

VACCINE VICTORY

WE ENGAGE 4 HEALTH IS FUNDED BY A GRANT FROM THE NATIONAL
INSTITUTES OF HEALTH SCIENCE EDUCATION PARTNERSHIP AWARDS.

OUR CAST OF CHARACTERS





Hey Big Sam,
Hi Vito!

Hey!

Hey!

An illustration featuring two stylized characters against a light blue background. On the left, a person with light blue skin and a white face mask wears a purple sweater over a tan collared shirt. On the right, a person with teal skin and a green face mask wears a grey t-shirt with 'XX' printed on it, a yellow cap, and has orange hair. Between them is a round wooden table with three brown paper food bags. Two small wooden stools are at the bottom. A large white speech bubble from the person on the left contains the text:

I'm so glad the community center is hosting this picnic with bagged lunches. Since COVID-19 started, I've missed seeing everyone.

 A smaller purple speech bubble from the person on the right contains the text:

Me too.

Me too.



I wish everything
would go back to
normal.


Me too, Vito.
That's why I'm doing
everything I can to stop
the spread of COVID-19,
like wearing this
mask.

Right... to
protect yourself ... AND
other people in case you
have the virus and
don't know it!

You got it! Anyway,
let's eat!



COMMUNITY MEMBERS SIT AT PICNIC TABLES THAT ARE SPREAD OUT



This is definitely
more than six feet
apart. Can you hear me
over there?

Yes,
haha.

I guess we
can take our
masks off now!



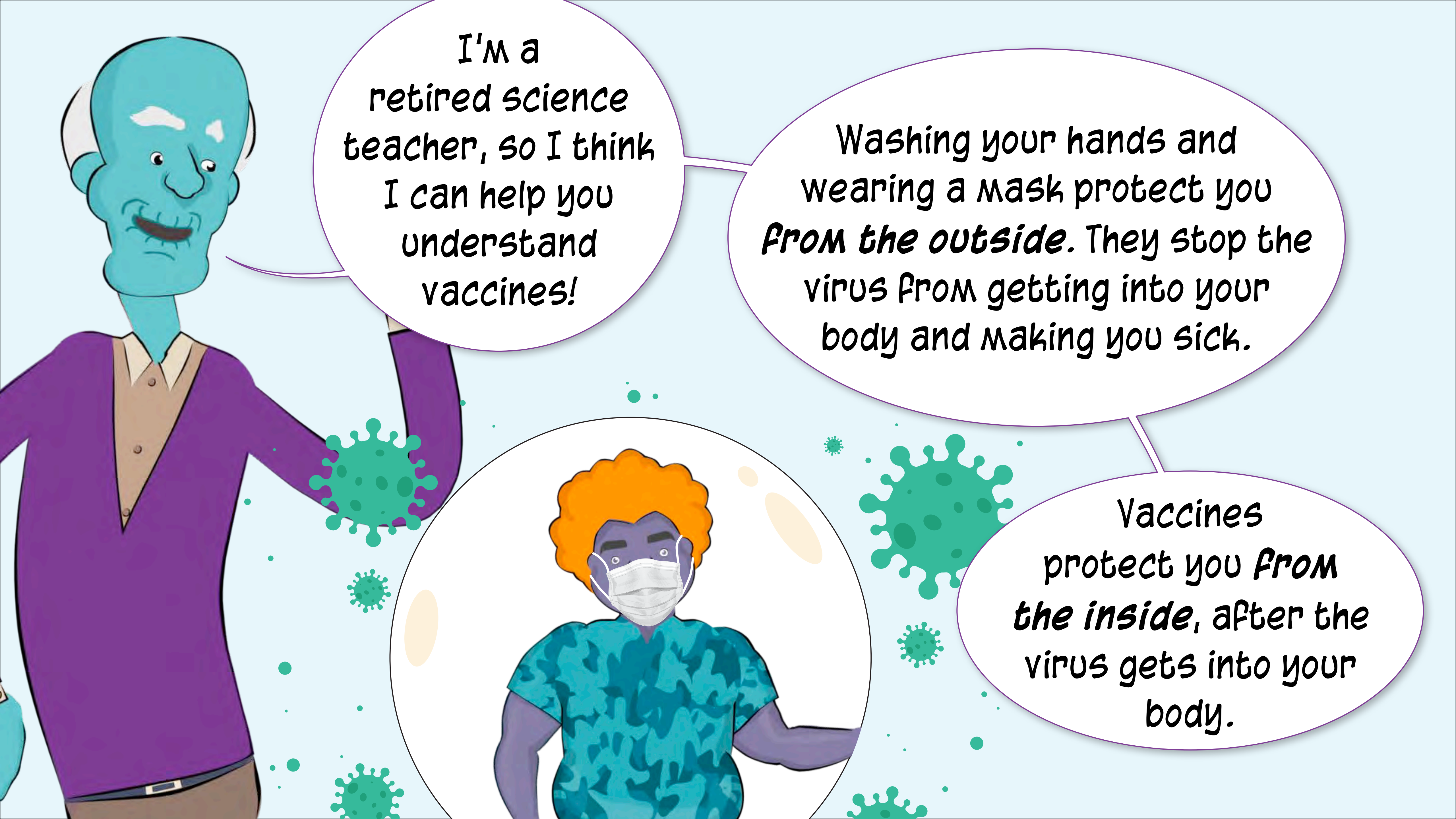
Speaking of
things getting back
to normal...

I heard on the news
that scientists
everywhere are working on
a vaccine to protect
people from getting
COVID-19.

That's great
and all, but I'm not
really sure how
vaccines work.



Yeah, I've taken
vaccines for school, but
I'm not sure why I
needed them.



I'm a retired science teacher, so I think I can help you understand vaccines!

Washing your hands and wearing a mask protect you *from the outside*. They stop the virus from getting into your body and making you sick.

Vaccines protect you *from the inside*, after the virus gets into your body.




How do vaccines protect you? What's in them?

Most vaccines use a dead or weakened version of the virus or bacteria that causes the disease. It is put into your body with an injection... a shot.

WEAK VIRUS

I don't know, Pops, it doesn't seem smart to put a virus into your body as a way to not get that virus.



Actually, dead or weakened viruses and bacteria can't hurt you, but your body doesn't know that! So, your **immune system** starts fighting them to protect you. This process trains your immune system.

WE BETTER
LEARN TO FIGHT
YOU!

WE'RE READY!

WEAK VIRUS

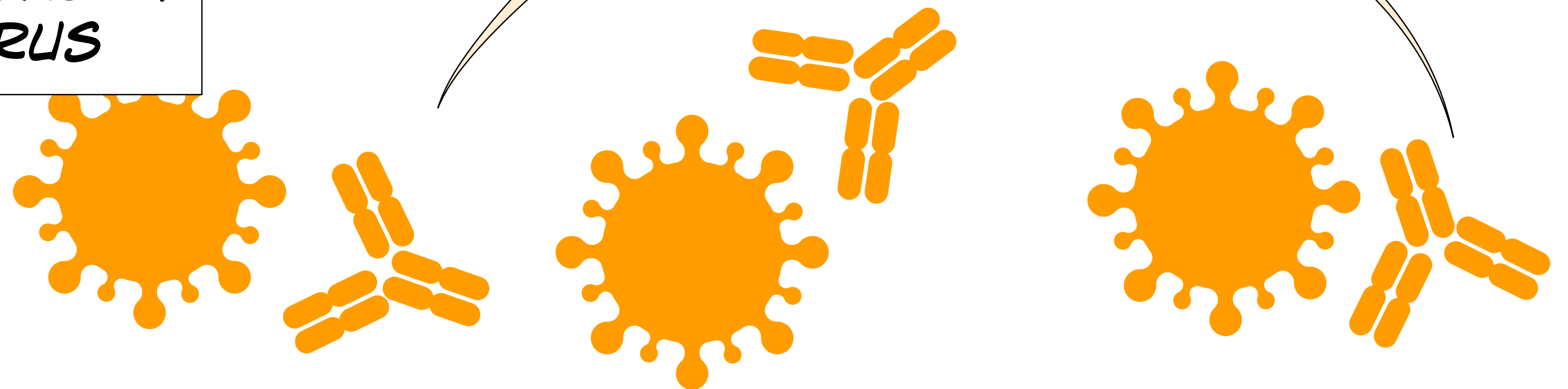
THE IMMUNE
SYSTEM IS THE
BODY'S
DEFENSE
AGAINST
INFECTION,
DISEASE, AND
OTHER THINGS
THAT ATTACK
THE BODY.



When the same kind of virus or bacteria enters your body at another time, your immune system recognizes it and responds quickly!

WE ALREADY
KNOW YOU!

FULL
STRENGTH
VIRUS





I'm
Doctor
Cook!

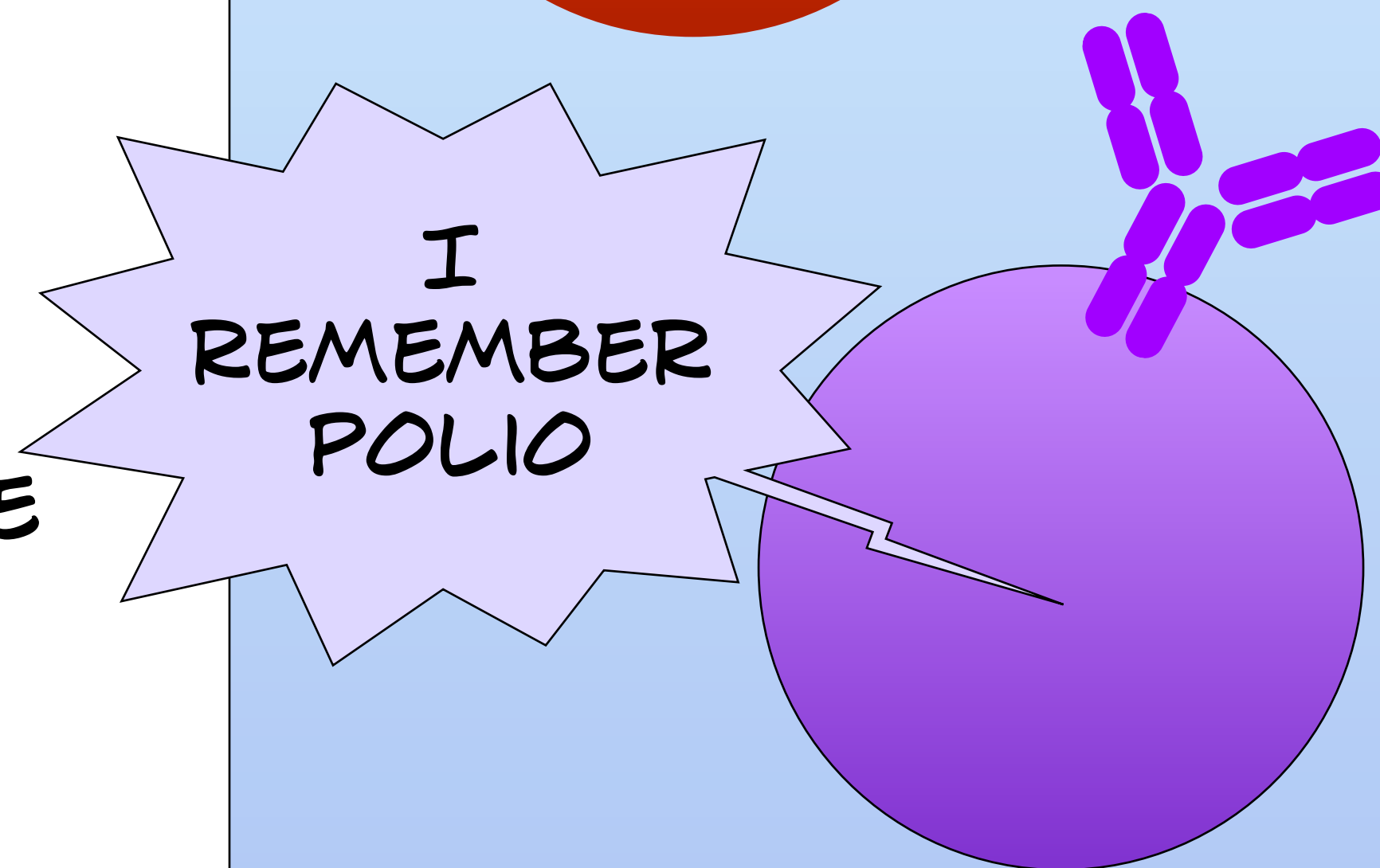
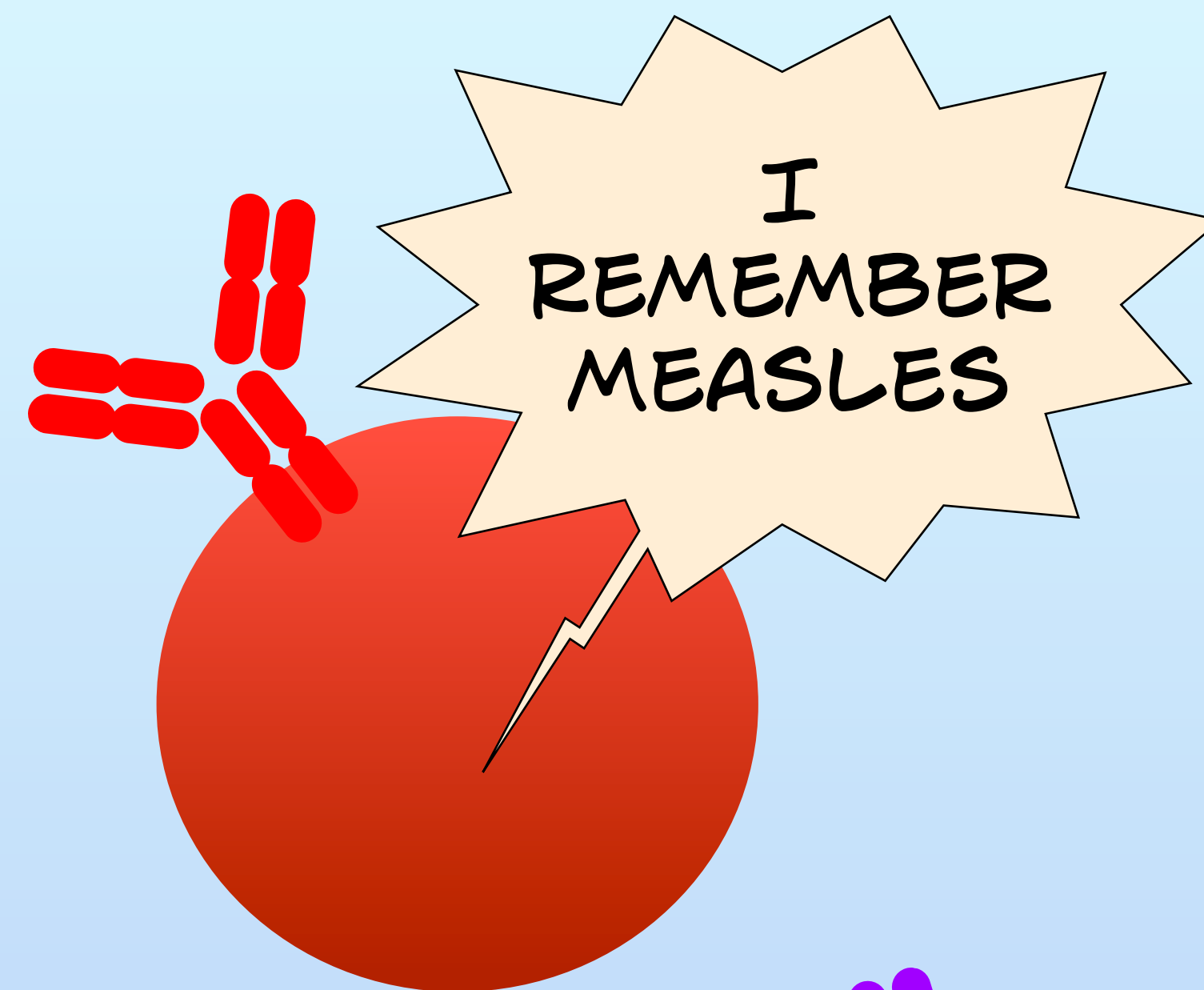
Here's
an expert
tip!

