

LA LIBERTÉ

SCIENCES

MAY 2020

VOL. 1 | N° 1

Mao JUNIOR



NO MERCY FOR THE

CORONAS

THE TEAM

EXECUTIVE DIRECTOR AND EDITOR-IN-CHIEF:

Sophie Gaulin

SCIENTIFIC DIRECTOR:

Prof. Jean-Eric Ghia

COORDINATOR AND ASSOCIATE EDITOR:

Lysiane Romain

WRITERS:

Prof. Jean-Eric Ghia

Stephen Jones

Meghan Kynoch

GRAPHIC DESIGNER:

Véronique Togneri

ILLUSTRATORS:

David MacNair

Tadens Mpwene

COLOURISTS:

Marta Guerrero

Véronique Togneri

Special thanks to Marie-Thérèse Bocquel, Danielle and Laure Ghia, Laëtitia Kermarrec and Béatrice Lachaud for their input.

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La Liberté's *Sciences Mag Junior* was made possible with the support of ...

GOLD



Hôpital St-Boniface Hospital



Hôpital St-Boniface Hospital

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en français

Québec



SILVER

"This project has been made possible by the Community Media Strategic Support Fund offered jointly by the Official Language Minority Community Media Consortium and the Government of Canada."

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LA LIBERTÉ

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Editorial address:
P.O. Box 190, Winnipeg (Manitoba) R2H 3B4
Tel.: 204-237-4823
sgaulin@la-liberte.mb.ca

Magazine unit cost:
\$4.50 + Taxes
Annual subscription to *La Liberté*:
\$65.90 (GST and provincial tax included)
la-liberte.ca

ISSN 0845-0455
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MESSAGE FROM
THE EDITORIAL TEAM FOR THIS SPECIAL ISSUE



SOPHIE GAULIN
EXECUTIVE DIRECTOR
AND EDITOR-IN-CHIEF



LYSIANE ROMAIN
COORDINATOR AND
ASSOCIATE EDITOR



PROF. JEAN-ERIC GHIA
SCIENTIFIC
DIRECTOR

While COVID-19 has been turning our lives upside down for several weeks now, it has also given *La Liberté* the opportunity to publish its first-ever youth science magazine in May 2020 for its 107th anniversary.

In this 60-page publication, our information, science and communication professions come together to explain to youth in a fun and reliable way what happens to the human body when it is attacked by a virus like SARS-CoV2.

To carry out this major project, we reached out to partners who generously donated their time, networks and expertise.

Our heartfelt thanks to each and every one of them. We especially want to acknowledge the unwavering support of Martine Bouchard, President and CEO of St. Boniface Hospital, who immediately and enthusiastically embraced this project and allowed us to work with Dr. Grant Pierce, the hospital's Executive Director of Research, and his wonderful colleagues at Youth BIOlab Jeunesse, Stephen Jones and Meghan Kynoch.

Popularizing science is no easy feat, especially with the daily developments associated with such an unfamiliar virus. We are hugely grateful

to Stephen and Meghan for sharing their passion, and to the University of Manitoba faculty members who readily contributed their expertise. Any resemblance to actual scientists and health care workers in this publication is by no means coincidental and is, in fact, downright deliberate!

This special edition would not have been possible without the financial contribution of our partners. The children who read this magazine will be as grateful as we are.

Last but not least, we would like to salute the outstanding efforts of the entire artistic team. Illustrators Tadens Mpwene and David MacNair and our graphic designer Véronique Togneri and colourist Marta Guerrero all put their considerable talents to use in service of information and science.

We extend our warmest thanks to each and every one of our colleagues, partners, sponsors and broadcasters (WANIFRA World Association of News Publishers, News Media Canada, the Association de la presse francophone and the Coopérative nationale de l'information indépendante) whose spirit of collaboration and solidarity, so critical in this time of crisis, will help us fight this virus and come out stronger.

THE TEAM

STEPHEN JONES
WRITER



MEGHAN KYNOCH
WRITER



DAVID MACNAIR
ILLUSTRATOR



TADENS MPWENE
ILLUSTRATOR



VÉRONIQUE TOGNERI
GRAPHIC
DESIGNER
AND COLOURIST



MARTA GUERRERO
COLOURIST



MESSAGE FROM
**ST. BONIFACE
HOSPITAL**



MARTINE BOUCHARD

PRESIDENT AND CHIEF EXECUTIVE OFFICER

During a pandemic, one of the keys to limiting the spread of the virus and the anxiety it generates, besides a vaccine, is effective, reliable and accessible communication. When people are well informed, implement protective measures and understand the reasons for following public health guidelines, our hospitals around the world can work to the best of their abilities to save as many lives as possible.

The St. Boniface Hospital was eager to support this project because we believe that a healthy community also depends on our children's knowledge of science, the human body and its immune system.

I would therefore like to thank Dr. Grant Pierce, Executive Director of our Research Centre, who ensured that his Youth BIOlab Jeunesse collaborators Stephen Jones and Meghan Kynoch were able to work closely and for many hours with Professor Jean-Éric Ghia and the teams at La Liberté and POP Comm' to produce this quality magazine.

I am proud that our institution continues to value projects such as this one that are rooted in solidarity and promoting our children's access to medical science.

MESSAGE FROM
**RÉSEAU COMPASSION
NETWORK**



DANIEL LUSSIER

EXECUTIVE OFFICER

The Réseau Compassion Network was created by pioneering women of great vision who entrusted us with their legacy of bringing together people of all faiths, traditions and cultures who want to be signs of compassion and hope.

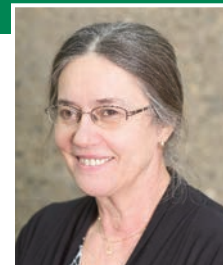
We chose to support this magazine because we know that it will also be a beacon of hope in these difficult times.

We are proud to support St. Boniface Hospital, a member of our Network, in sharing their world-renowned research with children around the world through this publication.

We would like to acknowledge all the partners that made this beautiful unifying and informative project happen.

We hope that this magazine helps address issues that may seem complicated and are distressing to both youth and adults during this pandemic period.

MESSAGE FROM
**SOCIÉTÉ SANTÉ
EN FRANÇAIS**



ANNE LEIS

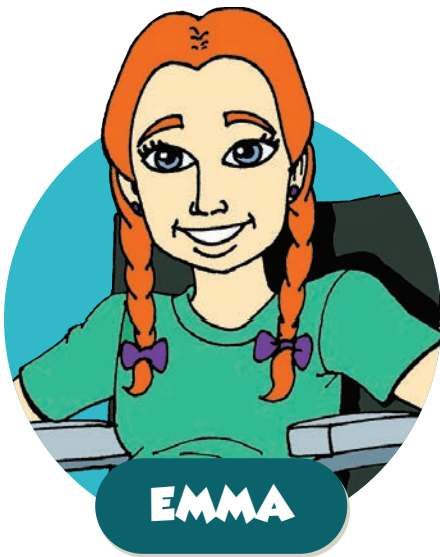
PRESIDENT

Société Santé en français (SSF) is proud to be a partner in the production of this youth magazine on COVID-19. Children and youth will have access to health information in French that is clear, accurate and adapted to their reality in the context of the pandemic.

Taking charge of one's health is important at any age, and this magazine will help readers develop good habits while having fun.

Many thanks to *La Liberté* and all the partners for a successful collaborative project.

DO NOT MISS THE FRENCH AND ENGLISH DIGITAL VERSIONS ON [LA-LIBERTE.CA](https://la-liberte.ca)



EMMA



ASHA



IDRISS

The 2020 school year has been an eventful one for Emma and her friends, Asha, Idriss, Juan, Li-Na and Sam. Like many children around the world, they had to leave school and their friends in March to stay home and help fight the COVID-19 (COronaVIrus Disease 2019) pandemic.

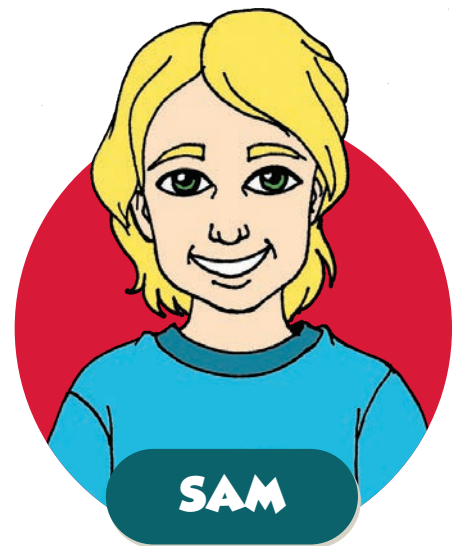
But Ms. Laura, their science teacher, is determined to teach them how the human body reacts when it is attacked by viruses.



JUAN



LI-NA



SAM

Today, Ms. Laura gives a very special assignment to a group of students in her class: doing research to better understand the virus, SARS-CoV2, that is affecting people around the world and causes COVID-19.

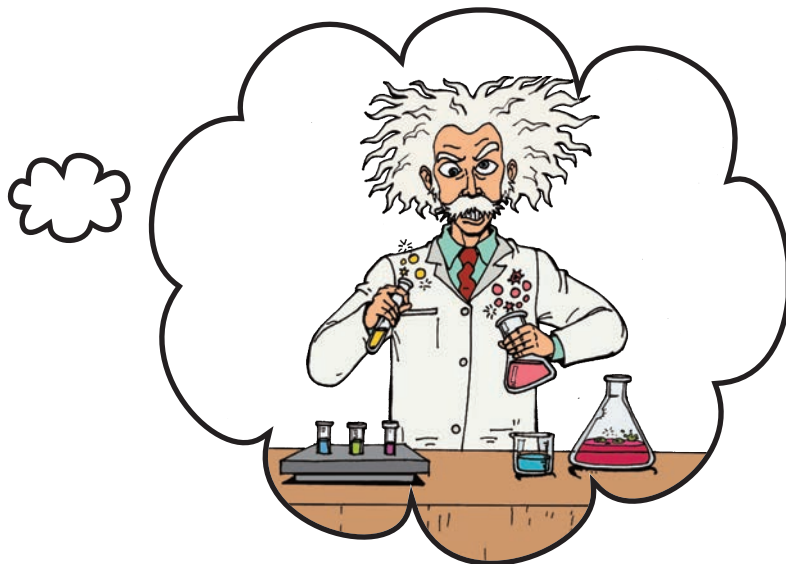
But this virus is not easy to understand...

"To understand how the human body works, I'm going to tell you a story... the story of a castle that is about to be invaded," says Ms. Laura.



"Why don't we ask some real scientists to explain it to us, too?" asks Emma.

“Real scientists???”
wonders Juan.
“But we don’t know
any!”



“My mom works at the university; maybe
she knows people who can help us,” says Li-Na.

Right away, the six friends
contact some University
scientists.

Even though they are very busy,
all the experts contacted
agree to participate.

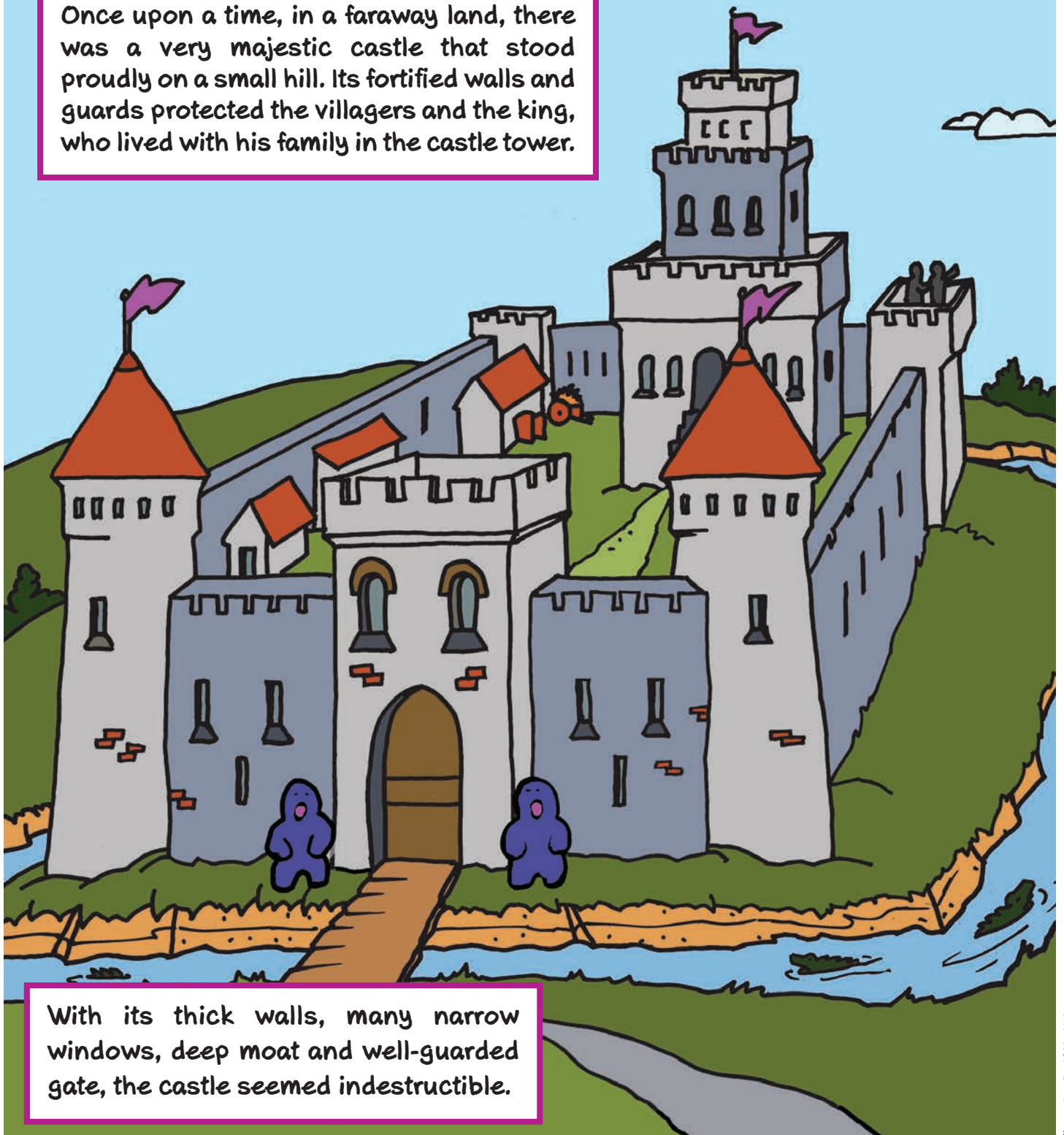
They decide to meet
the next day by
videoconference to read
the story together and
answer the students’
questions.



Illustrations: Tadjens Mpwene

THE STORY OF THE CASTLE

Once upon a time, in a faraway land, there was a very majestic castle that stood proudly on a small hill. Its fortified walls and guards protected the villagers and the king, who lived with his family in the castle tower.



With its thick walls, many narrow windows, deep moat and well-guarded gate, the castle seemed indestructible.

The villagers lived there in perfect harmony. Everyone had an important job and was happy doing their work. Some took care of food and supplies, others were messengers, cleaners, builders or guards.



Is it true that our body defends itself like a castle?

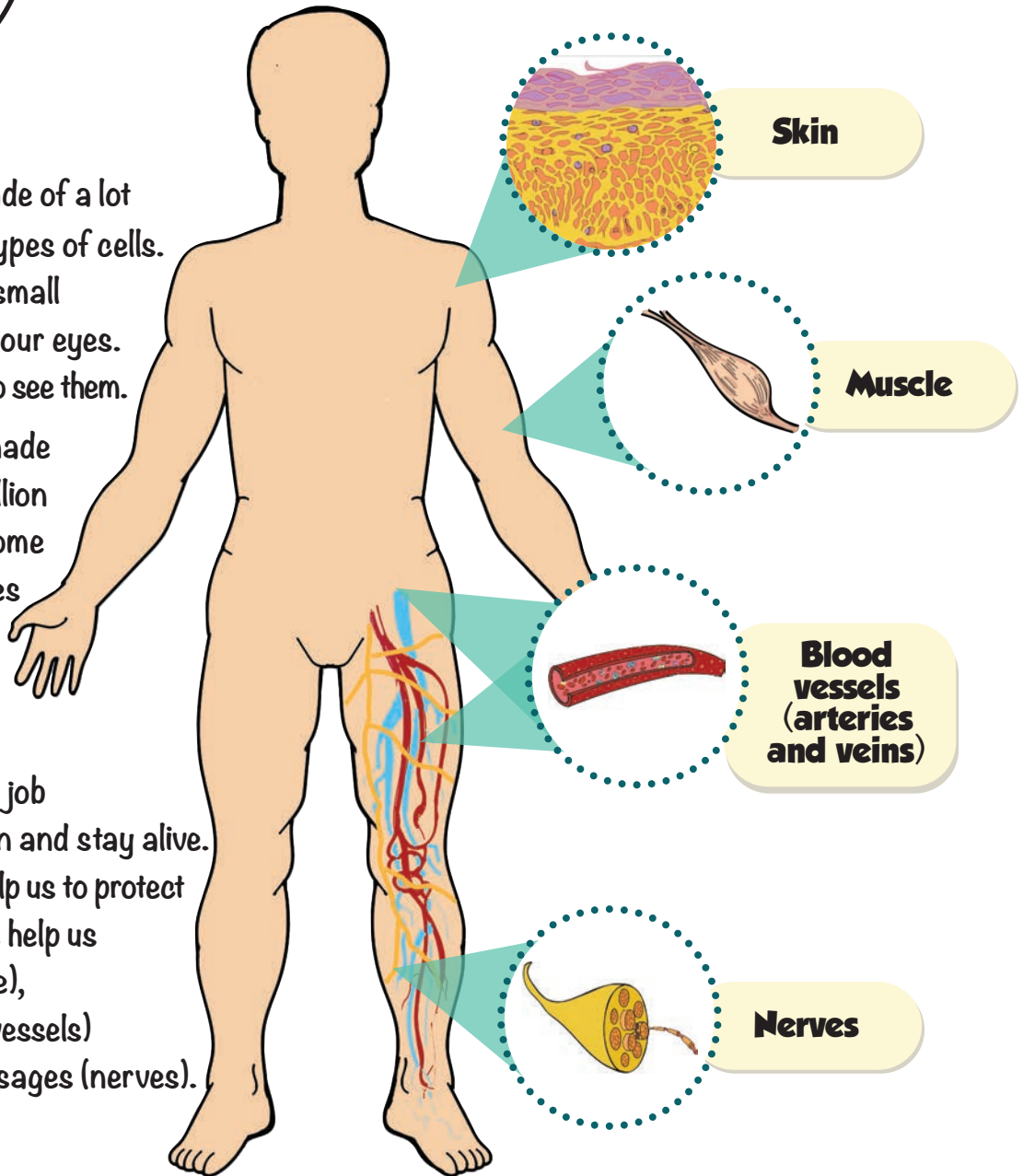


***PROF. JEAN-ERIC GHIA,**
Dept. Immunology & Internal Medicine
Rady Faculty of Health Sciences
University of Manitoba

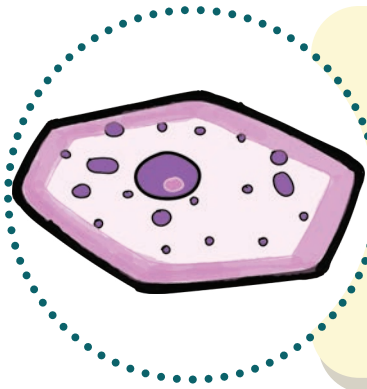
Our body is made of a lot of different types of cells. They are so small we can't see them with our eyes. We need a microscope to see them.

In fact, Li-Na, we are made on average of thirty million million cells and they come in many different shapes and sizes.

And just like the villagers of the castle, each cell has a specific job that helps us to function and stay alive. Some groups of cells help us to protect ourselves (skin), others help us to move around (muscle), bring nutrients (blood vessels) and even transmit messages (nerves).



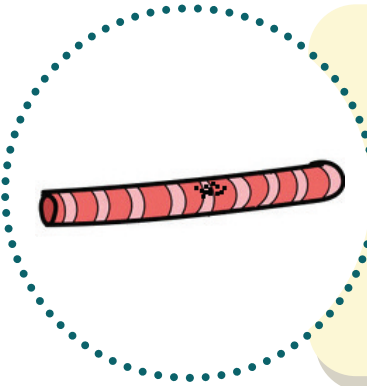
**The salutation Professor (Prof.) used in the magazine includes all the different levels of professorship (assistant, associate and full).*



Name: **Skin cells**

Location: Covering the whole surface of the body.

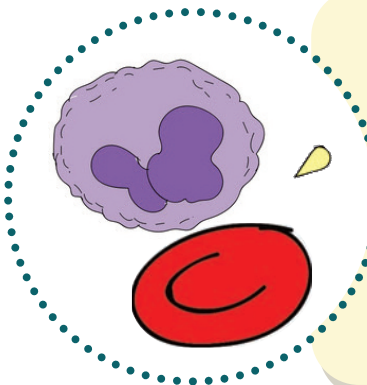
Job: Protect us.



Name: **Muscle cells**

Location: Attached to the bones, in digestive system, blood vessels and in the heart.

