

An illustration of a kitchen scene where two children are exploring. In the background, a sink contains two large strawberries. To the right, a toilet is visible. In the foreground, two large apples are shown. The children, a boy and a girl, are standing on a blue surface, possibly a floor or a large object, and are shining flashlights. The boy is holding a flashlight that illuminates the girl. The girl is pointing towards the right. The overall scene suggests a microscopic or 'shrinking' perspective of a kitchen.

Luis & Maya's

# Adventure in the shrinking lab

Searching for clues in the kitchen



German Federal Institute for Risk Assessment

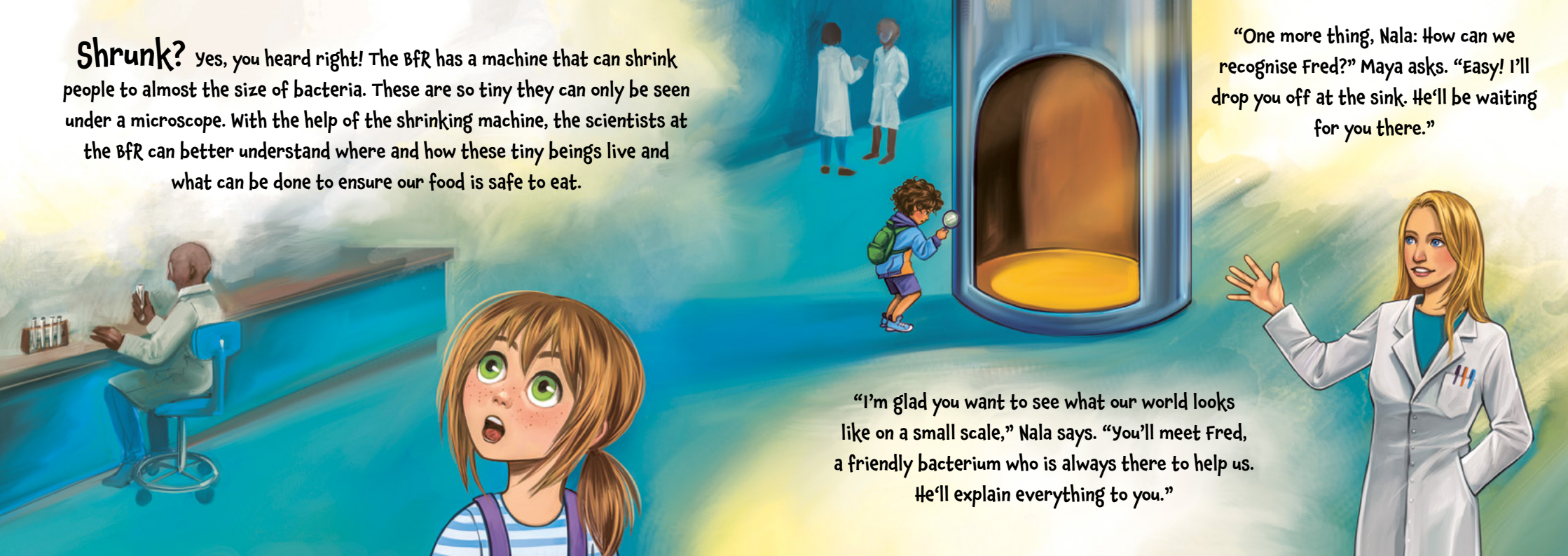
# Chapter 1



“Welcome to the German Federal Institute for Risk Assessment!”  
Dr Nala Schrinx greets Luis and Maya. “You can call me Nala!”  
The children have come to the BfR today to be shrunk.



**Shrunk?** Yes, you heard right! The BfR has a machine that can shrink people to almost the size of bacteria. These are so tiny they can only be seen under a microscope. With the help of the shrinking machine, the scientists at the BfR can better understand where and how these tiny beings live and what can be done to ensure our food is safe to eat.



“One more thing, Nala: How can we recognise Fred?” Maya asks. “Easy! I’ll drop you off at the sink. He’ll be waiting for you there.”

“I’m glad you want to see what our world looks like on a small scale,” Nala says. “You’ll meet Fred, a friendly bacterium who is always there to help us. He’ll explain everything to you.”



Dr Nala Schrinx gives the children a special mobile phone. They can use it to call Nala any time, and she can always find out where they are. Luis puts it in his backpack where he keeps all the tools that are important for little explorers.