OUR FIRST
LINE OF
DEFENSE IS
INNATE
IMMUNITY.
ADAPTIVE
IMMUNITY
BOOSTS ITS
EFFECTS.

DR. COOK'S EXPERT TIP

SPECIAL CELLS CALLED **MEMORY B CELLS** REMEMBER SPECIFIC VIRUSES AND BACTERIA THAT YOUR IMMUNE SYSTEM HAS SEEN BEFORE — WHETHER FROM A VACCINE OR ENVIRONMENTAL EXPOSURE.

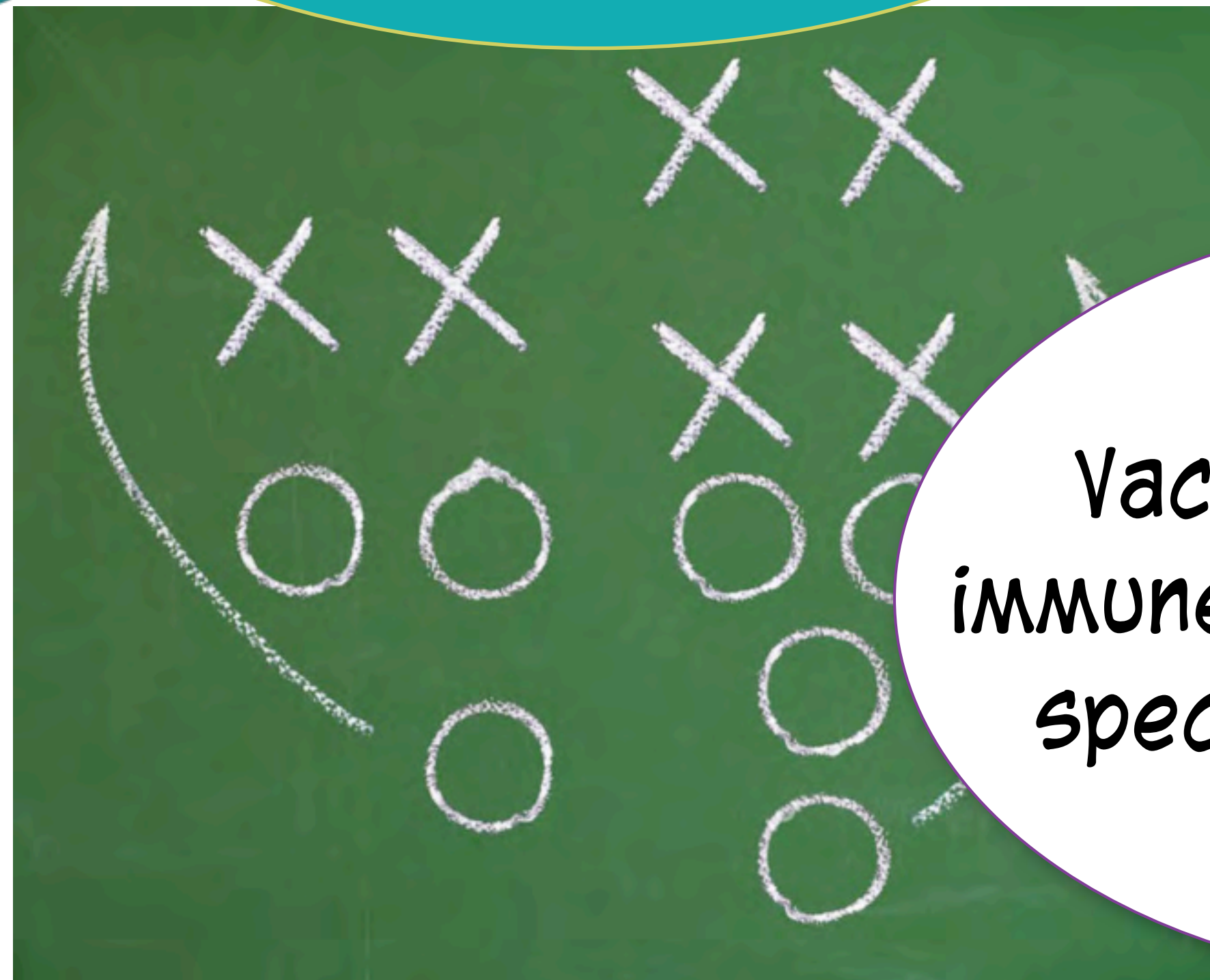
BECAUSE OF MEMORY B CELLS, YOUR IMMUNE SYSTEM CAN RESPOND FASTER TO DEFEAT THE VIRUS, SO YOU MIGHT NOT EVEN FEEL SICK. THIS PROCESS IS CALLED **ADAPTIVE IMMUNITY**.



MEMORY B CELLS



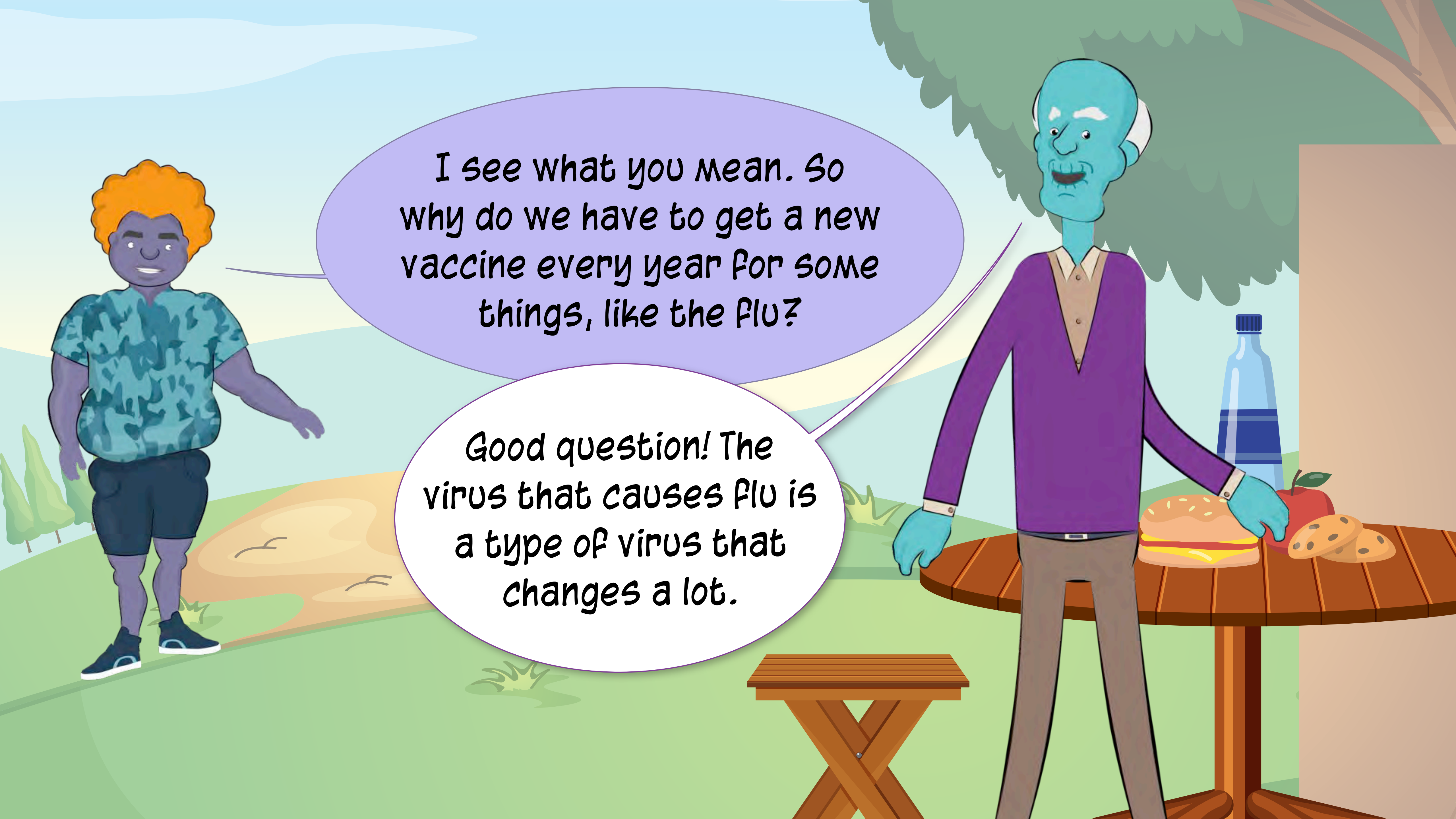
That's cool! It's like how we run different plays at football practice. We're training so when we have a game, we all know what to do to win.



If we know how another team usually attacks, we can even practice special plays just to defeat that team!



That's right!
Vaccines train your immune system to defeat specific bacteria and viruses!



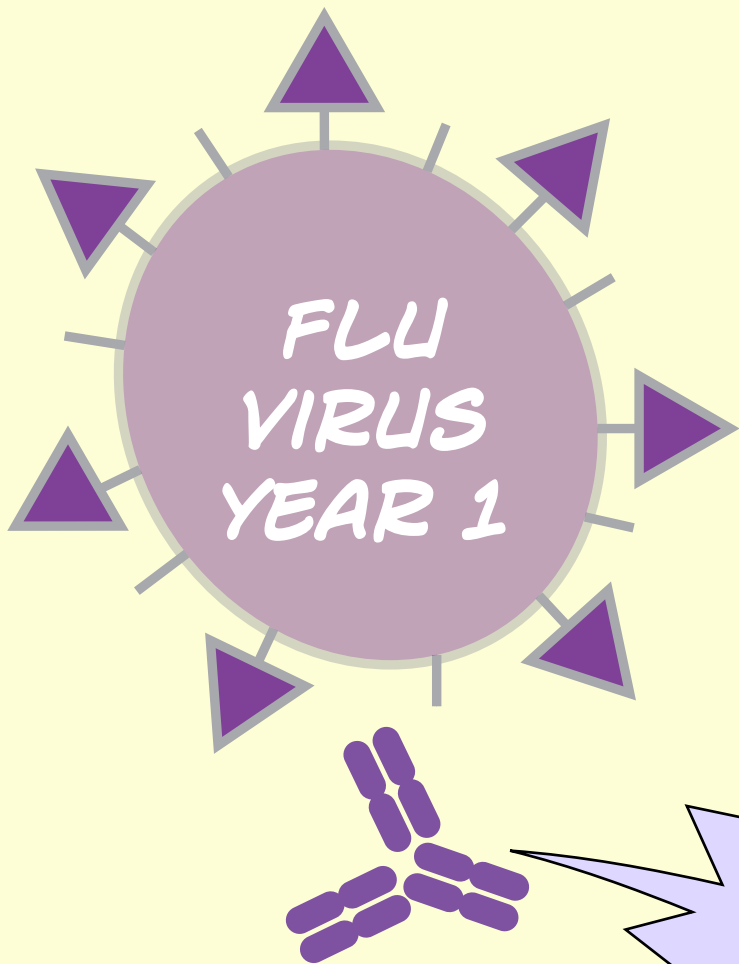
I see what you mean. So why do we have to get a new vaccine every year for some things, like the flu?

