

TRANSMISSIONS: GONE VIRAL

METRO CITY
SCIENCE TEAM -
ORIGIN STORY



CHAPTER 1

CHAPTER 2

CHAPTER 3

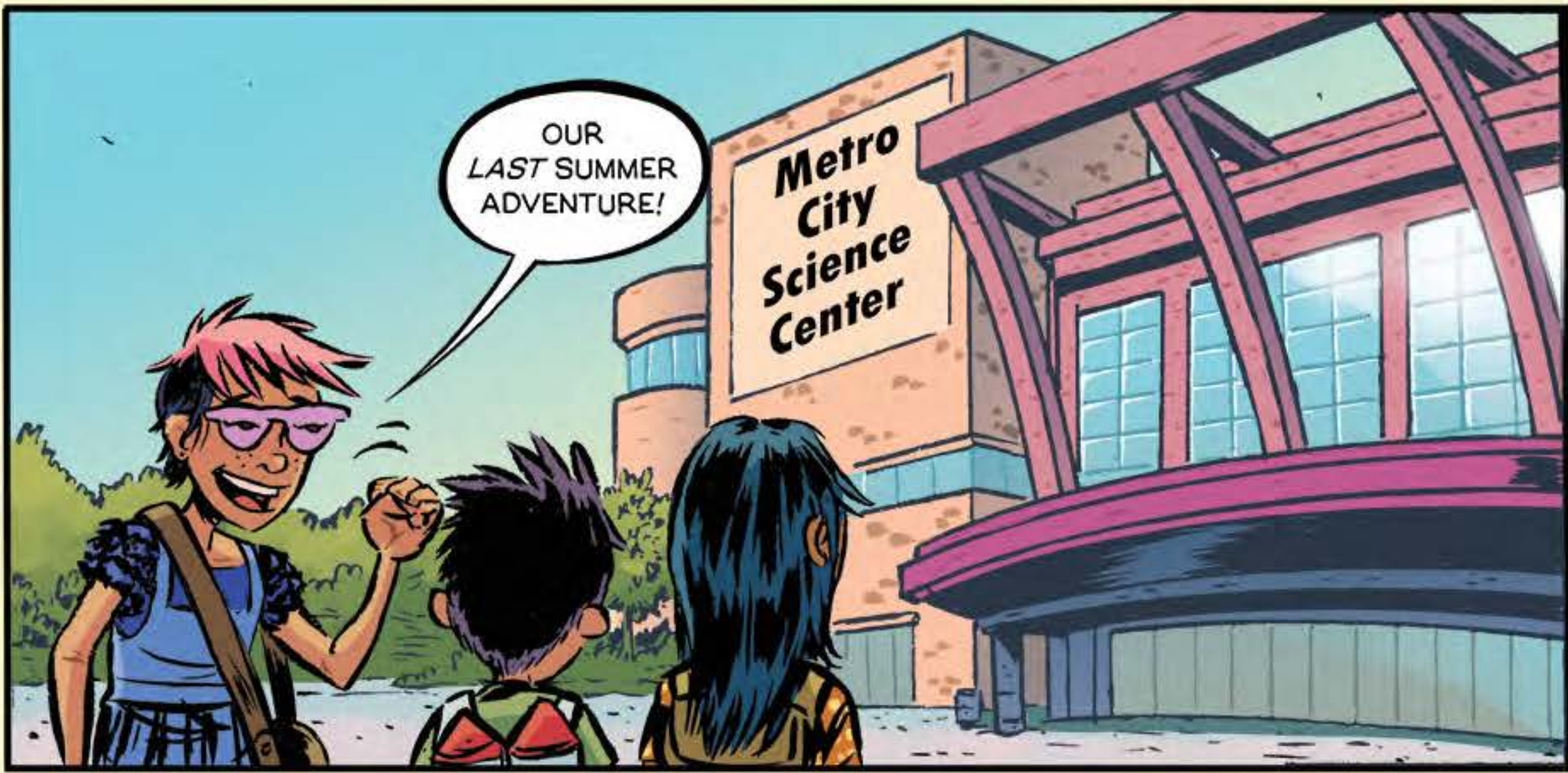
CHAPTER 4

CHAPTER 5



CHAPTER 1: CURIOUS KIDS





MARIA



#SUPERSLEUTH

MARIA is always ready with her camera and never wants to miss a detail.



SPECIAL TALENTS

- Getting the facts
- Blogging
- Overseeing Eduardo

EDUARDO



#ALIENHUNTER

EDUARDO is obsessed with aliens, loves video games and taking care of Bruno.



SPECIAL TALENTS

- "What if" scenarios
- Stumbling onto the right answers
- Horsing around

RANI



#SCIENCEGIRL

RANI is soft-spoken and thinks things through before speaking.



SPECIAL TALENTS

- Collecting evidence
- Organizing details
- Using microscopes

THIS SCIENCE NERD IS ALWAYS PREPARED!

BZZZZZZZZZZ



oOH!
EDUARDO,
HOLD STILL!



GOTCHA!

PERFECT
FOR MY NEW
MICROSCOPE!

ow!

IT'S A HOT AUGUST DAY.

OF COURSE RANI COLLECTS WATER FROM... YUP, A DIRTY PUDDLE.

NICE.

IT'S AN INVASION!

MY LITTLE BRO THINKS ALIEN... UM... INSECTS ARE INVADING.

ANOTHER ITCHY MOSQUITO BITE TO SCRATCH.

THAT'S LIKE THE FOURTH ONE TODAY.

KLING
KLANG
KLONG

WHOOPS! IT'S THREE O'CLOCK!

TIME TO GO BEFORE THE SCIENCE CENTER CLOSES.

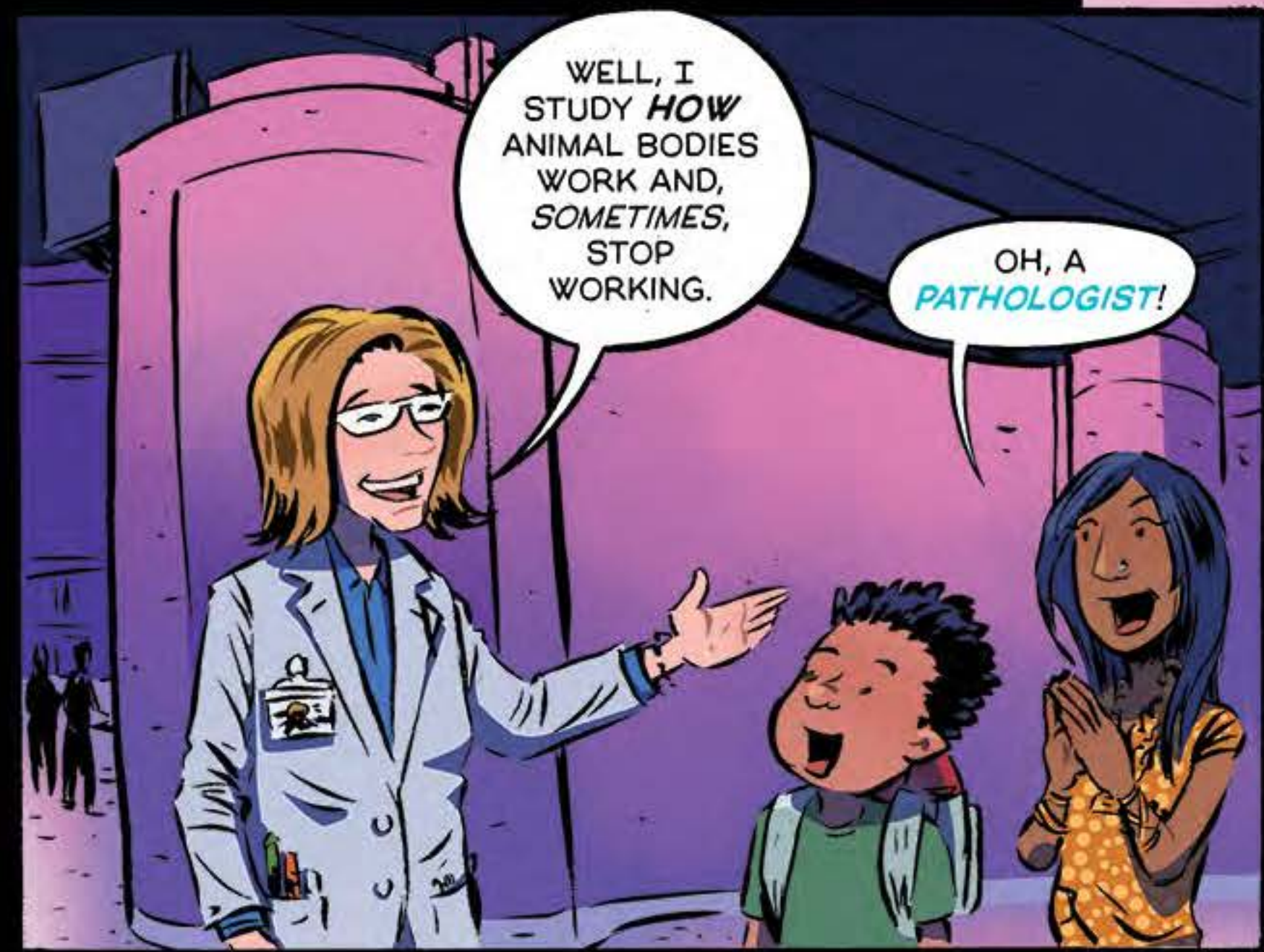
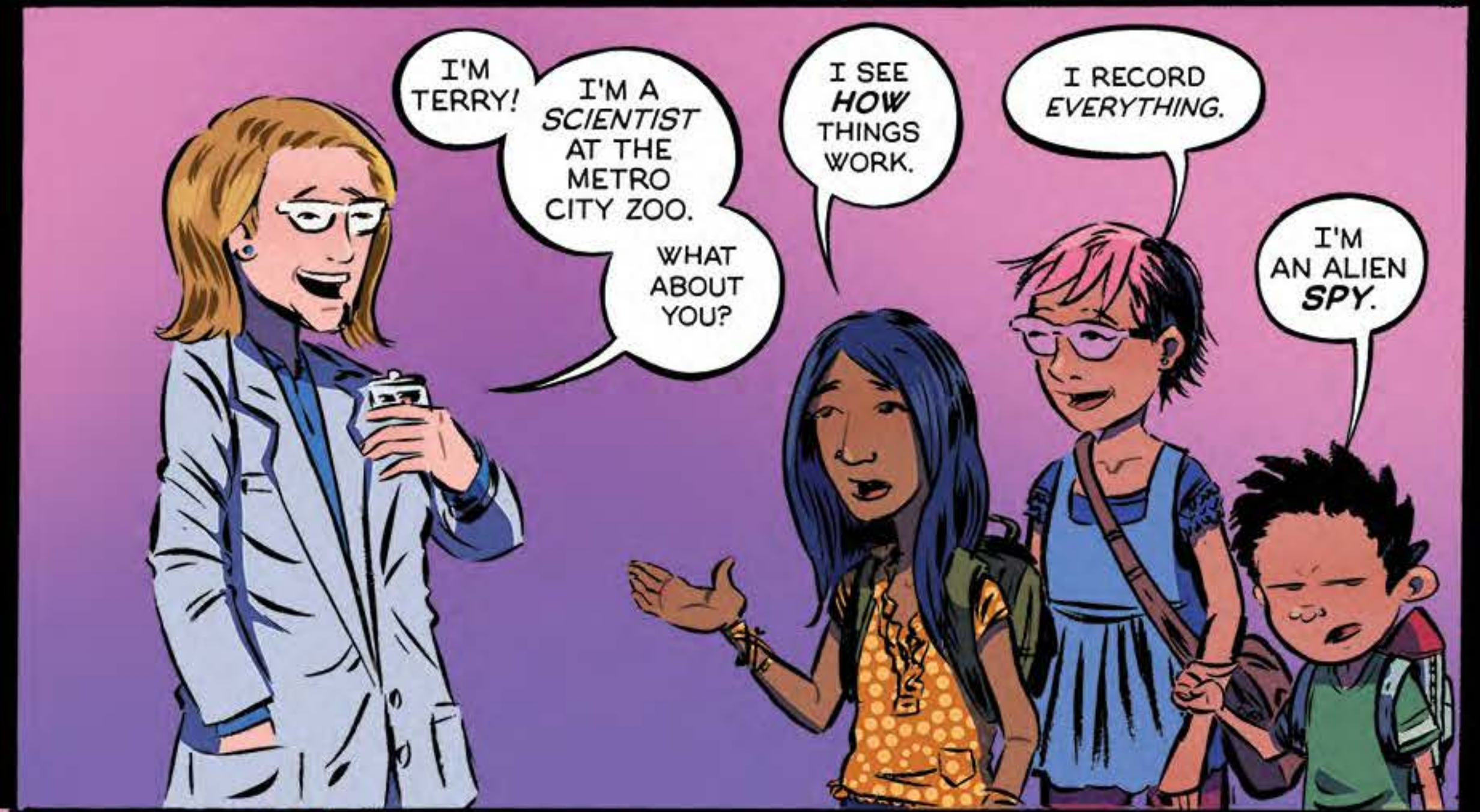