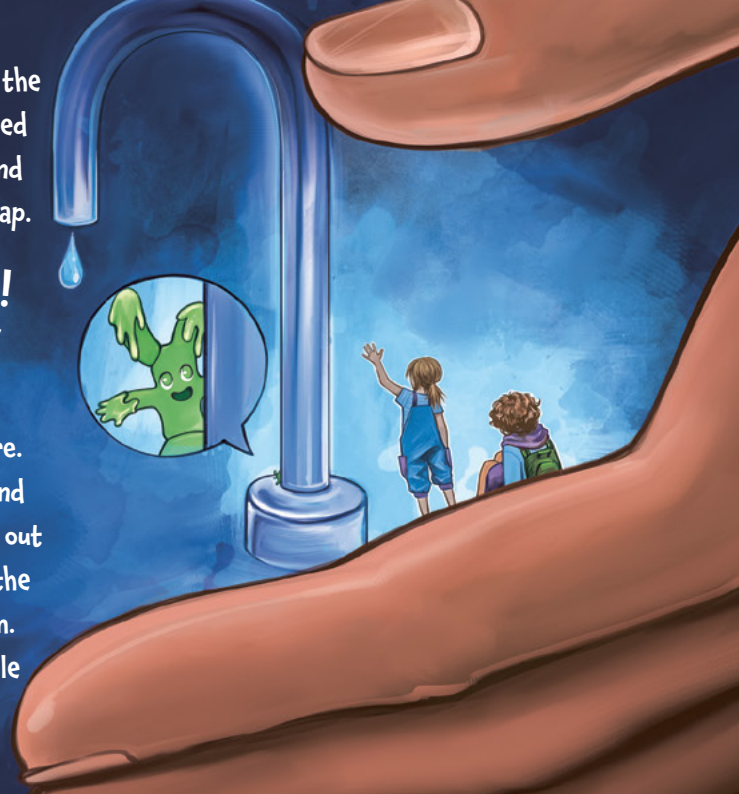


The shrinking machine makes a hissing sound, and Luis and Maya become smaller and smaller. They are now so tiny they can hardly be seen with the naked eye.

Nala carefully places them on the edge of the sink. Friendly Fred has already spotted them and comes out from behind the tap.

**“Hello, you two!  
Welcome to my  
world!”**

There’s lots to discover here. I’m delighted to meet you and show you around!” Fred holds out his rather slippery hand to the children and smiles at them. Well, as much as it is possible for bacteria to smile...



# Chapter 2

Fred, Maya and Luis sit on the edge of the sink with their legs dangling. They have a great view from up here. The sink is teeming with countless bacteria: round, long, stick-shaped. Luis and Maya can't stop staring in amazement.

"They're all my friends," Fred says, "Well, almost all of them. You humans usually get along well with them too. But there are a few I must warn you about. They could make you sick!"

"But everything looks so peaceful here,"  
Luis says.





**“Look closer!”**

“You can see some particularly distinct bacteria over there by the tap. They look like corkscrews.”



## **“These bacteria are called Campylobacter.**

But that name is too complicated for me, so I just call them Campys. They like chicken best. When people eat meat with Campys on it and it isn't cooked properly, they can get sick. They get a fever, stomach ache and diarrhoea. I've been told that's very unpleasant. The Campys, on the other hand, do very well and continue to multiply in the stomach. They feel almost at home there, because they actually live in the intestines of chickens and other animals.”