Good question! The virus that causes flu is a type of virus that changes a lot.



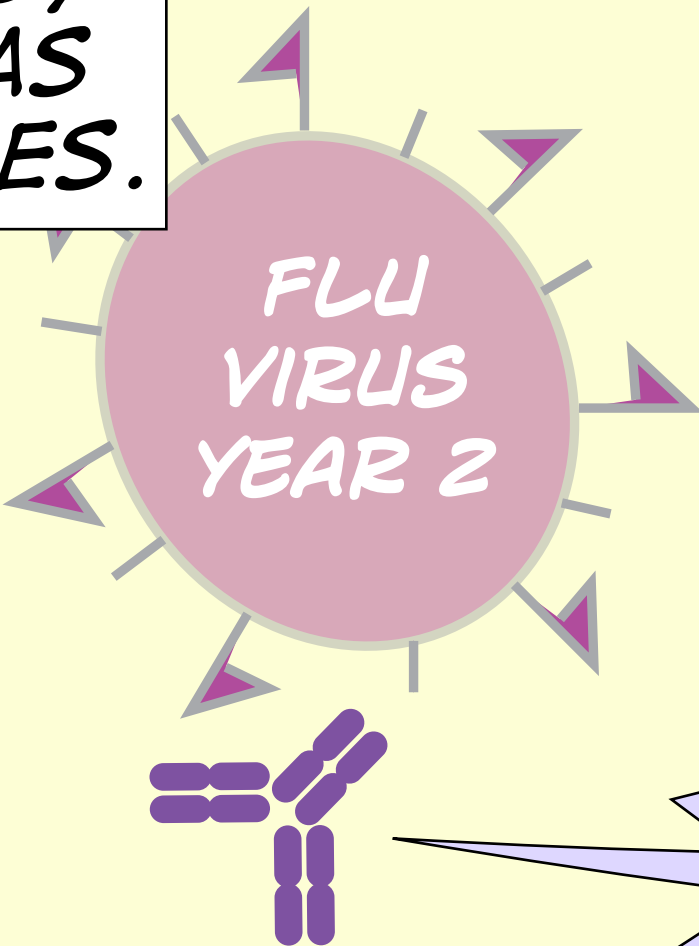
The Flu vaccine you get this year targets the current form of the Flu virus. By next year, the Flu virus will be different.

Next year, your immune system might not recognize the new version of Flu virus that shows up.



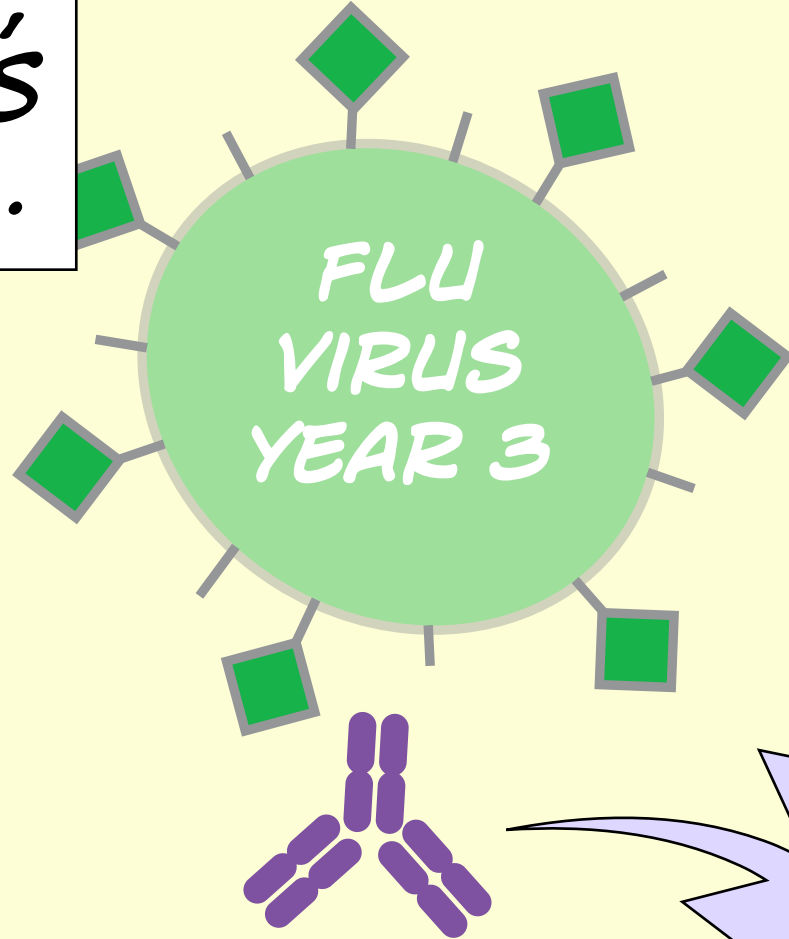
I KNOW YOU!

SOME YEARS, FLU VIRUS HAS SMALL CHANGES.



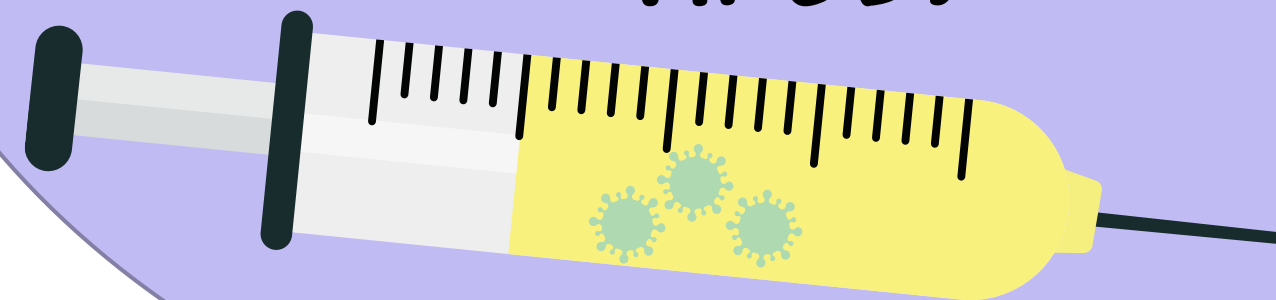
YOU SEEM A BIT FAMILIAR!

SOME YEARS, FLU VIRUS HAS BIG CHANGES.



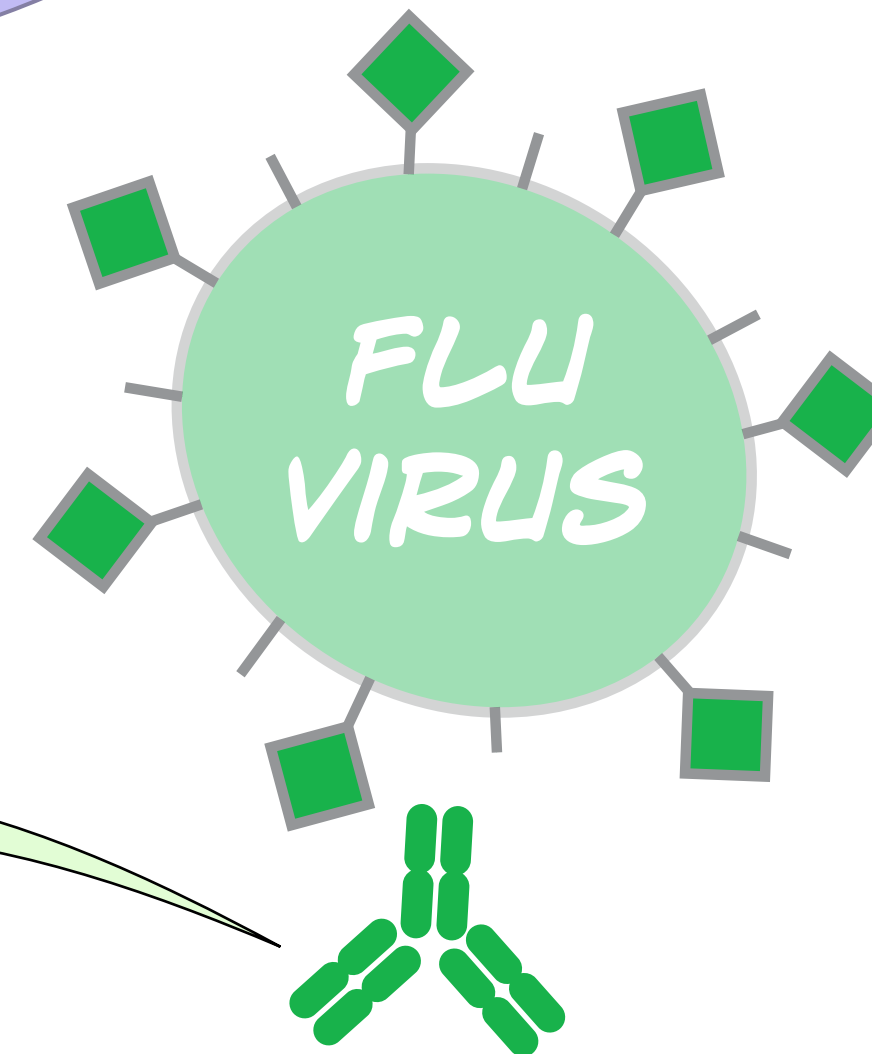
I DON'T KNOW YOU AT ALL!

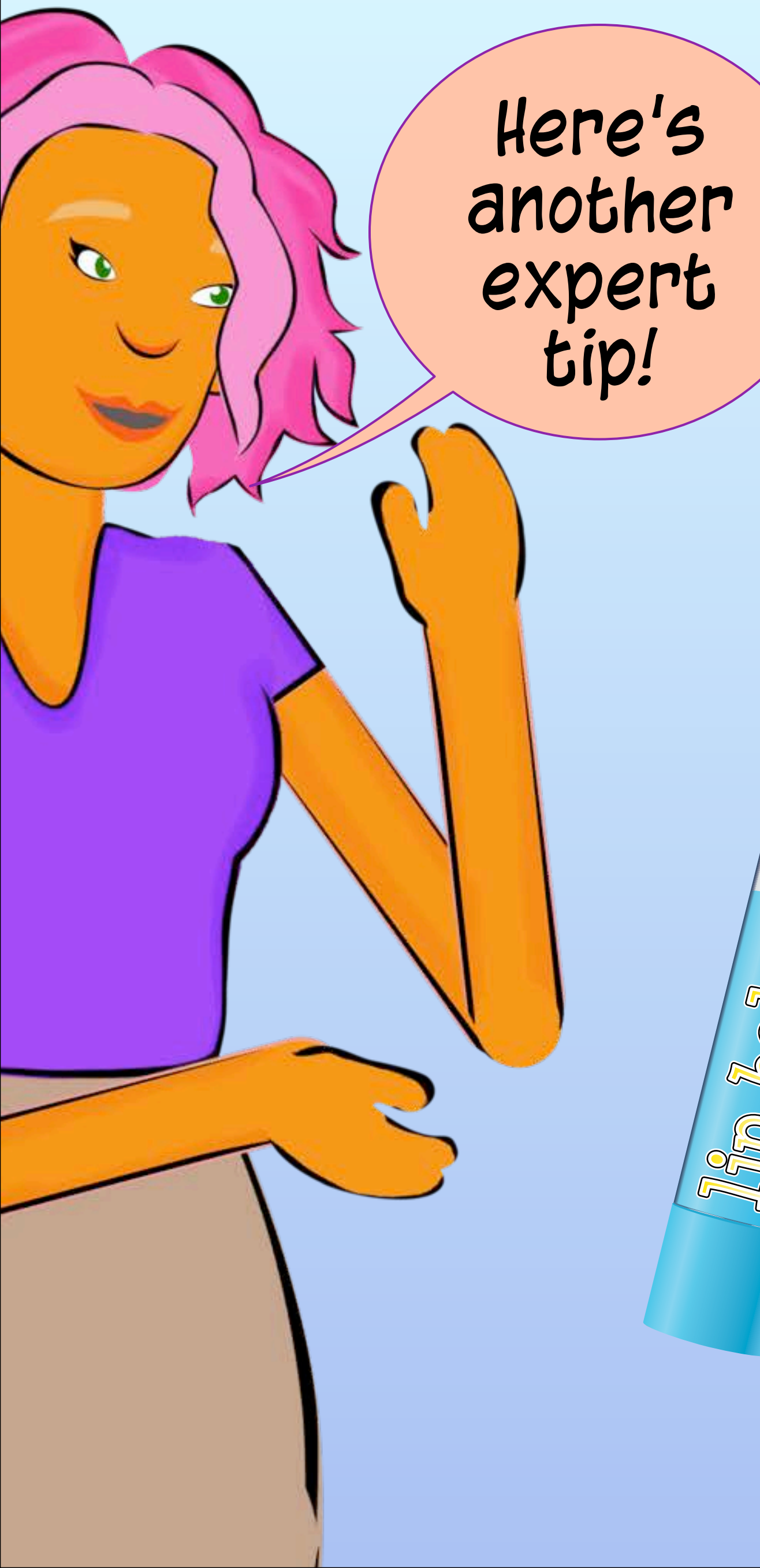
I see, so you
need to get a new flu
vaccine every year to train
your immune system to fight
the new version of the flu
virus.