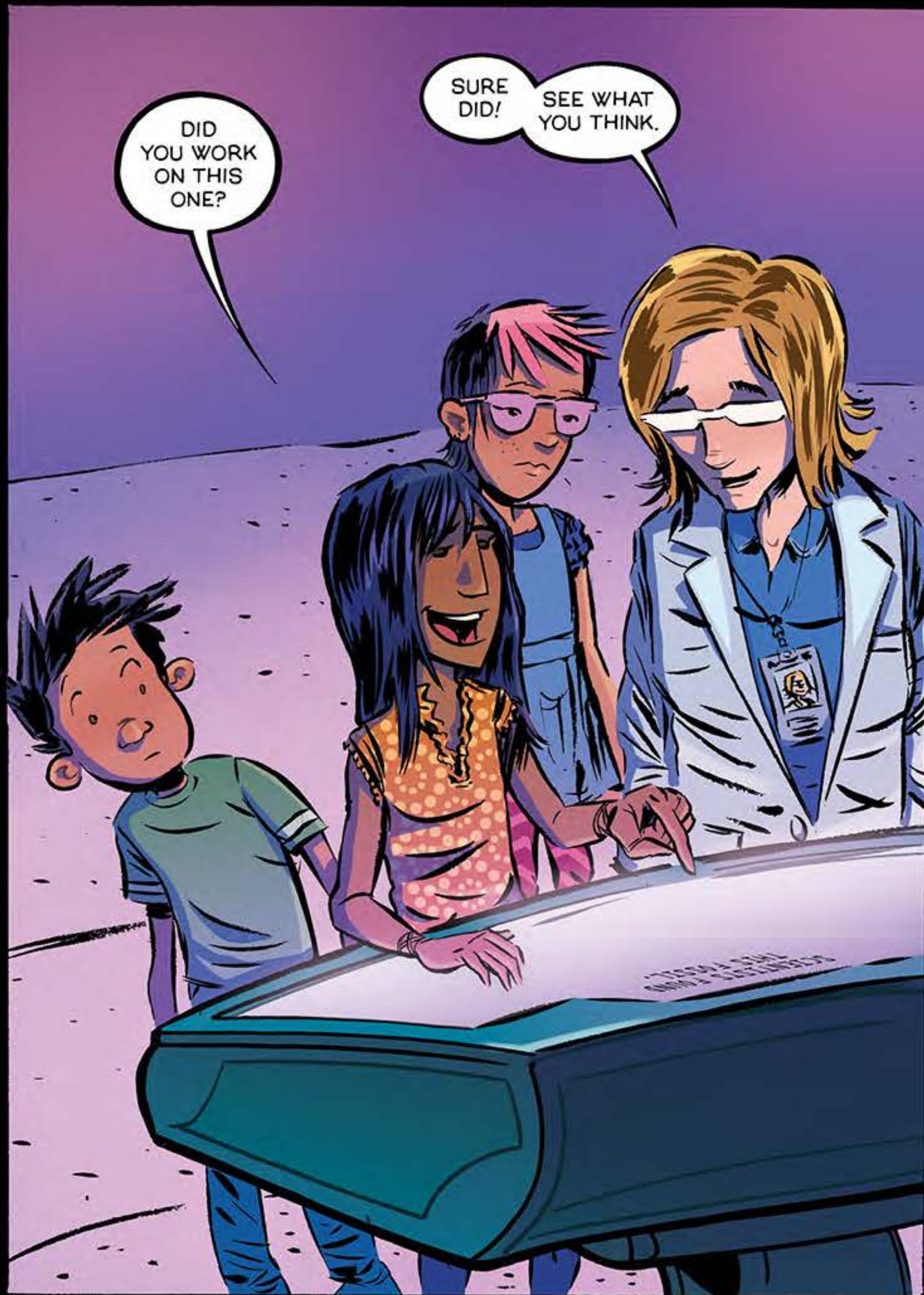
YOUR INNER ANIMAL







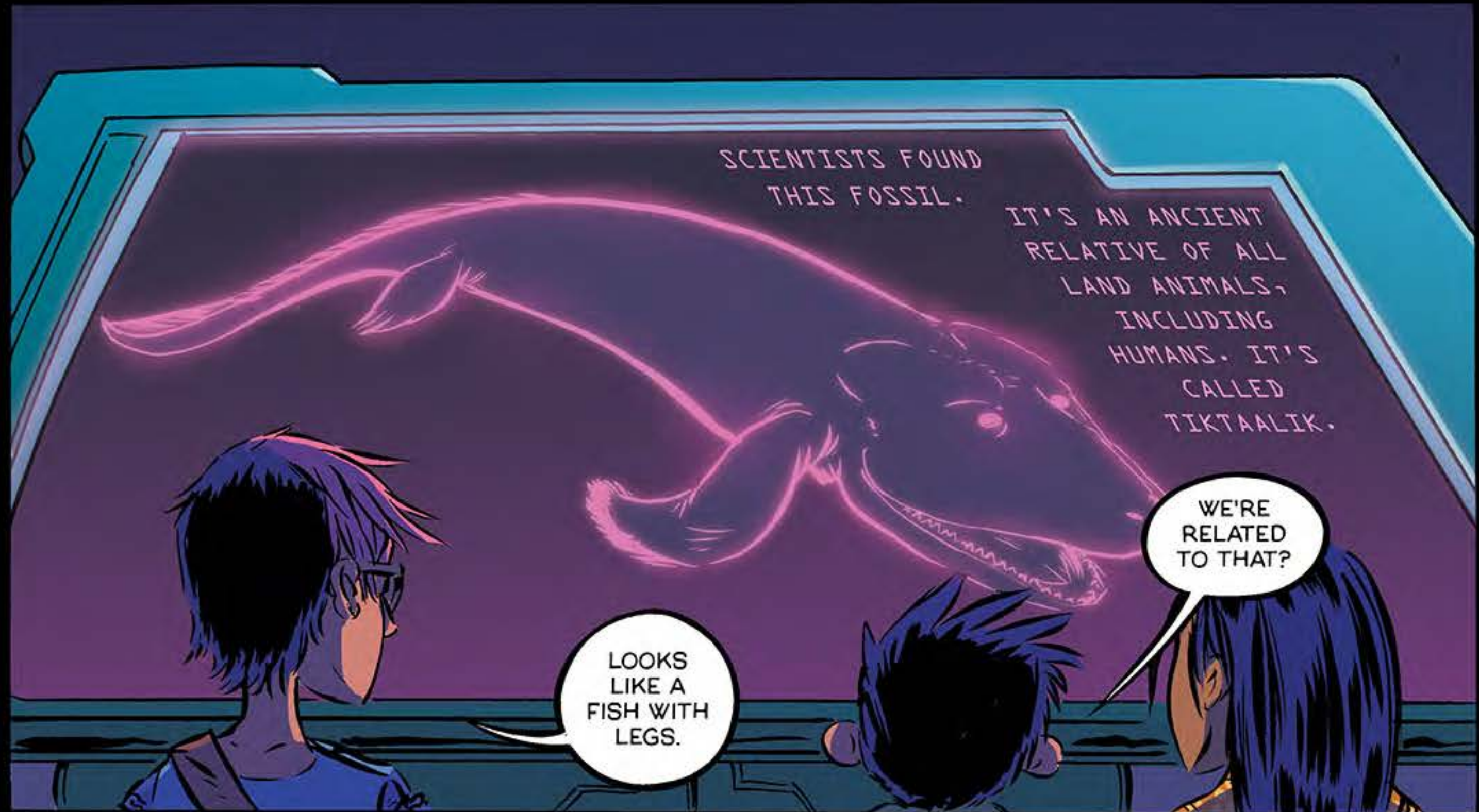




DID YOU WORK ON THIS ONE?

SURE DID!

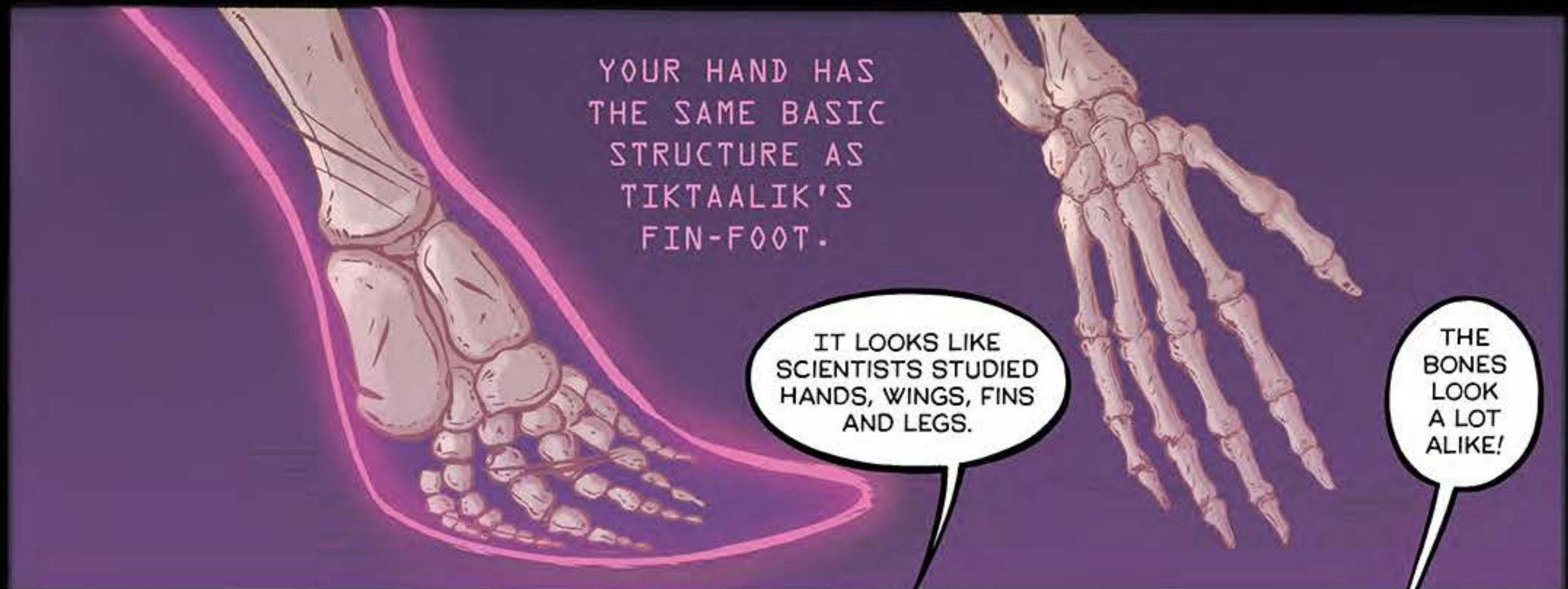
SEE WHAT YOU THINK.



SCIENTISTS FOUND THIS FOSSIL. IT'S AN ANCIENT RELATIVE OF ALL LAND ANIMALS, INCLUDING HUMANS. IT'S CALLED TIKTAALIK.

LOOKS LIKE A FISH WITH LEGS.

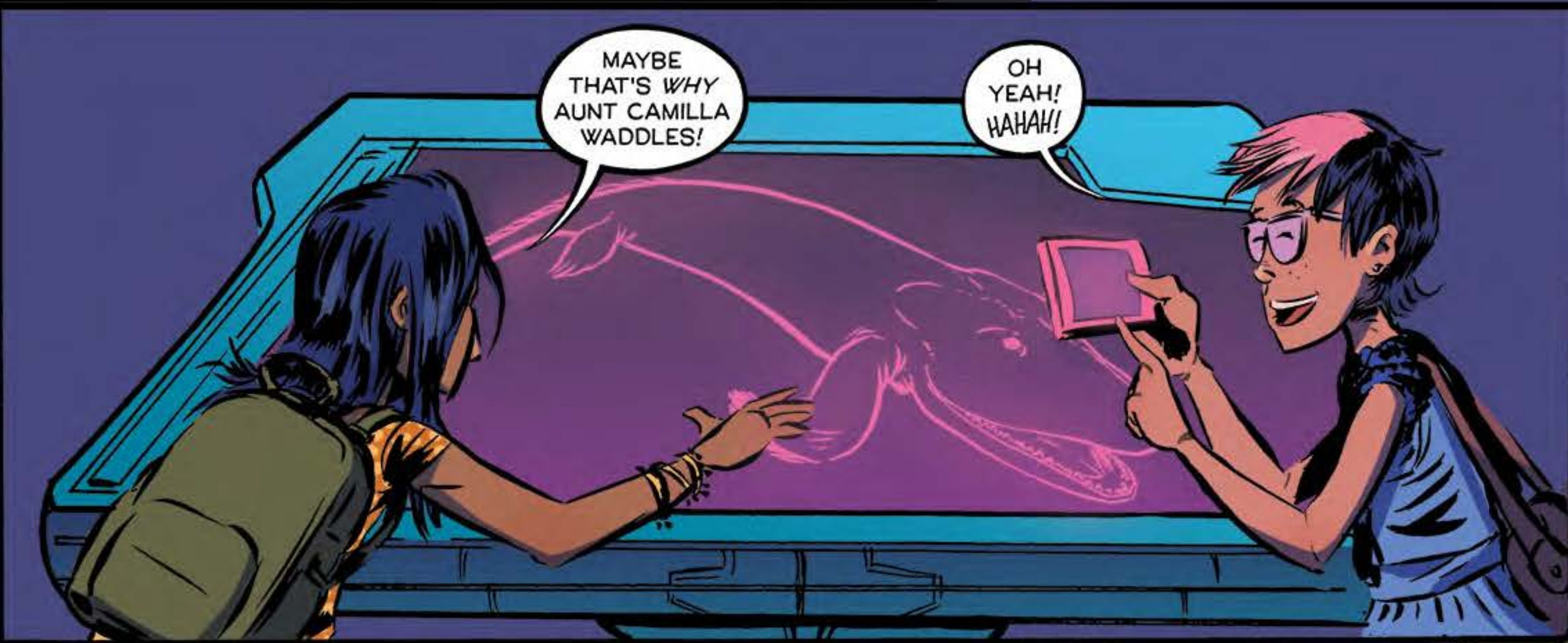
WE'RE RELATED TO THAT?



YOUR HAND HAS THE SAME BASIC STRUCTURE AS TIKTAALIK'S FIN-FOOT.

IT LOOKS LIKE SCIENTISTS STUDIED HANDS, WINGS, FINS AND LEGS.

THE BONES LOOK A LOT ALIKE!



MAYBE THAT'S WHY AUNT CAMILLA WADDLES!

OH YEAH! WAHHA!



HAHAHAH

YEAH, A HORSE'S ELBOW LOOKS LIKE AN ARMPIT!