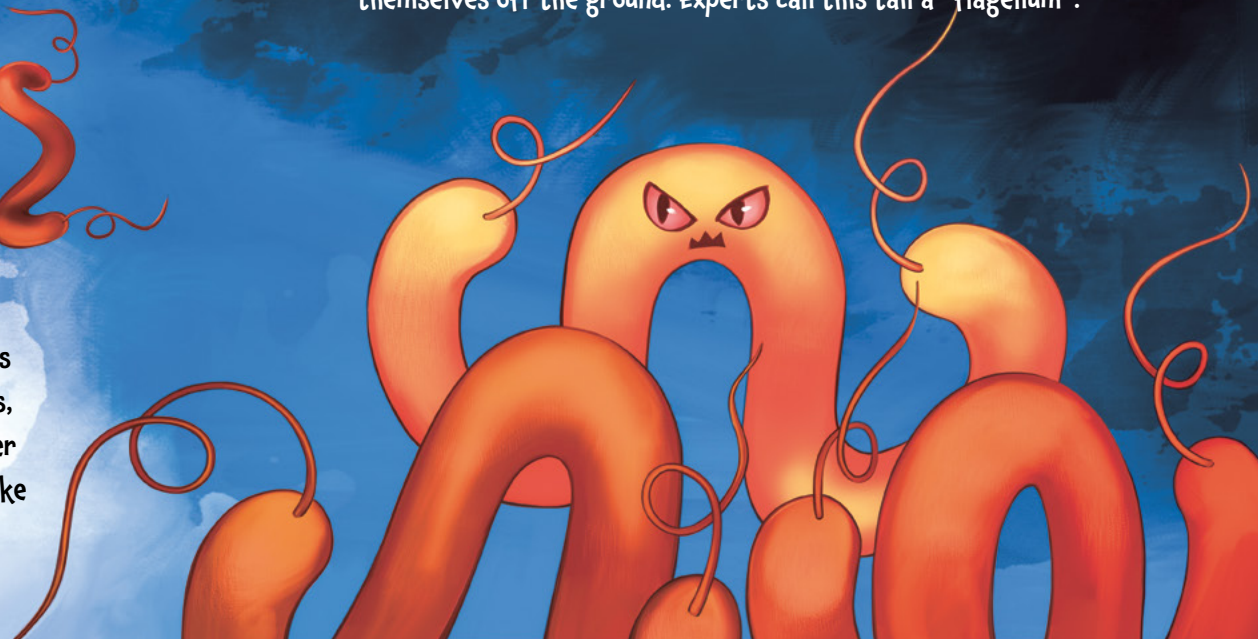


“Oh dear, that’s terrible,” Maya says.  
“How can we stop that?”



“Many of the bacteria you see here come from you humans,” Fred explains.  
“Especially from your hands, with which you’ve touched door handles, telephones or handrails on the bus. Many of us live on such objects. Others, like the Campys, are transmitted through food. If you wash your hands with soap before and after preparing food and before eating, you will get rid of many bacteria. They don’t like water and soap! And if your hands are clean, you can’t get infected.”

Just then, the Campys notice the three friends. They whisper to each other and slowly approach Fred, Luis and Maya. They use a long, thin tail to push themselves off the ground. Experts call this tail a “flagellum”.





**“They’re getting closer!”**  
Maya cries. **“What should we do?”**

**“Don’t panic,”**  
Fred answers, grinning.  
**“Luis, can you call Nala and ask  
her to clean the sink  
thoroughly?”**





The children do as Fred advises. Soon after,  
Dr Nala Schrinx arrives with a large  
sponge and cleaning products. The foam  
starts to bubble and the bacteria flee.  
The Campys also slink away.

“Look, they’re disappearing!  
We’ve won!” Luis and Maya say triumphantly.



Fred watches the gang leave.  
But suddenly he is suspicious.



"The Campys probably come from the refrigerator. There are likely to be many more there," he says. "That's dangerous because they can make themselves comfortable on food. When that food is eaten, the Campys can make people sick."



"We have to stop that!"  
Maya exclaims. "But how?"