That's
right!

NOW I
KNOW YOU!





Here's
another
expert
tip!

DR. COOK'S EXPERT TIP

VACCINES HAVE A TINY AMOUNT
OF OTHER STUFF IN THEM TOO.

VACCINES HAVE PRESERVATIVES
LIKE "PHENOL" FOR THE SAME
REASON PRESERVATIVES ARE
PUT IN FOOD: TO KEEP THEM
FRESH LONGER!



Active Ingredients

Octinoxate	
7.50%Sunscreen
Oxybenzone	
4.00%Sunscreen
White Petrolatum	
35.00%Lip Protectant

Inactive Ingredients

lanolin, theobroma cacao seed butter, euphorbia cerifera wax,
beeswax, cetyl esters, ozokerite, paraffin, limnanthes alba
seed oil, camphor, menthol, salicylic acid, **phenol**, flavor,
vanillin

THE CHEMICAL NAMES OF
PRESERVATIVES IN
VACCINES MIGHT SOUND
SCARY TO SOME PEOPLE.
BUT THE SAME STUFF IS
IN PRODUCTS PEOPLE
SAFELY USE EVERY DAY.

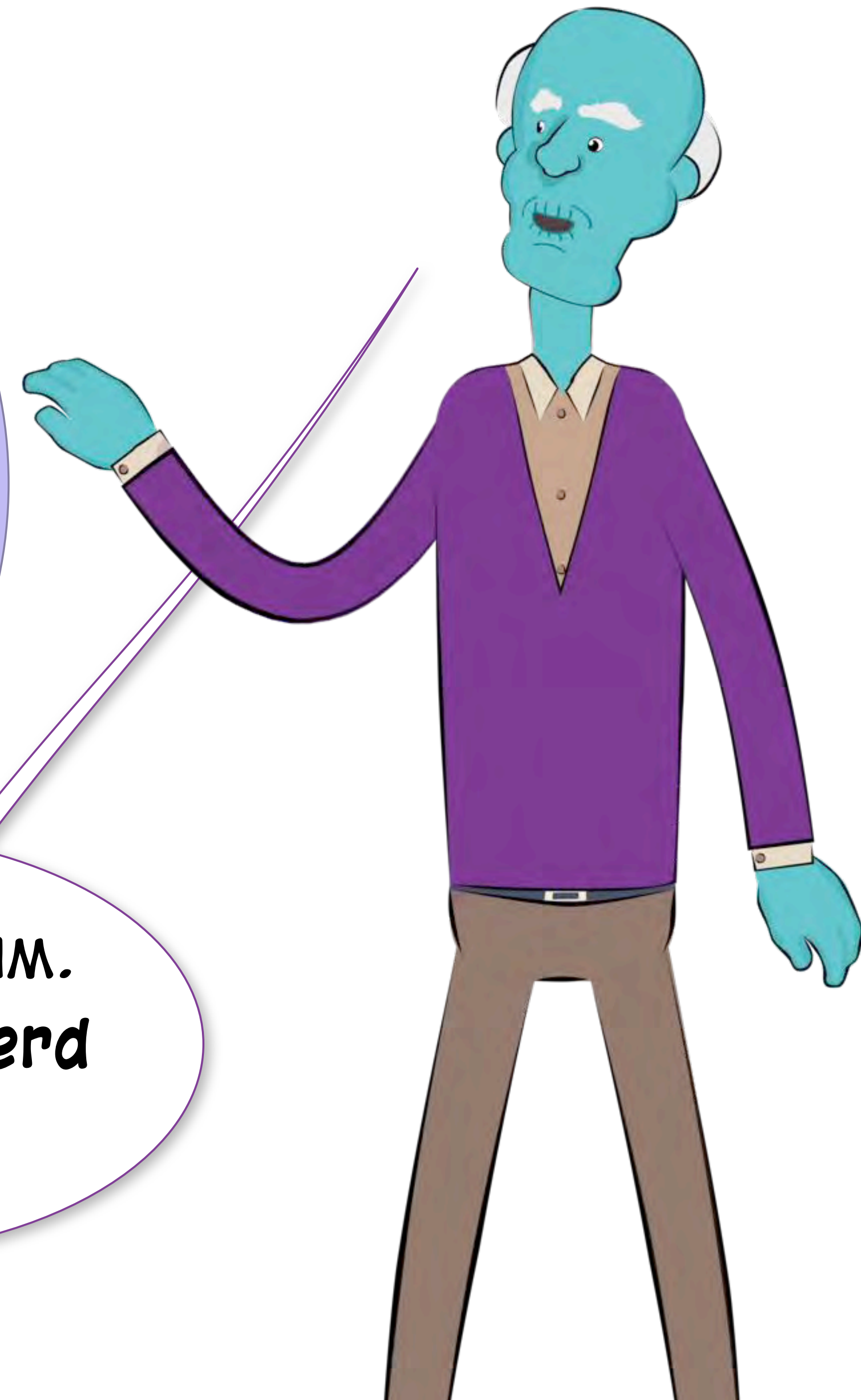
SOME VACCINES ARE
MADE USING EGGS AND
CONTAIN A TINY AMOUNT
OF EGG PROTIEN.

OTHER SUBSTANCES, LIKE
OILS, ARE ADDED TO HELP
VACCINES WORK BETTER.



Vaccines don't just keep **YOU** safe. My doctor told me getting vaccinated keeps **OTHER PEOPLE** safe too. After all, if you aren't sick, you can't spread it to other people.

Good point, Sam. We call this "herd immunity."





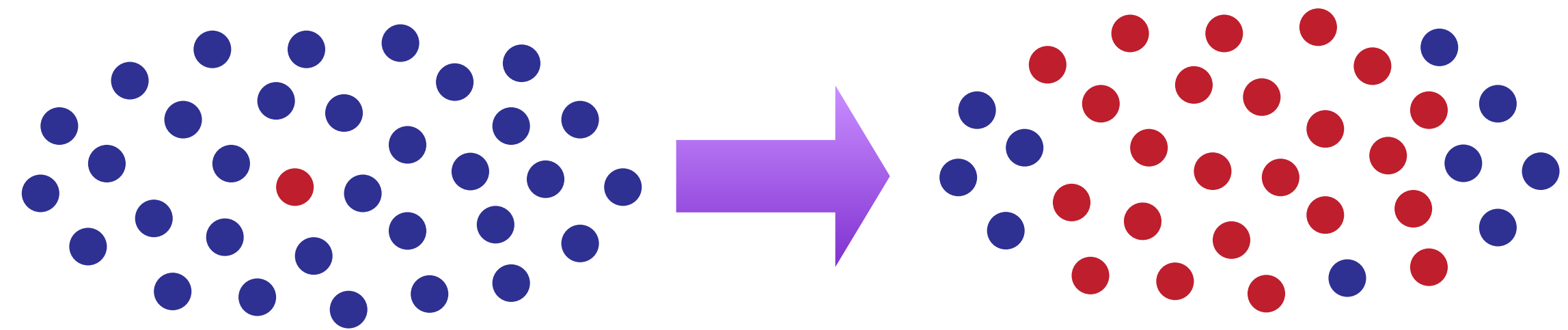
I've heard of
herds of cows, but
herds of people?

Ha, it is a funny
term. It means if enough
people in a given area are
immune to a disease, it's
hard for the disease to
spread.

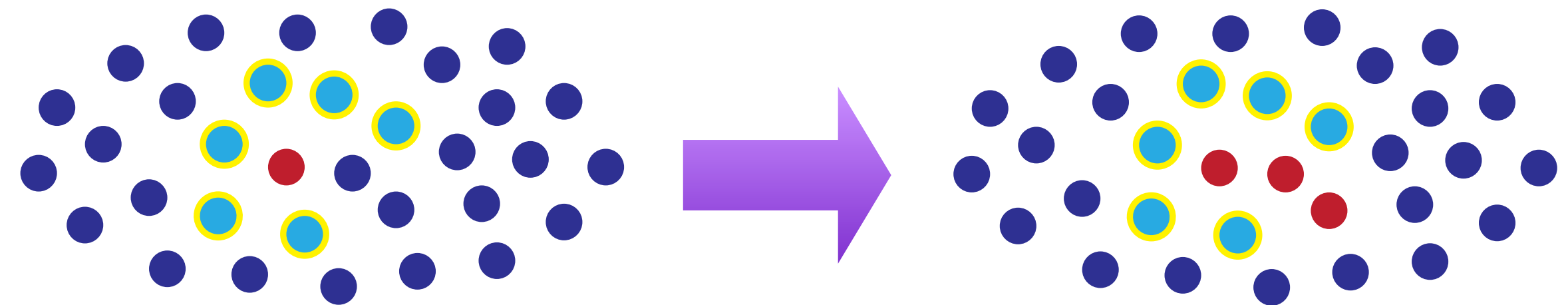


Herd immunity protects vulnerable people who can't get vaccinated for some reason.

When **no one** gets vaccinated — the disease can spread easily.

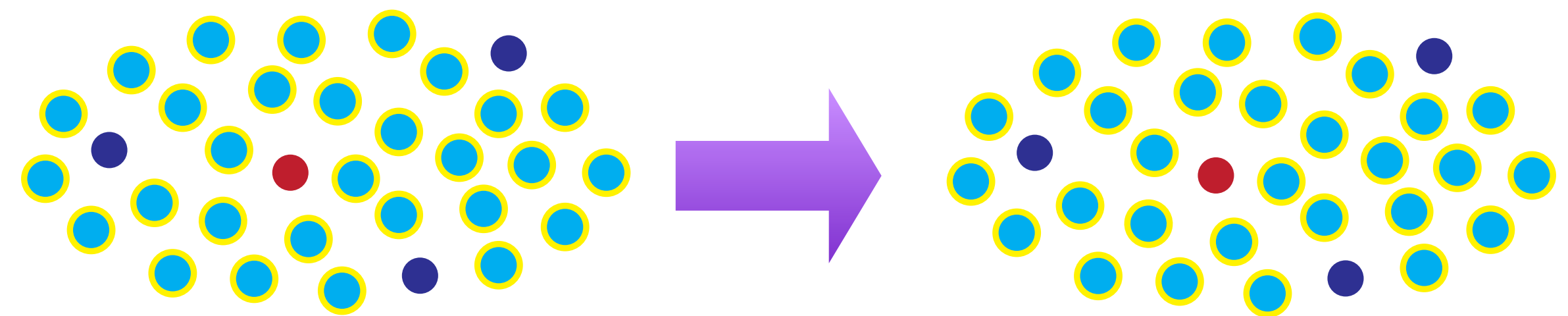


When **some people** get vaccinated — the disease spreads a little slower.



When **most people** get vaccinated — even people without vaccine are protected.

HERD IMMUNITY



● Vaccinated

● Not vaccinated

● Sick


I'm born
with some
immunity to
diseases, but I need
vaccines for full
protection!



By vulnerable people, do
you mean they can get sick
easily? Like babies?


I remember when my
baby cousin was born, my
parents told me to wash my
hands a lot and be careful
with her, so she wouldn't
get sick.