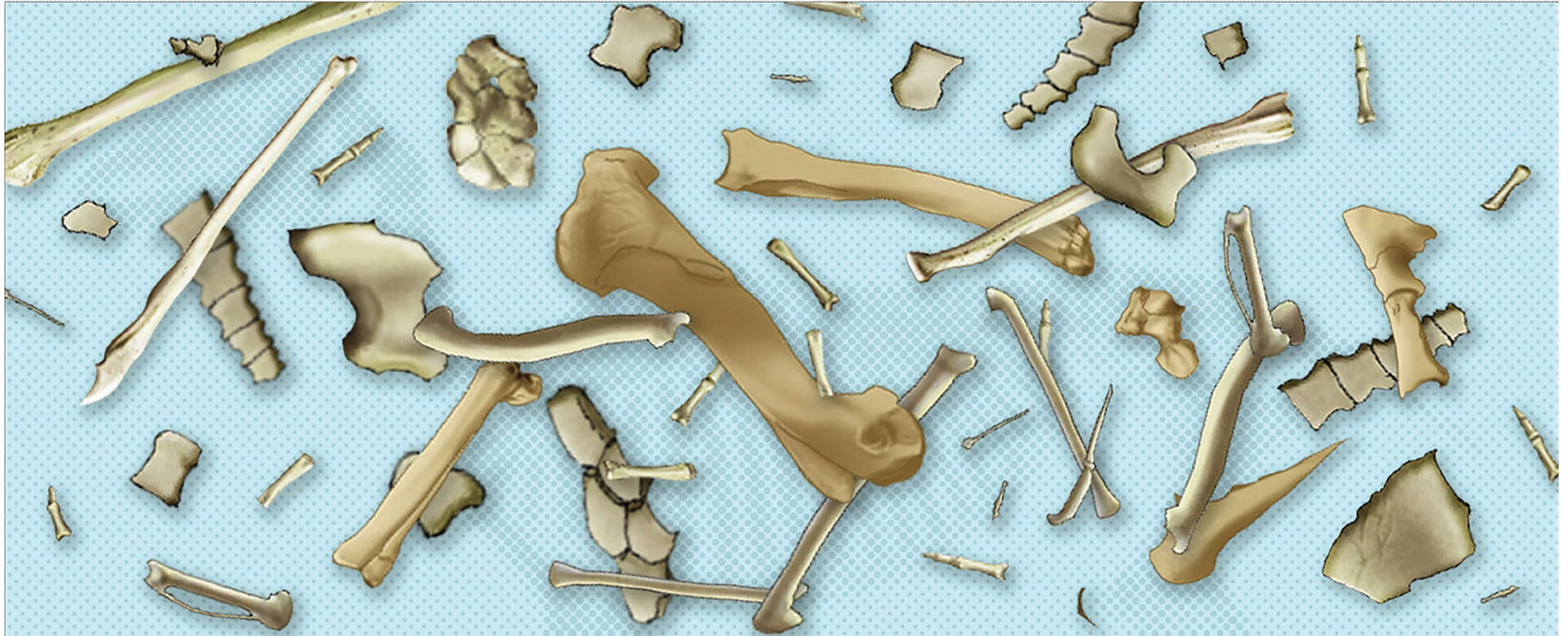
OOH, LONG NECK, JUST LIKE MINE!



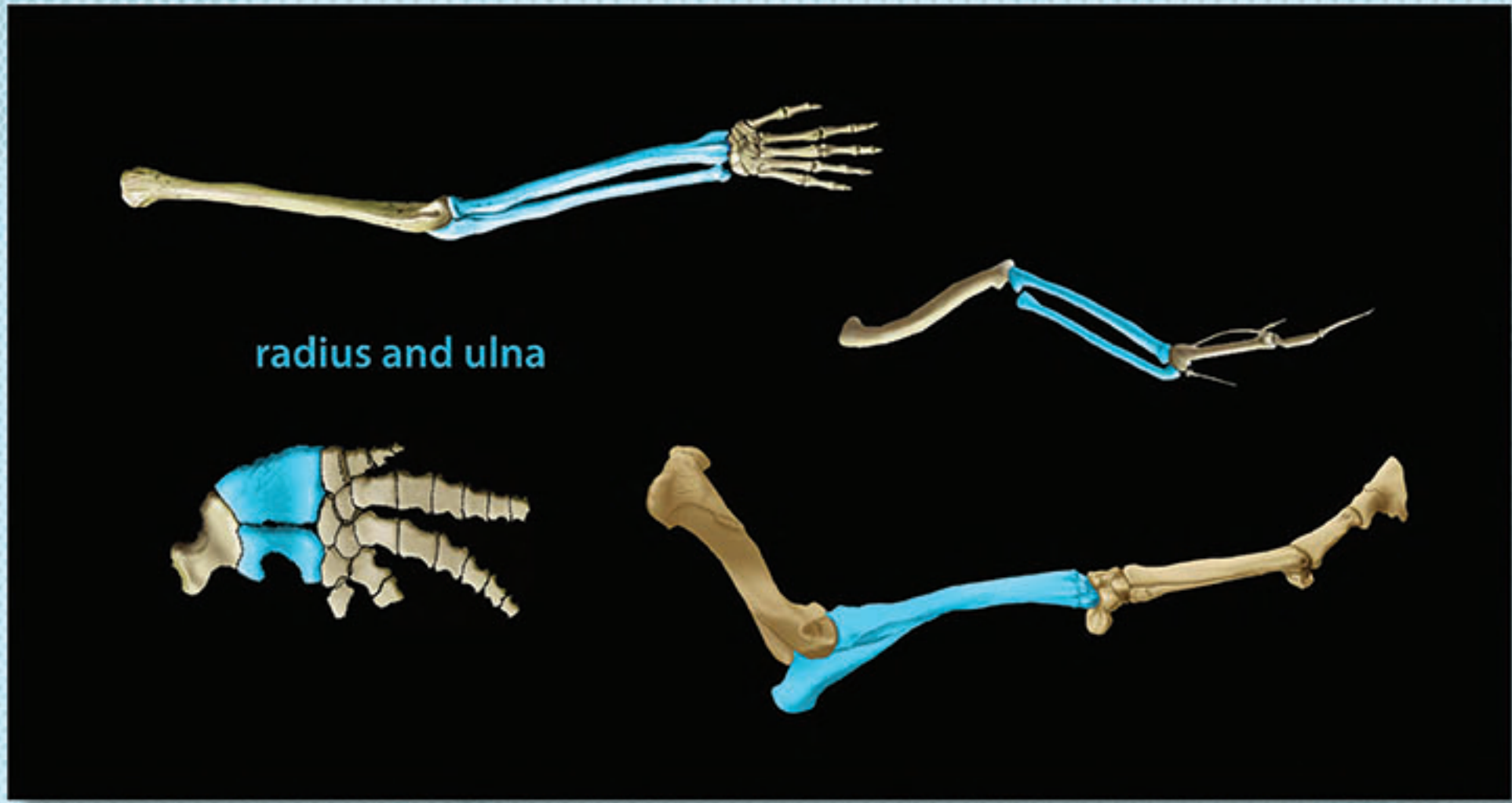
WHOA!

MY ARMS ARE LIKE A HORSE'S FRONT LEGS?

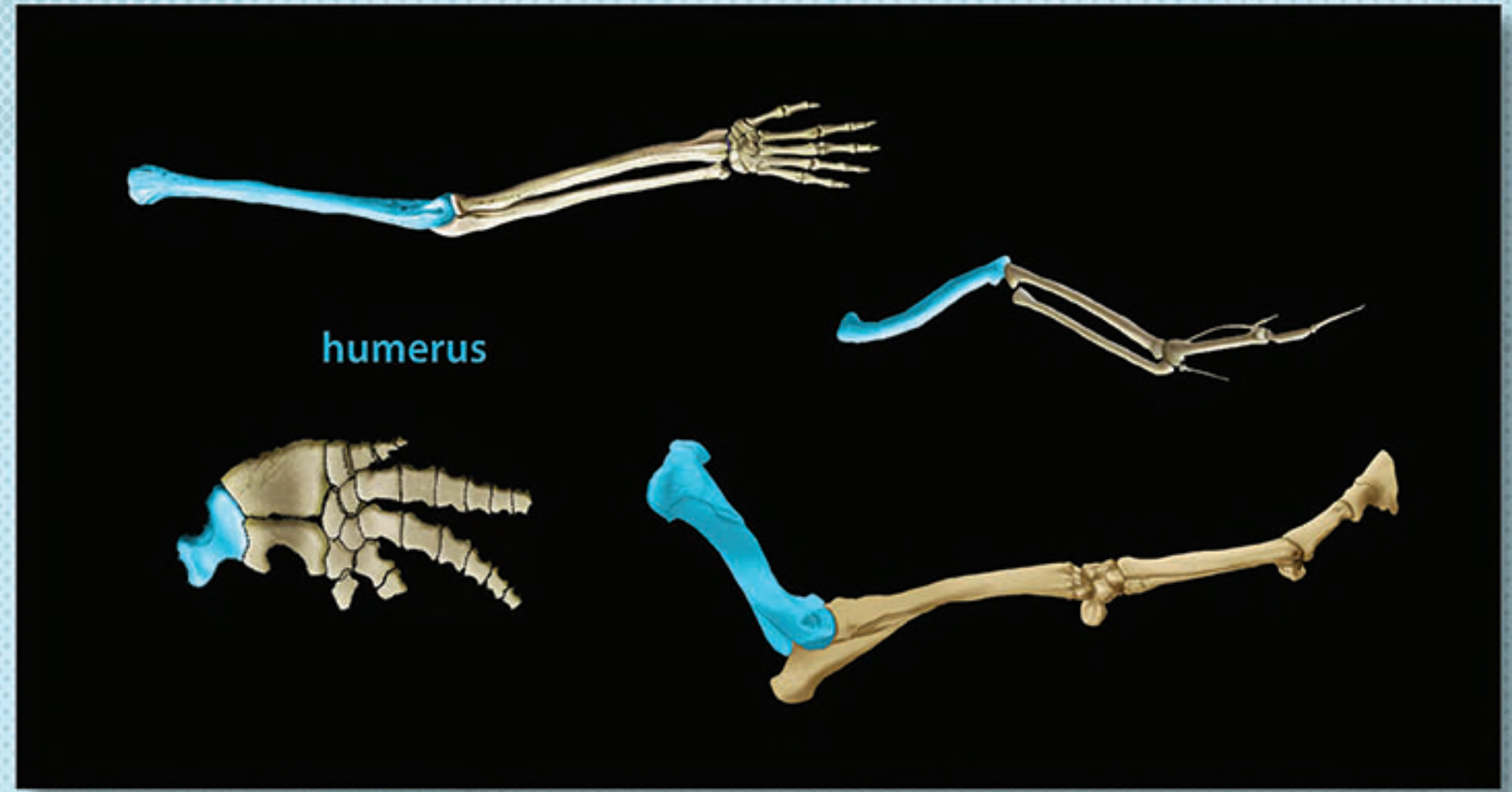
Build a Body



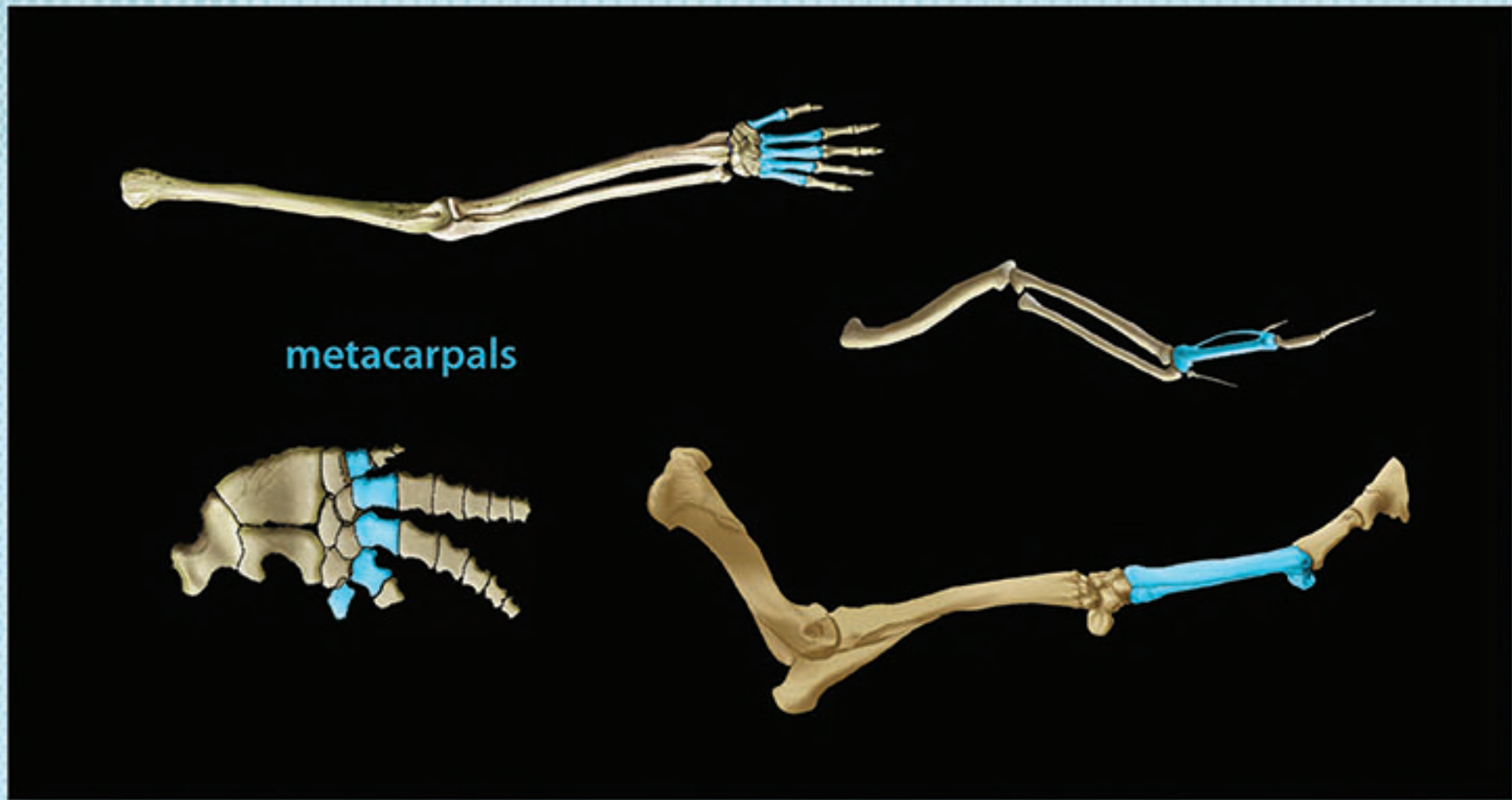
**Fins, fingers and feet look different on the outside.
But inside, they have many similar bones.**