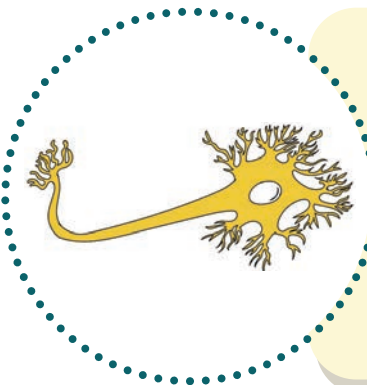
Job: Squeeze or stretch to help move your body and some organs.



Name: **Blood cells**

Location: Floating in blood.

Job: Carry oxygen to the body (red cells), protect against germs (white cells) and repair injuries (platelets).



Name: **Nerve cells** (neurons)

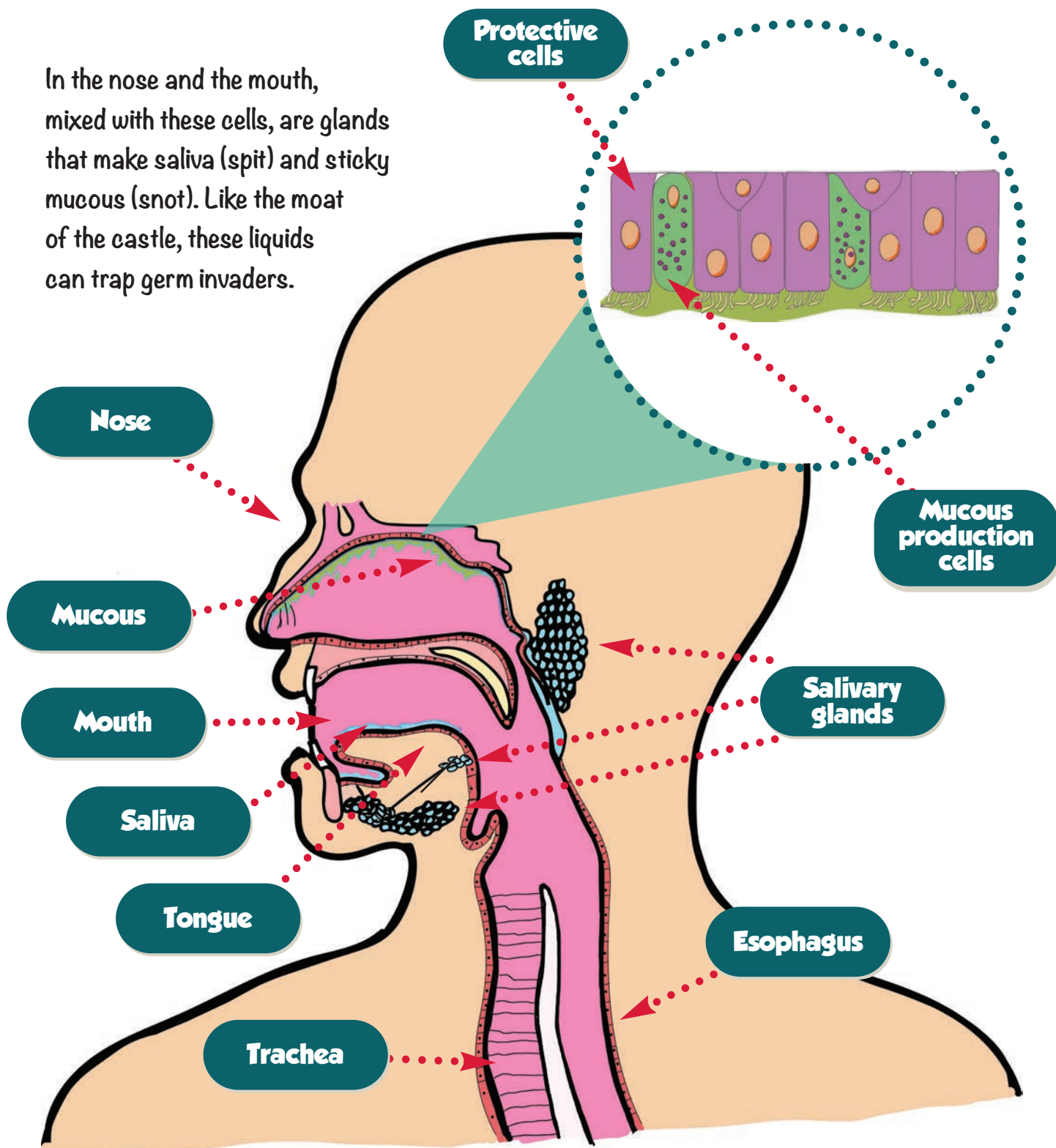
Location: Brain and body (nerves).

Job: Send messages from the brain to control the body, think, and feel the outside world (see, hear, touch, taste and smell).



Some protective cells in our body are building blocks, like the wall of the castle. They stop invisible germs from getting inside. Our skin, lungs and many other organs are made of those cells.

In the nose and the mouth, mixed with these cells, are glands that make saliva (spit) and sticky mucous (snot). Like the moat of the castle, these liquids can trap germ invaders.

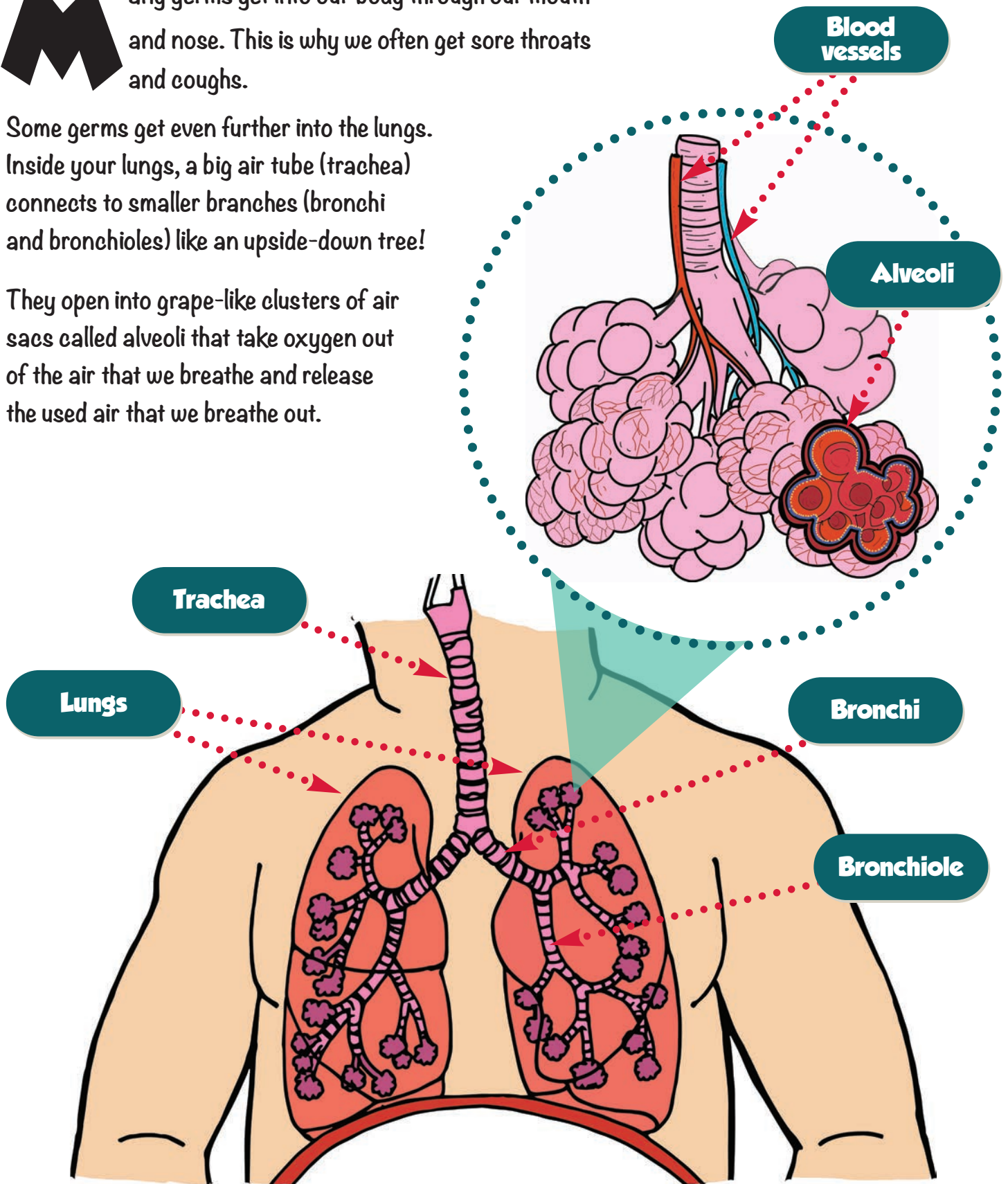




any germs get into our body through our mouth and nose. This is why we often get sore throats and coughs.

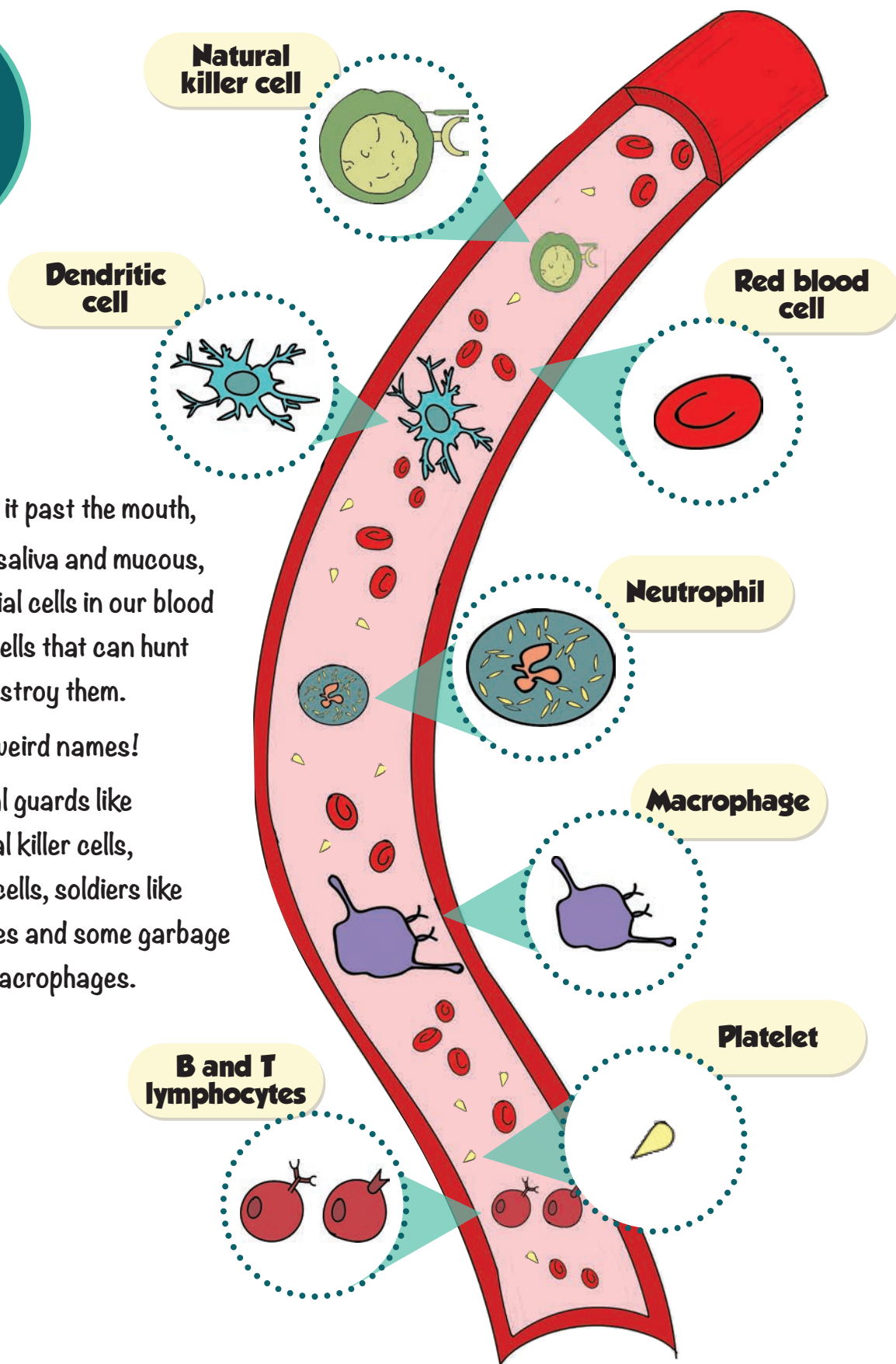
Some germs get even further into the lungs. Inside your lungs, a big air tube (trachea) connects to smaller branches (bronchi and bronchioles) like an upside-down tree!

They open into grape-like clusters of air sacs called alveoli that take oxygen out of the air that we breathe and release the used air that we breathe out.



INSIDE OF A BLOOD VESSEL

If germs make it past the mouth, and past the saliva and mucous, we have special cells in our blood called white blood cells that can hunt down germs and destroy them. They all have very weird names! You can find natural guards like neutrophil or natural killer cells, spies like dendritic cells, soldiers like B and T lymphocytes and some garbage collectors named macrophages.



Illustrations: Tadens Mpwene

Those cells in our body help to protect us, just like the guards protect their castle!

Usually, the guards are able to easily find, catch, and kill the invaders before they can harm the villagers.

Sometimes, very strong or sneaky invaders can overpower the guards, and enter the castle. Thankfully, there are backup teams of spies and soldiers who can help.



Natural Guard Team

Scientific name:

Neutrophil and natural killer cells

Job:

Some of the first cells to respond to any new infection and to go in the infected zone.

Duties:

Attack, eat and kill any dangerous looking germs, outside or inside infected cells of the body.

Garbage Collector Team

Scientific name:

Macrophage

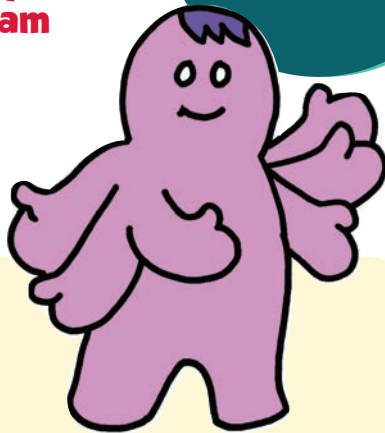
Job:

Some of the first cells to respond to any new infection and to go in the infected zone.

Duties:

Clean up, eat germs and send information to soldiers.

Spy Team



If the germs are too powerful, other cells are called in to help:



Soldier Team

Scientific name:

B and T lymphocytes

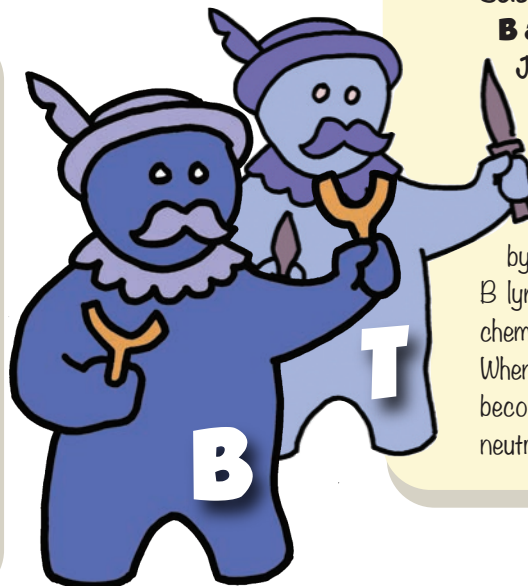
Job:

Specialized soldiers for targeted attacks.

Duties:

Some T lymphocytes will find, attack and kill any cells in our body infected by a particular germ.

B lymphocytes will throw special Y-shaped chemical targets called antibodies onto germs. When covered with antibodies, the germs will become more delicious to macrophages and neutrophils.



Scientific name:

Dendritic cell

Job:

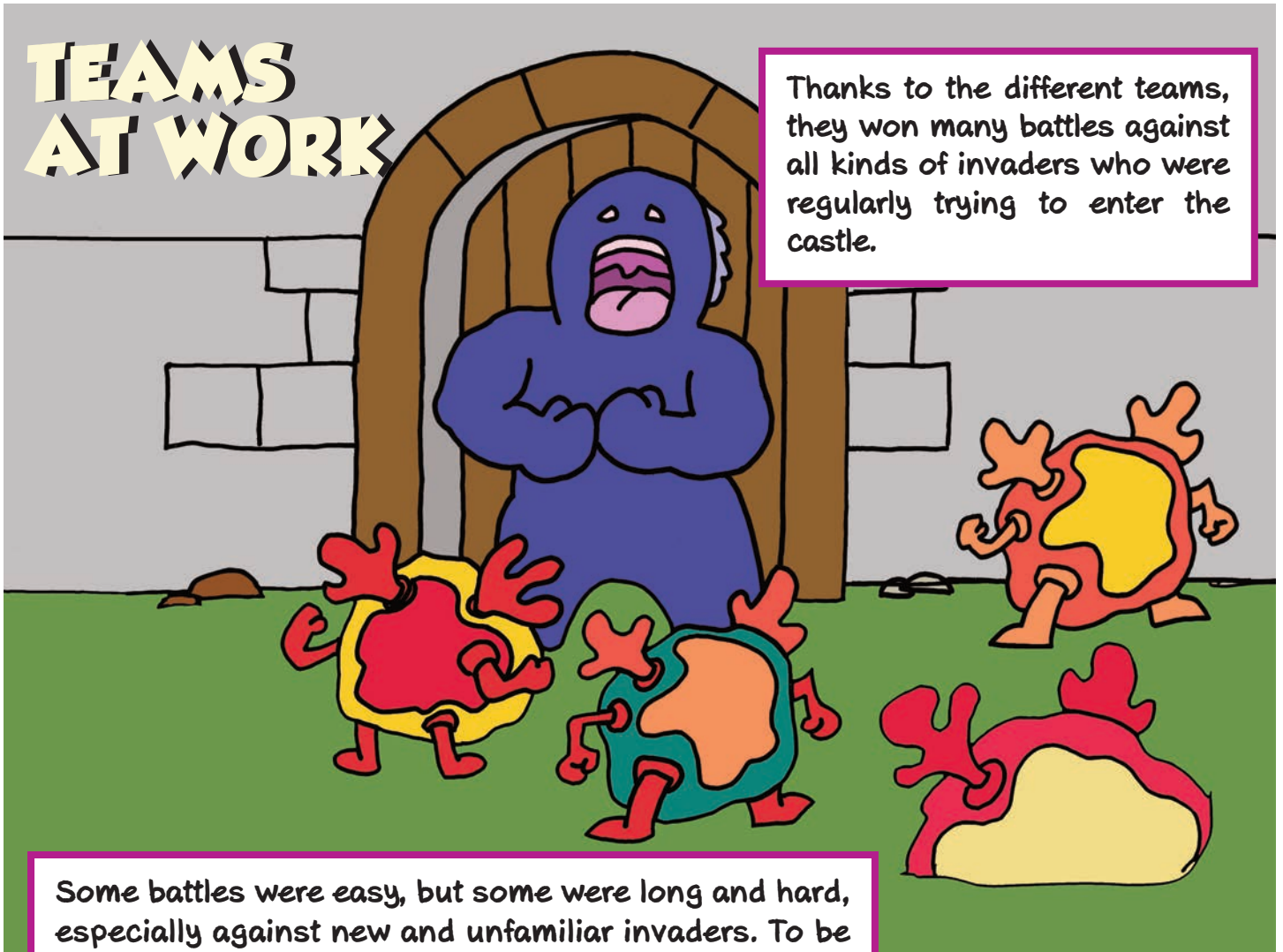
Relay information between first response cells and specialized soldiers.

Duties:

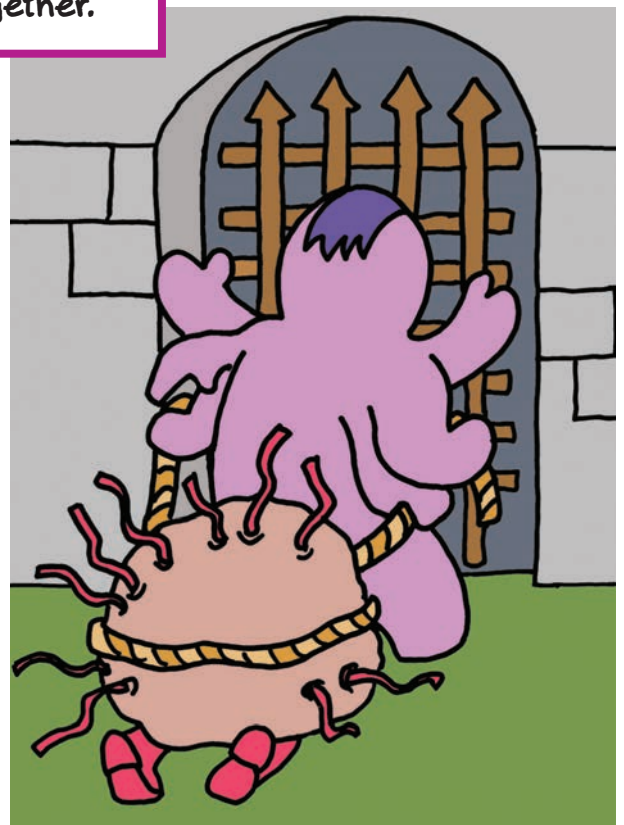
With their multiple hands (dendrites), they capture germs and bring them to B and T lymphocytes to be studied.