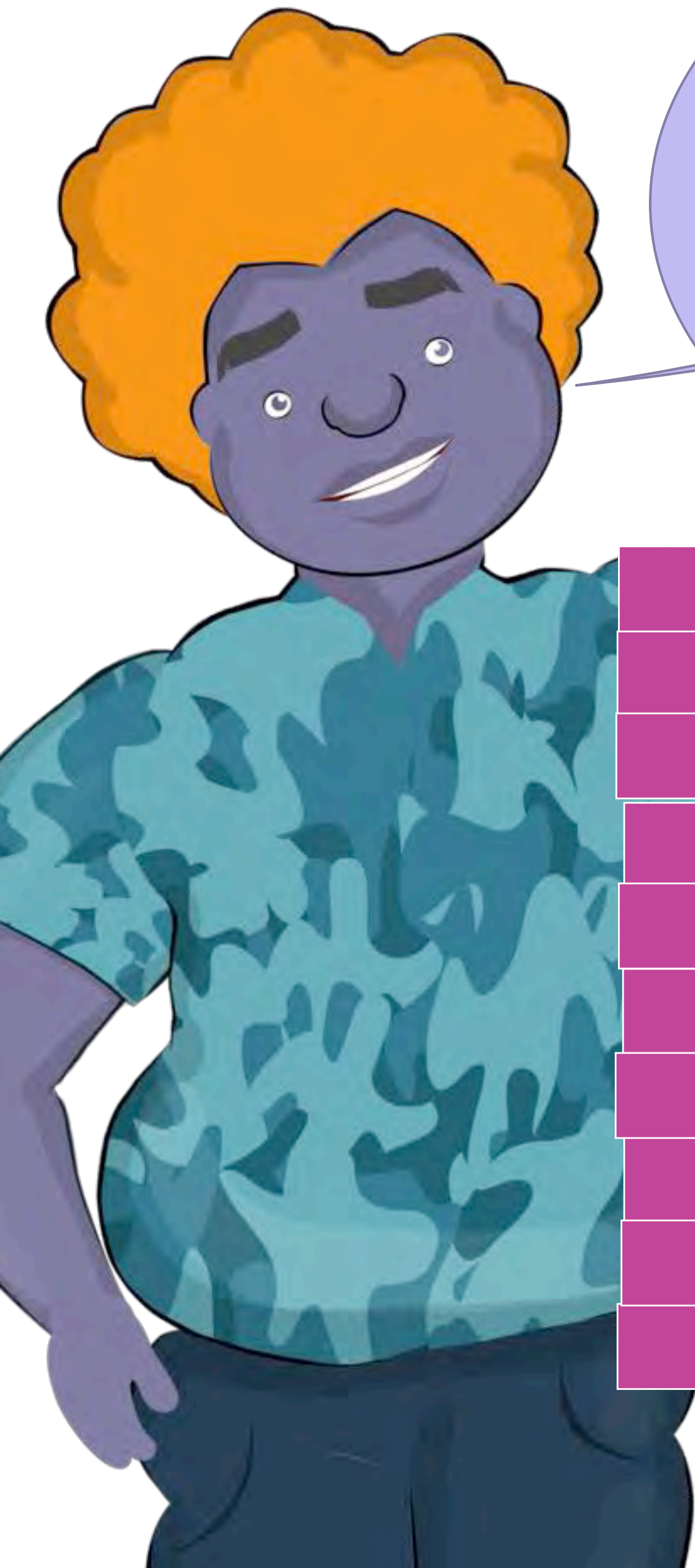


Yes, Vito, babies are a great example of people we protect with herd immunity! Other examples are older folk like me and people who are immunocompromised.

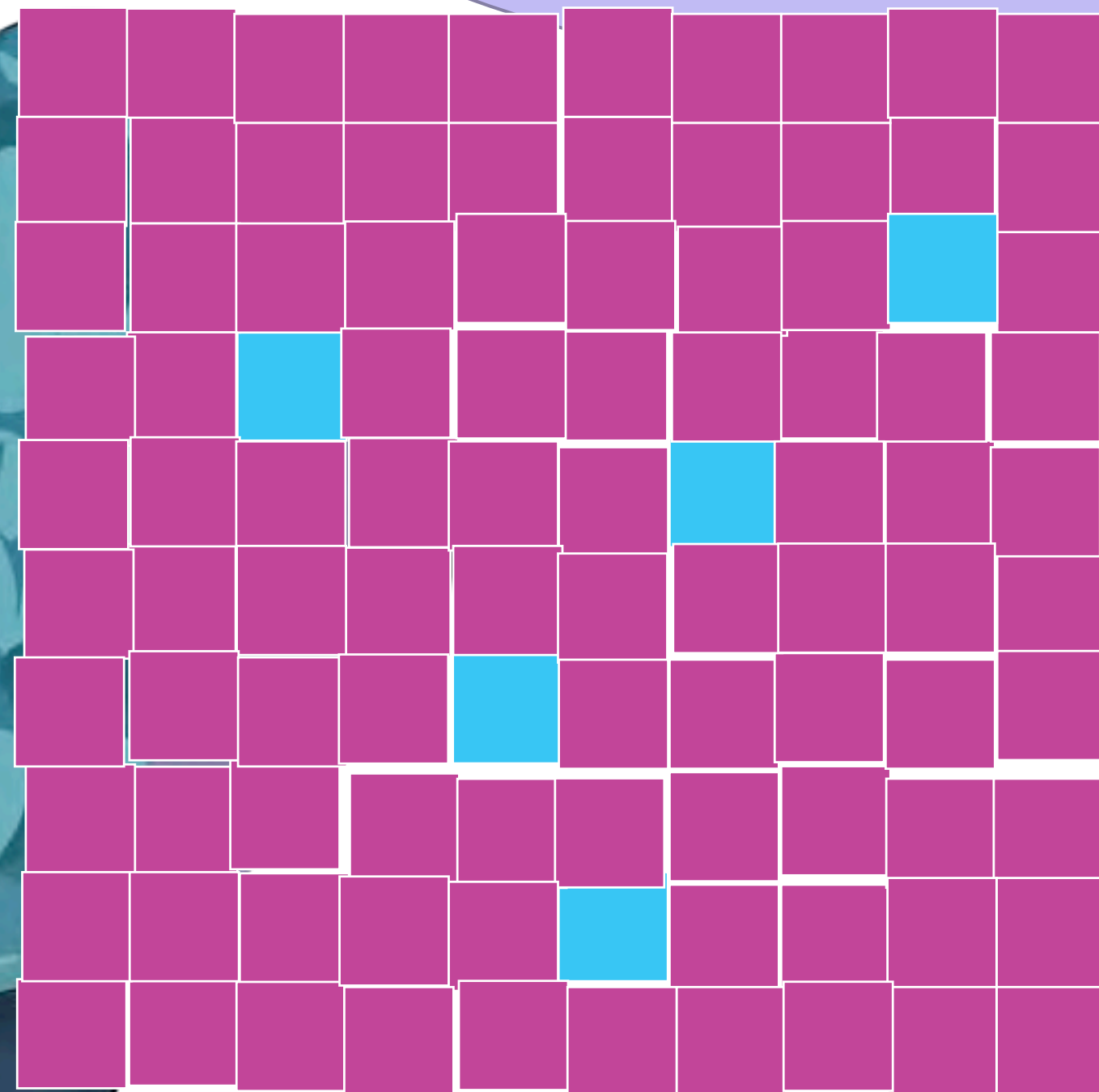
Immunocompromised people have weakened immune systems for various reasons. For example, cancer treatments can weaken people's immune systems.





Thank you for getting vaccines to protect me!



A doctor talking about vaccines on the news said 95 percent of people need to get the measles vaccine to have herd immunity for measles.

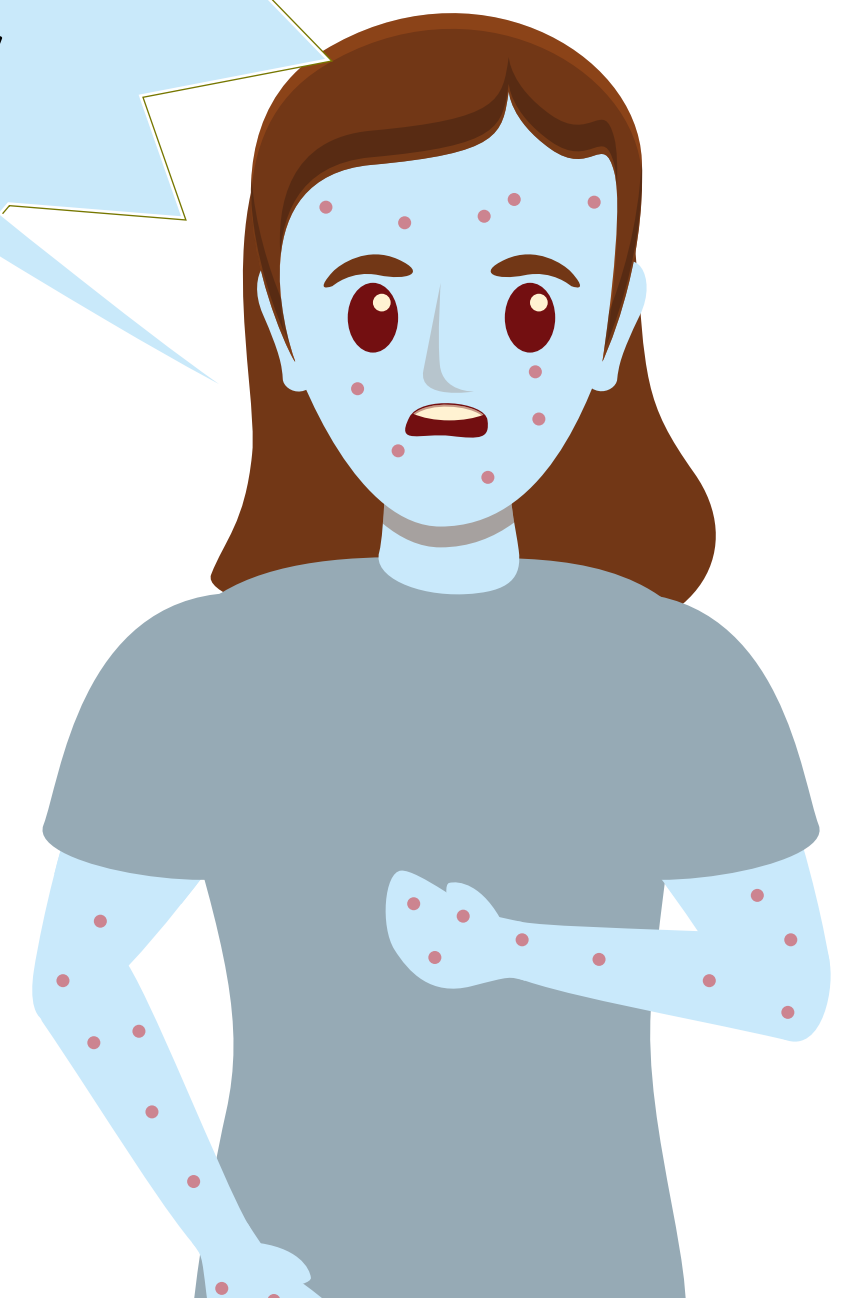


95 OUT OF 100 =
95 PERCENT

-  MEASLES VACCINE
-  NO VACCINE

In some places, not enough people are getting the measles vaccine, and outbreaks have happened.

I wish I had gotten a measles vaccine!






Yeah, I heard about a lot of measles at one school nearby. A kid even died! It's kinda scary.

It is scary, Vito.
That's why it's important to get vaccinated, so we can protect ourselves and others from dangerous diseases like measles.





So making a
vaccine doesn't
sound that hard.

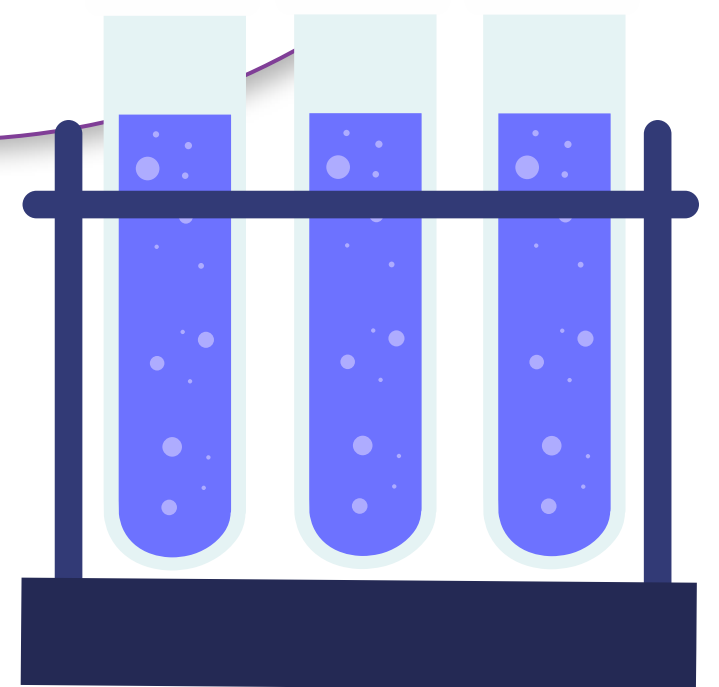
Why did it take
so long to get
COVID-19 vaccine
made?