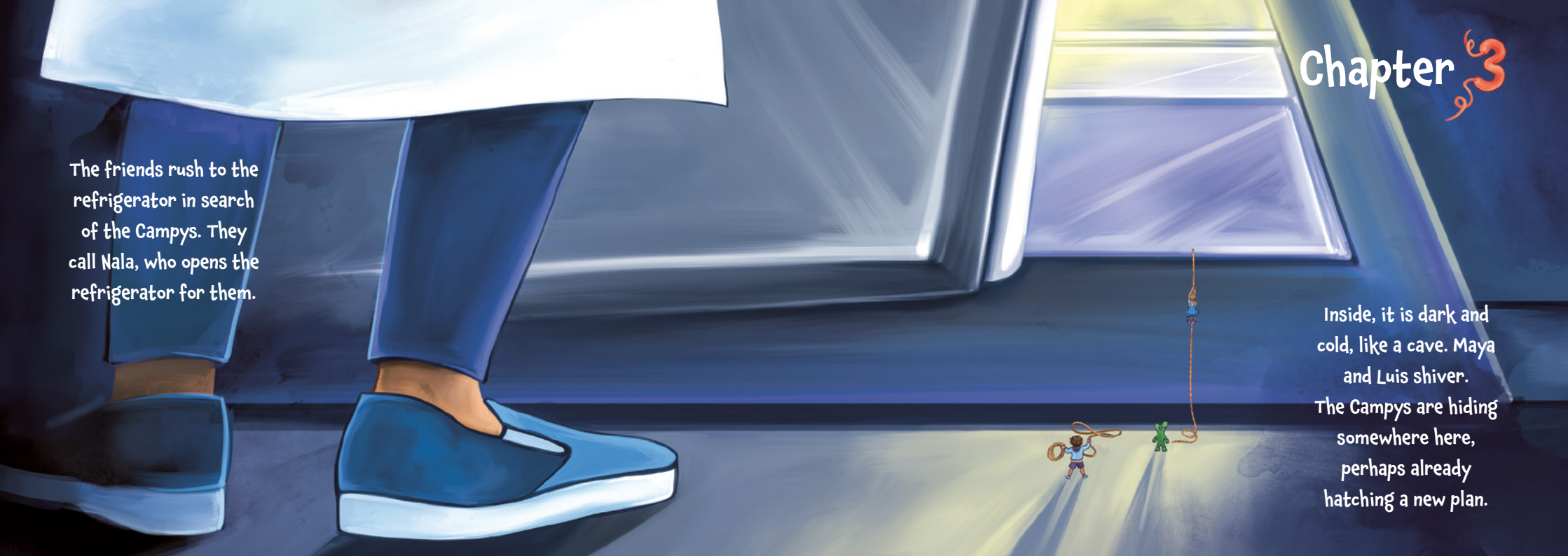
"I have an idea," Fred says.  
"Come with me."



## Chapter 3

The friends rush to the refrigerator in search of the Campys. They call Nala, who opens the refrigerator for them.

Inside, it is dark and cold, like a cave. Maya and Luis shiver. The Campys are hiding somewhere here, perhaps already hatching a new plan.





Luis pulls a torch out of his backpack and the three of them rummage through the shelves. It's quite a mess. There's a cucumber here, a half-eaten apple and two lemons there. Further back, they find some salami wrapped in foil and a jar of jam.



A yoghurt pot has been opened, and unfortunately  
black mould has attacked its contents.  
With long stems, it sucks out the yoghurt.

When Maya, Luis and Fred walk past them,  
the mould recoils and envelops the trio in  
grey dust, making them cough.  
A rather unfriendly welcome!





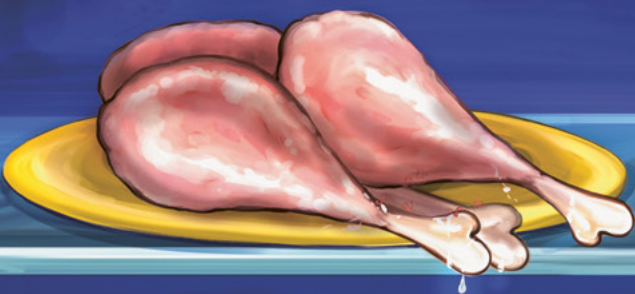
One shelf above, a Camembert peeks out of its packaging. Its white rind is covered with mould. The fungi look like bowling pins and nod cheerfully at the new arrivals. So, mould is not always harmful. There are also peaceful and useful types, just like bacteria.



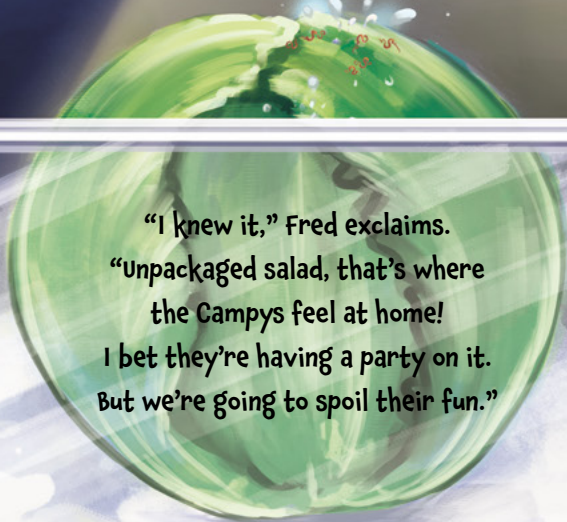
Drip, drip!  
Condensation drips down from the chicken in the top compartment and forms a puddle. The Campys seize their chance – as the liquid from the puddle runs further down, they go along for the ride.