TEAMS AT WORK

Thanks to the different teams, they won many battles against all kinds of invaders who were regularly trying to enter the castle.



Some battles were easy, but some were long and hard, especially against new and unfamiliar invaders. To be successful, all of the teams needed to work together.



“So if our body is a fortress, who are the invaders that are making us sick?” asks Asha.



PROF. AARON MARSHALL,
Dept. Immunology
Rady Faculty of Health Sciences
University of Manitoba

The invaders are tiny germs, smaller than the cells of your body. We can only see them through a microscope.

There are different kinds of germs called bacteria and viruses.

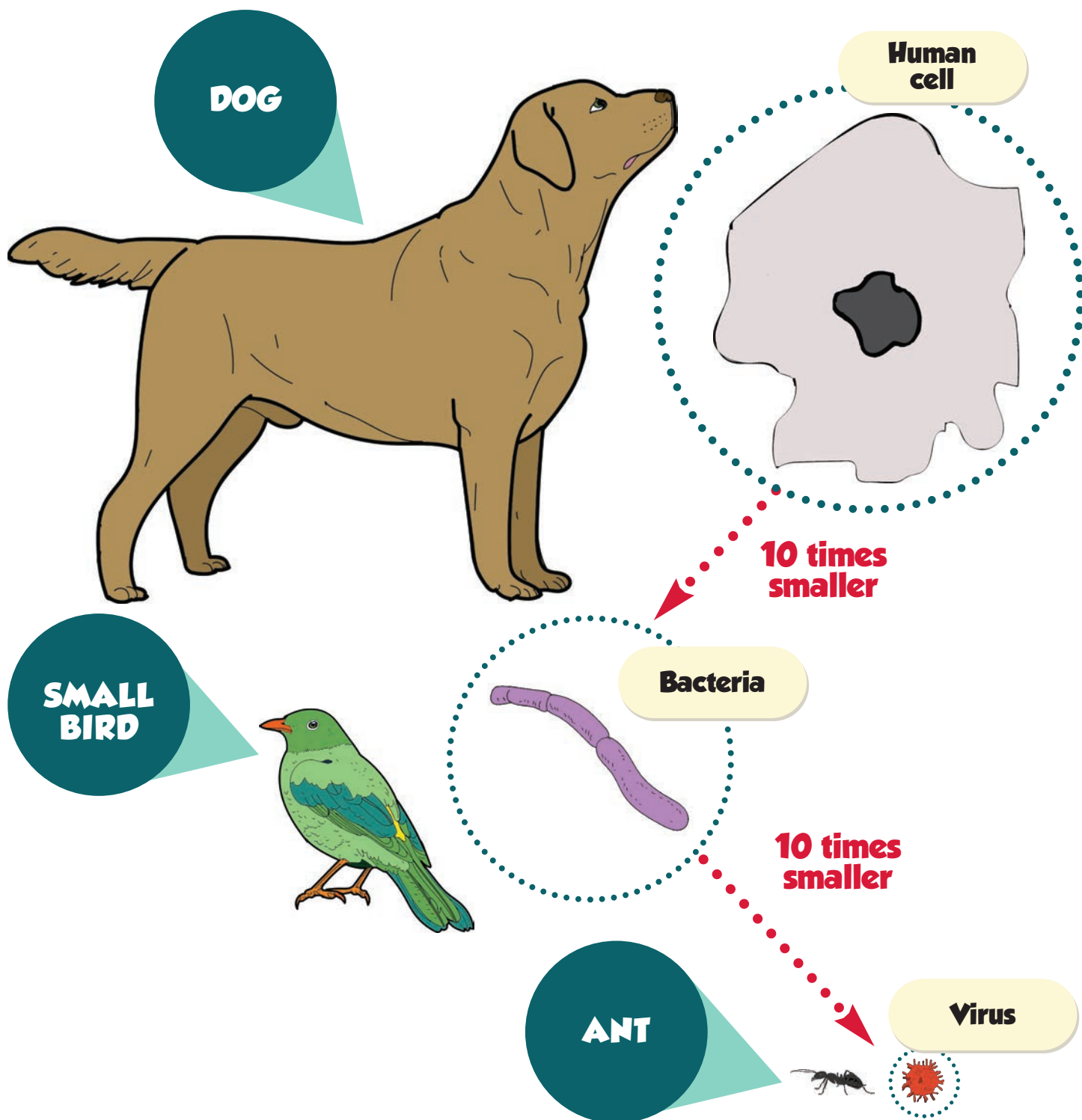
We are surrounded by all kinds of viruses and bacteria but not all of them are dangerous.

Only some types invade our body and cause damage that makes us sick.



Illustrations : Tadeus Mpwene

The viruses are extra tiny, even smaller than bacteria (10 times smaller). They also can get right inside the cells of our bodies where they feel at home and multiply there to make us sick. Imagine our cells are the size of a big dog. Bacteria would be the size of a small bird and viruses would be as small as an ant.



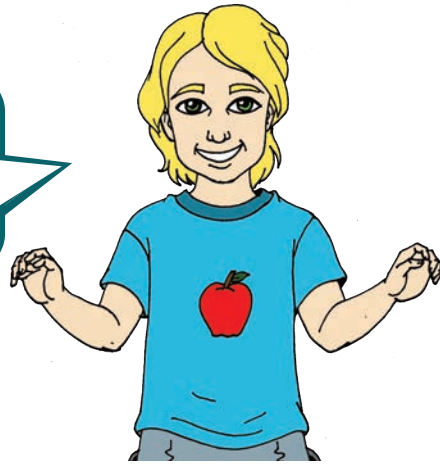
SPREAD OF THE CORONAS

Life was great for the villagers, until one day they started to hear about some invaders spreading terror in other castles in the region. They were called the Coronas.

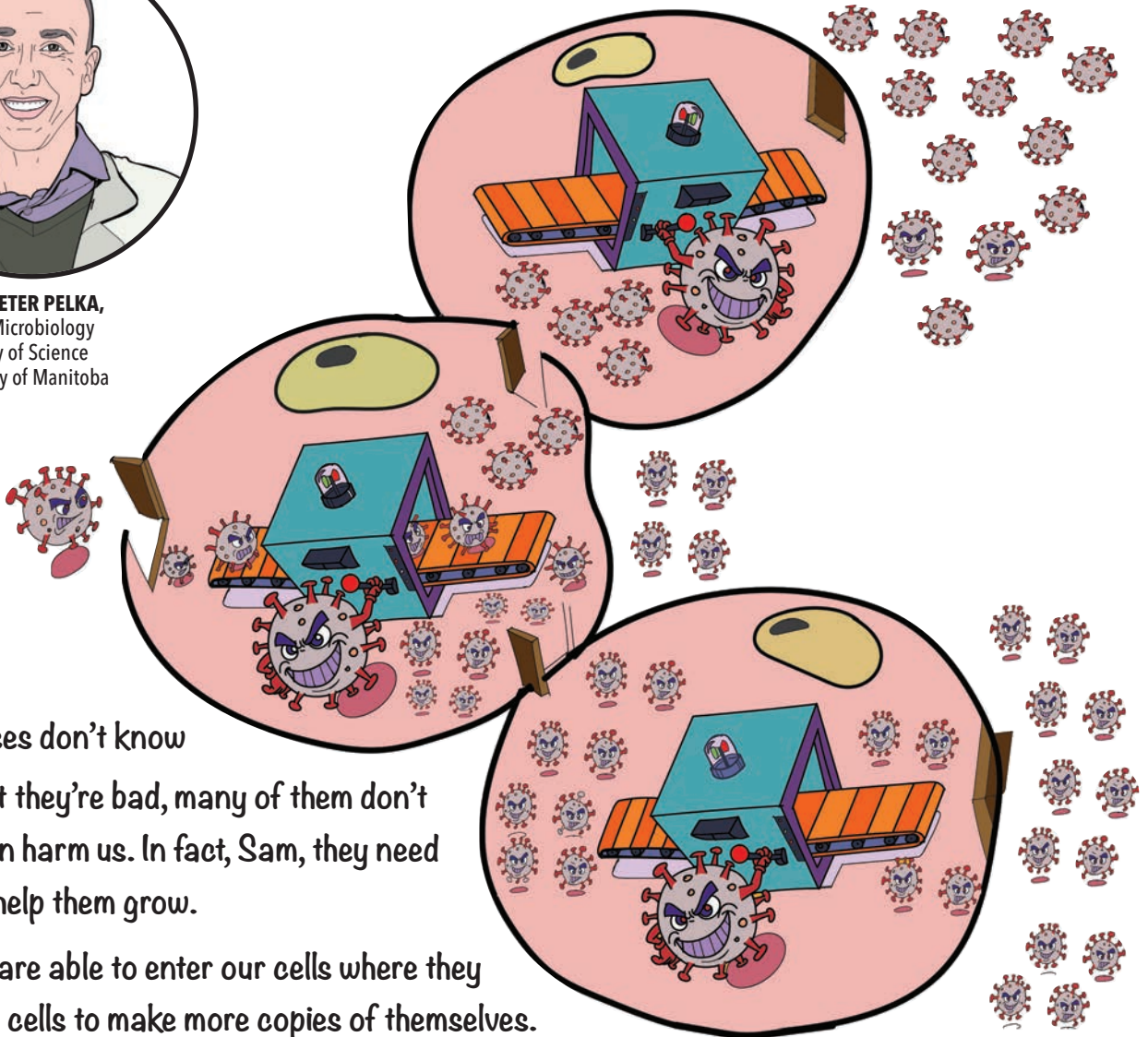


Although no one had ever seen one before, the villagers worried the Coronas were on their way. The king asked the guards to be ready for anything threatening.

Coronas.... like the virus we're hiding from now? Why are they so bad?



PROF. PETER PELKA,
Dept. Microbiology
Faculty of Science
University of Manitoba

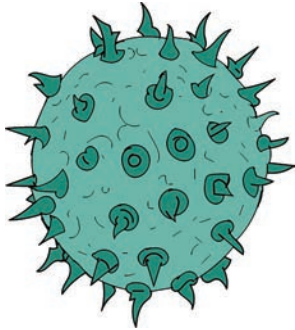


Viruses don't know that they're bad, many of them don't even harm us. In fact, Sam, they need our bodies to help them grow.

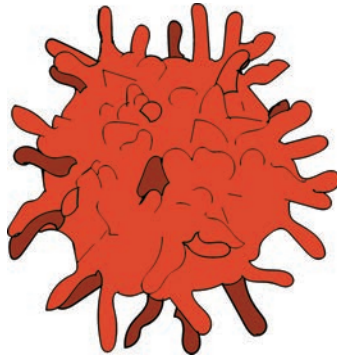
Some viruses are able to enter our cells where they steal from our cells to make more copies of themselves.

When there are many of them, they enter more and more cells causing damage.

There are many types of virus that can cause colds, minor flus, rabies, ebola and even warts! Some are dangerous, some are not very dangerous, and some viruses don't affect us at all. This new type of coronavirus that we're seeing since the end of 2019 causes a disease that mainly attacks the lungs but also seems to affect other parts of the body. We call it COVID-19.



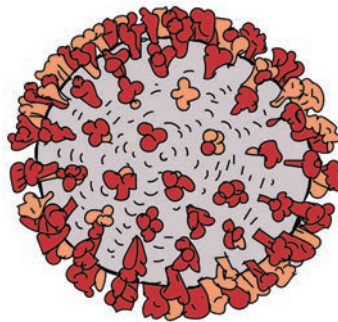
Cold



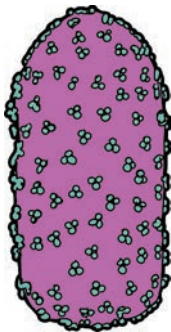
**Influenza
(flu)**



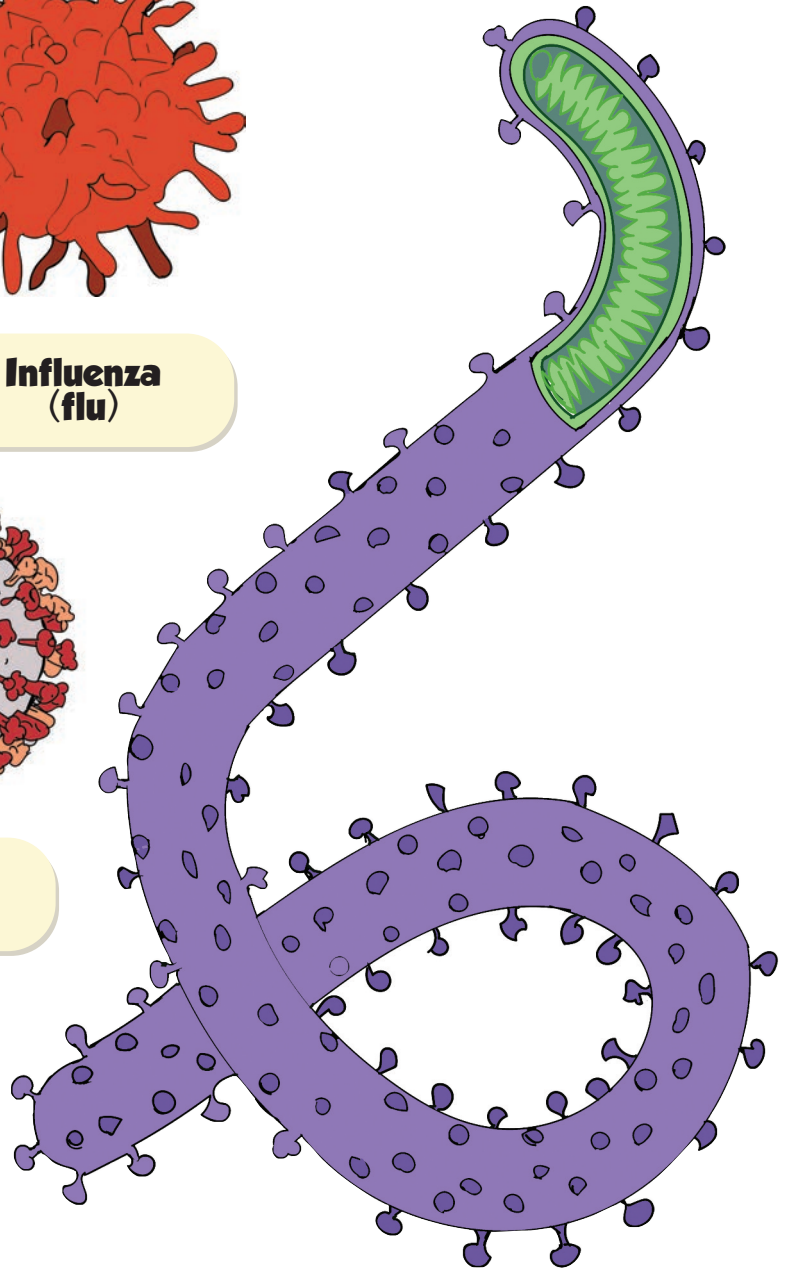
Wart



COVID-19



Rabies



Ebola

Bacteria are germs too, are they the same as viruses?



PROF. JUDE UZONNA,
Dept. Immunology
Rady Faculty of Health Sciences
University of Manitoba

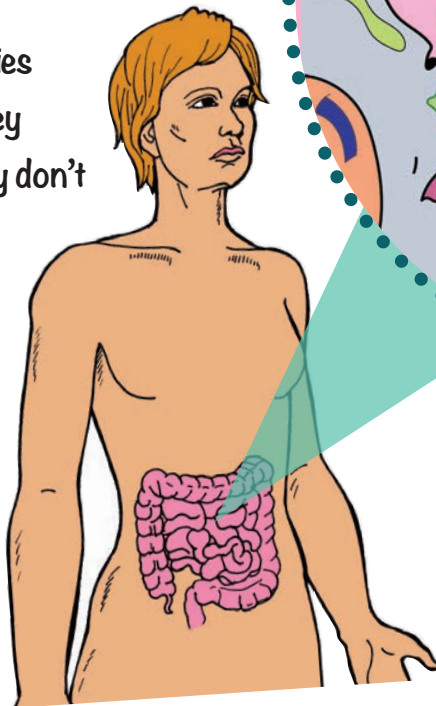


No Idriss, they are different from viruses in many ways.

Bacteria can live in and on our bodies because our bodies are warm and moist, and they can find food there. But they don't need to get inside our cells to survive.

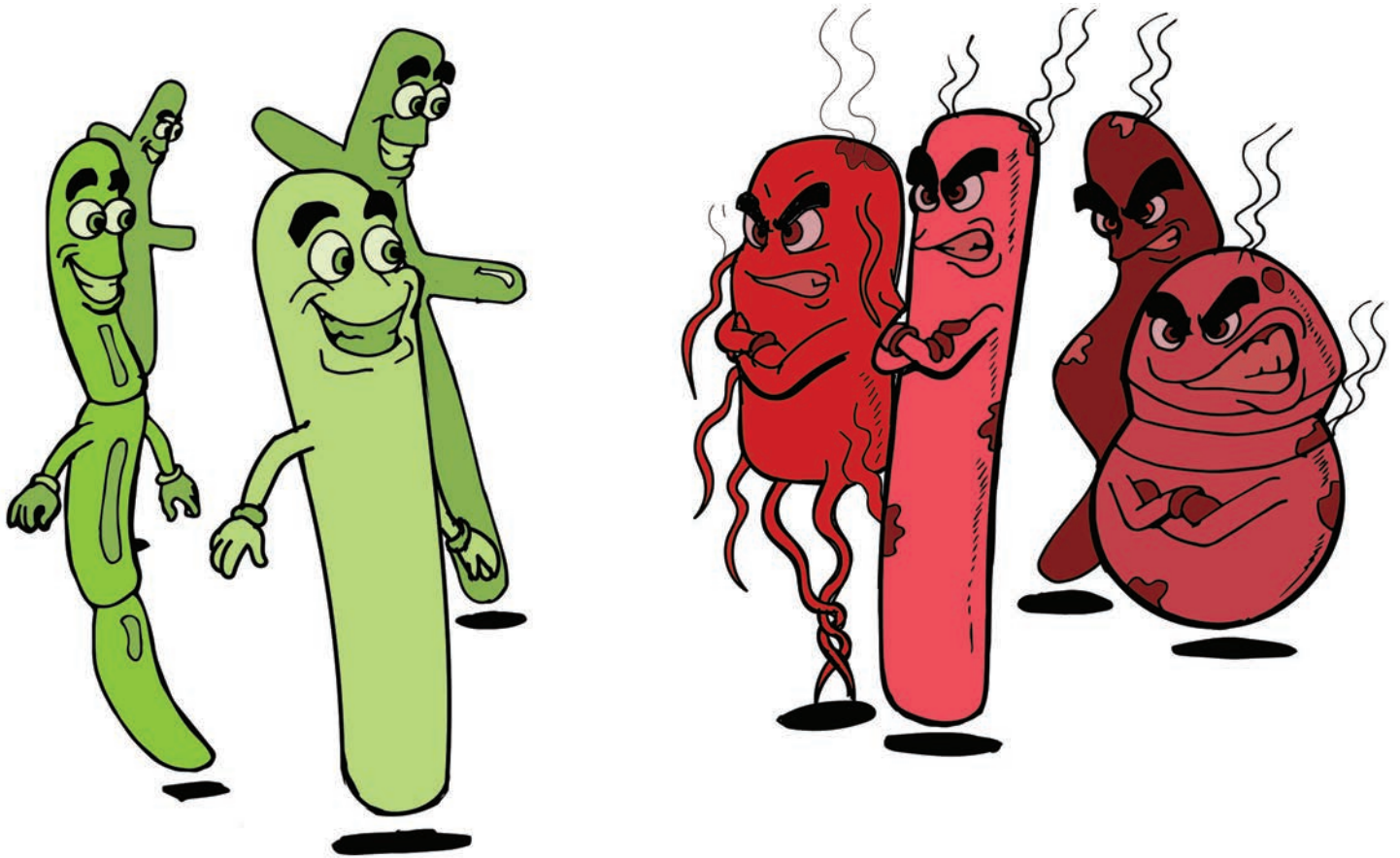
Bad bacteria can surround cells and compete or fight with cells for food and energy.

Some make poisons or weapons that hurt our cells or make us sick.



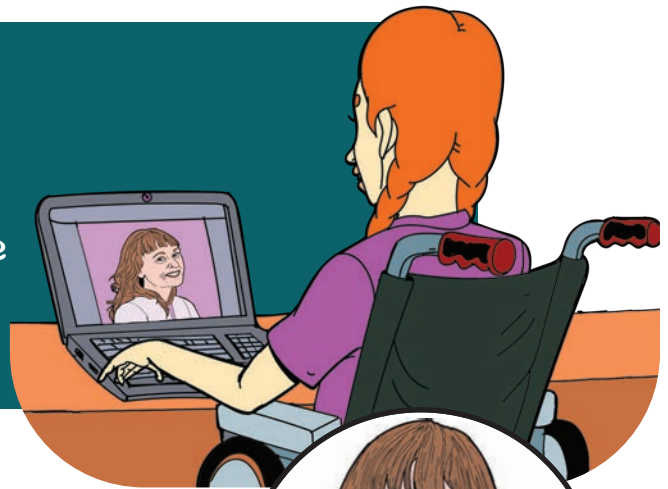
Different kinds of bacteria live on different parts of the body (like on the skin or in your gut).

Not all bacteria are bad, some help us stay healthy by digesting tough foods and making vitamins for us, but some can cause sore throat and breathing problems, while others cause upset stomach.



The Coronas story reminds Emma about how fast the virus causing COVID - 19 is spreading.