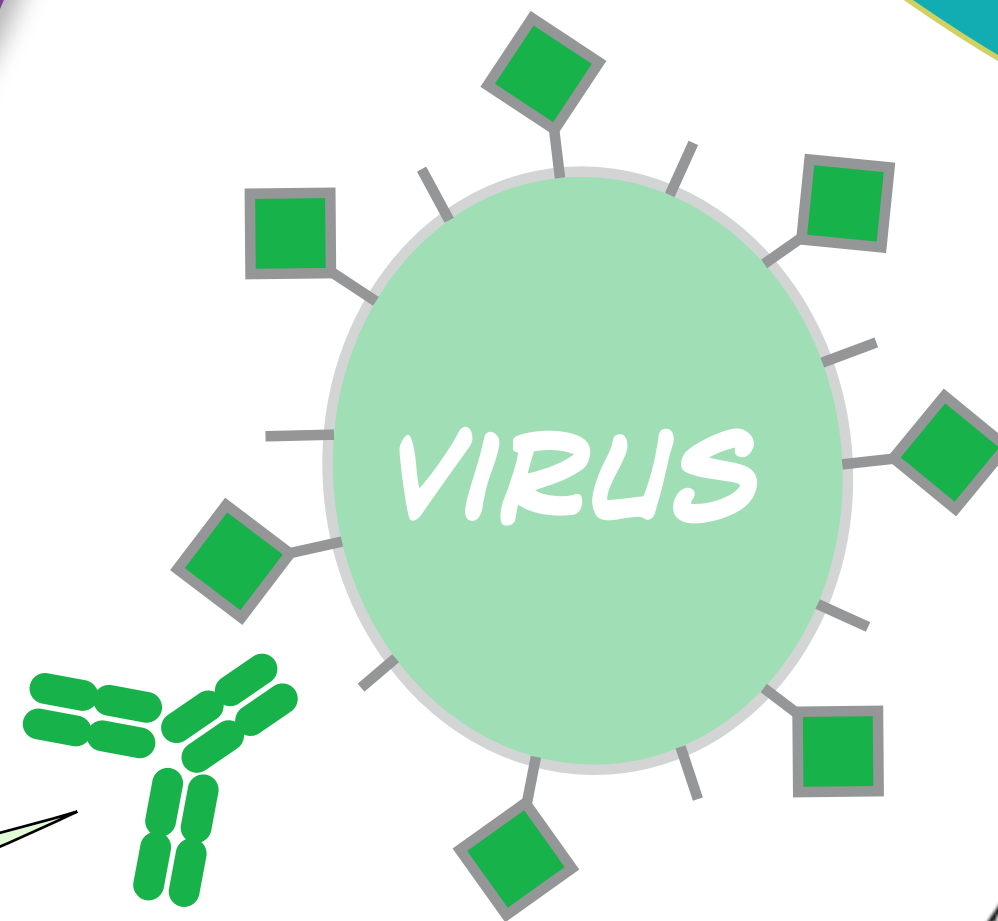
Vaccine development takes time. First, scientists have to make sure the vaccine acts like a real infection to train the immune system...

To train the immune system to attack fast and prevent the disease!

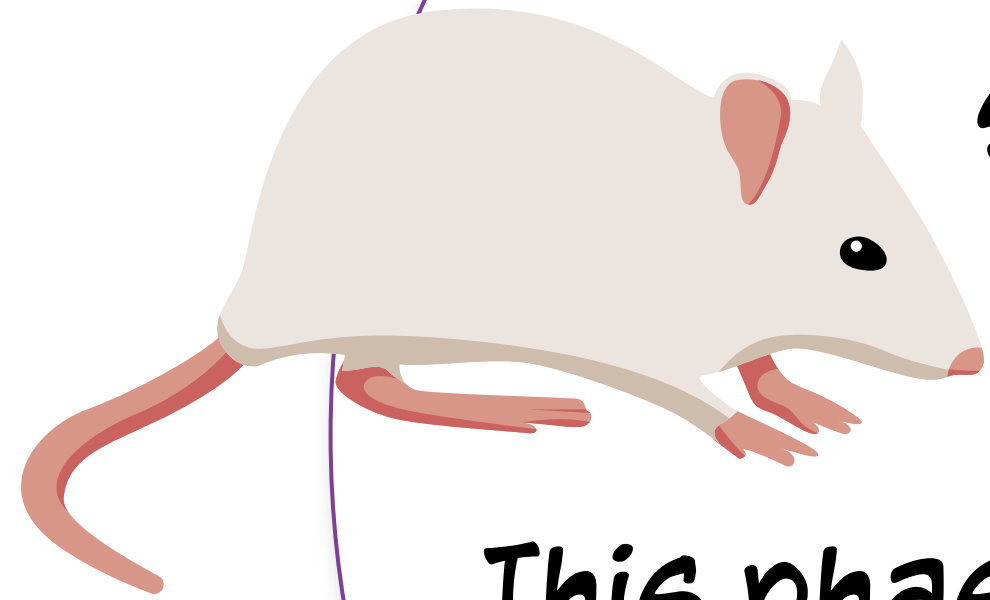
Exactly!
This early stage of vaccine development usually uses cells in test tubes.



I KNOW YOU!

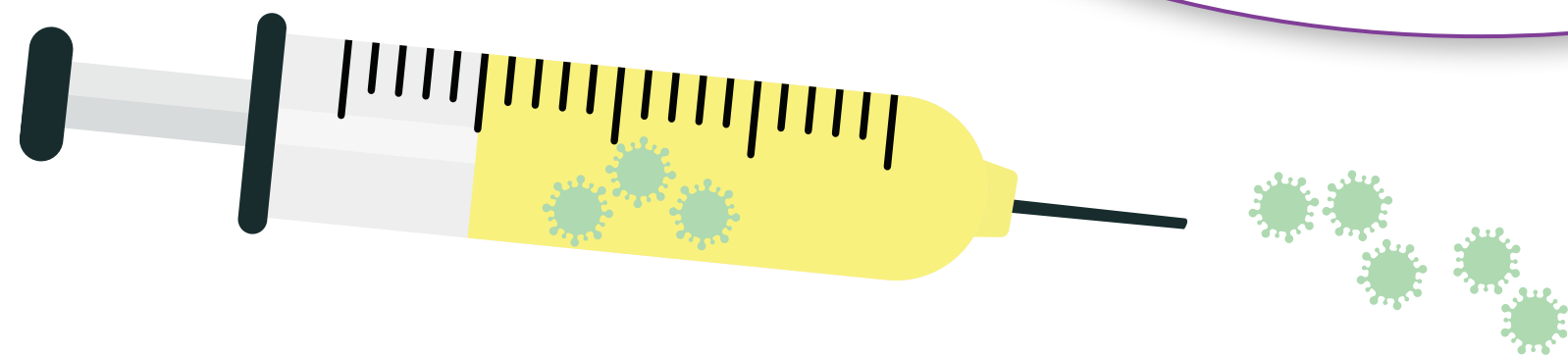


Next, scientists have to make sure the vaccine actually works and is safe, which involves many rounds of testing.



This phase of testing usually starts with lab animals like mice. If the vaccine works and is safe for lab animals, testing on people begins.

We call vaccine testing on people "clinical trials." Clinical trials begin with very small groups and continue with larger and larger groups.



CLINICAL TRIALS



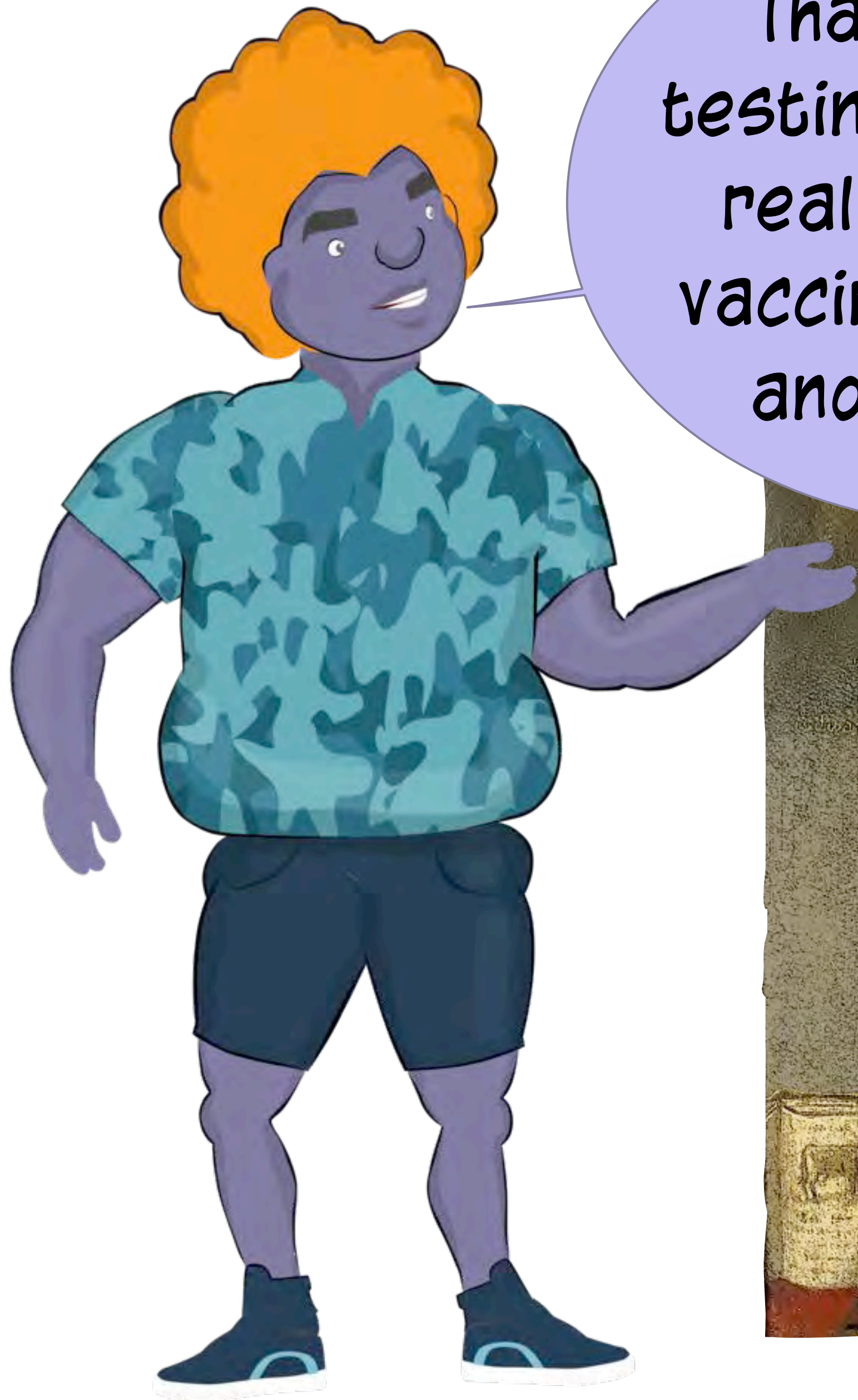


OK, let's see
if I can
remember...