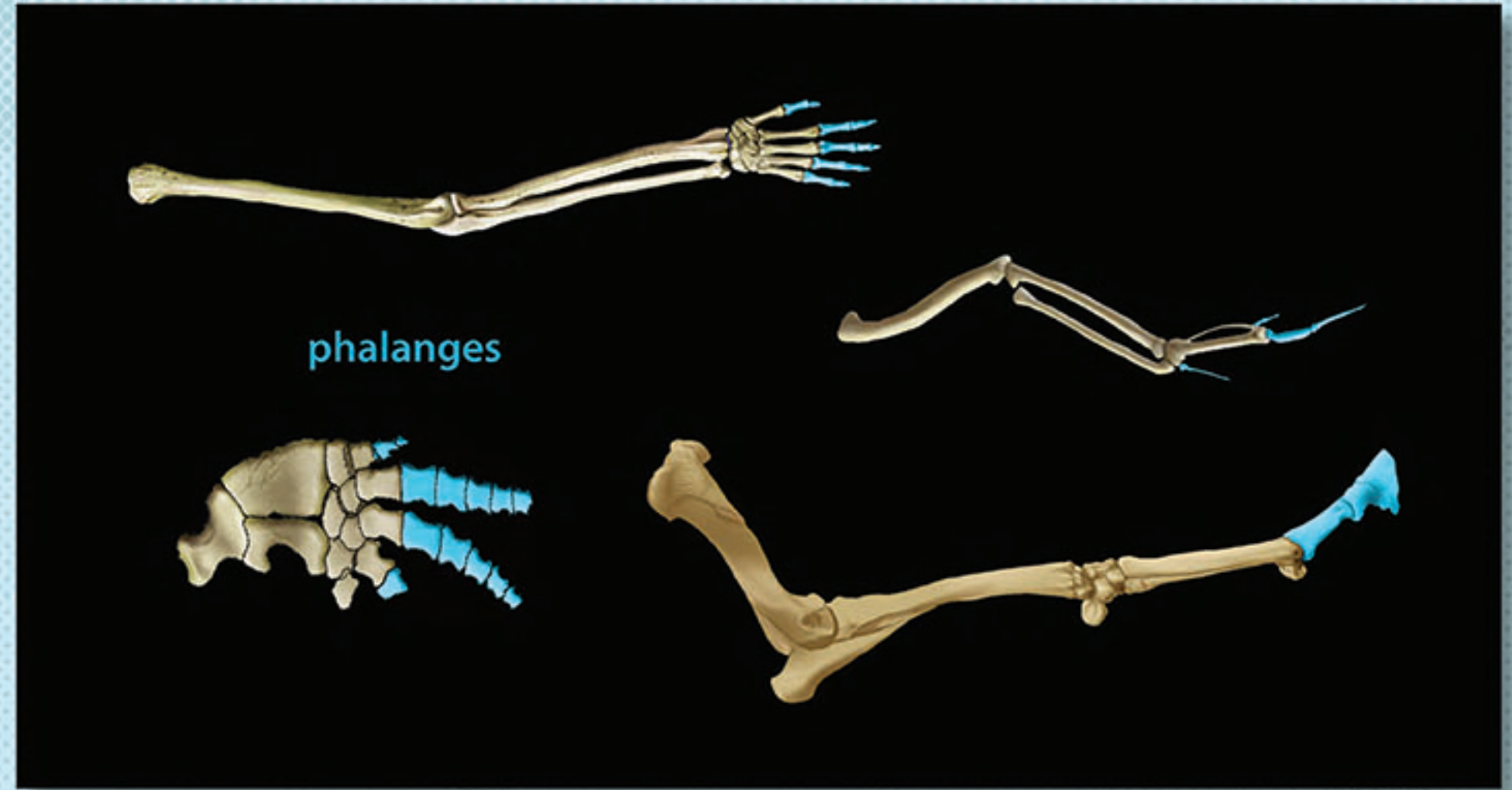
The **radius and ulna** bones are separate in some animals and fused together in others.



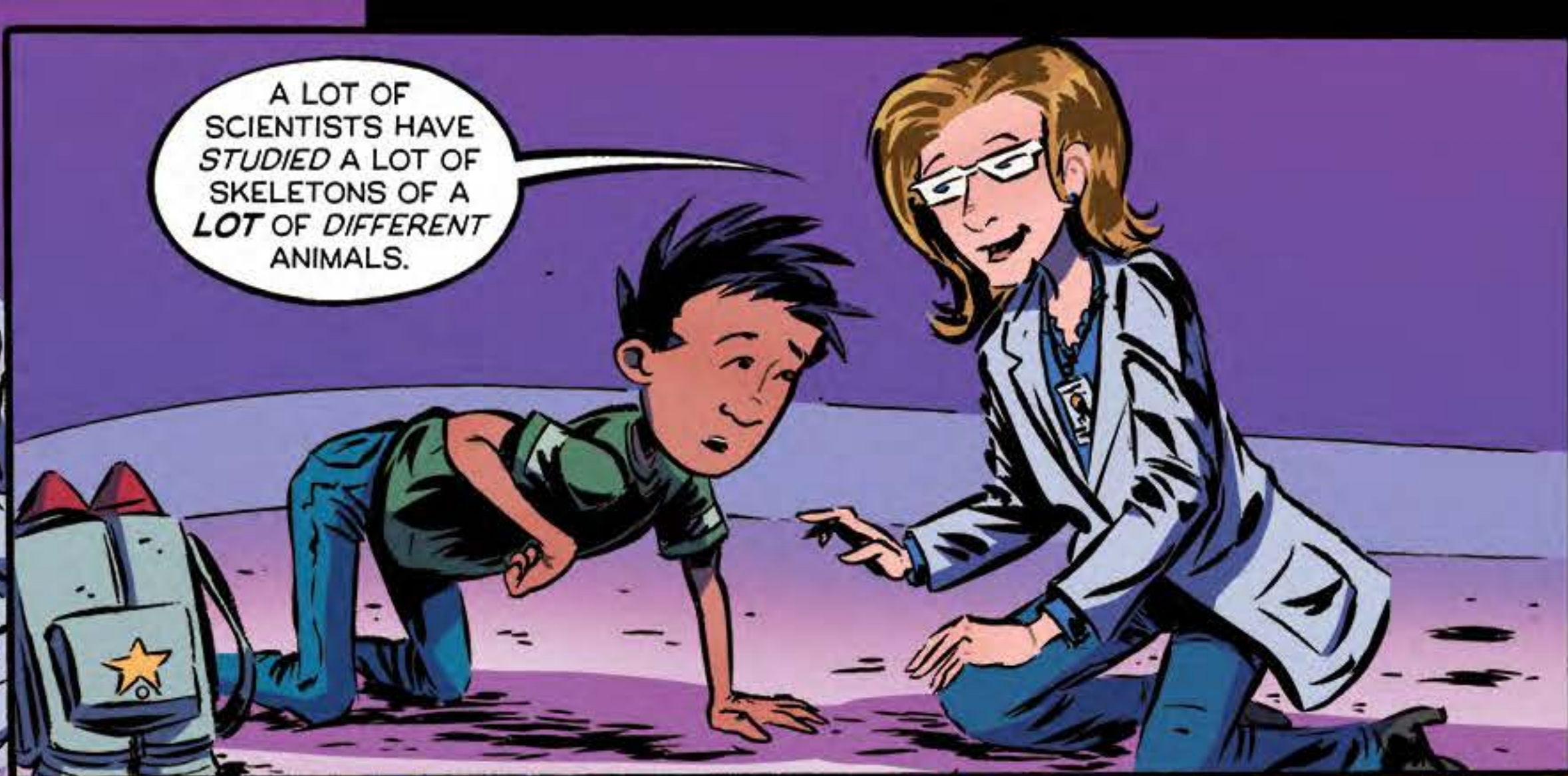
The **humerus** bone often ends at the elbow, if there is an elbow.

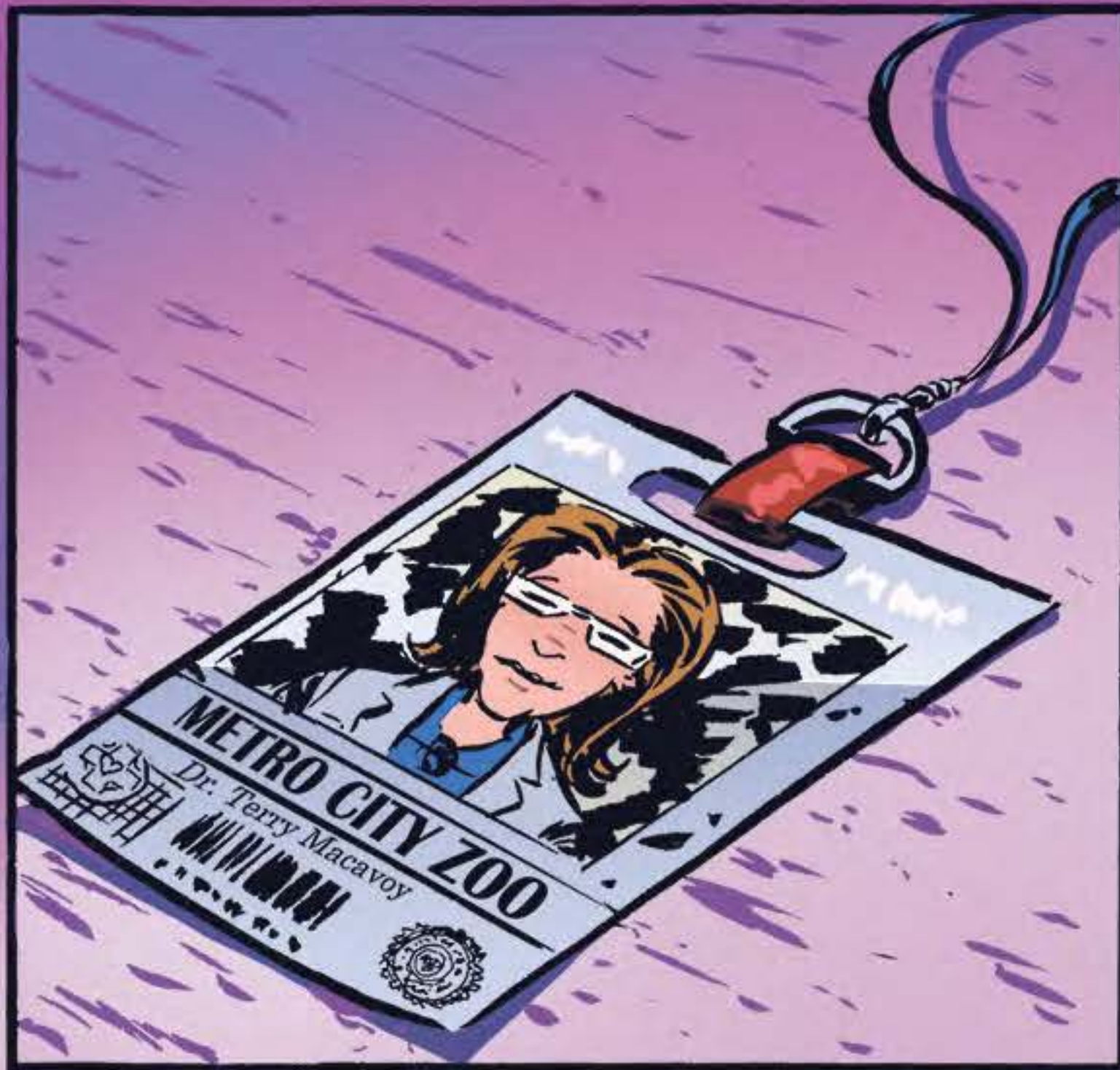


Metacarpals are in the hand, wing and fin, but also in the lower leg.

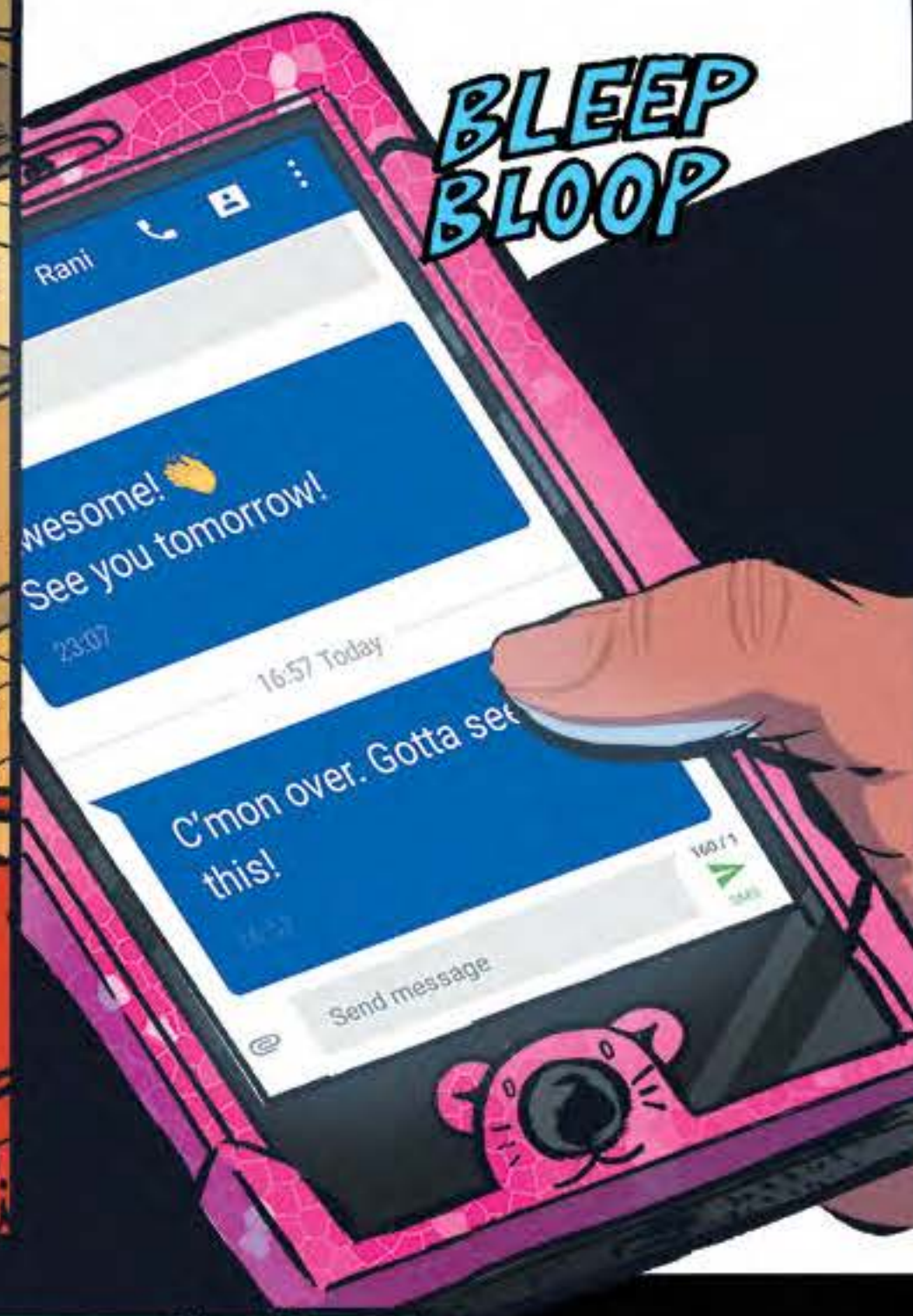


Phalanges are finger bones in hands, foot bones in hooves, and the tips of wings and fins.