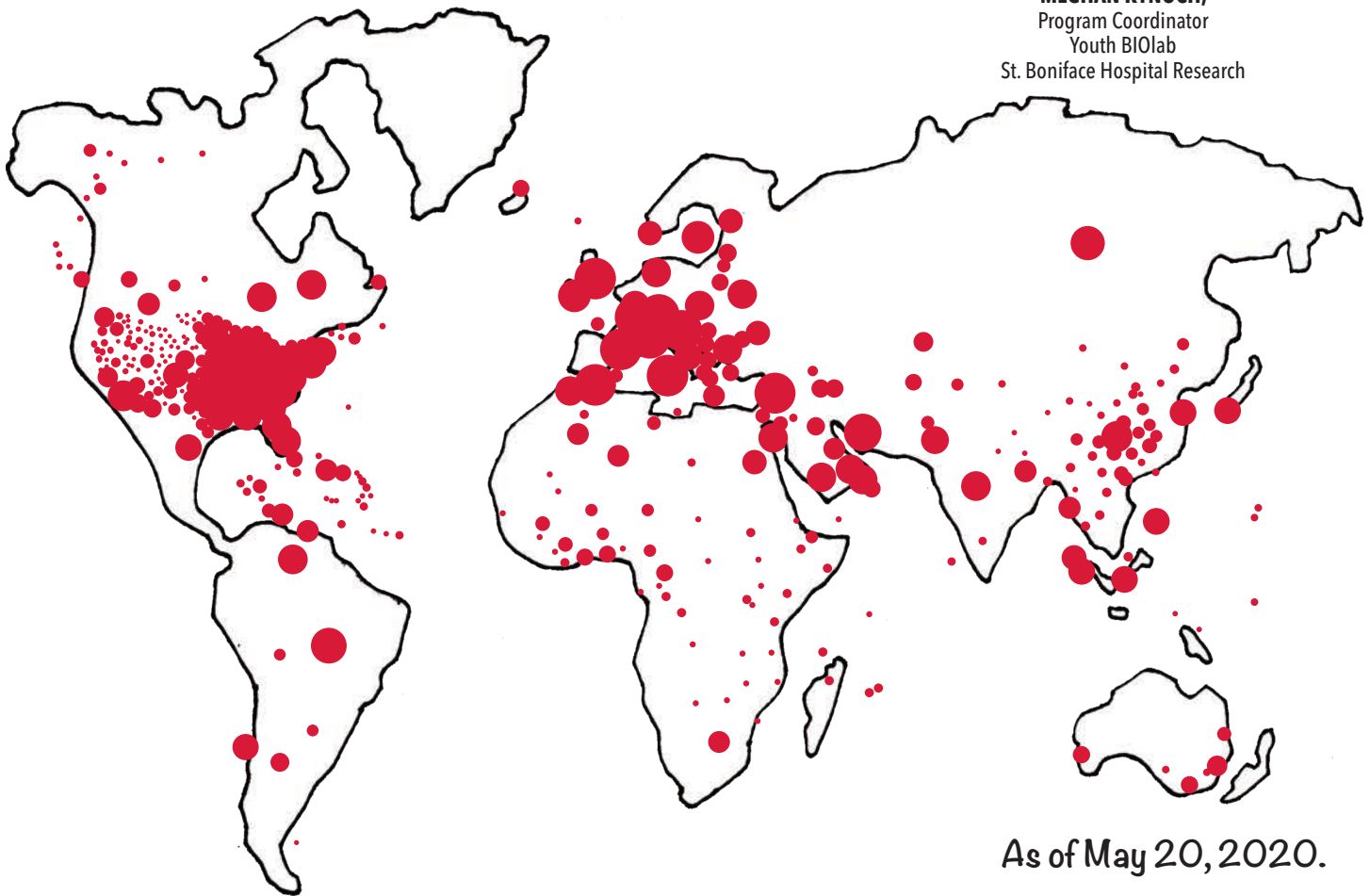
“How did this virus manage to overcome the entire world in a few weeks? Why is it so strong?”



Scientists are trying to answer these same questions right now about this new coronavirus, which is very contagious. It moves very fast, from person to person, and the whole world has been trying to figure out how to slow it down.



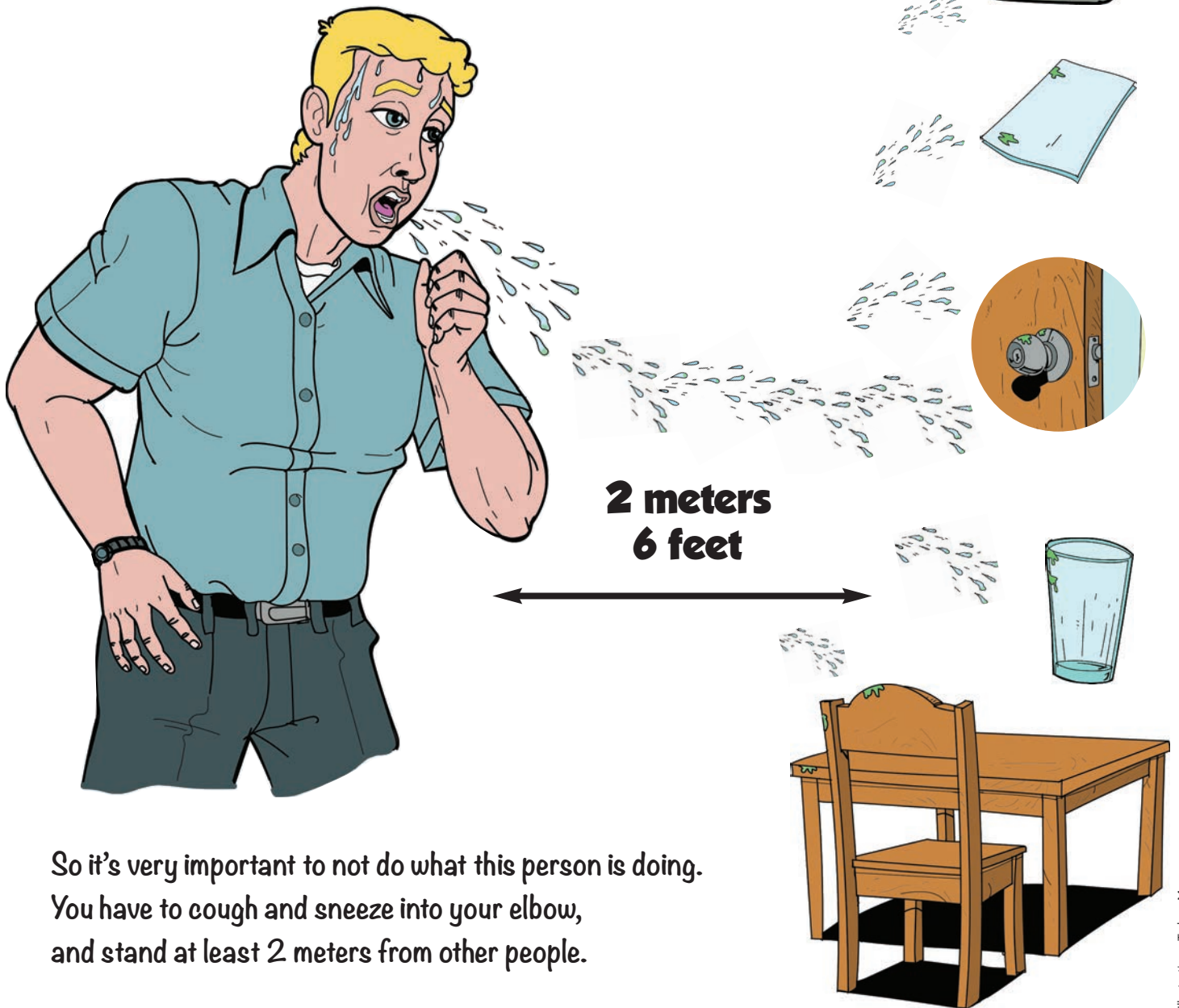
MEGHAN KYNOCH,
Program Coordinator
Youth BIOlab
St. Boniface Hospital Research



As of May 20, 2020.

Illustrations: Tadeus Mpwene

This virus multiplies in the lungs of an infected person. When they cough, sneeze or talk, the virus can leave their body in little droplets and infect other people or land on surfaces that other people might touch.



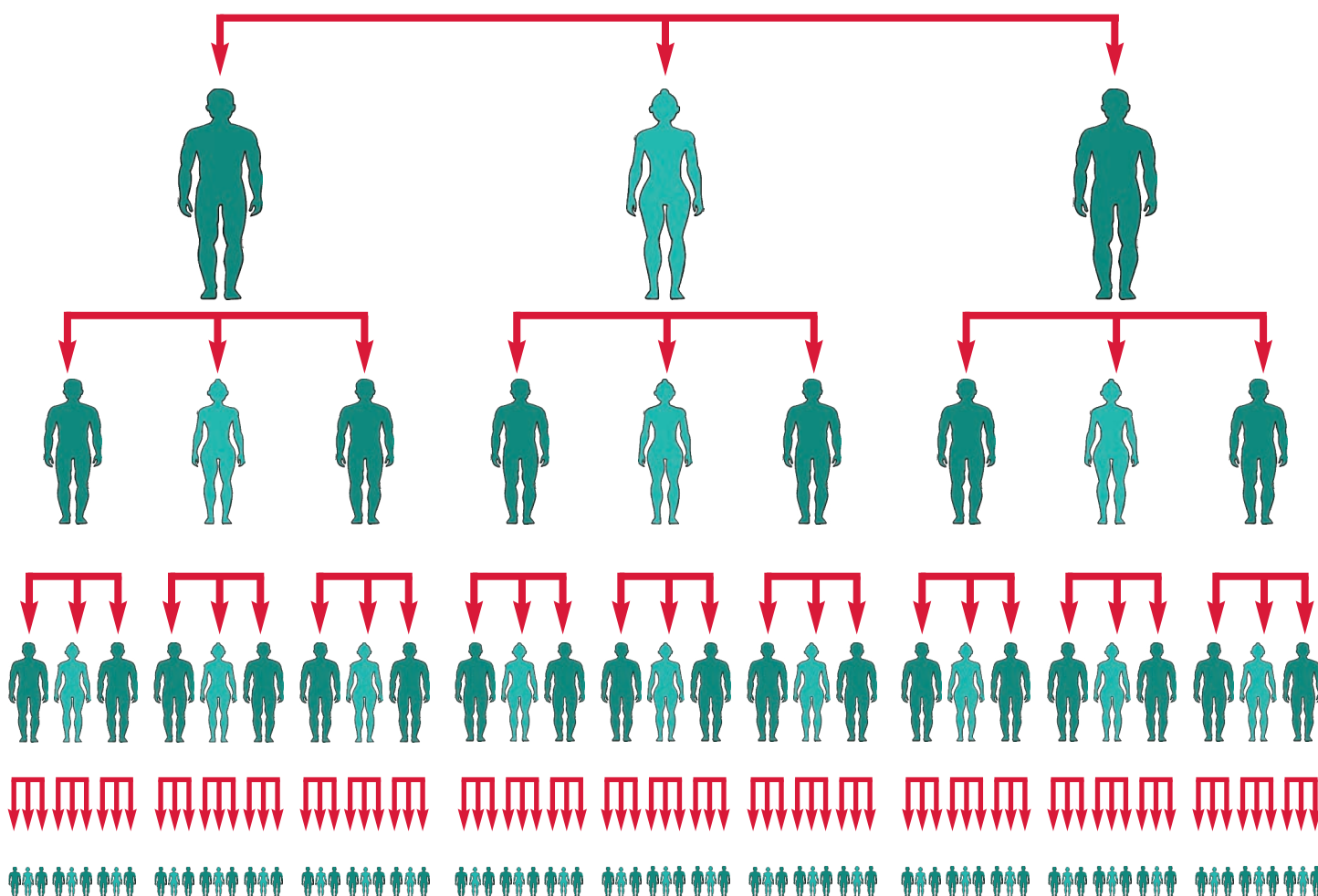
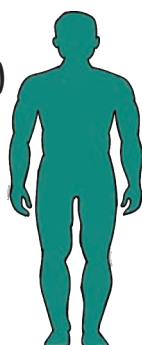
So it's very important to not do what this person is doing. You have to cough and sneeze into your elbow, and stand at least 2 meters from other people.

Think of all the people you see and all the things you touch in a day! This virus spreads very fast. Wherever we go, whether we're at our friend's house or travelling to the other side of the world, we bring our germs with us. On average, each infected person can spread the disease to two or three people.

Furthermore, many people with the infection don't feel sick (they are called asymptomatic) and spread the virus when visiting friends and family.



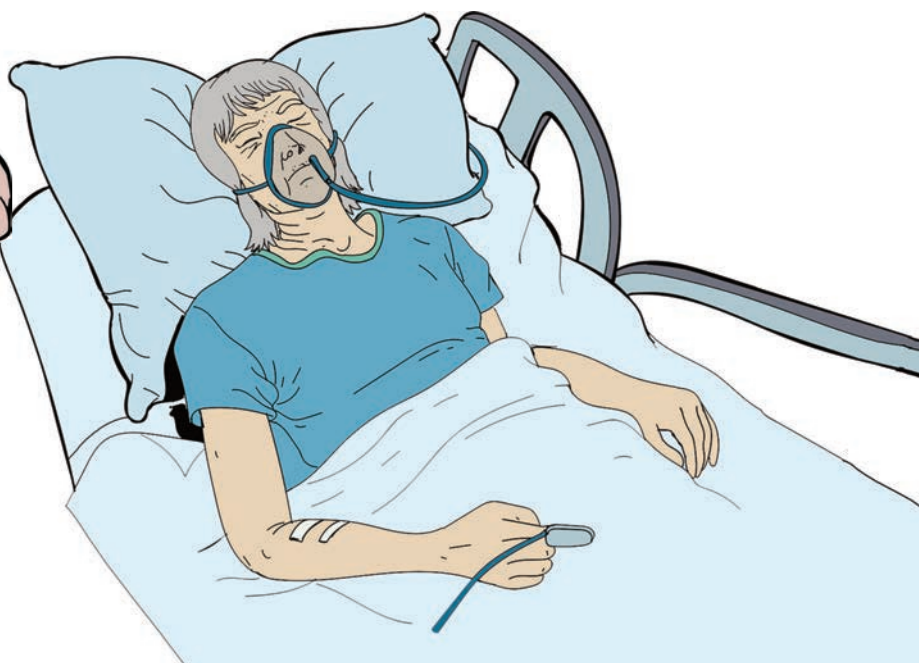
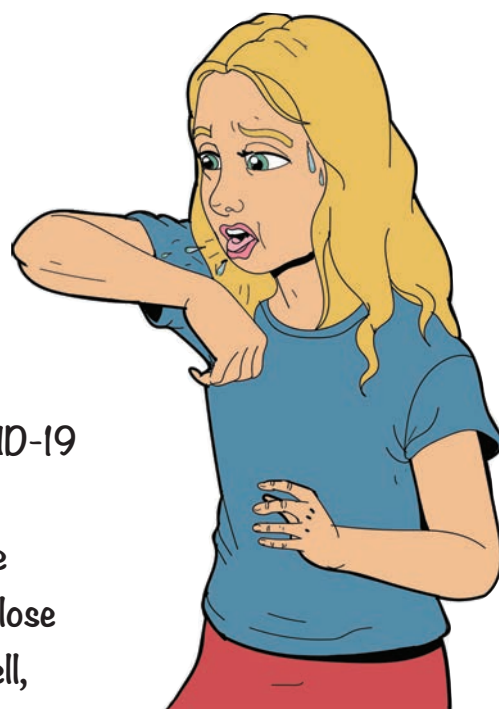
STEPHEN JONES,
Program Director
Youth BIOlab
St. Boniface Hospital Research



Illustrations: Tadeus Mpwene



Some people who catch the virus that causes COVID-19 don't feel sick at all, some will feel like they have a mild cold with a fever, or lose their sense of taste or smell, but some people can get very sick and have trouble breathing. Even though they feel different, they all have the same kind of virus.



Illustrations: Tadeus Mpwene

The Coronas sound so scary, already causing so much damage. I'm really worried.



DR. HEATHER MACKENZIE,
Dept. Clinical Health Psychology
Rady Faculty of Health Sciences
University of Manitoba

Don't worry Juan. It's normal that we might feel anxious or worried about an unknown virus that might infect our body. In the story, the king and his villagers also feel scared about enemies trying to invade their castle.



Anxiety is how our brain puts our body on high alert in case something dangerous might happen to us.

Understanding what this virus is and learning what we can do to protect ourselves will help us feel less scared.

Staying home and finding ways to relax and enjoy ourselves can help lower anxiety.

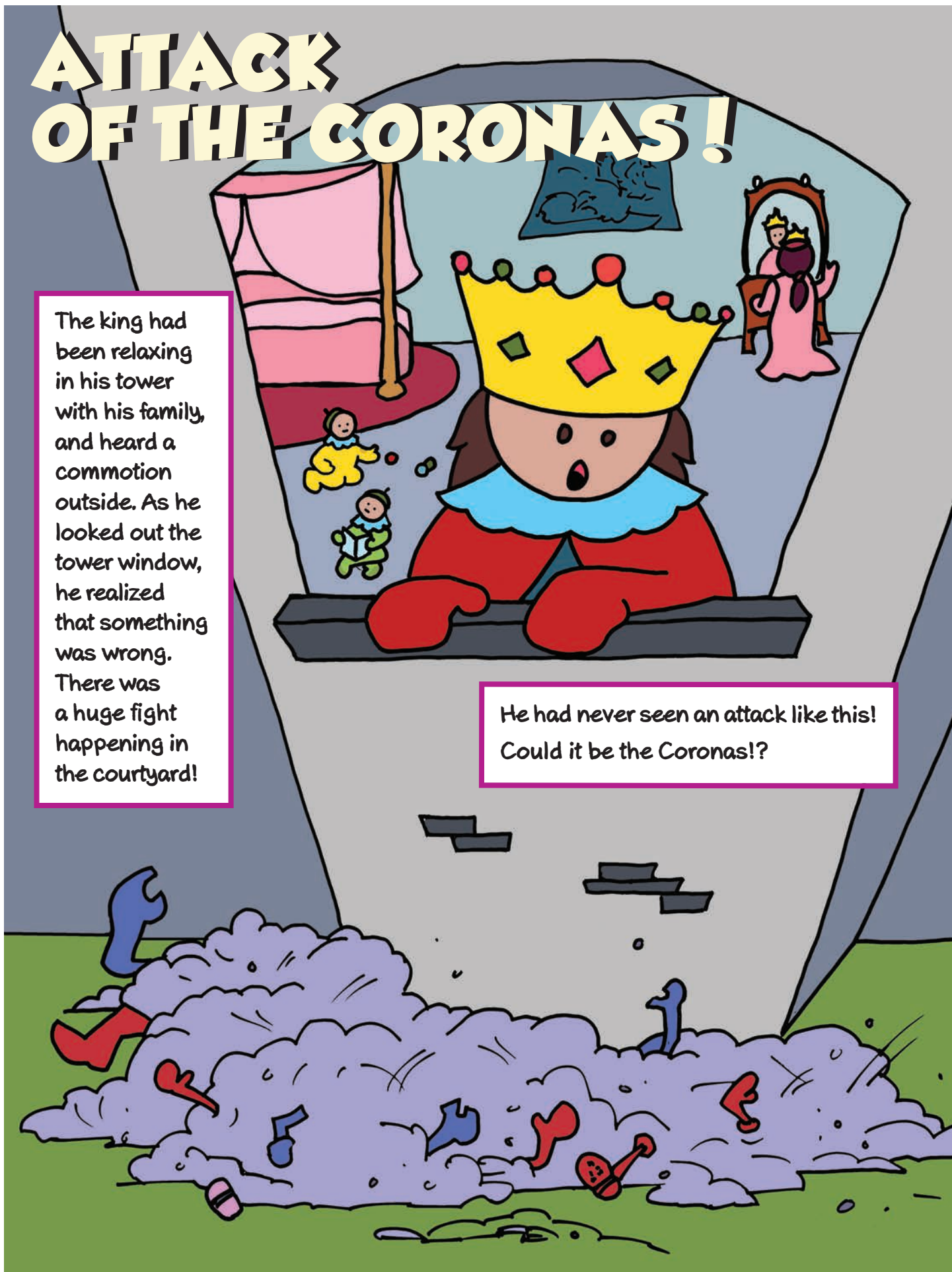


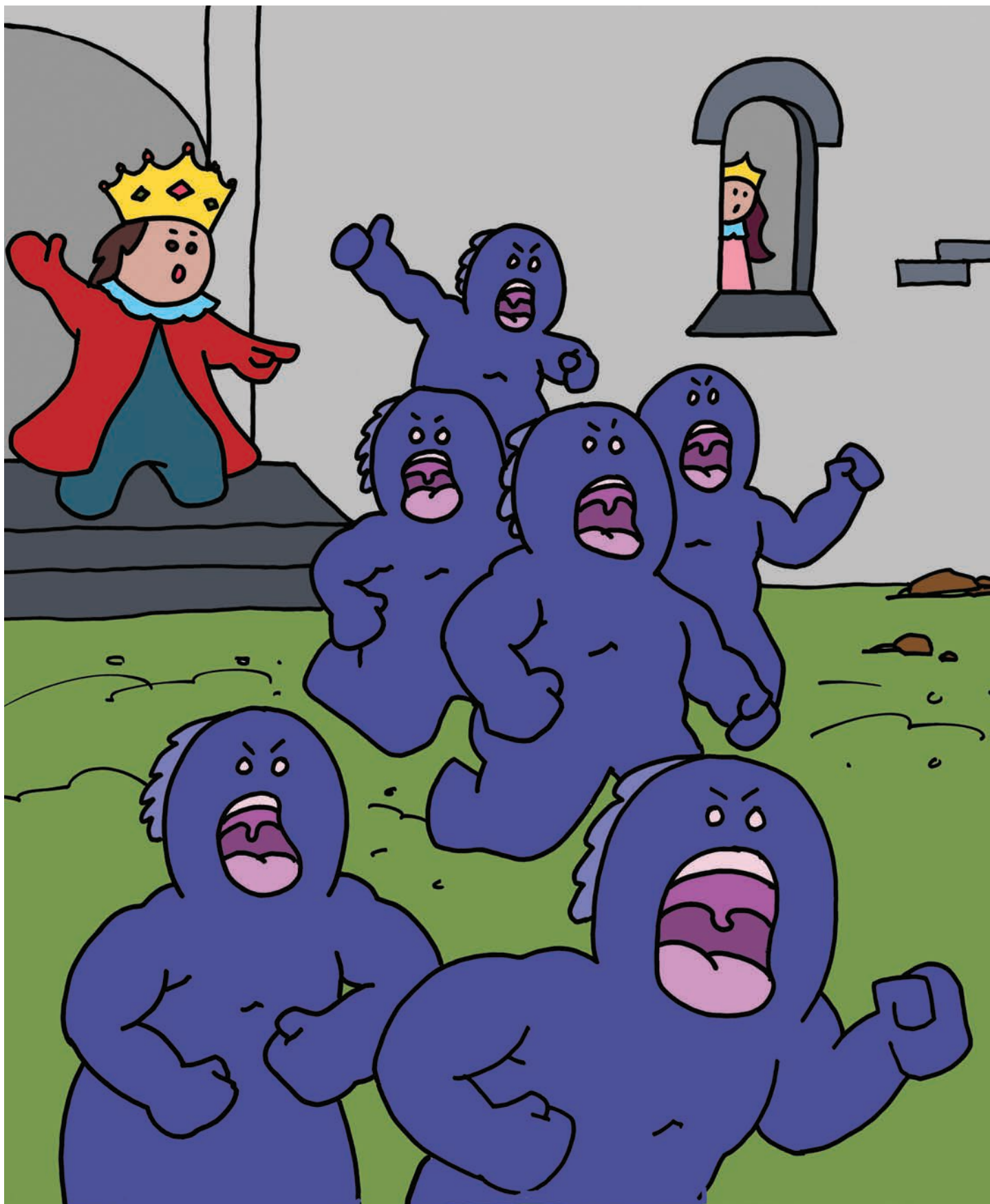
Illustration: Tadeus Mpwene

ATTACK OF THE CORONAS!