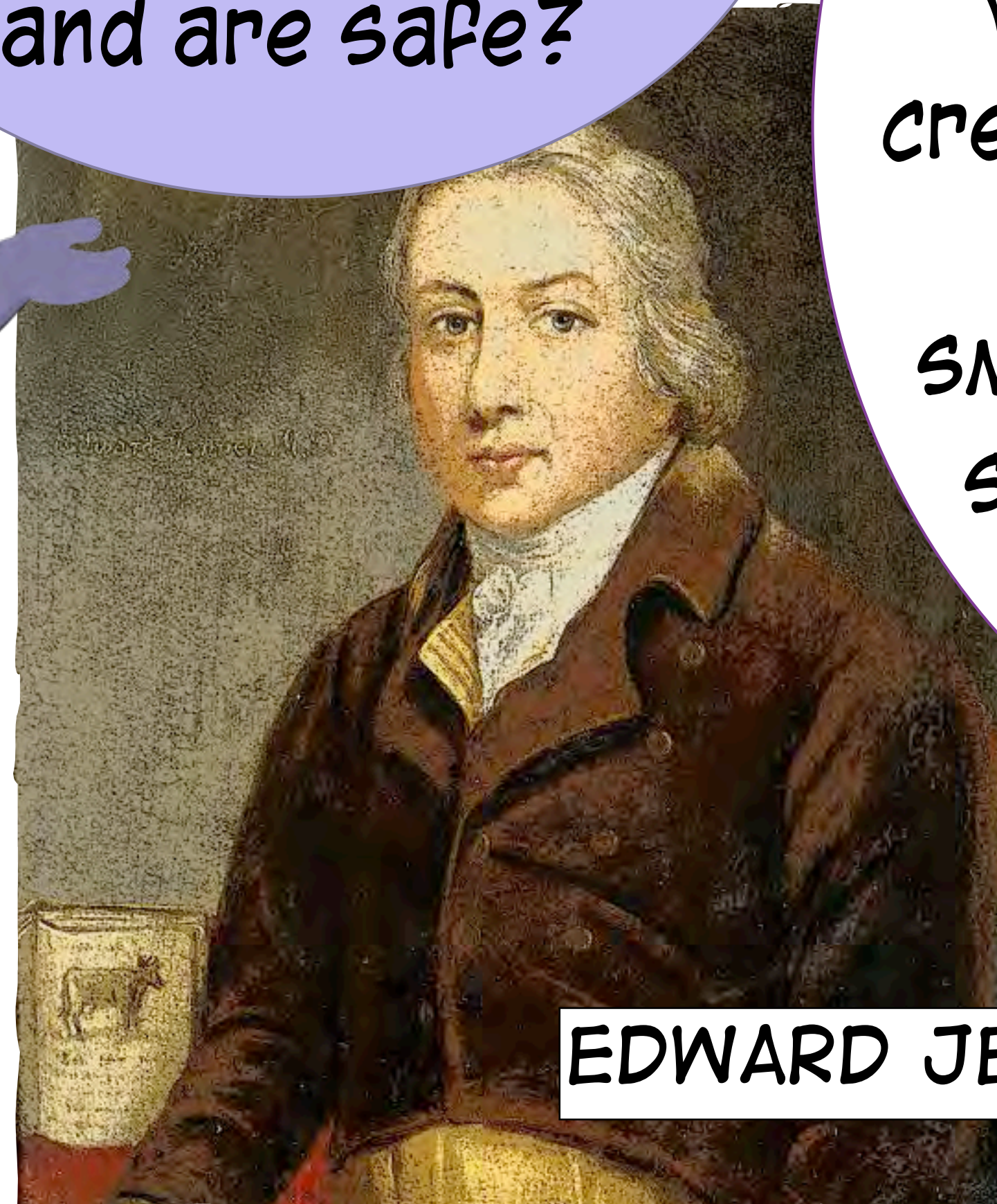
STAGES OF VACCINE TESTING

- 1. IN CELLS IN TEST TUBES**
- 2. IN LAB ANIMALS**
- 3. IN SMALL GROUPS OF PEOPLE**
- 4. IN BIGGER GROUPS OF PEOPLE**



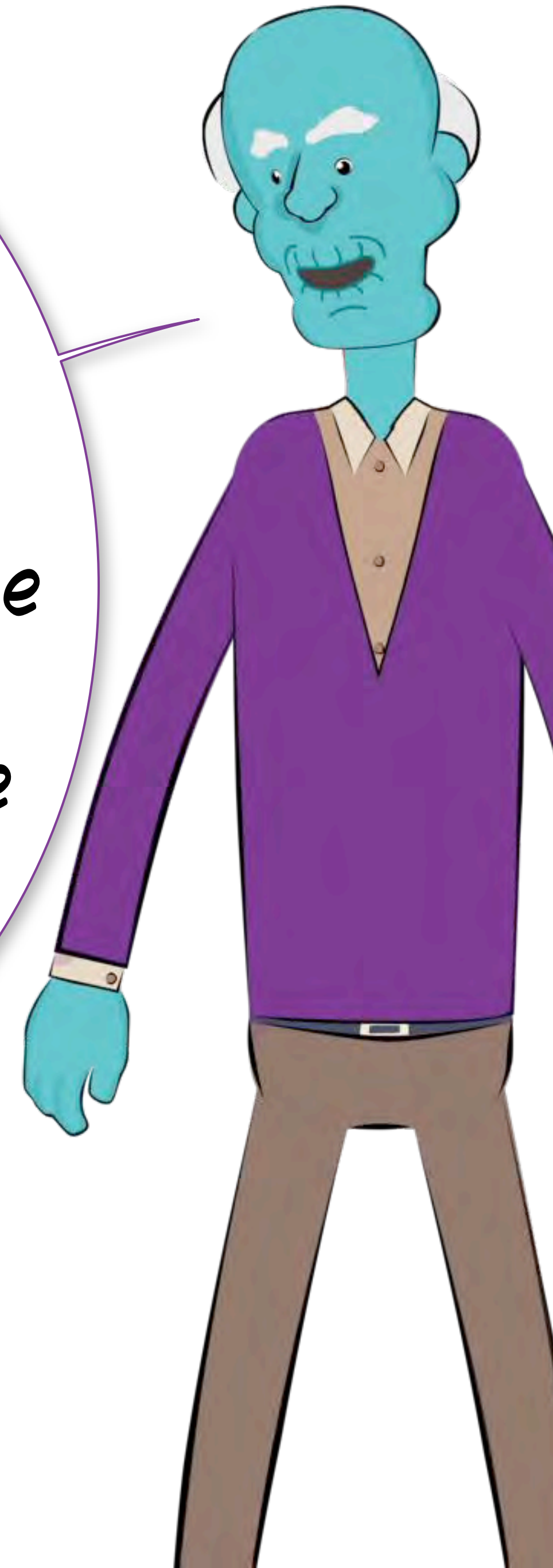


That's a lot of testing. But are we really sure that vaccines work well and are safe?



EDWARD JENNER

Scientists have been developing vaccines since 1796, when Edward Jenner created the first vaccine for a disease called smallpox. Vaccines have saved millions of lives since then.



These are some
examples of
vaccine power!

USA PRE-VACCINE
YEARLY ILLNESS

PERCENT
REDUCTION

USA RECENT
YEARLY ILLNESS



DIPHTHERIA
100%



INFLUENZA
99%



MEASLES
99%



WHOOPING COUGH
93%

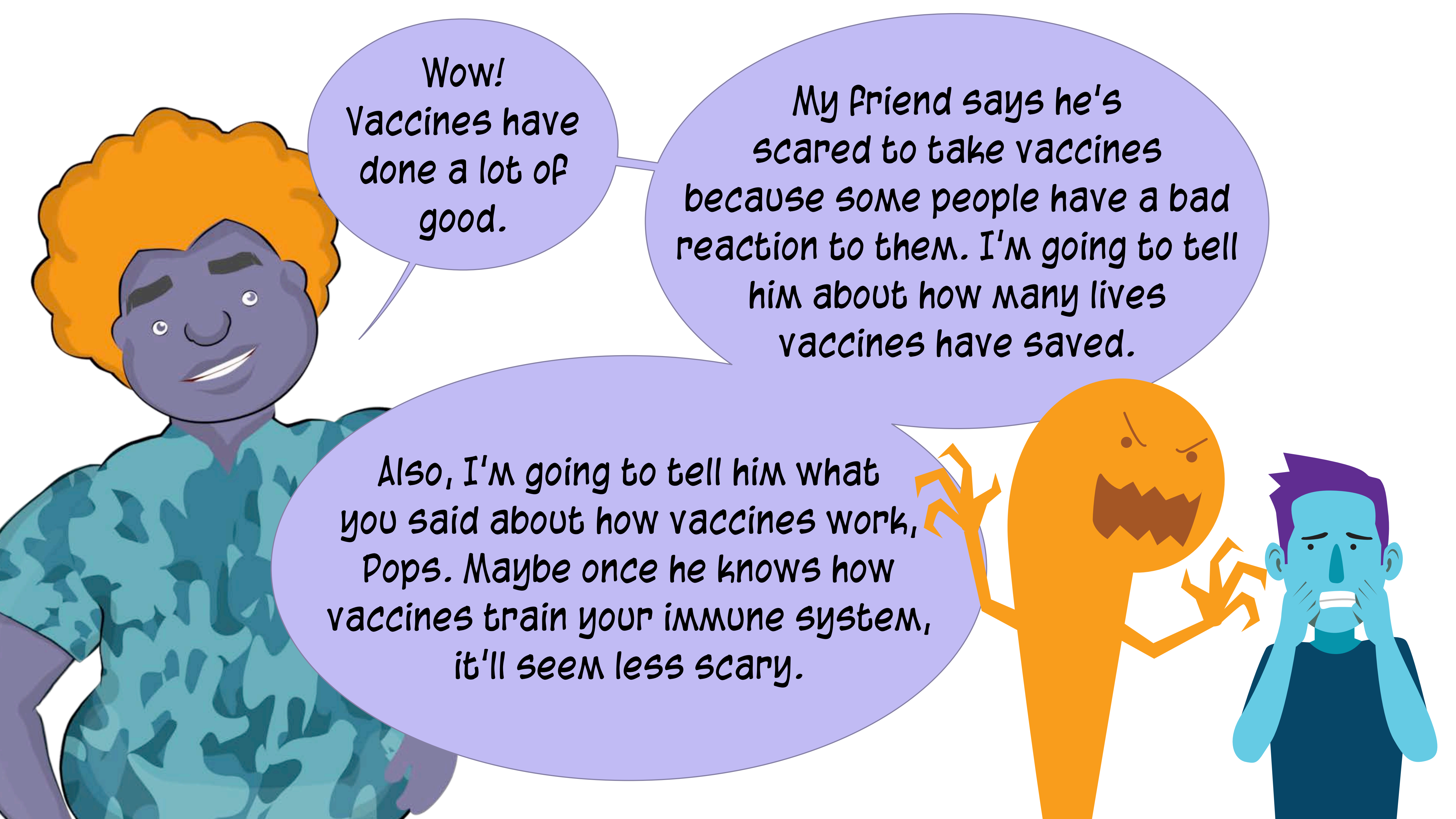


POLIO
100%



SMALLPOX
100%





Wow!
Vaccines have
done a lot of
good.

My friend says he's
scared to take vaccines
because some people have a bad
reaction to them. I'm going to tell
him about how many lives
vaccines have saved.

Also, I'm going to tell him what
you said about how vaccines work,
Pops. Maybe once he knows how
vaccines train your immune system,
it'll seem less scary.





Maybe talk to him about risk and benefit. Nothing in life has zero risk! The chance of being hit by lightning is 1 in 700,000. But we still go outside because the risk is tiny and the benefits are big!

The chance of a bad reaction to a vaccine also tiny.

For example, only about 1 in a million people have a severe reaction to the measles vaccine. But, the benefit is huge!





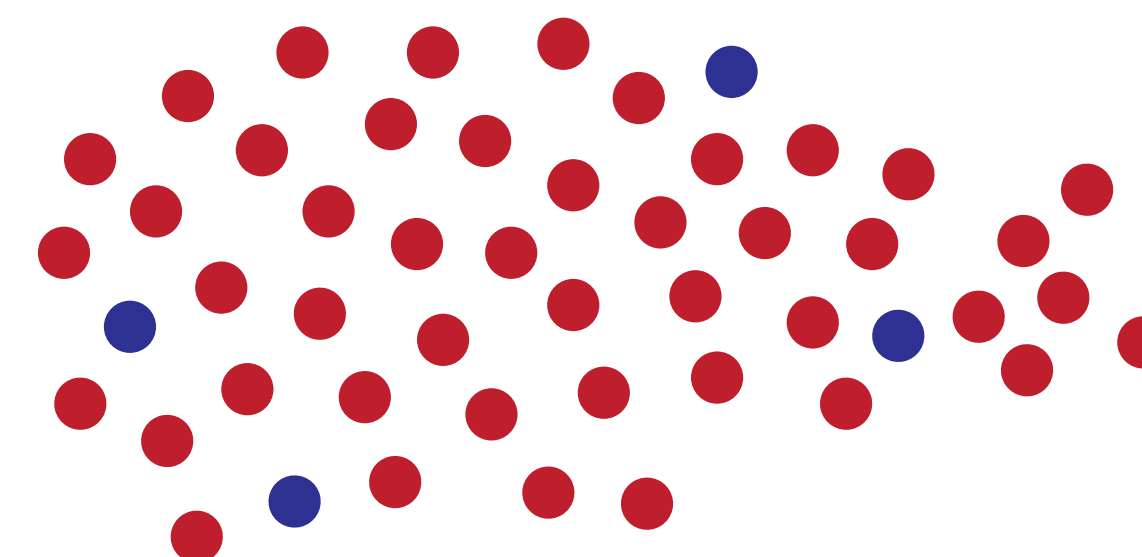
IF 100 people without a vaccine get exposed to measles, almost all of them will come down with the disease.

IF 100 people have the measles vaccine, almost no exposed people will get measles!