LATER, AT HOME...



BLEEP BLOOP



MY BIRTHDAY PRESENT!

CHECK OUT THE WATER I COLLECTED IN THE PARK.



LEMME SEE!

IS THAT GUM? WHAT ARE THOSE BUBBLE THINGS?



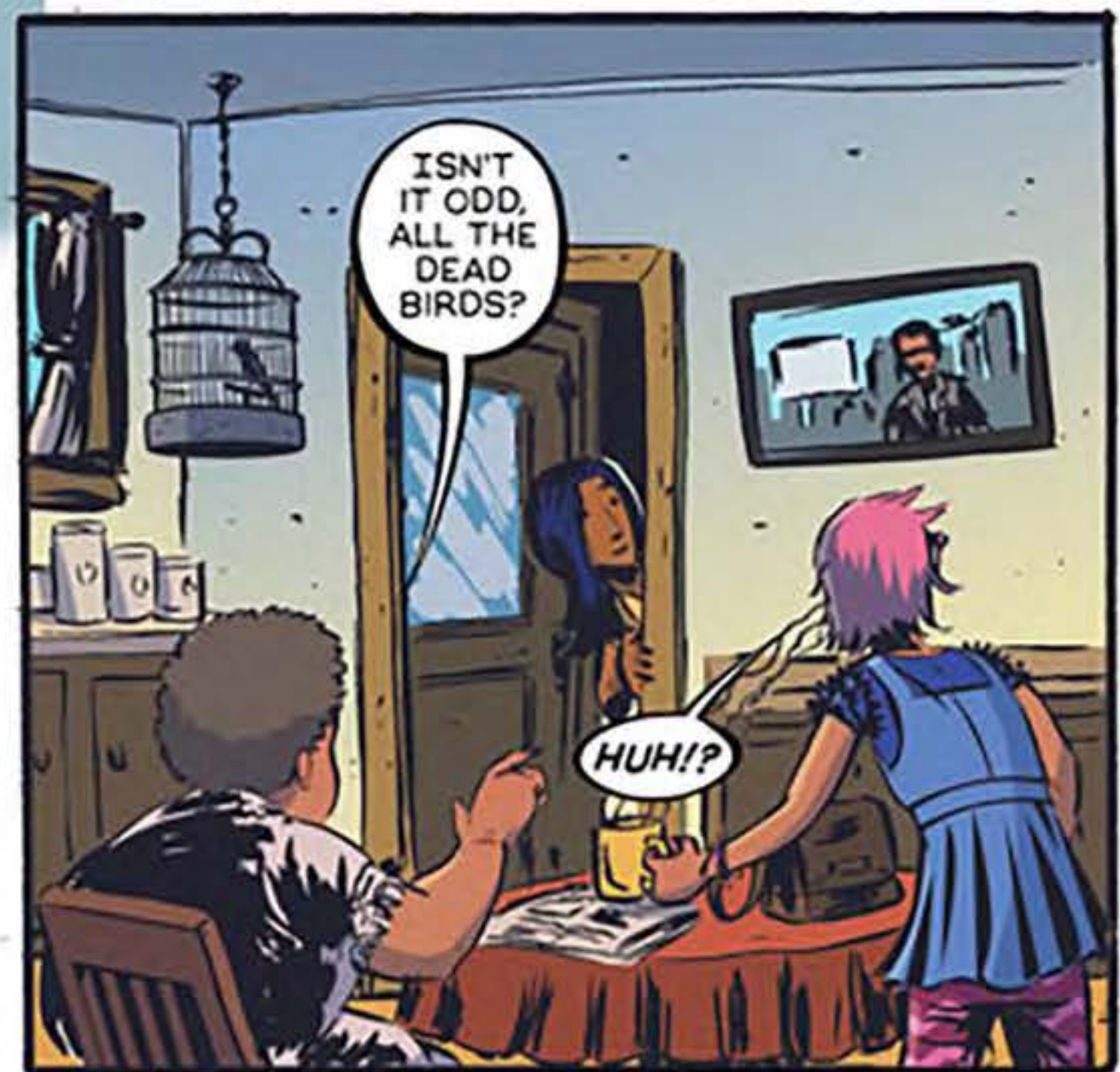
PRETTY SURE THEY'RE MOSQUITO EGGS.

IT'S CALLED A RAFT. LOOK AT THIS...



CHAPTER 2: ANOTHER DEAD WHAT?





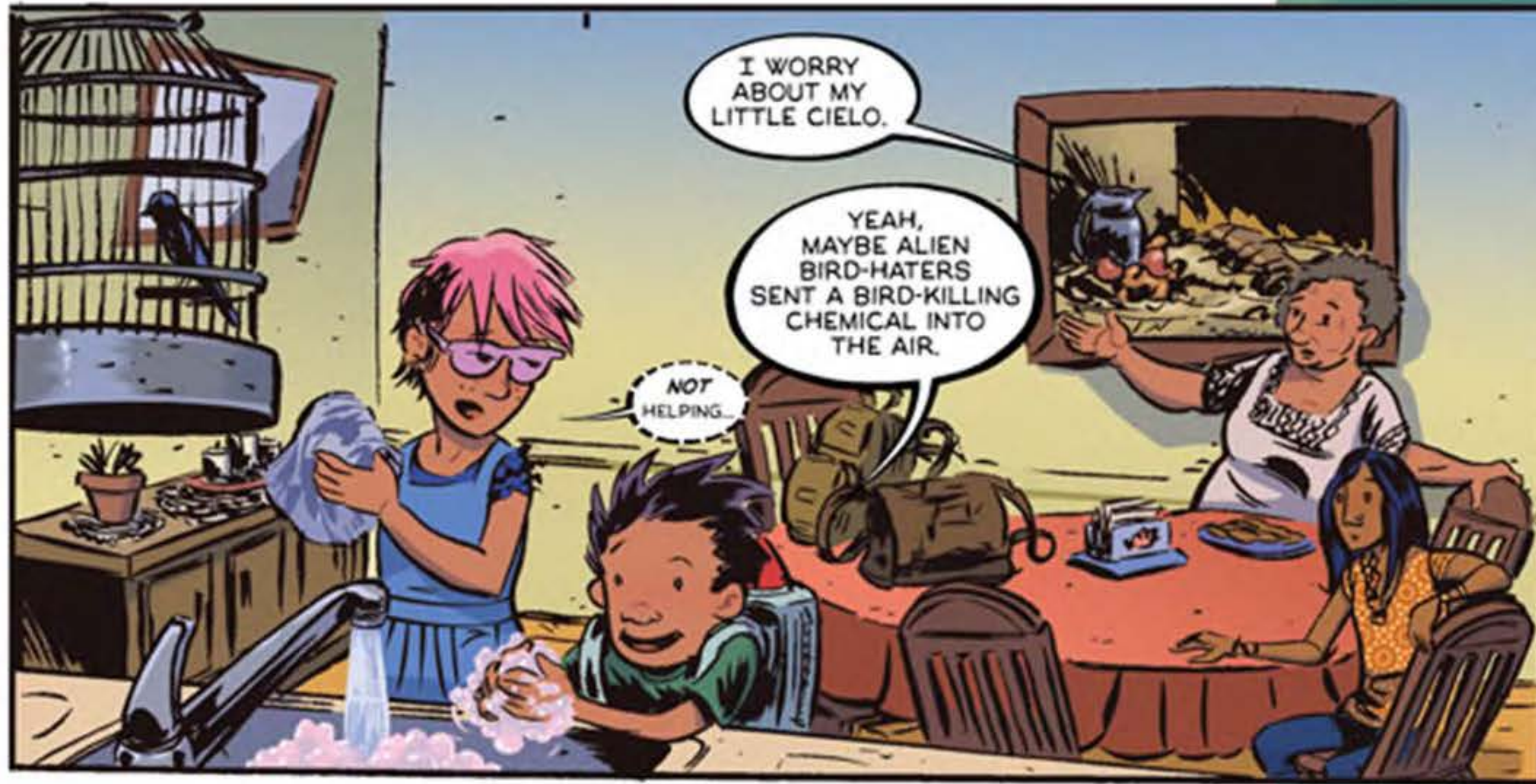


LOOKS LIKE THE DEAD BIRD IN THE PARK.

YEAH.









I JUST TEXTED YOU GUYS THE MAP.

ARE RED DOTS FOR DEAD BIRDS?

YEP!



LET'S CHECK OUT EACH PLACE ON THE MAP.

OH GREAT! LET'S GET CLOSER TO THE DEADLY ALIEN SICKNESS!

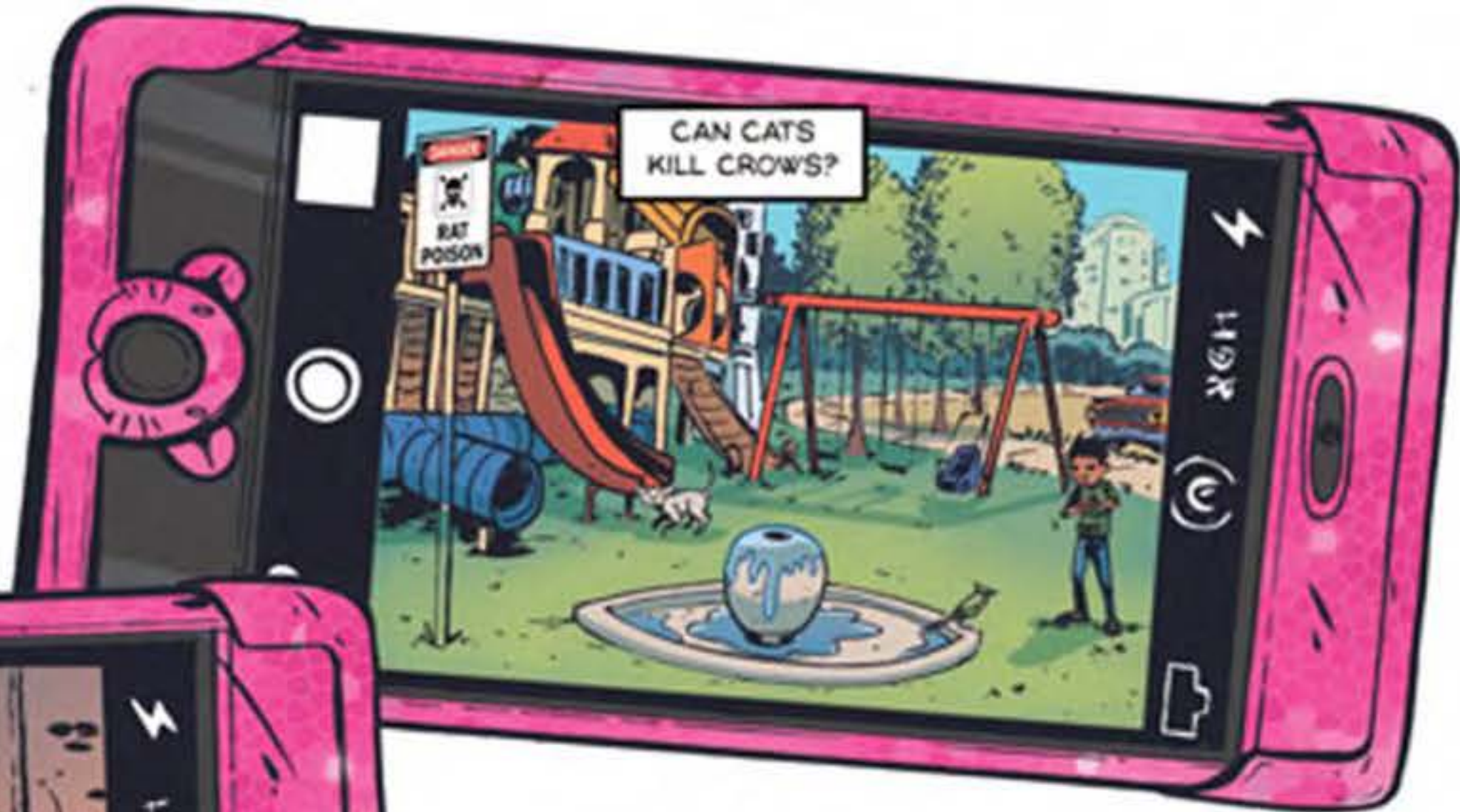


WE CAN SPLIT UP AND TAKE PICTURES OF ANYTHING WEIRD.