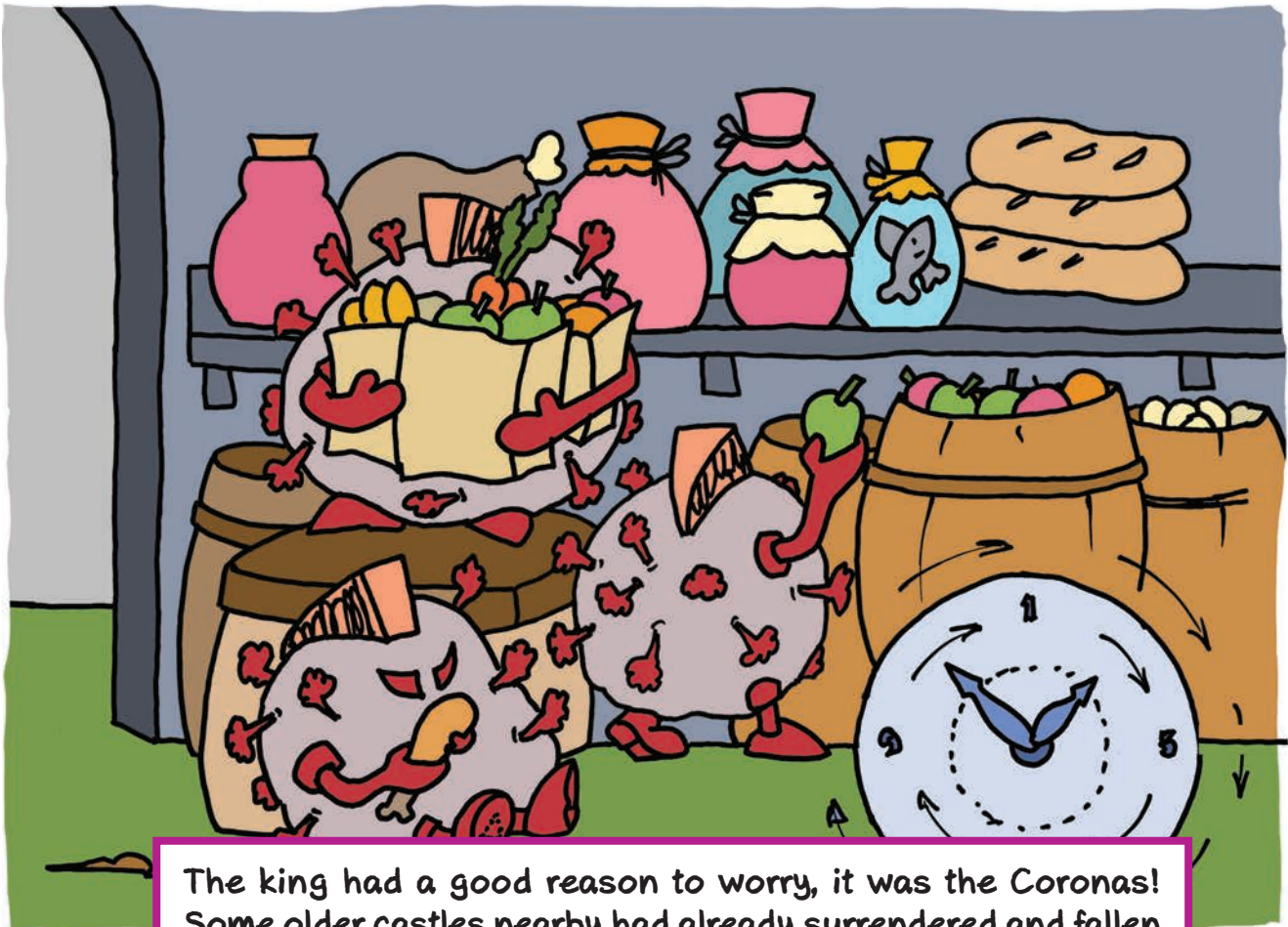
The king had been relaxing in his tower with his family, and heard a commotion outside. As he looked out the tower window, he realized that something was wrong. There was a huge fight happening in the courtyard!

He had never seen an attack like this!
Could it be the Coronas?!

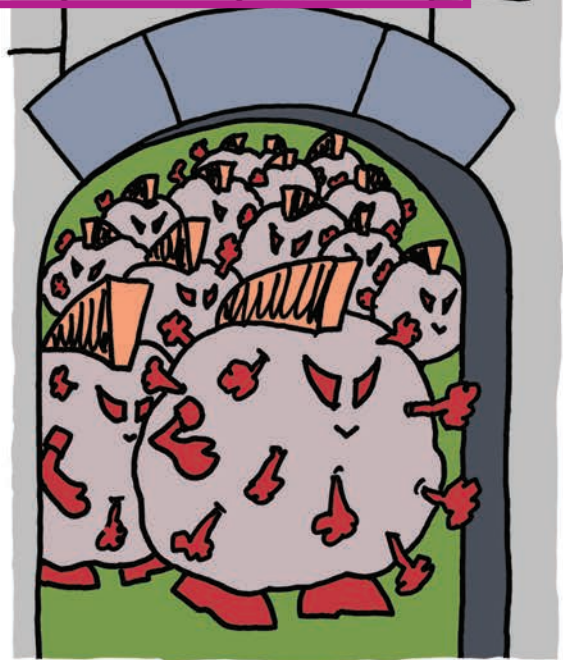




The king didn't know what to do, he couldn't tell who was fighting who! He ordered more guards down to get a clear view of the invaders.



The king had a good reason to worry, it was the Coronas! Some older castles nearby had already surrendered and fallen at the hands of this new enemy.



While he met with his generals, the Coronas were already able to get into some of the castle rooms to steal supplies, gain strength and multiply unnoticed by the guards...

I am scared for my grandma and grandpa. Is that true that, like older castles, older people get a lot sicker because of this virus?



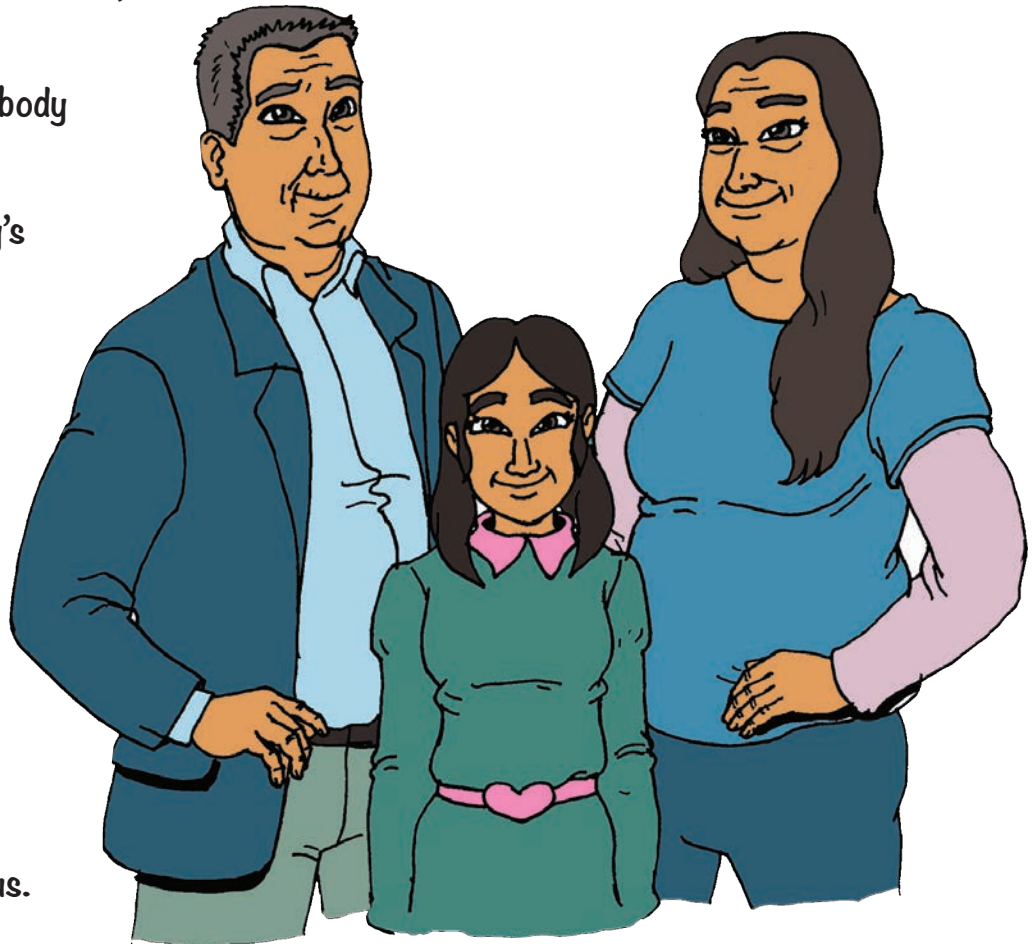
DR. GEERT W.'t JONG,
Pediatrician
Dept. Pediatrics and Child Health
Rady Faculty of Health Sciences
University of Manitoba

People get sick from the virus, but even more from the response of the body trying to fight the virus.

This virus can make the body's defences overreact, like an allergic reaction.

In young kids, their defence cells fight calmly against the virus.

As people get older, their defence cells can become more aggressive and sometimes overreact, damaging healthy lung cells while trying to attack the virus.



Asha mentions that her aunt is still young, but she received a kidney from someone else and she heard that makes it harder for her to fight the virus too.

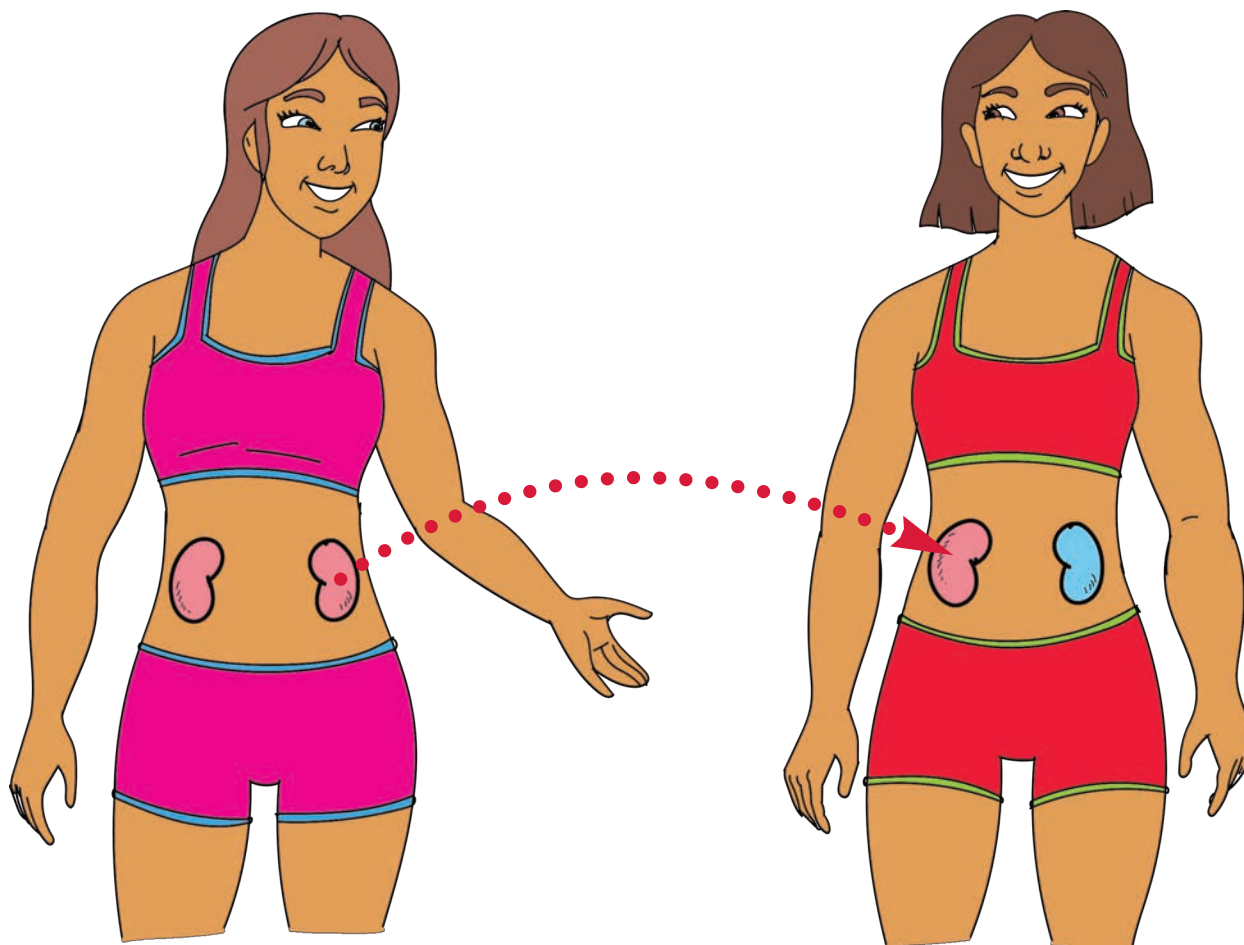
Kidneys clean blood by filtering it to keep people healthy. Your aunt's new kidney was given by a friend, so her new "filter cells" don't look like the cells that were already in her body.

The same way the castle's army recognizes and fights invaders, the army of your aunt's body (its spy and soldier cells) might think that the new kidney is an enemy.

Your aunt needs medicine that weakens her army to protect her new kidney. But medicine can also make your aunt's defences less effective and make it harder to fight invaders like the new coronavirus.



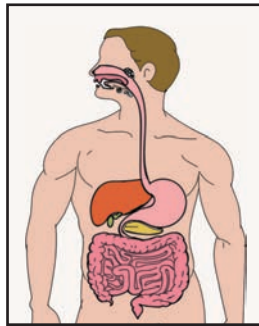
DR. JULIE HO,
Dept. Internal Medicine
Rady Faculty of Health Sciences
University of Manitoba



Illustrations: Tadeus Mpwene

Sam anxiously asks:

“Because I have Crohn’s disease, which gives me stomach pain and bloody diarrhea, I take medication that slows down my body’s defences too, am I at greater risk for COVID-19?”



DR. CHARLES BERNSTEIN,
Dept. Internal Medicine
Rady Faculty of Health Sciences
University of Manitoba

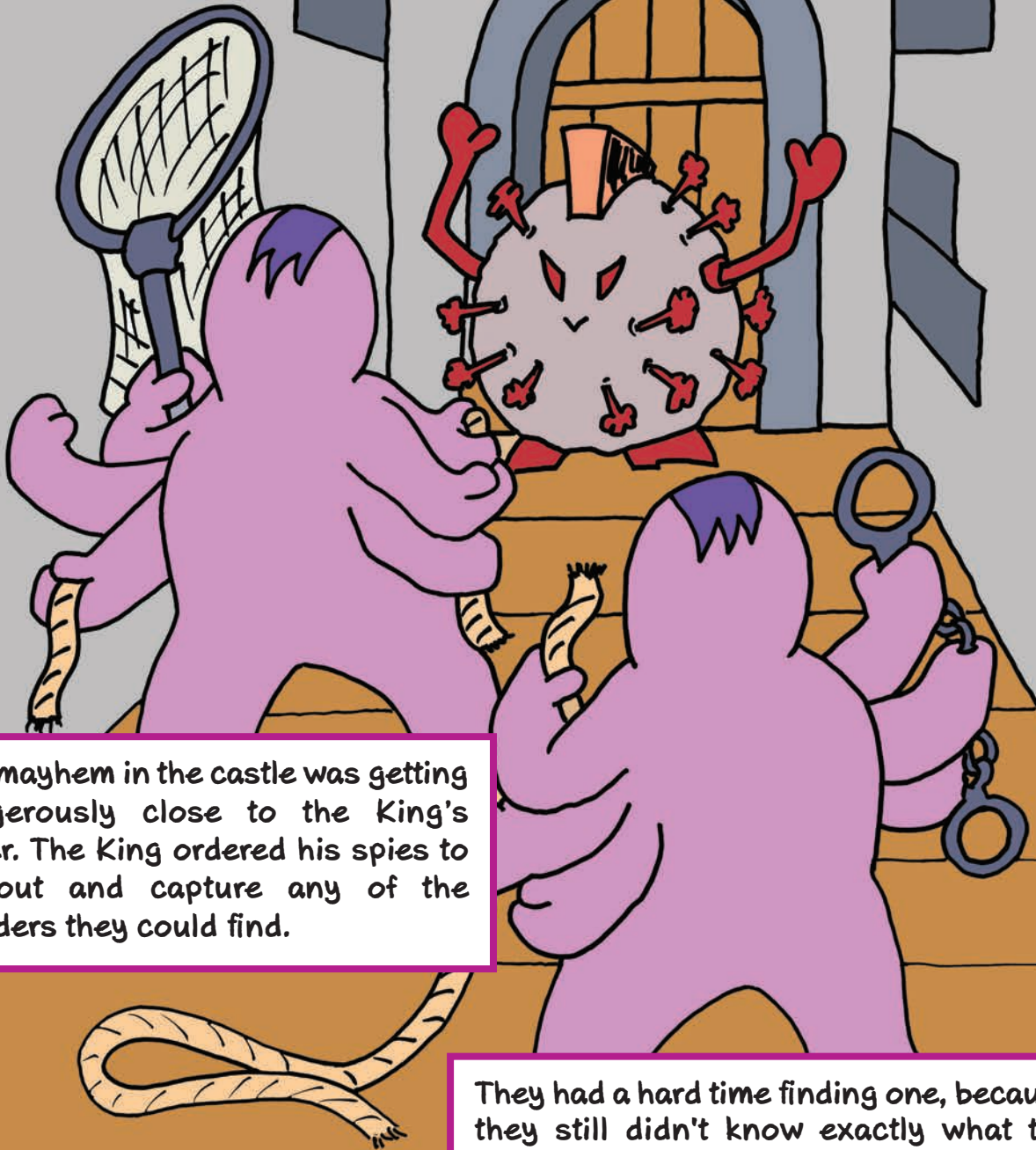


Doctors from Canada have been meeting on their computers weekly to discuss what is happening with Crohn’s disease patients.

And the truth is, Sam, doctors are learning daily about this new virus, and how it works with the various CD medications.

So it’s important you stay in touch with your doctors and follow their recommendations.