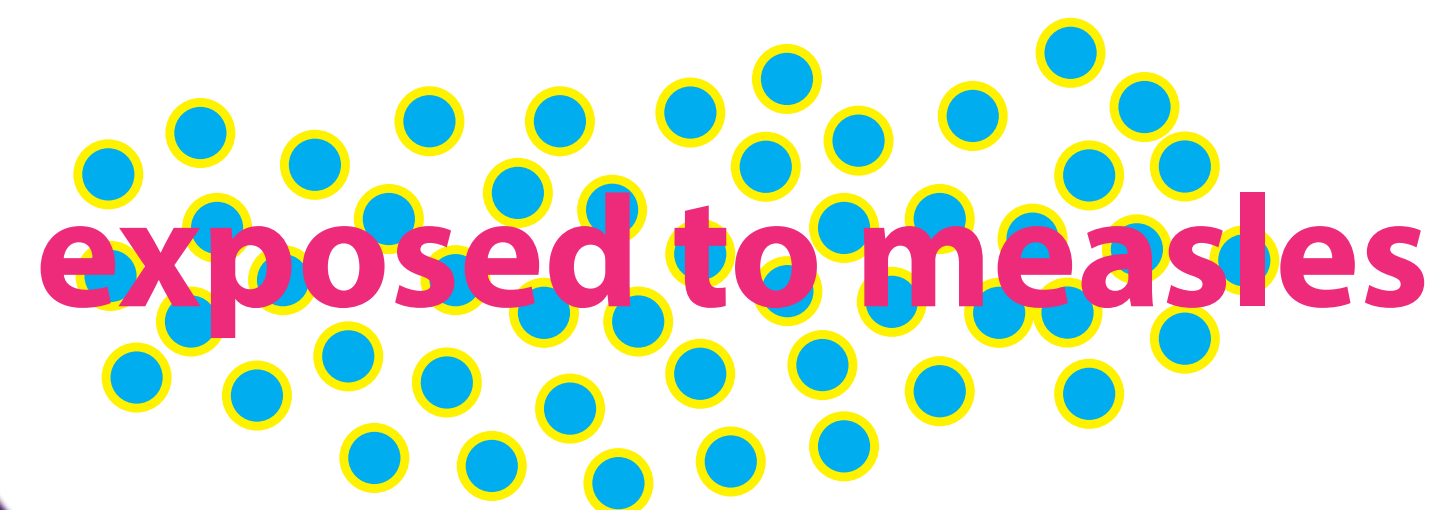
no vaccine



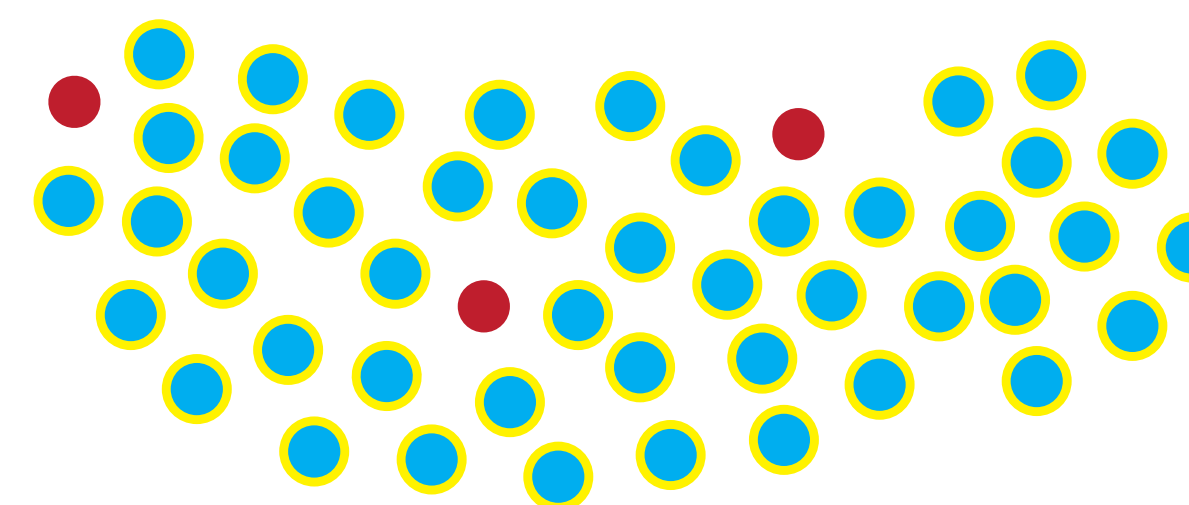
most exposed people get sick.






with vaccine



few exposed people get sick.



-  Vaccinated
-  Not vaccinated
-  Sick



OK! I'll
tell my
friend!

Speaking of clinical trials, my
doctor—Dr. Cook— actually asked me if
I'd want to be part of a COVID-19 vaccine
trial happening at the hospital. I haven't
decided yet.



We
need
you...




I wouldn't
want to sign up
for that.

That's okay, Vito,
you don't have to
participate in a
vaccine trial if you
don't want to.

It's great
you're
considering it
though, Sam.





Testing on people of different ages and backgrounds is very important to make sure the vaccine works well for everyone.

If the vaccine was only tested on younger people with really strong immune systems like you, Vito, it might not work as well on older folks like me.

And we wouldn't know until after the vaccine was given to everyone.



That's a
good point!

Hey, remember
when we did that
citizen science
project? They said we
were all protected by
laws and
regulations.

Does that
apply to vaccine
trials?



It does!
Human subjects
protections apply to
everyone involved in research.
Researchers have to balance
the risks with the benefits for
participants. And all
participants have to
consent.

CONSENT = AGREE



DR. COOK'S EXPERT TIP

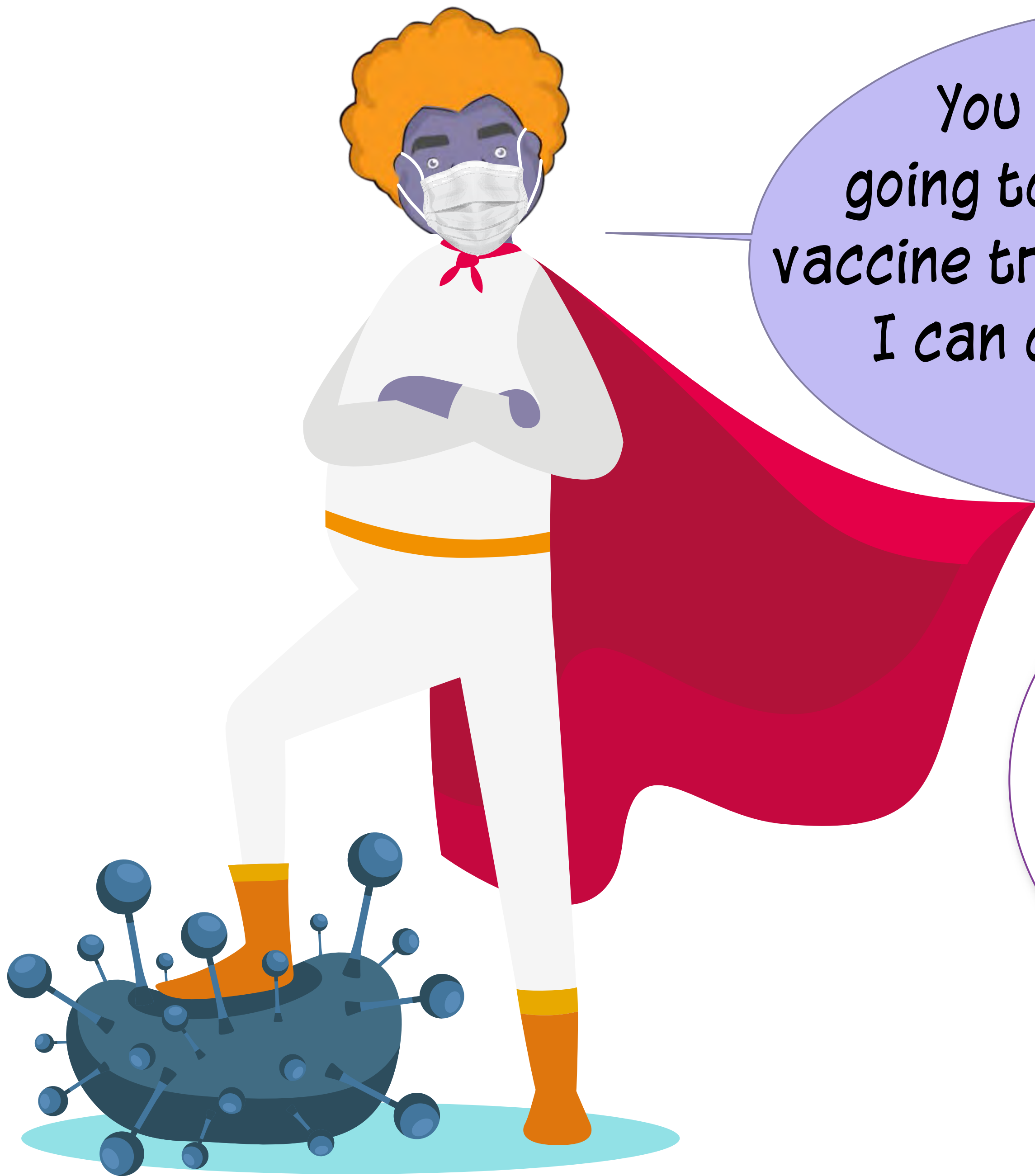
RULES AND REGULATIONS FOR HUMAN SUBJECTS RESEARCH

ANY RESEARCH INVOLVING PEOPLE IS HUMAN SUBJECTS RESEARCH. RESEARCHERS MUST FOLLOW THREE MAIN RULES:

RESPECT FOR PEOPLE: EVERYONE HAS TO GIVE "INFORMED CONSENT," MEANING YOU KNOW ALL ABOUT THE RESEARCH AND VOLUNTARILY AGREE TO PARTICIPATE.

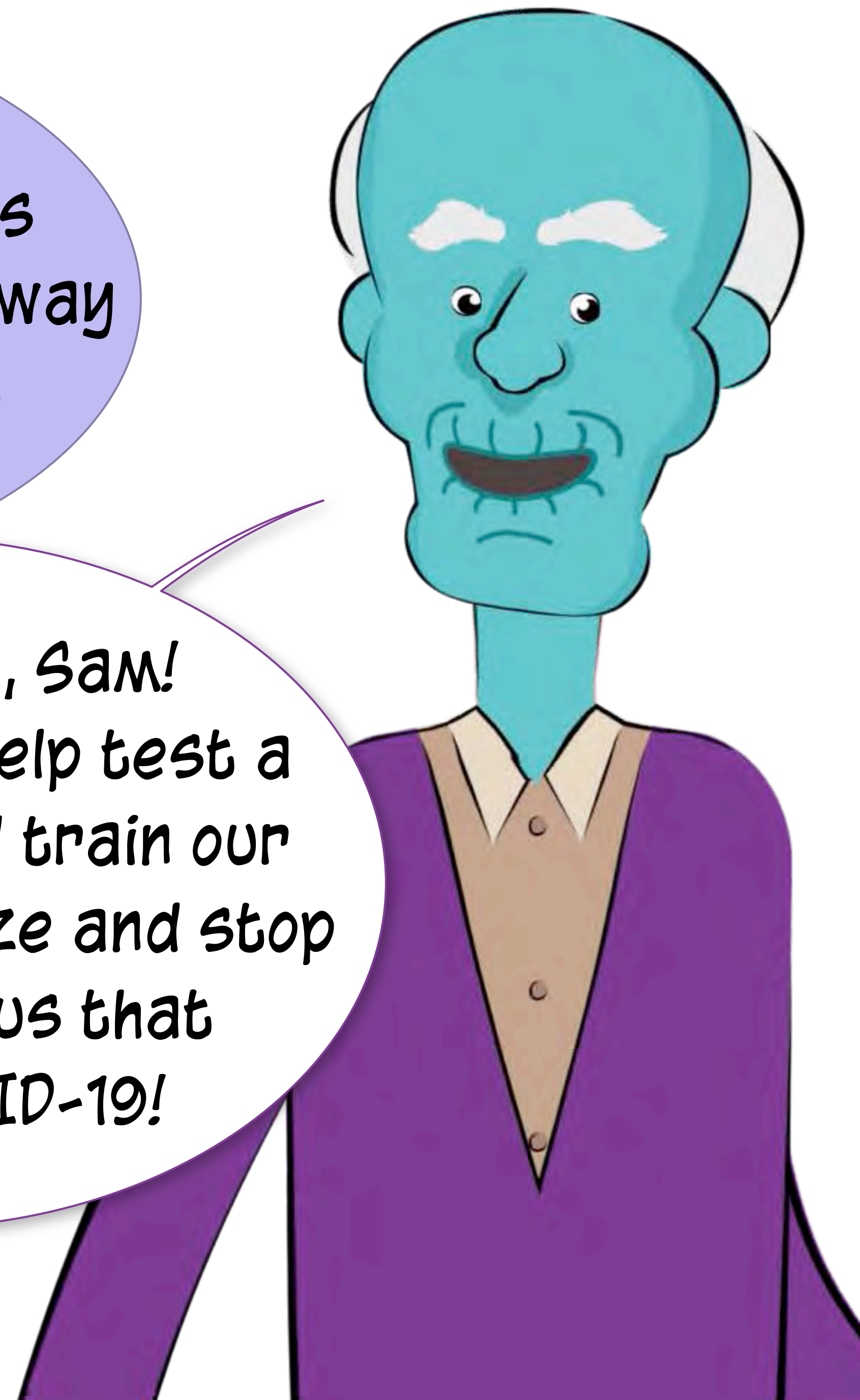
BENEFICENCE: RISKS TO PARTICIPANTS MUST BE LOW AND BENEFITS TO PARTICIPANTS AND SOCIETY MUST BE HIGH.

JUSTICE: THE BENEFITS AND RISKS OF RESEARCH HAVE TO BE SHARED FAIRLY.



You know what, I AM going to participate in this vaccine trial! I feel like this way I can do my part to fight COVID-19.

That's great, Sam! You're going to help test a vaccine that will train our bodies to recognize and stop the coronavirus that causes COVID-19!





And then, we can
all go out and get the
vaccine to protect
ourselves...

...And also
protect other
people through herd
immunity.

Right!
And life can get
more normal
again!





Even though things are strange right now, I'm glad I got to spend the afternoon with you and talk about vaccines.



And eat!

Ha, Me too. See you soon!





THIS WE ENGAGE 4 HEALTH (WE4H) STORY WAS DEVELOPED AS A COLLABORATION OF COMMUNITY REPRESENTATIVES OF THE WEST END NEIGHBORHOOD IN CINCINNATI, OHIO AND WE4H PROGRAM STAFF.

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*FOR MORE INFORMATION ABOUT **WE ENGAGE 4 HEALTH**, VISIT OUR WEBSITE AT WE4H.LIFE. FOR MORE INFORMATION ABOUT THE SEPA PROGRAM, VISIT NIHSEPA.ORG.*

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