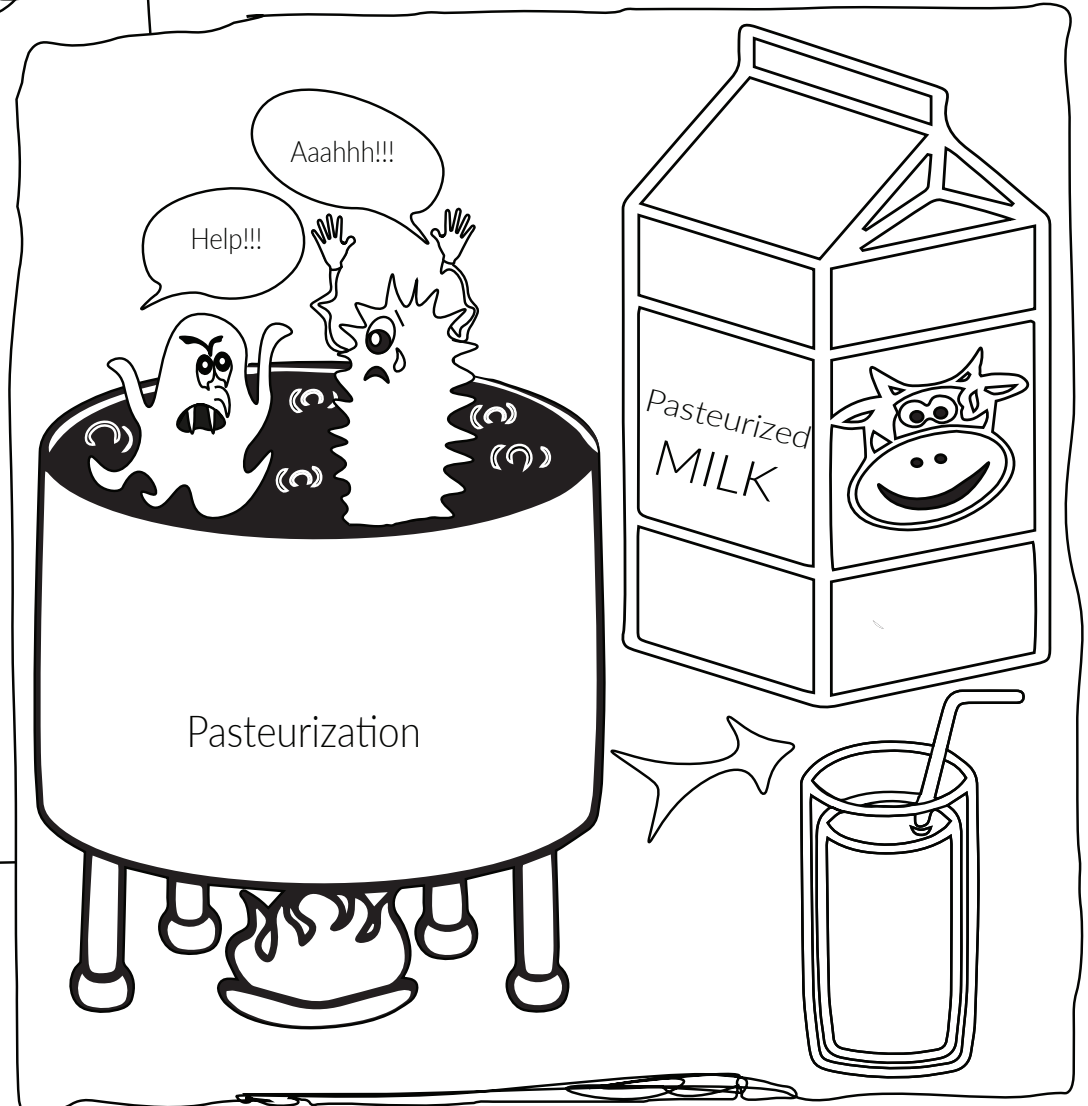


There is hope!  
For now I focus on eating  
more food with fibre like  
wholegrains, fruits and veg,  
and also fermented foods  
because they are rich in  
beneficial bacteria.