CAPTURE OF THE CORONAS

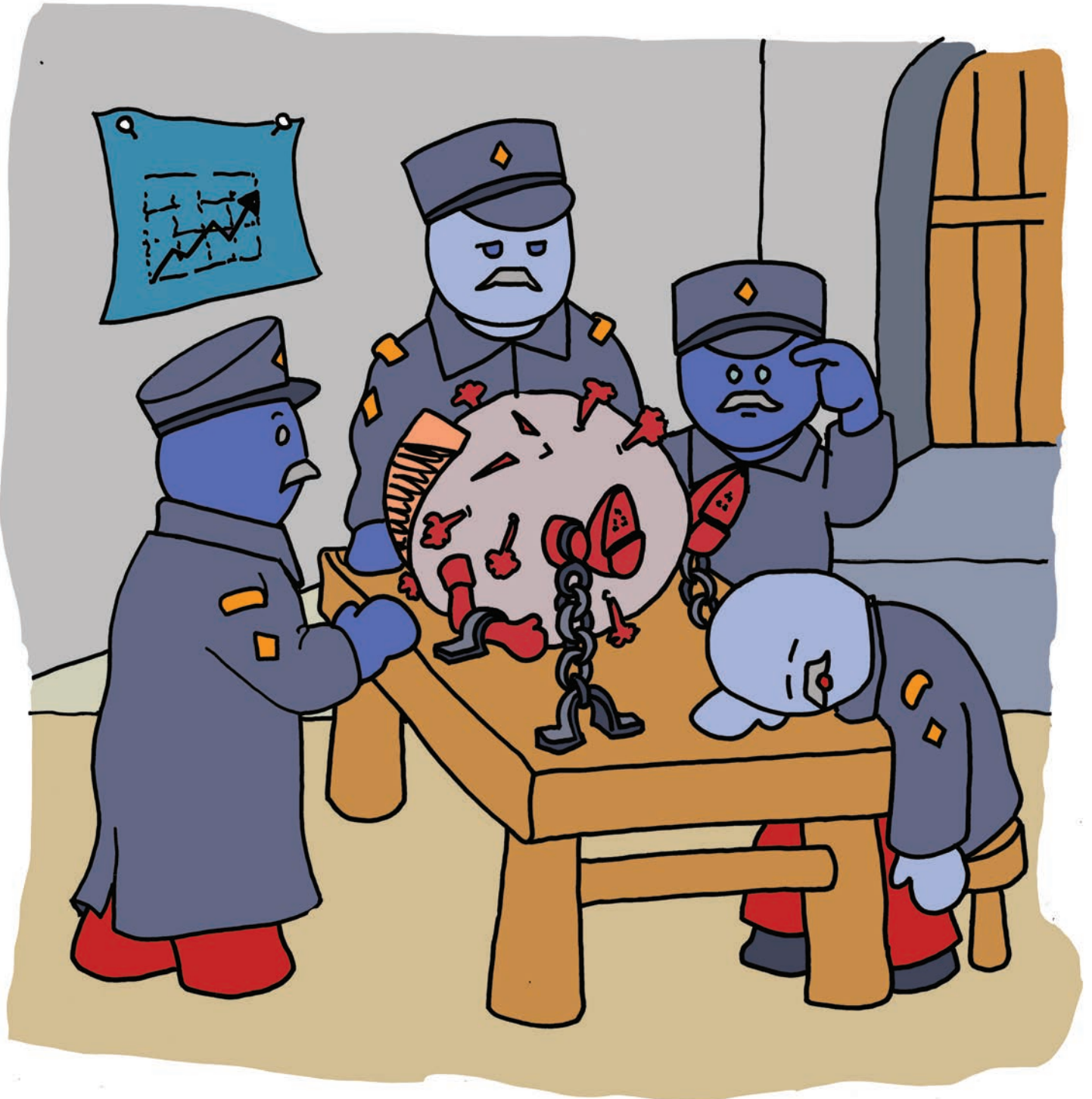


The mayhem in the castle was getting dangerously close to the King's tower. The King ordered his spies to go out and capture any of the invaders they could find.

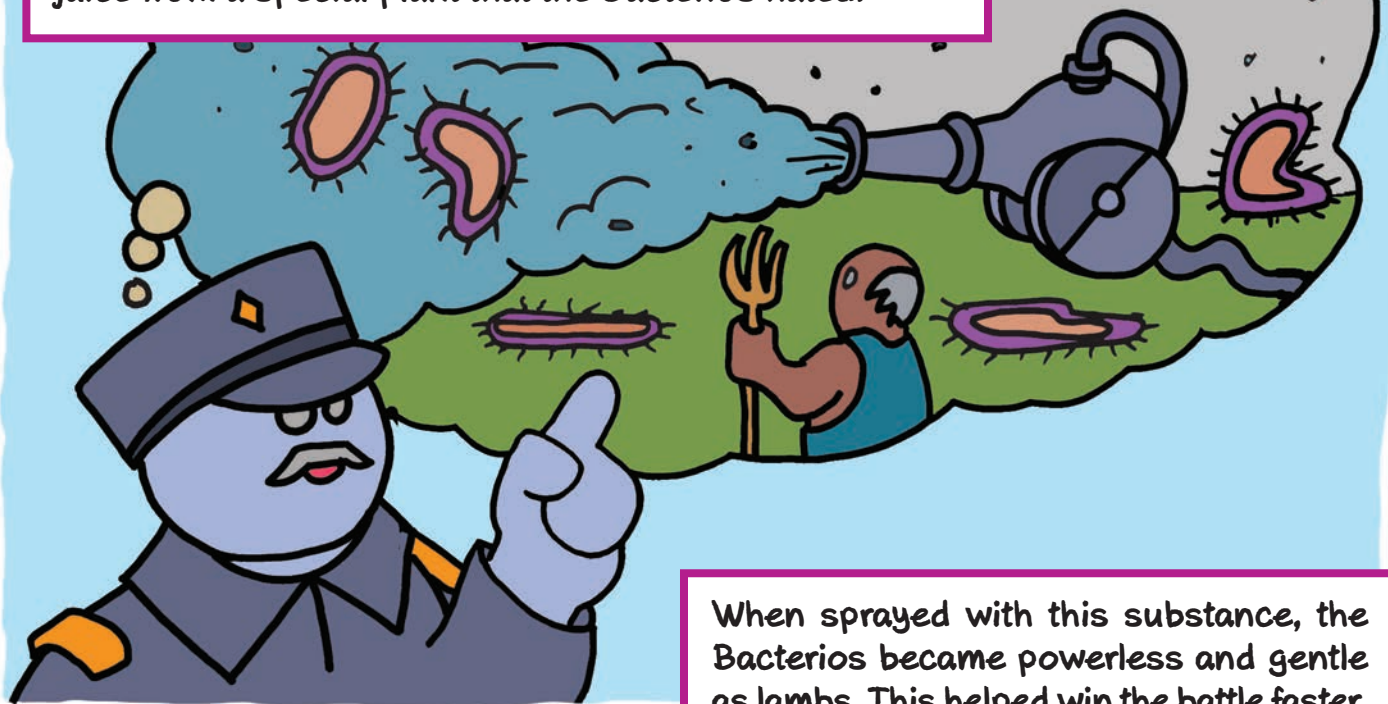
They had a hard time finding one, because they still didn't know exactly what the Coronas looked like, other than their spiky crowns. They finally caught one trying to get into a pantry and took him back to the tower for a closer look.

The king's generals studied the prisoner from every angle. They had to figure out how to quickly spot the new kind of Coronas in the crowded castle and kill them before they destroy everything.

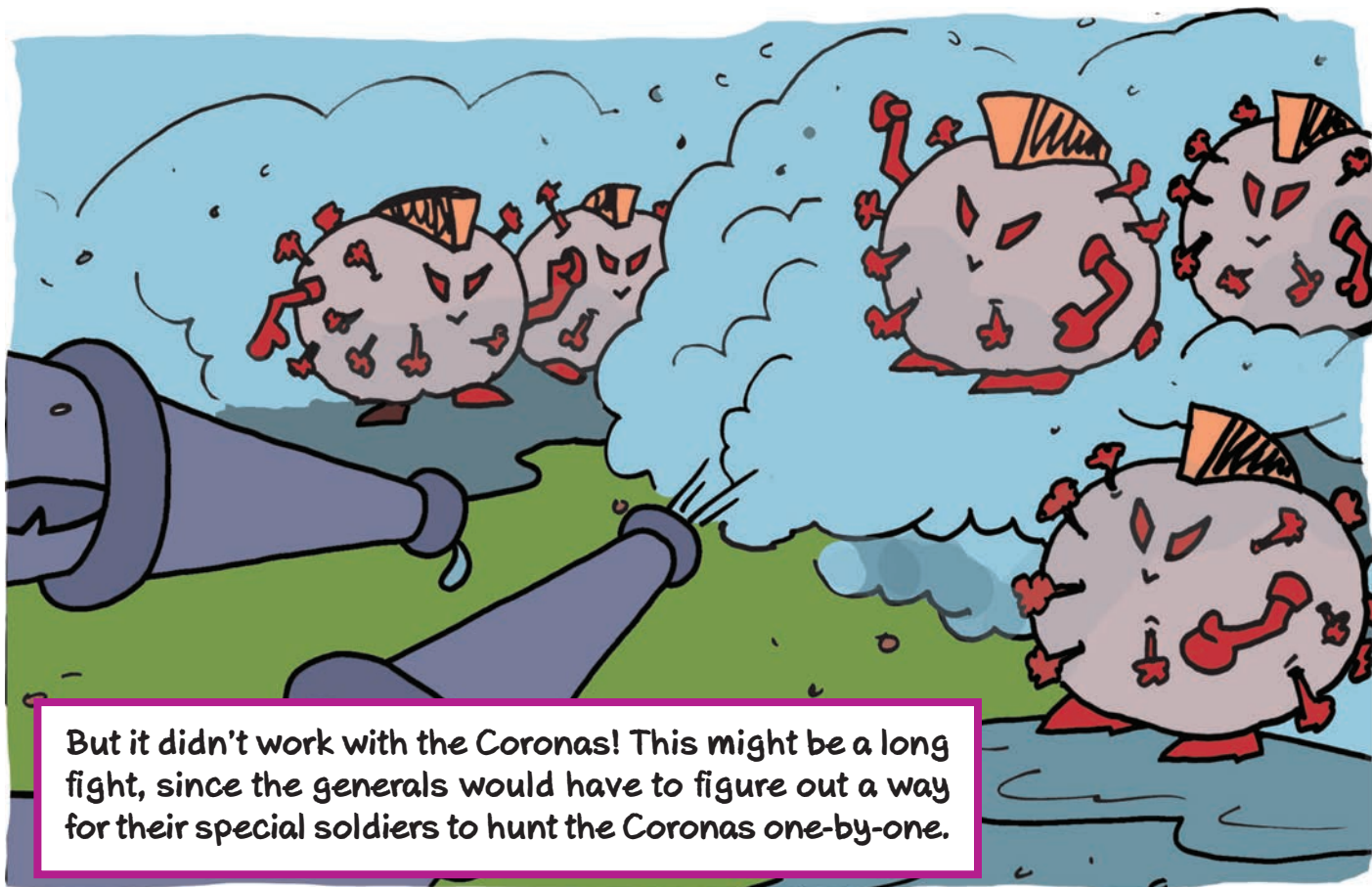
The generals worked and worked until they dropped from exhaustion.



Then, the king's army generals recalled an ancient battle against a powerful group of invaders called the Bacterios. They needed extra help from outside to win that battle: juice from a special plant that the Bacterios hated.

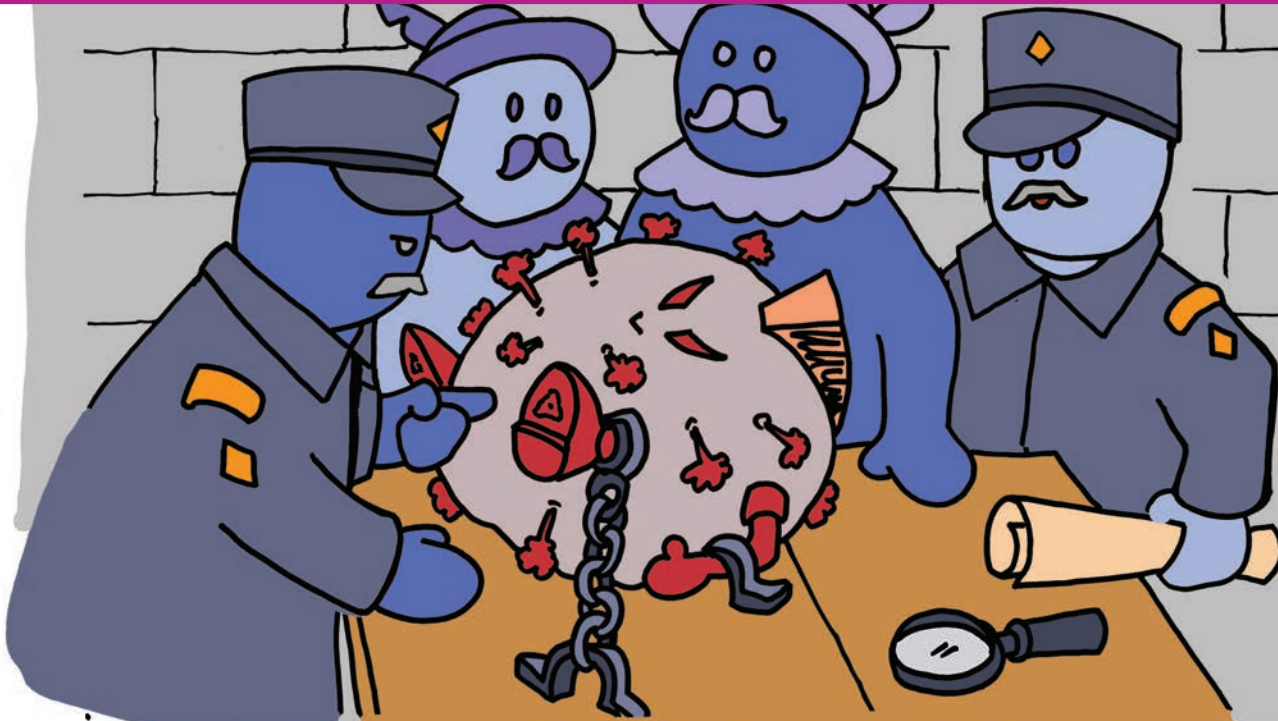


When sprayed with this substance, the Bacterios became powerless and gentle as lambs. This helped win the battle faster.



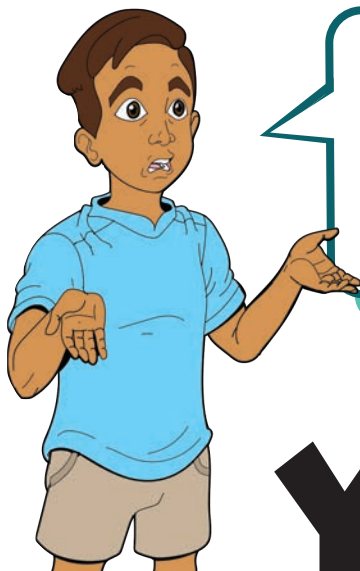
But it didn't work with the Coronas! This might be a long fight, since the generals would have to figure out a way for their special soldiers to hunt the Coronas one-by-one.

Eventually, after spending countless hours studying the prisoner, a general noticed something about these new strong Coronas: besides their crown of spikes, they had a strange tattoo on the bottom of their foot.



They finally had a way to recognize the Coronas! The king realized he would need to train many new soldiers to find every invader. It would take days of searching every room of the castle and checking every villager to make sure they caught all the Coronas.





In the story, the bad Bacterios lose the battle because of a mysterious plant. Do we also have a way to fight viruses and bacteria?

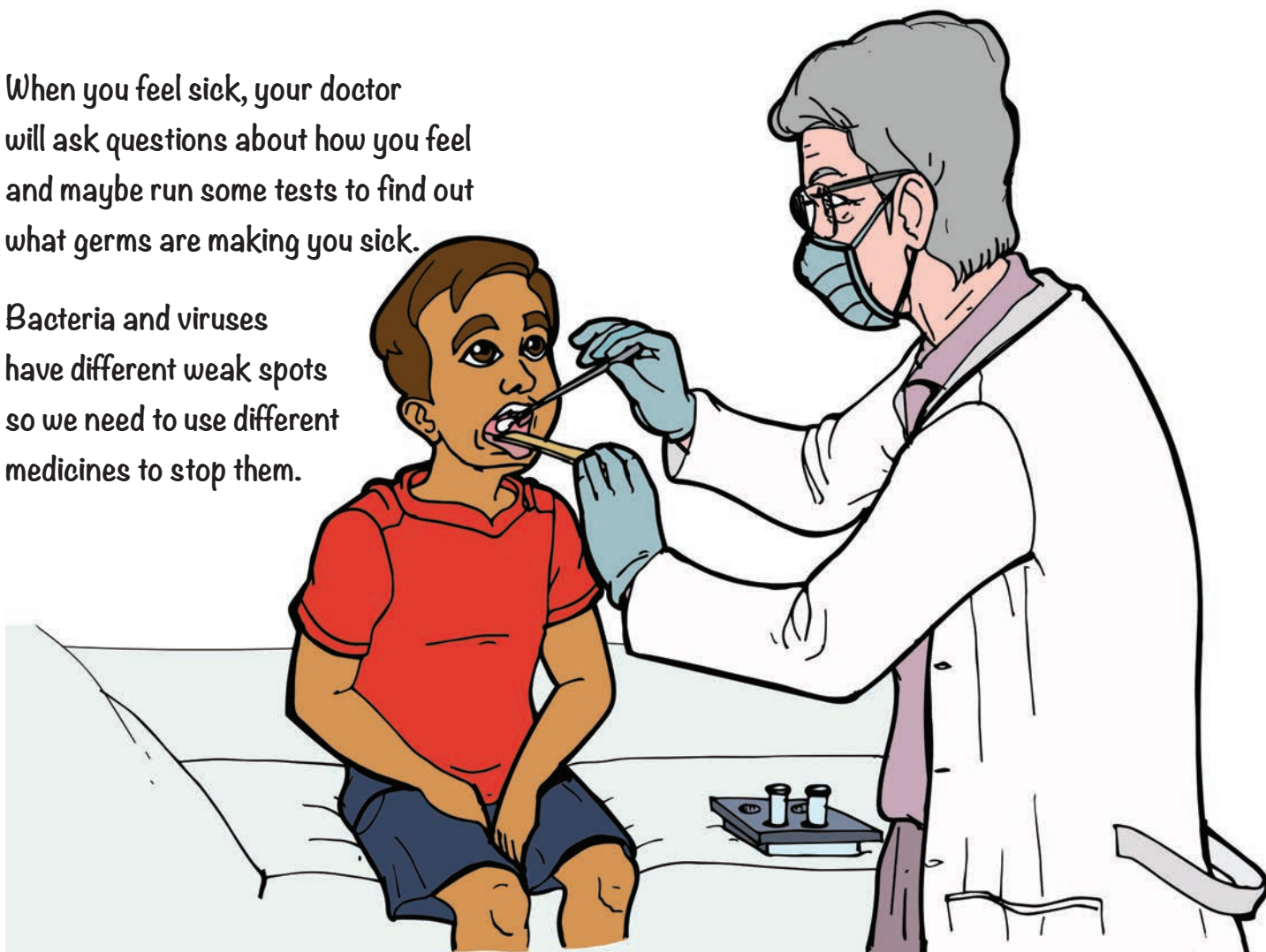


DR. ELENA DIBROV,
Research Associate
St. Boniface Hospital Research

Yes, Juan, your body usually learns to fight off germs on its own, but if it gets overwhelmed, there are different medicines to treat different kinds of infections.

When you feel sick, your doctor will ask questions about how you feel and maybe run some tests to find out what germs are making you sick.

Bacteria and viruses have different weak spots so we need to use different medicines to stop them.



Illustrations: Tadeus Mpwene

Usually people get rid of viruses like a cold on their own, but for a few types of bad viral infections, there are some special antiviral medicines. Antibiotics will not help you fight infections caused by viruses.

Antibiotics are only helpful in killing bacteria, so people should not take them if they are sick from a virus.