“Oh, the Campys are disappearing down below,”  
Maya observes. “What are they doing there?”



“We’ll find out soon,”  
Luis says,  
shining his torch on  
the bottom shelf.



“I knew it,” Fred exclaims.  
“Unpackaged salad, that’s where  
the Campys feel at home!  
I bet they’re having a party on it.  
But we’re going to spoil their fun.”





Fred, Luis and Maya consult with each other, then call Nala. She comes over, empties the refrigerator, cleans it and tidies it up thoroughly: the mouldy yoghurt and the salad covered in chicken juice end up in the bin. The vegetables go into the vegetable compartment and the cheese is wrapped up and placed in the middle compartment. Everything that is particularly sensitive to heat is placed on the bottom glass shelves. That's where it's coldest in the fridge.

Nala takes out the chicken and fries it on the stove until it is well cooked.

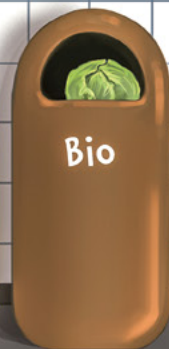
Interesting: the heat changes the colour of the meat from pink to white on the inside. The three friends watch happily as the Campys gradually disappear. They can no longer pose a danger to humans.



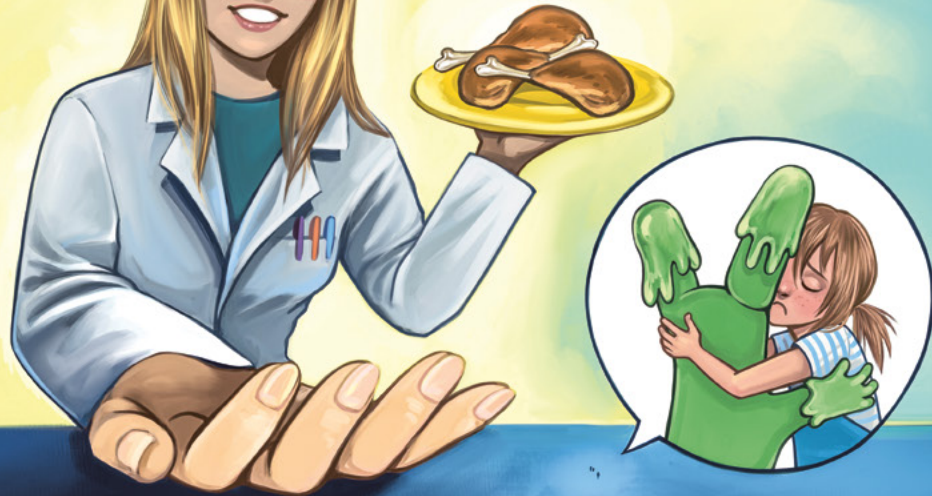
“Now everything  
is fine in the  
refrigerator again,”  
Fred sighs with relief.



“That was a  
lot of fun!”  
Luis and Maya laugh.







The friends hug each other. Luis, Maya and Fred are a little sad (as much as it is possible for bacteria to be sad, of course), but they are already looking forward to seeing each other again soon. Then Nala takes the children into the shrinking machine and they grow back to their normal size.



**“Welcome back – and thank you for your help,”**

Dr Nala Schrinx says  
to Luis and Maya.

**“If you like, you can join me for some crispy chicken – but please wash your hands first!”**

Maya and Luis don't need  
to be told twice.



## Three tips



Before and after preparing food and before eating: wash your hands thoroughly.



Mouldy food (e.g. bread, yoghurt, fruit) belongs in the bin, not on the table.



Store food that is particularly sensitive to heat, such as chicken, on the bottom shelf of the refrigerator.



Luis and Maya have an exciting adventure in the world of microorganisms. Some bacteria on food can pose a risk to our health. To prevent this from happening, there is the German Federal Institute for Risk Assessment in Berlin, abbreviated to BfR. Scientists conduct research there so that such risks can be identified and eliminated in good time.



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