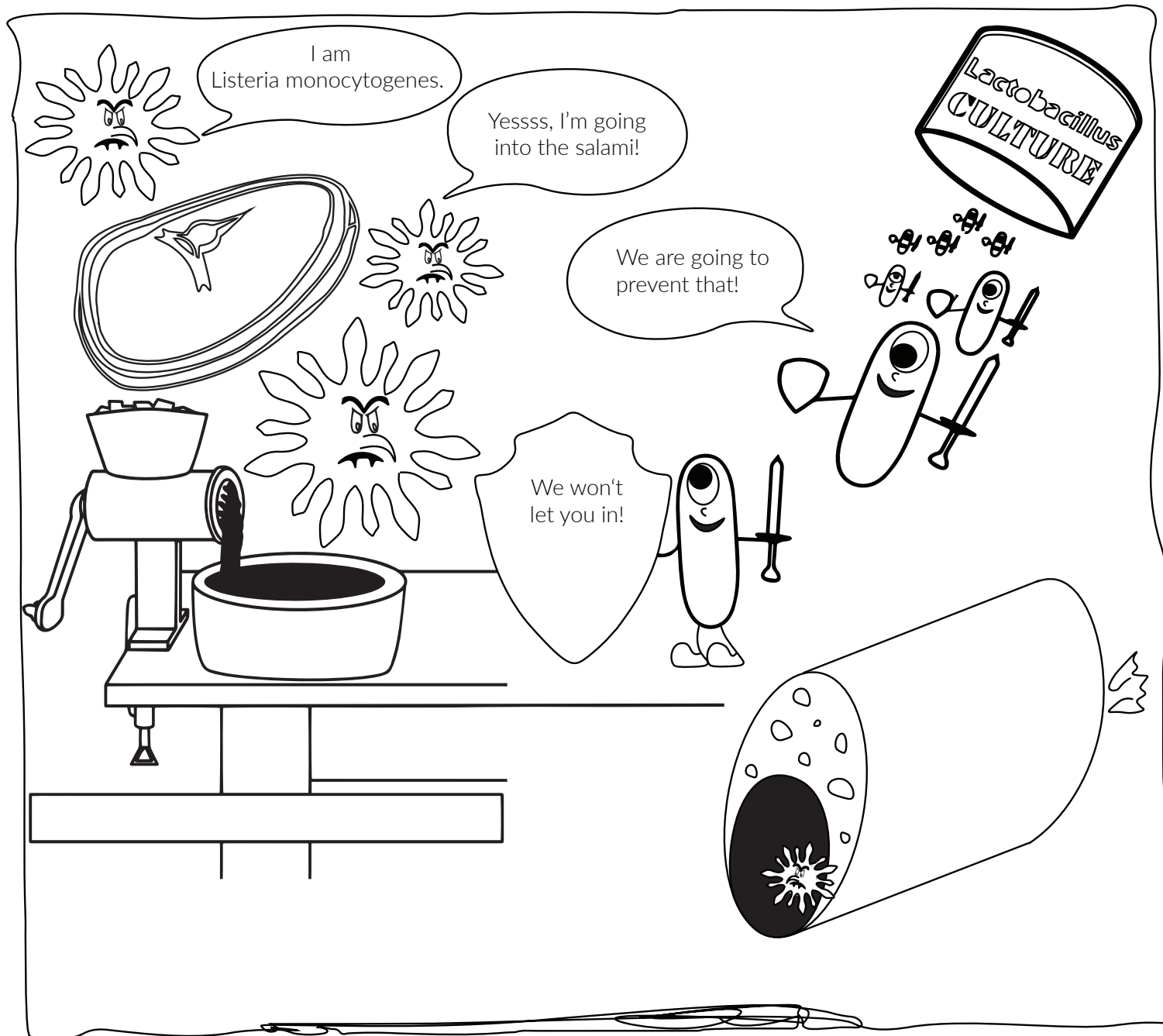
Hopefully, science can  
give us more treatment  
recommendations soon  
or have new medication  
available.



# The impact of Louis Pasteur

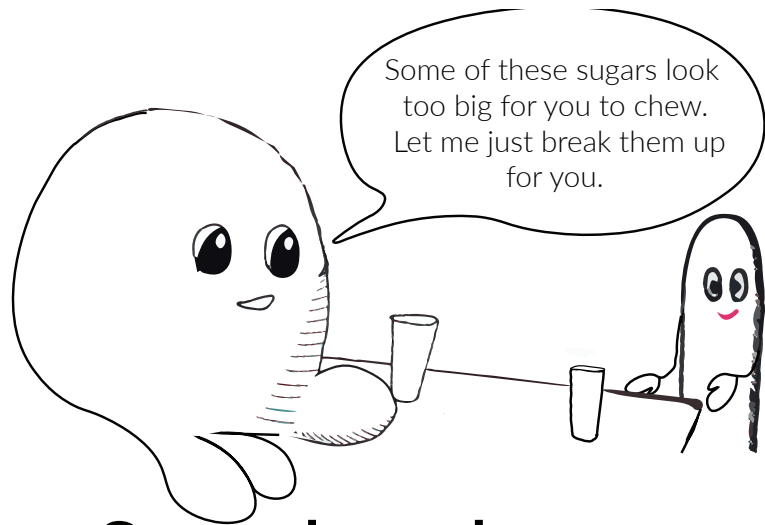


Milk pasteurization kills bacteria and increases shelf life. It also protects from harmful bacteria.