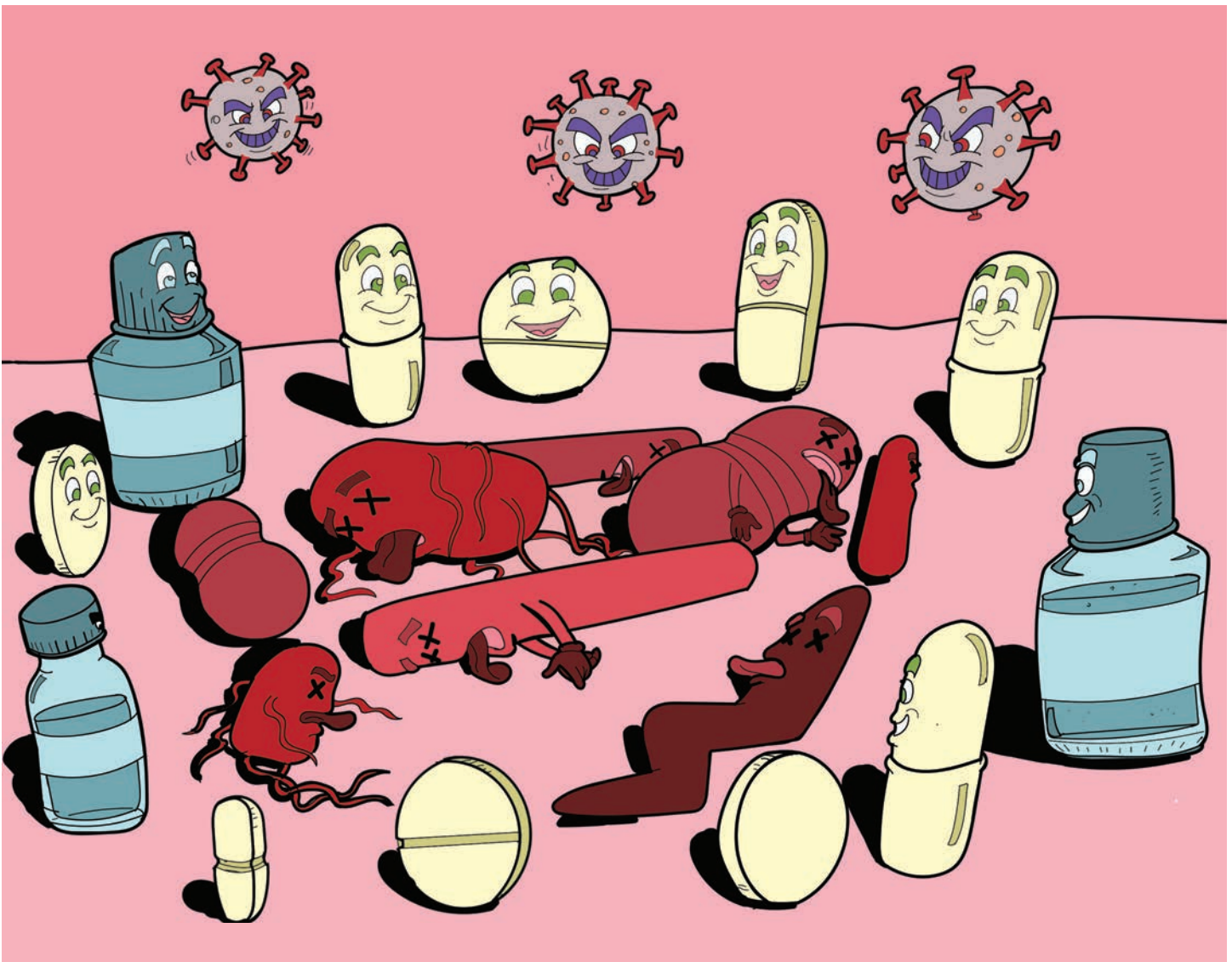


Illustration: Tadeus Mpwene

“So if COVID-19 is a disease caused by a virus, do we have antiviral medicines to fight it?” asks Juan.

Unfortunately, there is no solution yet for COVID-19, because each type of new virus has different features, like the tattoo from the story.*



Scientists around the world are studying this new virus to understand its specific features and maybe find a weak spot. This is why it is so important to prevent infection until we find a treatment or a vaccine.



That's a lot of information about germs. The students decide to take a break and have a snack (after washing their hands, of course!) before continuing their research.

Illustrations: Tadeus Mpwene

Idriss had been wondering something during the break, he thought he'd heard of vaccines before.

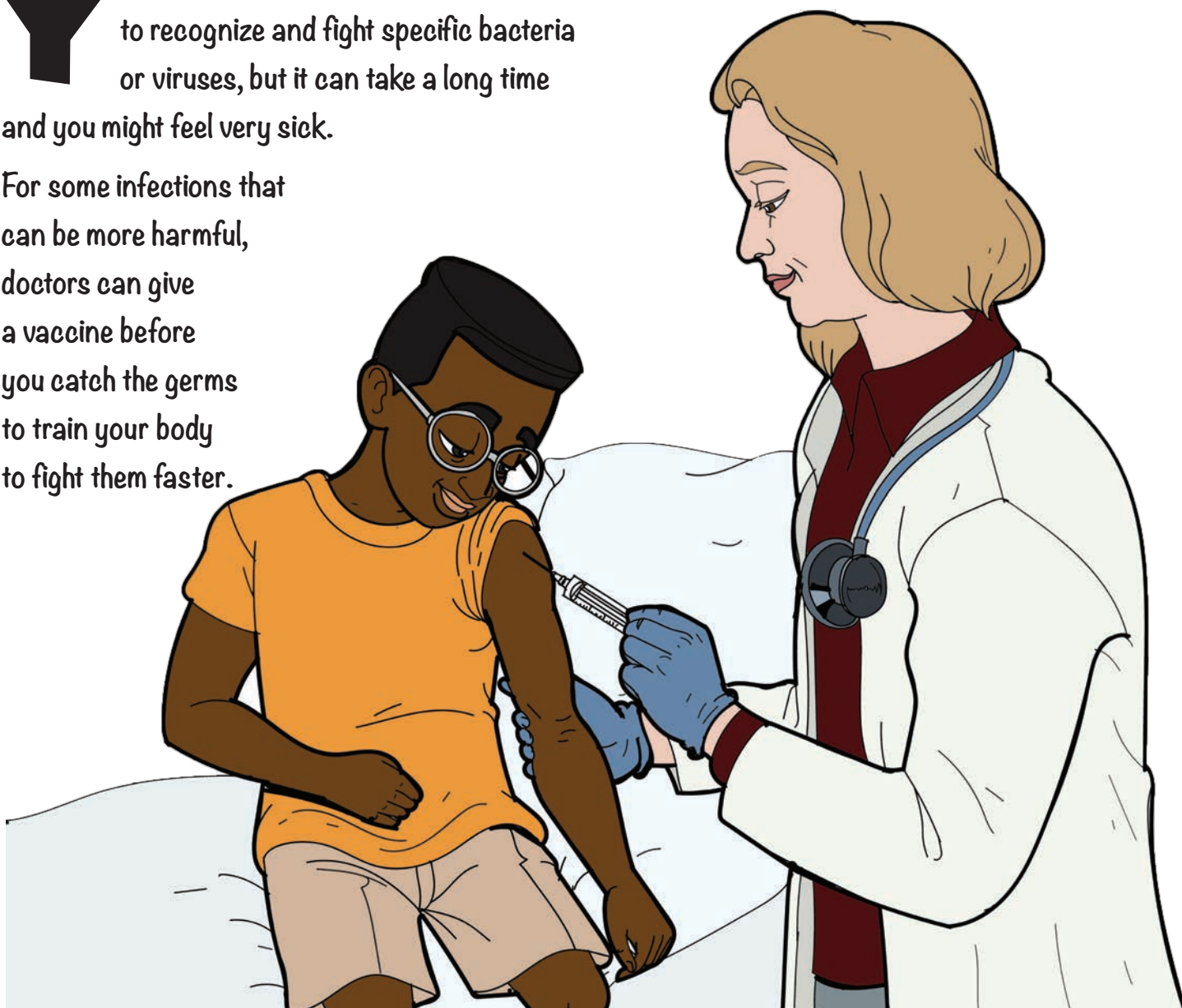
"I had a needle against yellow fever when I went to Africa to visit my grand-parents. Was it a vaccine?"



DR. CHRYSTYNA KALICINSKY,
Dept. Internal Medicine
Rady Faculty of Health Sciences
University of Manitoba

Yes, your body can learn on its own to recognize and fight specific bacteria or viruses, but it can take a long time and you might feel very sick.

For some infections that can be more harmful, doctors can give a vaccine before you catch the germs to train your body to fight them faster.

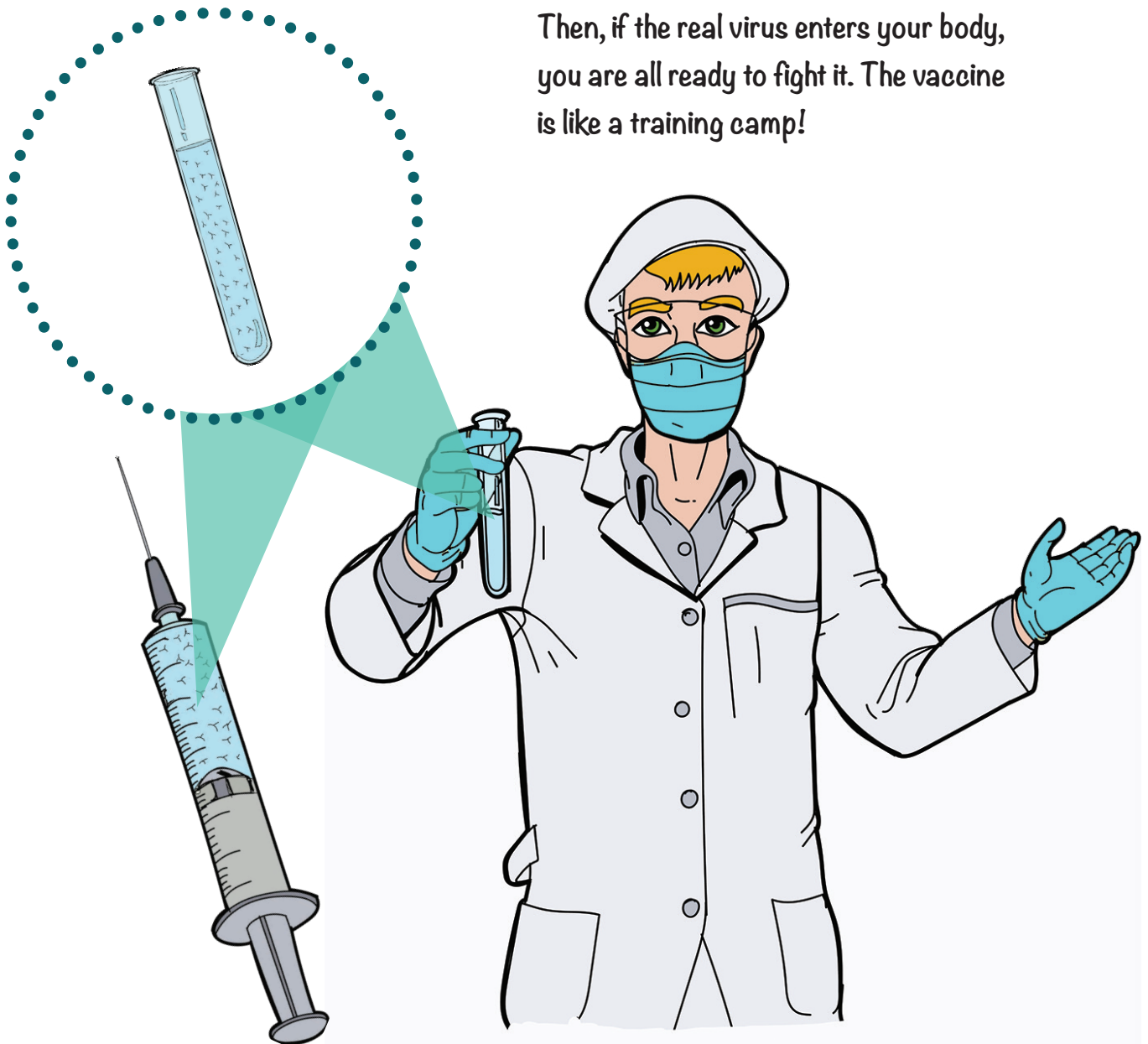


Illustrations: Tadeus Mpwene

Vaccines train your body to fight specific bacteria or viruses. They are made of tiny pieces of bacteria or virus, with unique shapes called antigens on their surface, like the spikes and tattoos of the Coronas in the story.

They are too little to make you sick, but your body still recognizes these antigens as a dangerous new germ and targets them for destruction with special weapons called antibodies. Antibodies stick to the antigens on the new germs and help other defence cells find and kill them faster. Our body will remember that.

Then, if the real virus enters your body, you are all ready to fight it. The vaccine is like a training camp!



Illustrations: Tadjens Mpwene



“But if we know that with a vaccine we won’t catch the virus, why don’t we get it right away?” asks Idriss.

We have all heard or read news stories about how important it is to develop a vaccine that can prevent COVID-19. But for vaccines to move from a thought or idea to a medicine that we can use, it takes a lot of time. There are several steps to make a vaccine and it can normally take up to 15 years. In emergency situations, like the COVID-19 pandemic, researchers around the world work together to try to speed this up, but they still have to make sure the vaccine works and that it is safe to use.

NUMBER OF VACCINE
IDEAS: 10,000



DISCOVERY AND EXPLORATION

2 TO 5 YEARS

This is the time when researchers discover the piece of an infectious germ with special shapes (antigens), like the tattoos in the story.

They start making a vaccine to try out in experiments.



LAB TESTING

1 TO 2 YEARS

Using experiments, researchers test the new vaccine in their labs. If researchers see that the new vaccine works in the lab and is safe, then they can plan to test it in humans.



HUMAN TESTING PHASE 1

1 TO 2 YEARS

Researchers test the new vaccine in a small group of healthy people to make sure it is safe to use (20-100 volunteers).

Researchers study how the immune system responds. If the vaccine helps people make antibodies and it is safe, they can move on to the next phase of tests.

HUMAN TESTING PHASE 3

3 YEARS

Researchers test the new vaccine in very large groups (1000s of volunteers) to make sure there are no bad side effects that they might miss in small group testing.

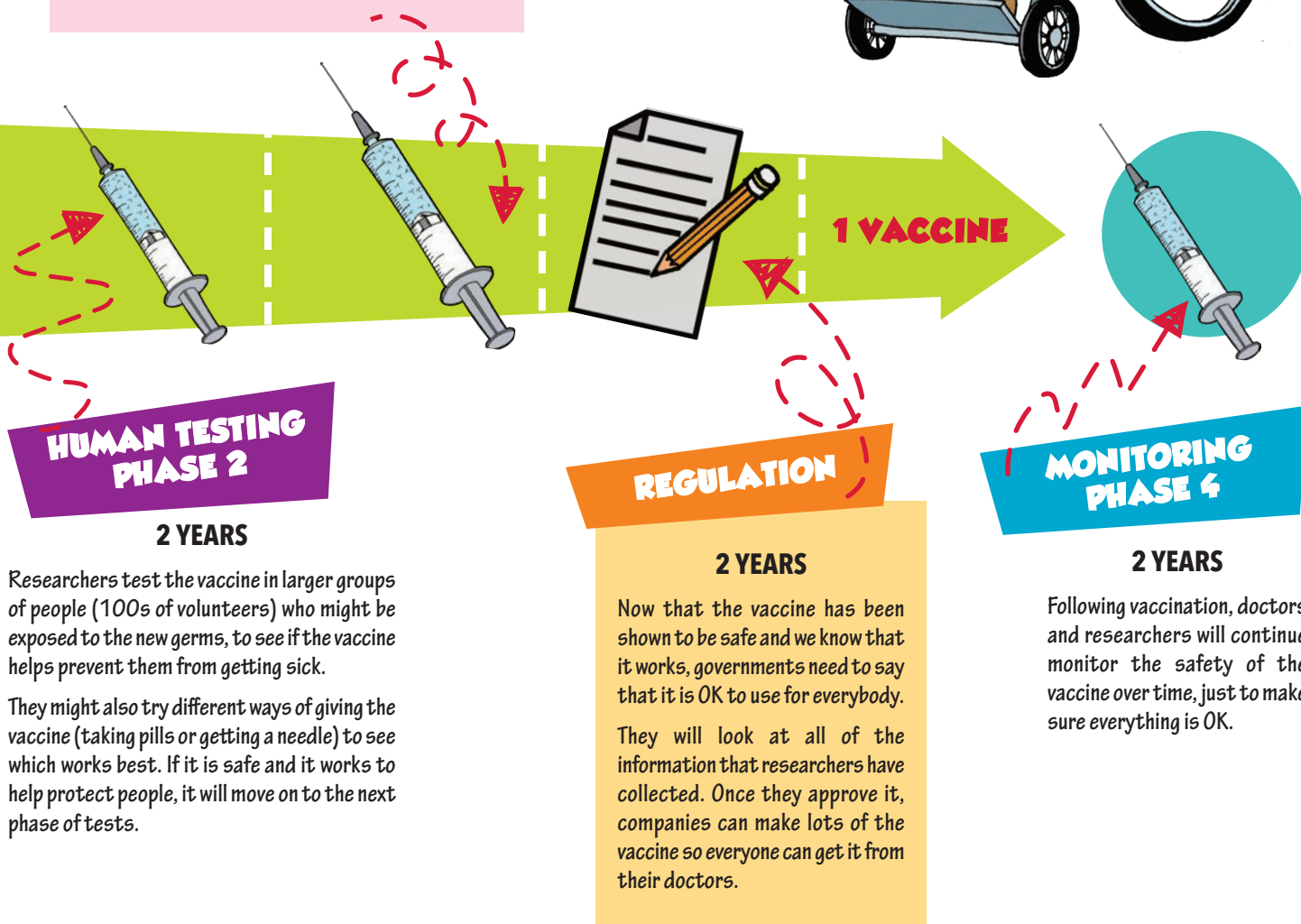
This phase brings in a wider variety of volunteers who may come in contact with the new germs in their daily life.

If it helps lower the number of people who get sick and side effects are low, the vaccine is almost ready to be approved for use in health care.

I just can't wait for scientists to find a vaccine against this virus!



Illustrations: Tadeus Mpwene



DEFEAT OF THE CORONAS



It took some time, but the king now had thousands of well-trained soldiers. Some of them even made special anti-Coronas weapons shaped like a “Y”. The army was now able to spot the Coronas by their tattoos and kill them. They fought tirelessly for days on end. The Coronas caused some damage to the castle but eventually, the army destroyed them all.

The king congratulated the entire village for their hard work. The castle was being repaired and everyone was ready to celebrate.



The villagers could enjoy life again, they were singing, dancing, the fear had disappeared, life was returning to normal.

But the King made sure his army would always remember the Coronas in case of a future attack.

THE END

HOORAY !

They beat them... good riddance!
I hope they never come back!



Illustrations: Tadjens Mpwene



A

ll the scientific explanations have aroused the students' curiosity.

They have many more questions and are also eager to go back to the way things were and play together without worrying.

“Mom tells me I should wash my hands thoroughly every hour and not put them in my mouth... It seems very important” says Juan.



MARTINE BOUCHARD,
President and Chief Executive Officer
St. Boniface Hospital

**1, 2, 3 ...
18, 19, 20!**



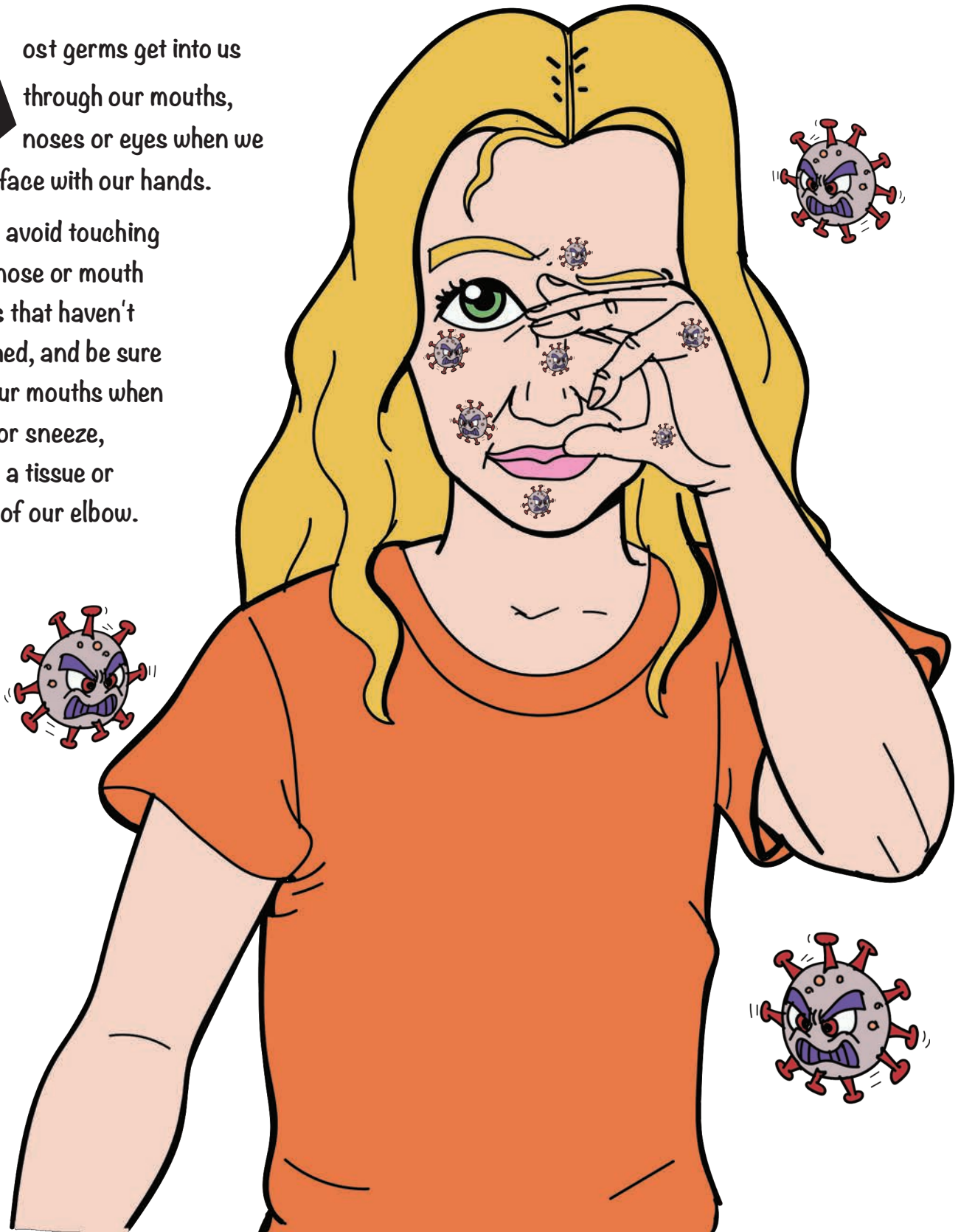
There are many things we can do to keep ourselves and others safe from germs. Especially when new viruses show up, it is very important to do these things so there are not too many people that get sick at the same time.