C'MON, LITTLE BRO. YOU'RE WITH ME.

SEE YOU HERE IN TEN MINUTES, RANI,

AND THEN THE ZOO?



TEN MINUTES LATER AT THE BUS STOP.



HURRY!
THE BUS!

COMING!



I FOUND
A MAP
APP.

SEND
ME YOUR
PHOTOS.

WHY
ARE WE
DOING
THIS?

DON'T
YOU WANT
TO KNOW
WHERE
THE ALIENS
WILL ATTACK
NEXT?



MAYBE
THERE WILL
BE A CODED
MESSAGE.

YOU
NEVER
KNOW.

LET'S
MAP OUR
PICTURES
TO FIND
OUT.



ALL OF
THE BIRD
DOTS
ARE IN
OUR
NEIGHBORHOOD.

YEAH.

THAT'S
REALLY
WEIRD.

WHAT'S
KILLING
BIRDS?





CHAPTER 3: AT THE ZOO





MAYBE
THE FLAMINGOS
ARE SLEEPING.

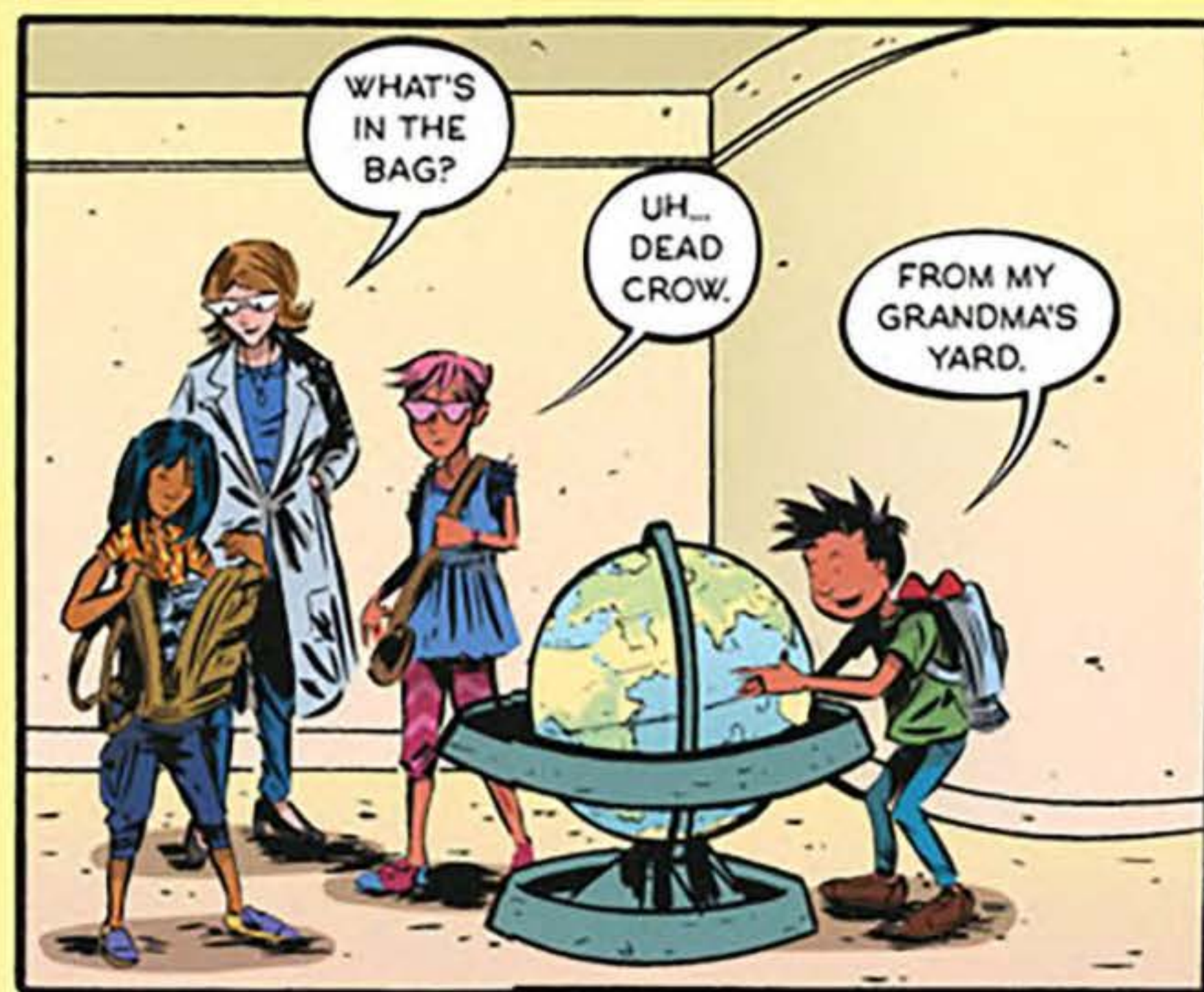
WHAT
IF ALIENS
NABBED
THEM?

RANI NEVER MISSES A
CHANCE TO GEEK OUT!
#SCIENCEGIRL!

AHH!
STUPID
MOSQUITO!

HAHAH

SLAP



YOU GUYS AGAIN!

DID YOU FIND MY ID?

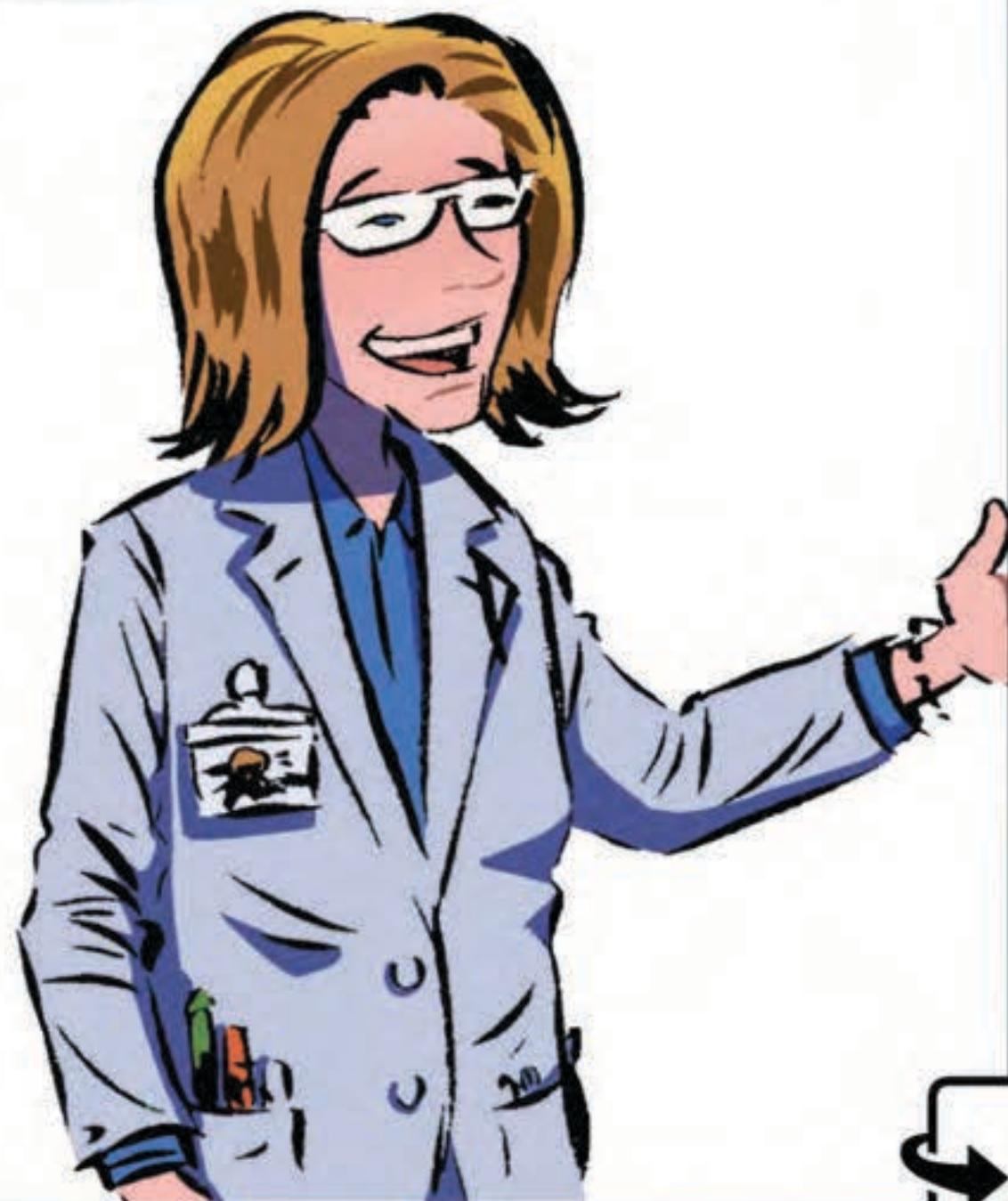
WHAT'S IN THE BAG?

UH

LET'S EXAMINE

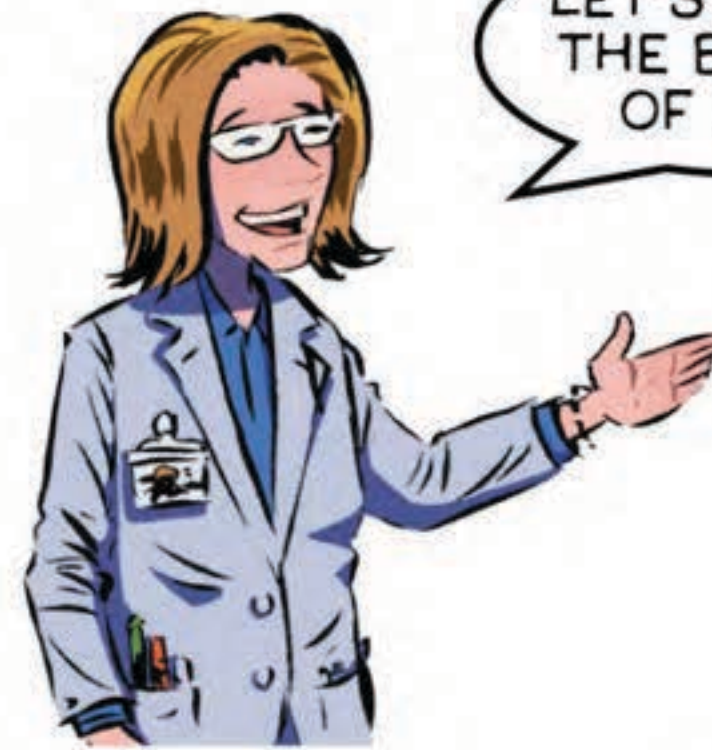
EXIT

DR. TERRY MACAVOY



ANIMAL PATHOLOGIST, METRO CITY ZOO

TERRY uses her veterinary skills to understand how animals get sick.



LET'S GET TO THE BOTTOM OF THIS!