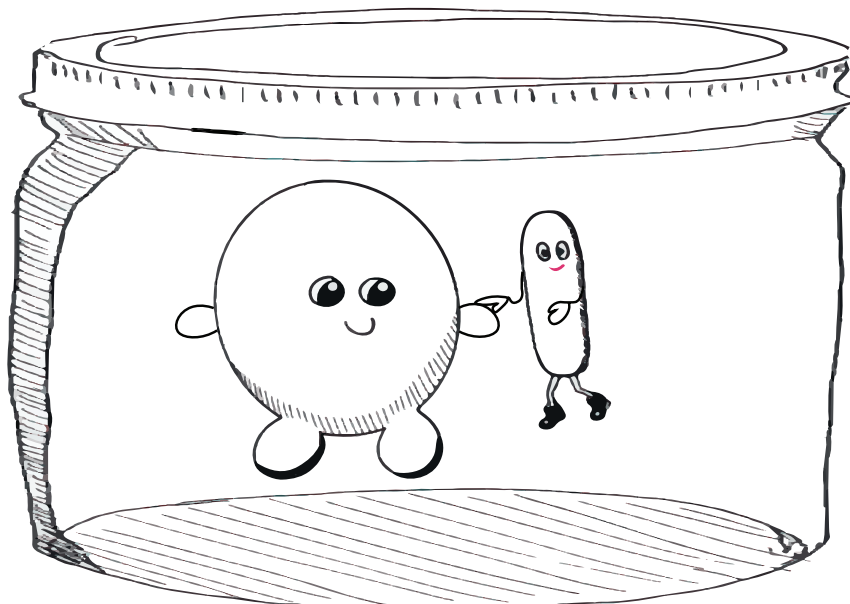


..with a  
little help  
from my  
friends

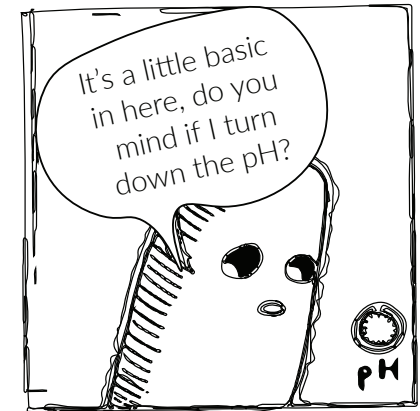
Starter cultures are  
necessary for the  
ripening of salami.  
They also help to  
inhibit the growth of  
pathogenic bacteria.



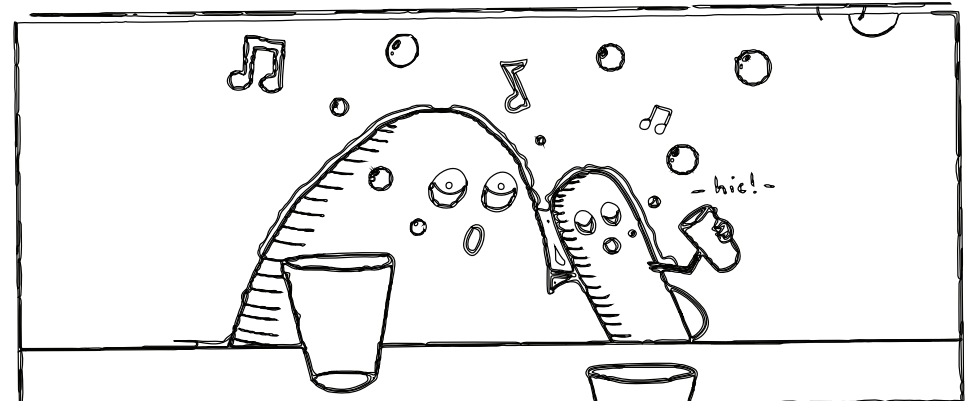
## Sourdough: a yeast and a bacterium walk into a jar...



Yeast in the culture digests certain complex sugars in the flour or grain into forms that are useable by bacteria. Bacteria produce acids that prevent growth of other, less beneficial, micro-organisms.



The sourdough culture undergoes fermentation, producing alcohol and carbon dioxide, the raising agent for our breads. The acids provide the dough with its characteristic sour flavour.



# MicrobiomeSupport is an EU-funded project which:

- Helps researchers to understand each other better when they talk about the microbiome.
- Brings scientists together to agree on what methods to use for their experiments.
- Informs politicians on policies that are required or need to be improved to use microbes for food production, safety and storage as well as human health.
- Advises on where more microbiology research is needed and where money for research can be used complementary between countries.
- Educates citizens on microbial communities and the importance of microbes in daily life.



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# Contributors:

This colouring book would not have been possible without the support of:

[Daria Rybakova](#)

who designed the comic “My apple is alive”.

[Jason McDermott \(@redpenblackpen\)](#)

who designed the comic “Sourdough: a yeast and a bacterium walk into a jar...”.

[Maria Pock](#)

who designed the comic “Biocontrol”.

[Marta Olivares, Rebeca Liébana and Yolanda Sanz](#)

who designed the comic “Healthy diet, happy gut”.

[Riya Rajeev, George Seghal Kiran and Joseph Selvin](#)

who designed the comic “The latest news on polycystic ovary syndrome research”.

[Sarah Thalguter and Stefanie Urimare Wetzels](#)

who designed the comics “Temperature is key”, “The impact of Louis Pasteur” and “...with a little help from my friends”.

[Thangadurai Thinesh, George Seghal Kiran and Joseph Selvin](#)

who designed the comic “I am not alone, there is always a microbe supporting me”.

[Maria Pock](#)

Illustrations