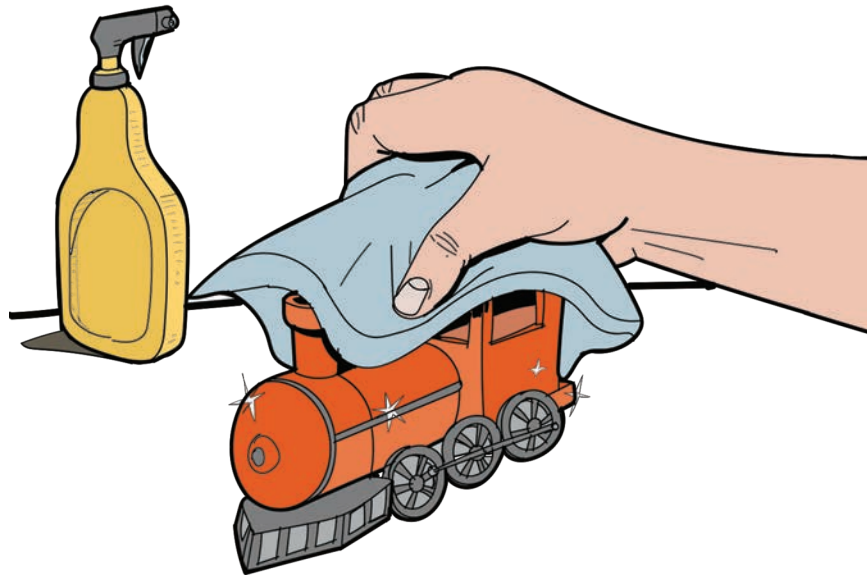
Hand washing is the best thing we can do!
Wash with soap and water for at least 20 seconds.

Illustrations: Tadeus Mpwene

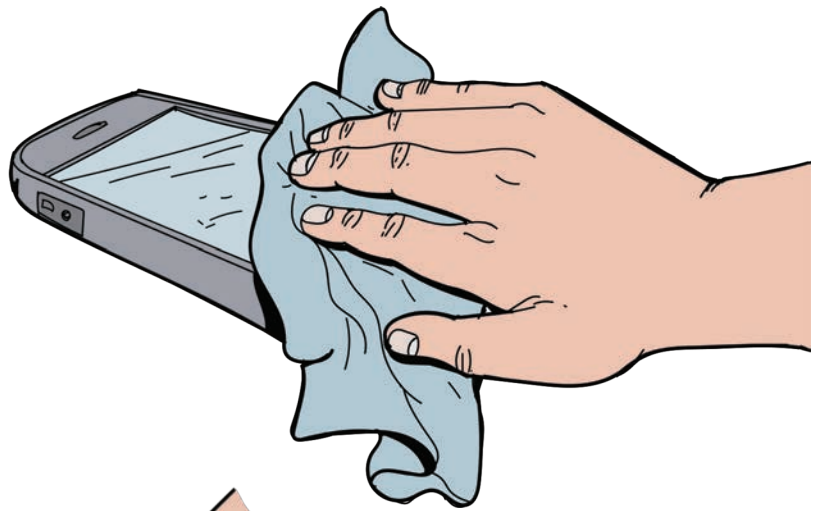
Most germs get into us through our mouths, noses or eyes when we touch our face with our hands.

We should avoid touching our eyes, nose or mouth with hands that haven't been washed, and be sure to cover our mouths when we cough or sneeze, either with a tissue or in the fold of our elbow.





Coronaviruses are actually easy to kill with soaps when they are on our body, and with disinfectant cleaners when they are on other surfaces. If we make sure to clean the surfaces and things that we touch all the time, we can keep ourselves safer and our hands cleaner.



We have to try to slow this new virus down so we have more time to understand it better and learn how to fight it. We want to avoid having too many people sick, and hospitalized at the same time.

To prevent our germs from spreading to other people, we must:

- stay at home as much as possible, and avoid gatherings
- keep 2 meters away from others
- wear a mask when we feel sick or cannot respect the social distance.

Then our scientists and hospital workers will have enough time to find the best treatments.



Illustration: Tadeus Mpwene



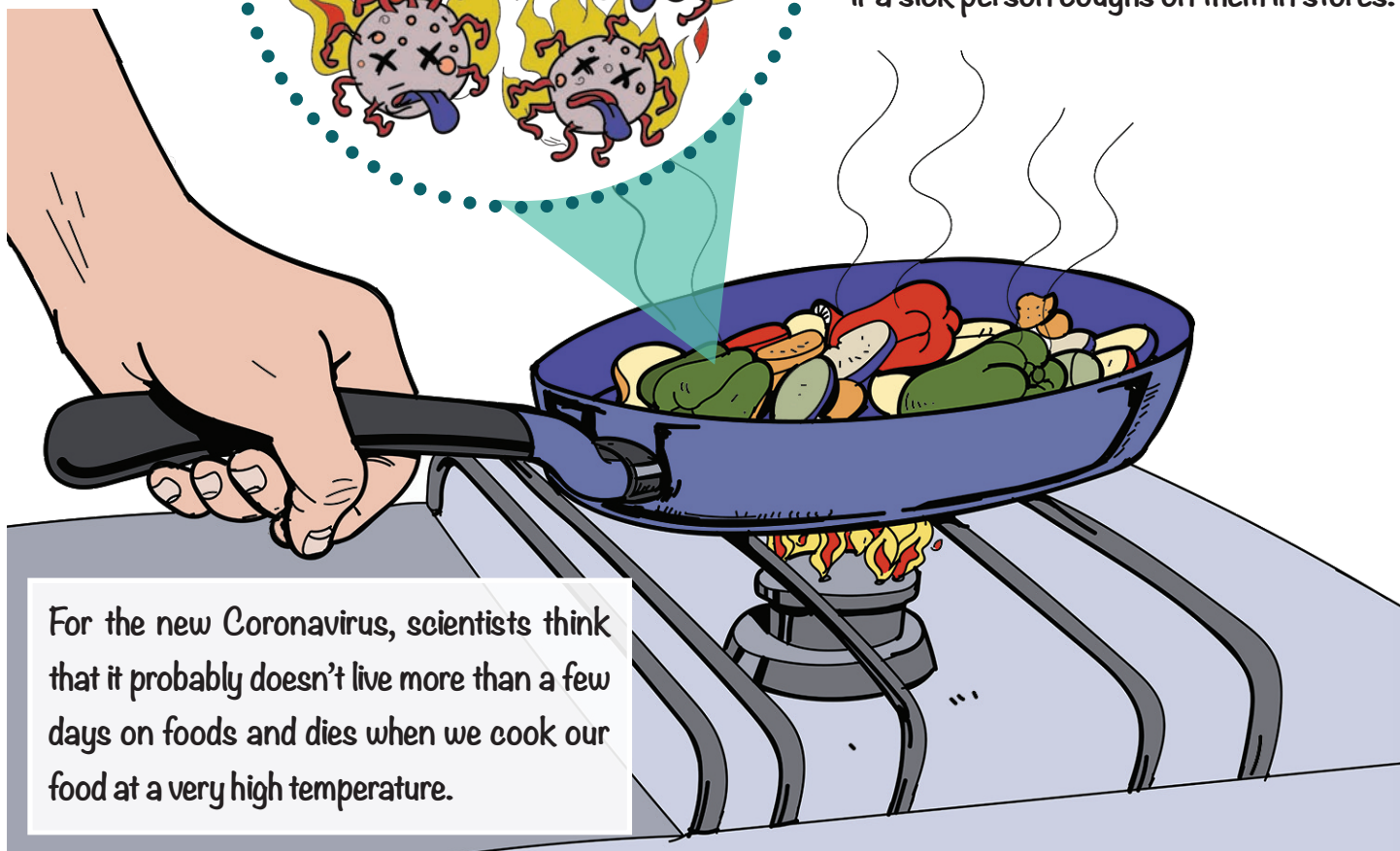
If these germs seem to be everywhere, are they even on foods from the store?



PROF. KARMIN O,
Dept. Animal Science
Faculty of Agricultural and Food Sciences
Dept. Physiology & Pathophysiology
Faculty of Health Sciences
University of Manitoba



Yes Sam, veggies and fruits from grocery stores can carry germs from coming in contact with other things that might have germs, like if a sick person coughs on them in stores.



For the new Coronavirus, scientists think that it probably doesn't live more than a few days on foods and dies when we cook our food at a very high temperature.

Illustrations: Tadeus Mpwene



My cat had a big cold last winter, it was sneezing a lot. Was it a virus? Could I catch a virus from my cat?



DR. CARISSA EMBURY-HYATT,
Head of Pathology
Canadian Science Centre
for Human and Animal Health,
National Centre for Foreign Animal Disease,
Canadian Food Inspection Agency,
Government of Canada

Li-Na, your cat's cold was probably caused by a virus or a bacteria.

A veterinarian can examine pets and do tests like a doctor would.

Most cat colds are caused by viruses that only make cats sick.

A few viruses can make both cats and people sick, so if your cat is sick it is a good idea not to hold it, or wash your hands if you do.



Illustrations: Tadeus Mpwene

Emma is worried. Her birthday is coming soon. She is wondering why she cannot invite all of her friends over.

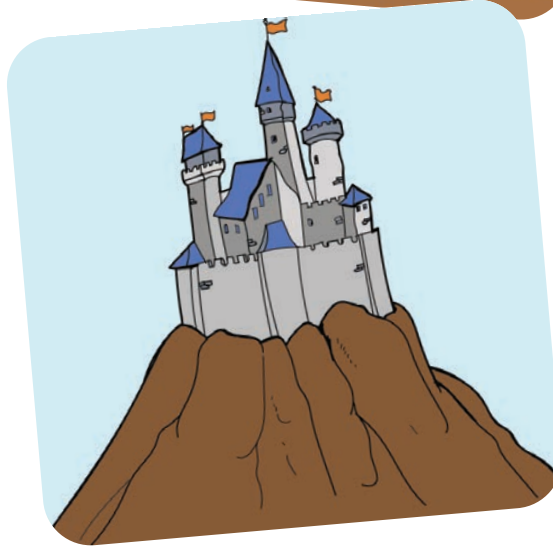
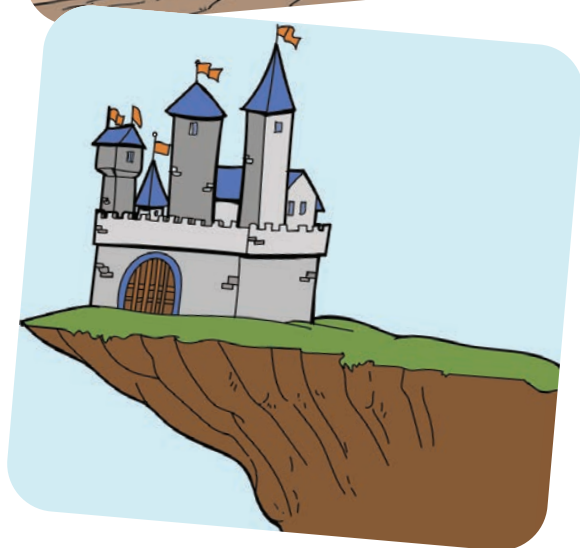


PROF. JASON KINDRACHUCK,
Dept. Medical Microbiology
and Infectious Diseases
Rady Faculty of Health Sciences
University of Manitoba

Pandemics - when germs spread quickly all over the world - can happen for short or long periods of time. But we can slow its spread, for example by staying home.

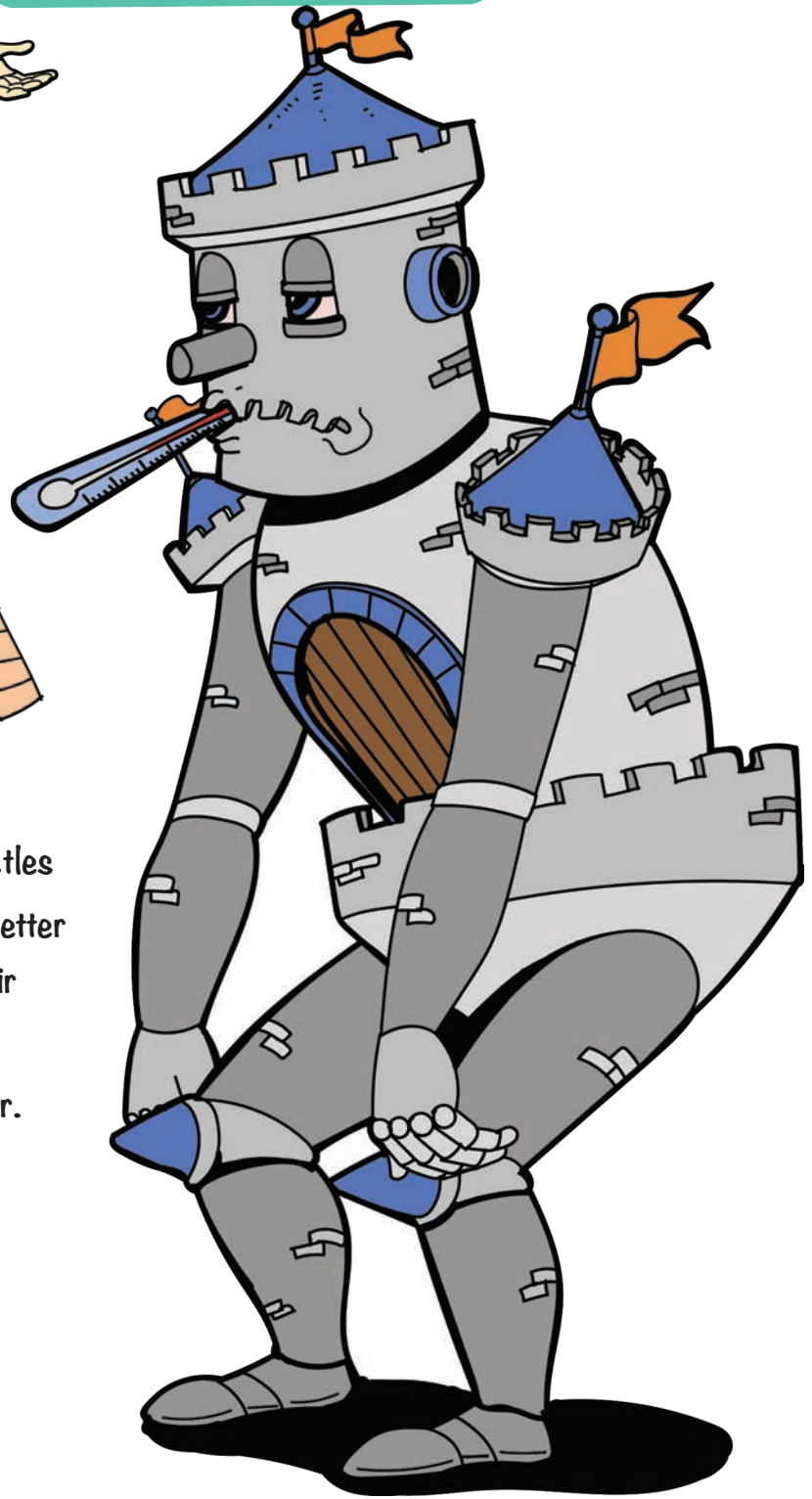
For example, castles that are very hard to find or to get into are less likely to come under attack.

So, Emma, keeping your social distances as well as limiting the number of people in a room will allow you to be better protected.





So if we do get sick, how long does it last?



We know that among all the castles under attack, some will fight better than others or be able to repair themselves more easily after the battle.

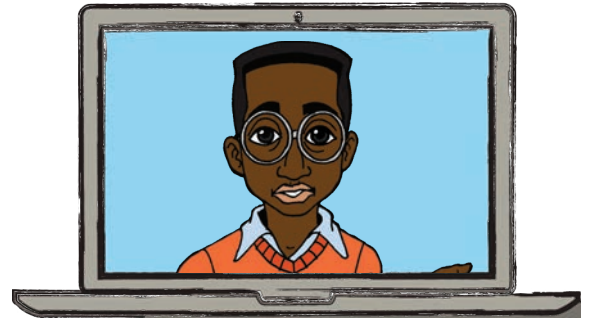
As castles get older, it might be much harder.

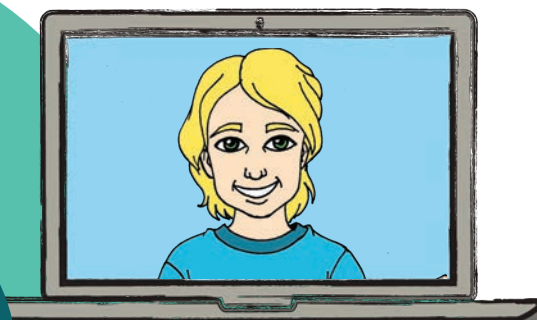
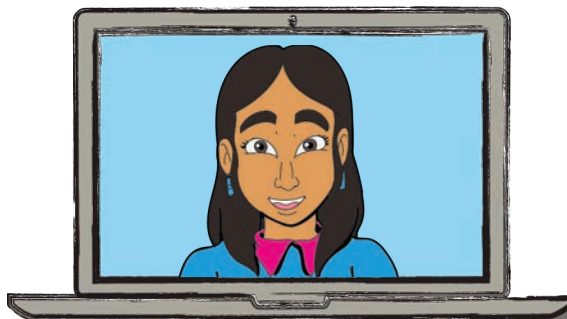
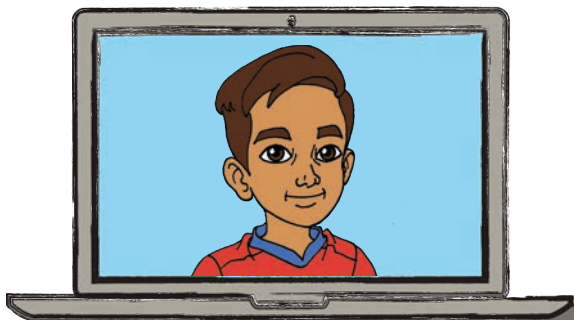
The truth, Emma, is that it could take them weeks to overcome their invaders, depending on how bad the disease is.

Now that the children are a bit more familiar with their enemy, they are ready to introduce it to the whole class.

They hope that, just like in the story, researchers around the world will join forces and quickly find a cure to rid the planet of this terrible virus.

“Well done, children!” says Ms. Laura.
“Now you have the knowledge you need to better defend yourself against viruses.”





TIPS

FOR THE WELL-BEING OF OUR KIDS

1

Encourage your children to talk openly with you about the coronavirus:

- This will help normalize any feelings and/or questions your child has about COVID.
- Sharing fact-based, age-appropriate information can help correct misinformation children may have received from peers or other sources that may be fuelling anxiety.
- Encourage your children to come to you with any questions they have so they can get accurate information (e.g. Why are people wearing masks? Why can't I go grocery shopping with you anymore? Why can't I see my friends anymore?)

2

Remain calm and reassuring:

Children will look to parents and caregivers to determine how they should react.



Focus on details that are relevant to children:

- Share information about the things that you and your children can control—such as hygiene practices they can do to keep themselves healthy (e.g. wash hands, cough into elbow).
- Unless they ask, don't volunteer information that might be worrisome.



Help your child focus on things that they can do that will create a positive environment for your family and community:

- Planning family activities (e.g. fort making, baking, slumber parties).
- Taking time to stay connected to friends and family from afar.
- Help foster generosity and kindness by involving children in opportunities to help those in the community who are most vulnerable & lonely (e.g. baking treats or making meals for older family members, sending a homemade card to patients and/or health care workers in the hospital).

**It takes an entire community
to support our children during
this time of uncertainty.**



If I could do anything... I would want to help my children better cope in this time of unparalleled uncertainty.

I'd want to help them understand viruses that threaten our health, like COVID-19. I'd like tools to help me ease their fears and anxieties as they wonder why they can't play with their friends, hug their grandparents or participate in their activities.

As a father, I have also been fearful myself in not knowing the answers to the many questions my kids have asked since the pandemic began, often having to search websites or ask local healthcare providers for information that is accurate and current.

This is why Children's Hospital Foundation of Manitoba is proud to support the initiative of **La Liberté** Newspaper and POP Comm' to create this terrific illustrated resource for kids (and parents!) to better understand viruses.

This home-grown effort is a tribute to leadership and expertise, right here in Manitoba.

Positive change in our community often starts with the actions of one or two innovators. Sophie Gaulin and Lysiane Romain have joined forces with our own local health scientist and Children's Hospital Research Institute of Manitoba (CHRIM) investigator, Associate Professor Jean-Eric Ghia, as well as Stephen Jones and Meghan Kynoch, from The Youth BIOLab at St. Boniface Hospital Research.

Their goal: to help ease children's stress and anxiety by explaining viruses like COVID-19 in an engaging and accessible way.

This magazine clearly shows how their work is driven by passion and expertise!

We invite you to support these efforts and those of our local caregivers and scientists while they #continuecaringforkids during the fight against COVID-19.

Visit goodbear.ca/covid19 to help.



Let's make anything possible.

Stefano Grande
President and CEO
Children's Hospital Foundation
of Manitoba



**The
Children's
Hospital
Foundation
of Manitoba**