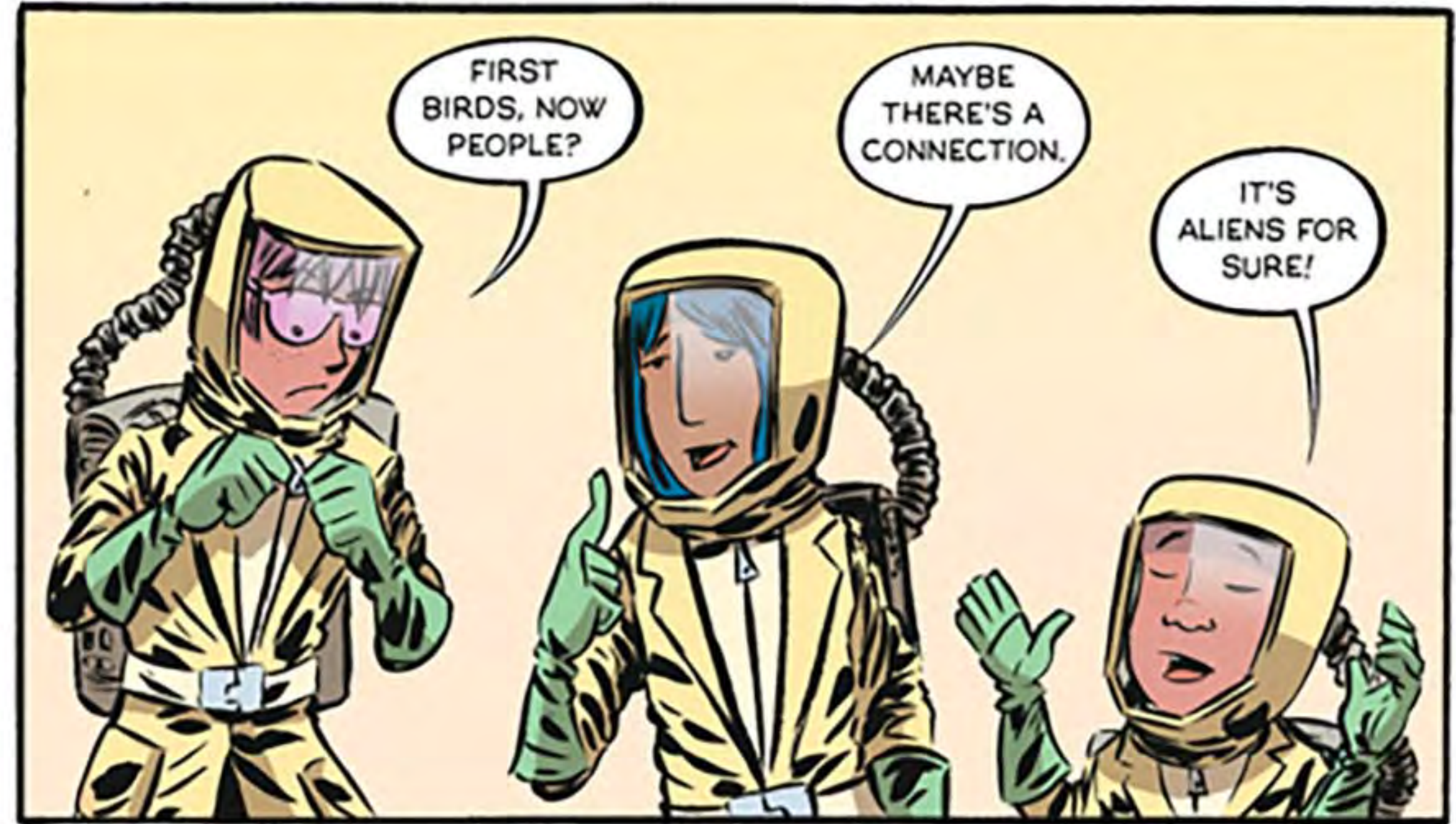
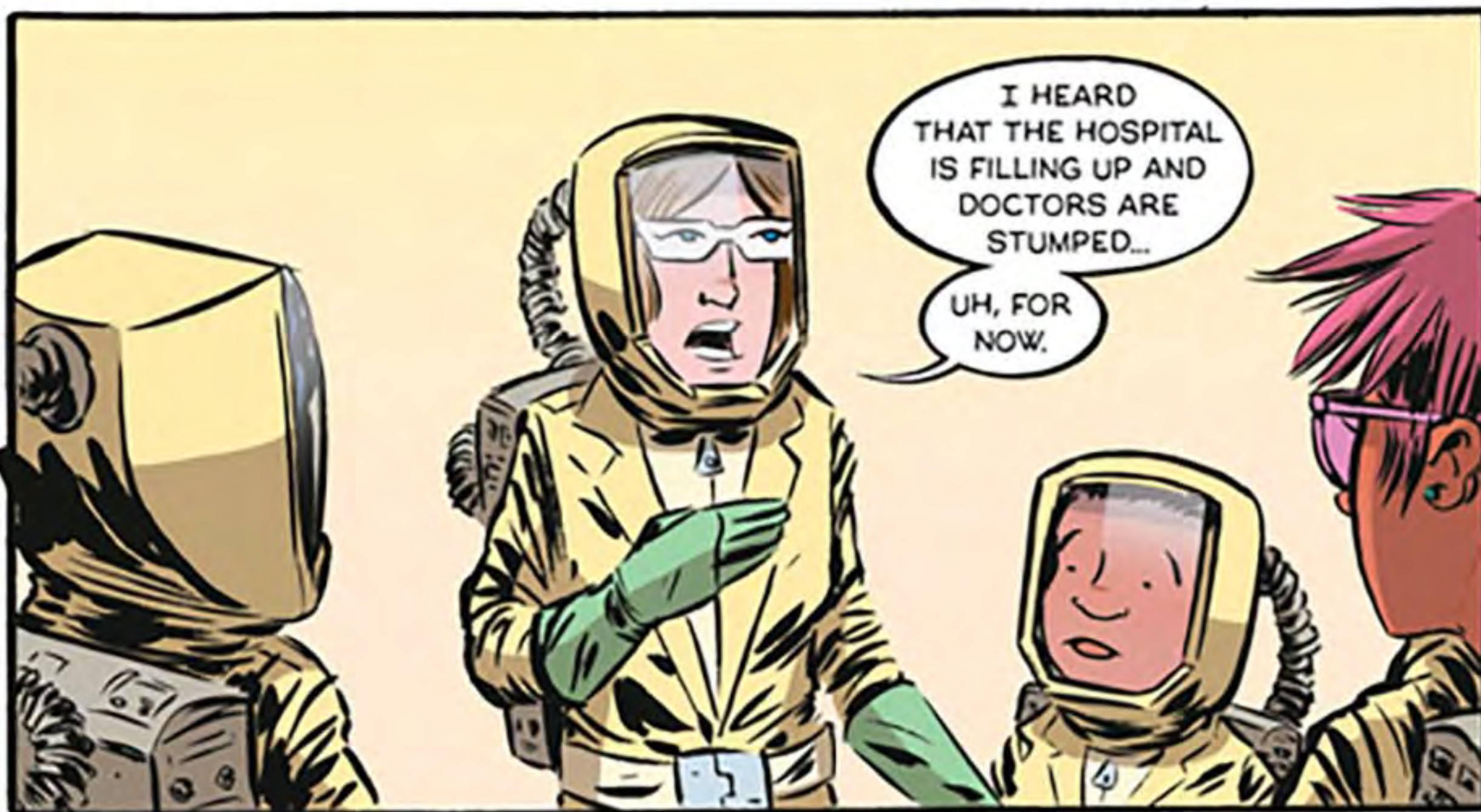
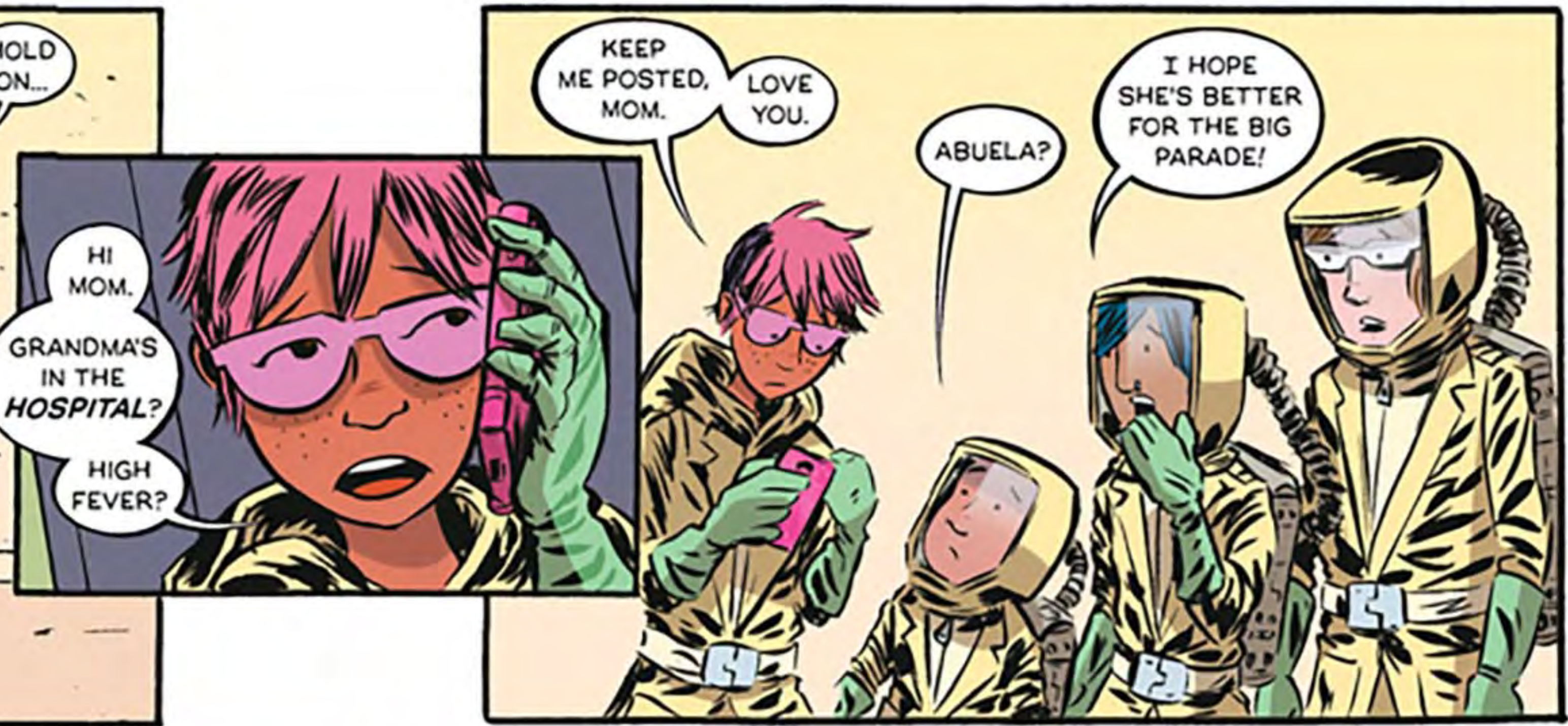
SPECIAL TALENTS

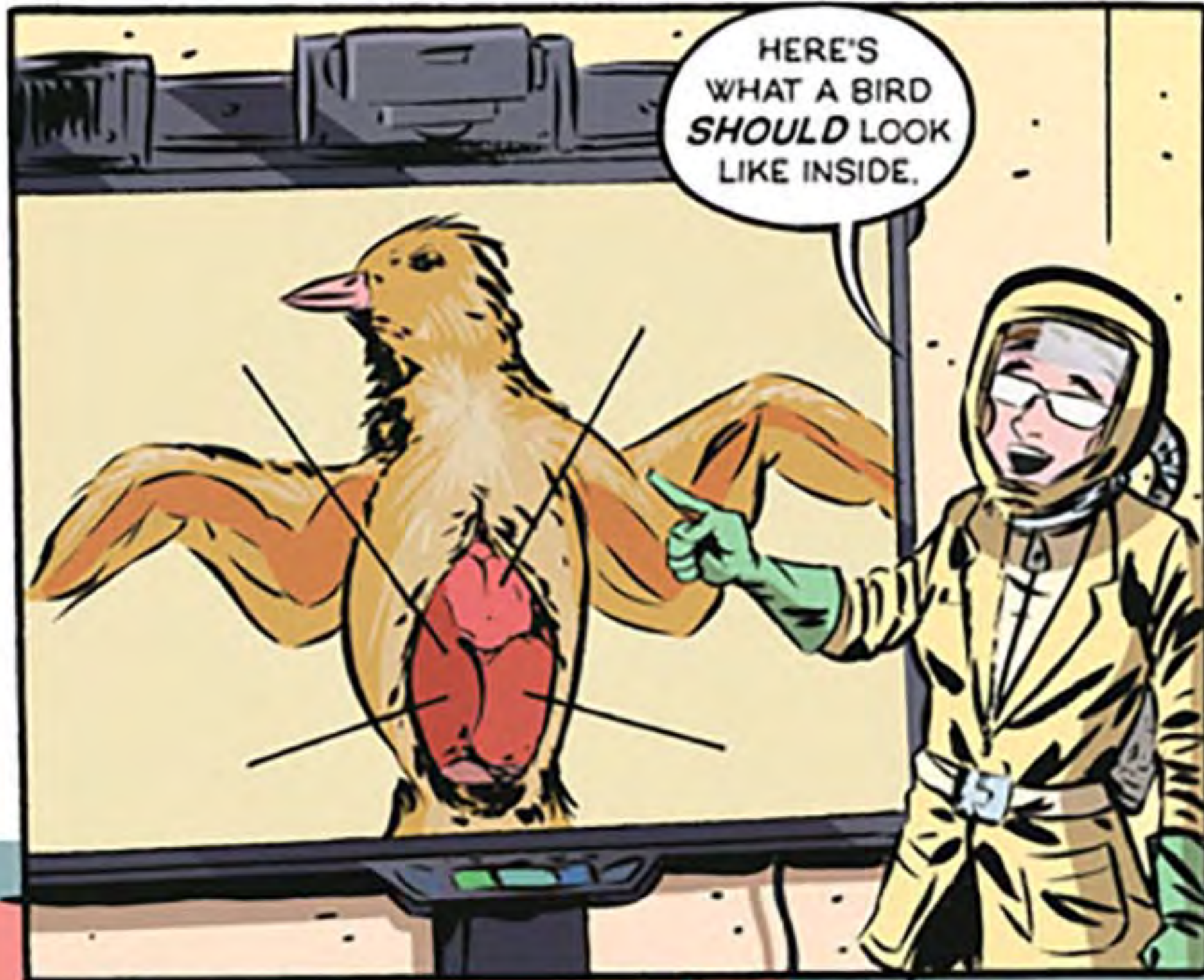
- Problem solver
- Thinks outside the box
- Doesn't quit

NO WAY!

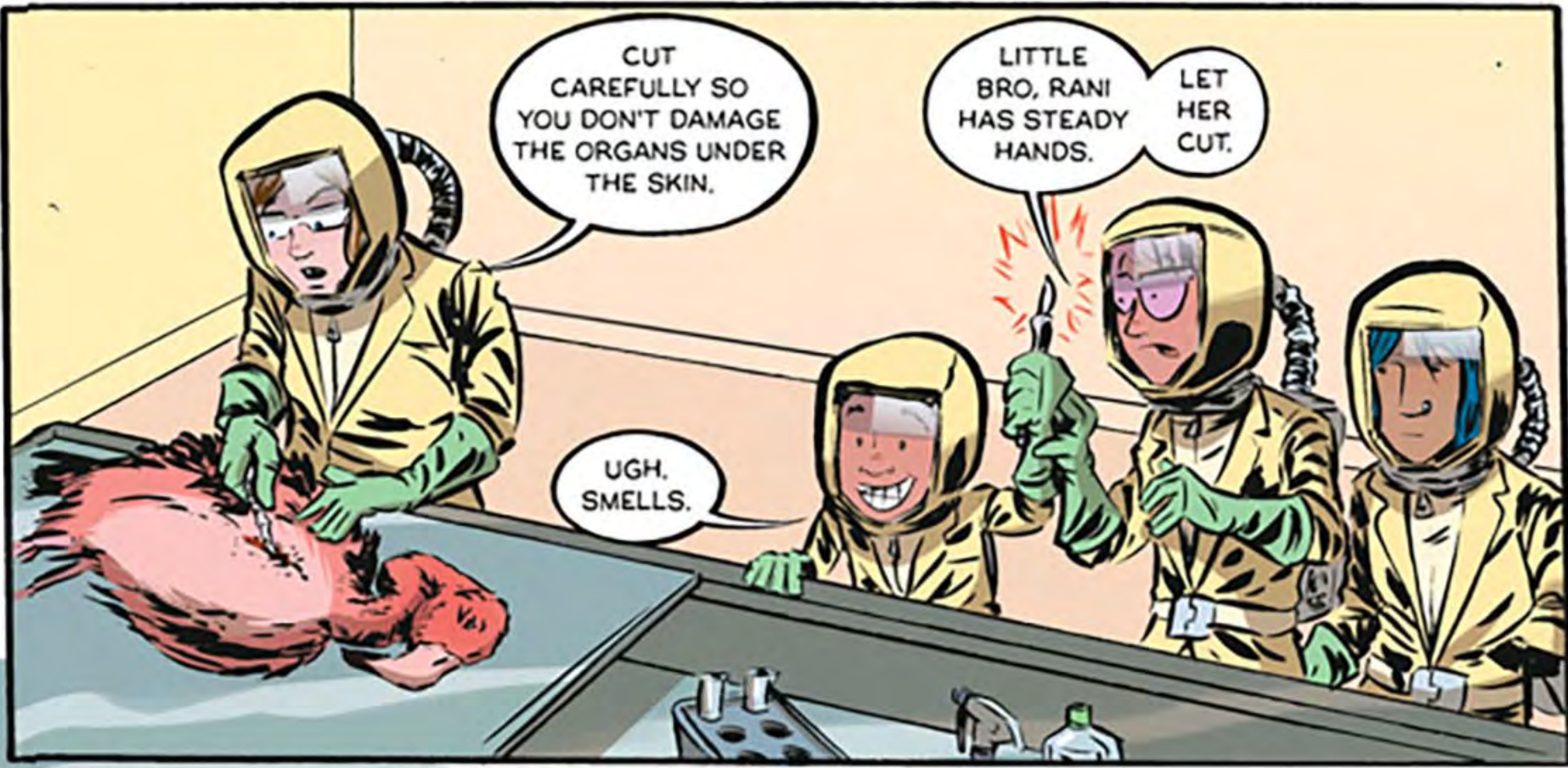
YEAH, AND I DON'T KNOW WHY.

I'M ABOUT TO DO A NECRAPSY TO INVESTIGATE.





HERE'S WHAT A BIRD SHOULD LOOK LIKE INSIDE.



CUT CAREFULLY SO YOU DON'T DAMAGE THE ORGANS UNDER THE SKIN.

LITTLE BRO, RANI HAS STEADY HANDS. LET HER CUT.

UGH. SMELLS.



WOW, PRETTY BLOODY INTESTINES AND HEART.

HMM... INFECTION. LET'S TAKE BLOOD TO TEST.



BIRD BLOOD. CHECK!

WHAT DO WE TEST FOR?

LATER, WE'LL LOOK FOR ANTIBODIES THAT HELP IDENTIFY THE INFECTION.

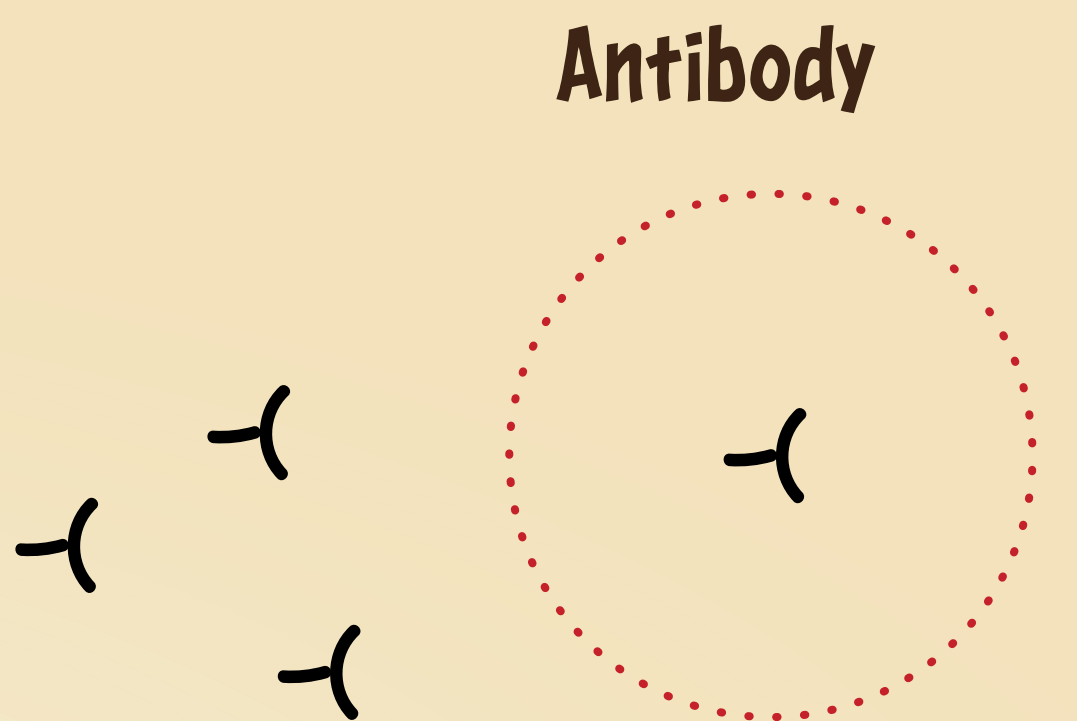
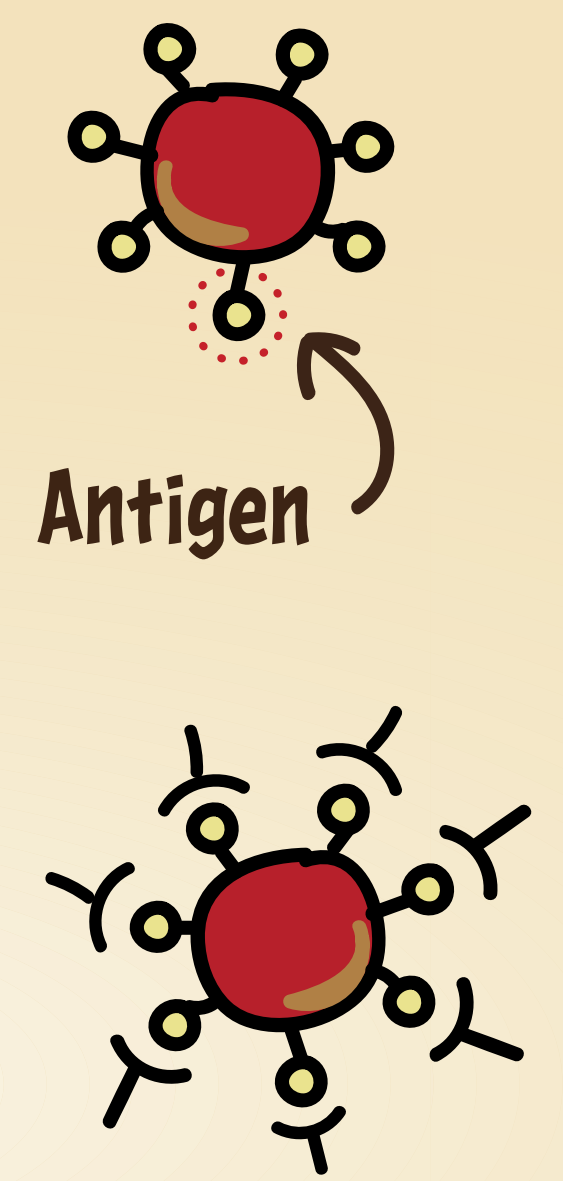
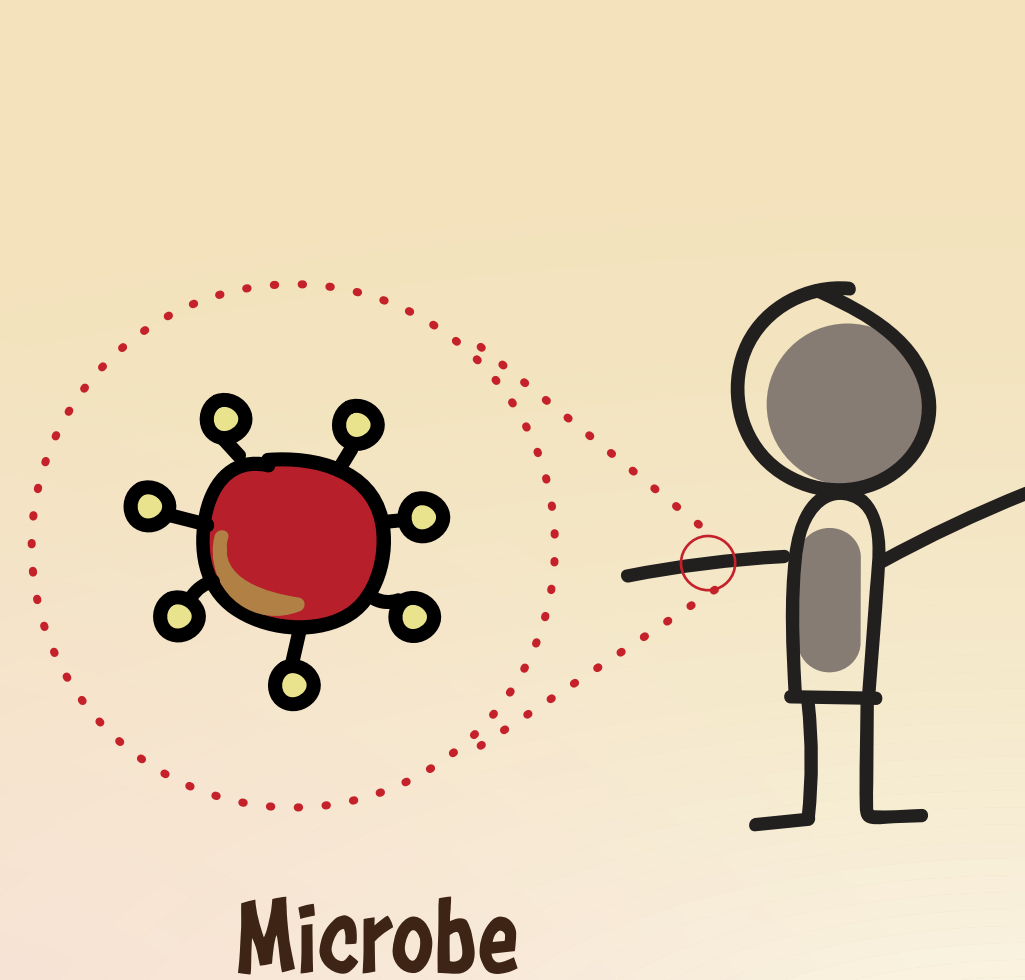
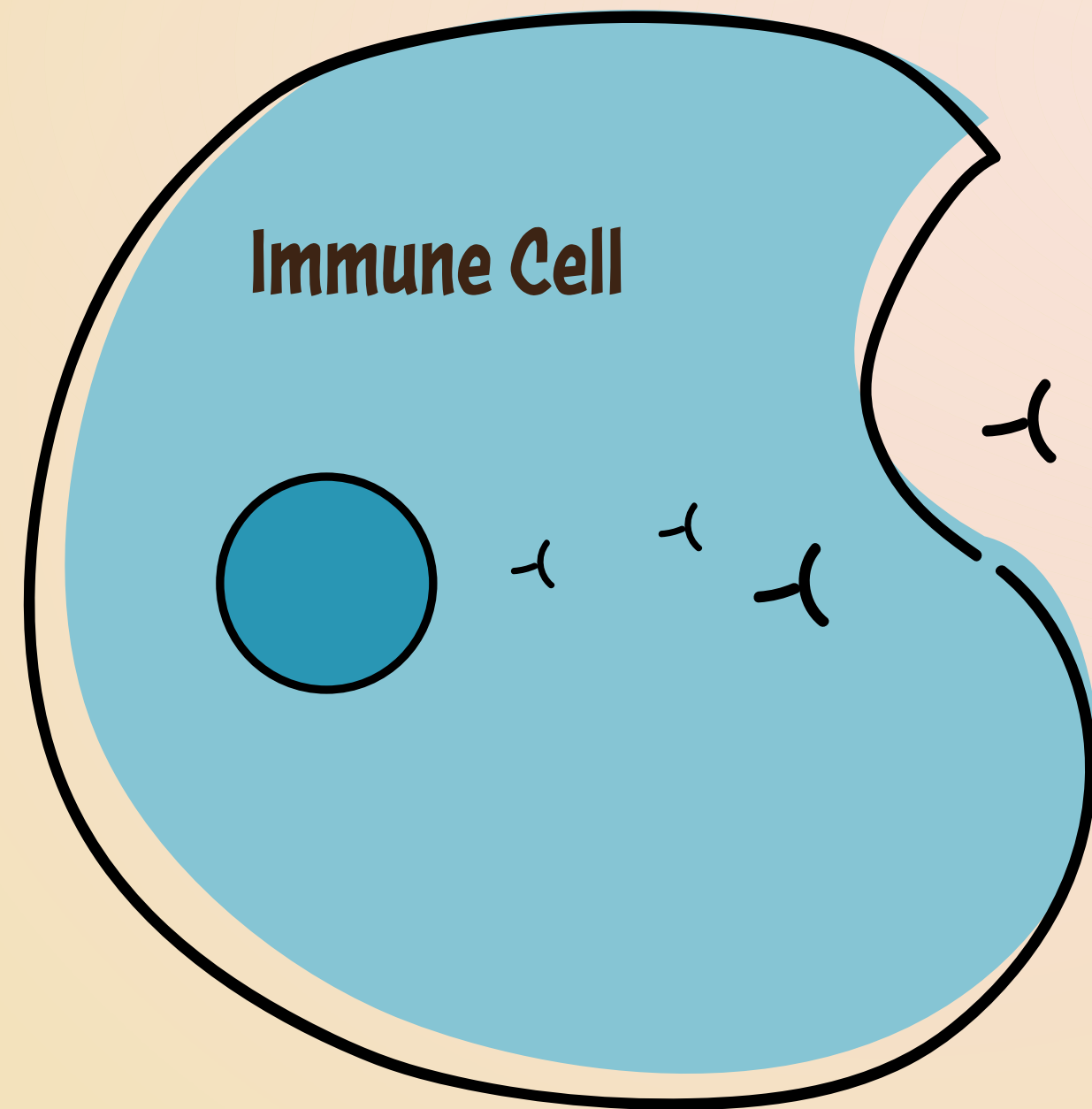


DO WE GET TO SEE THE BIRD BRAIN?

YOU'RE THE BIRD BRAIN.

How Antibodies Work

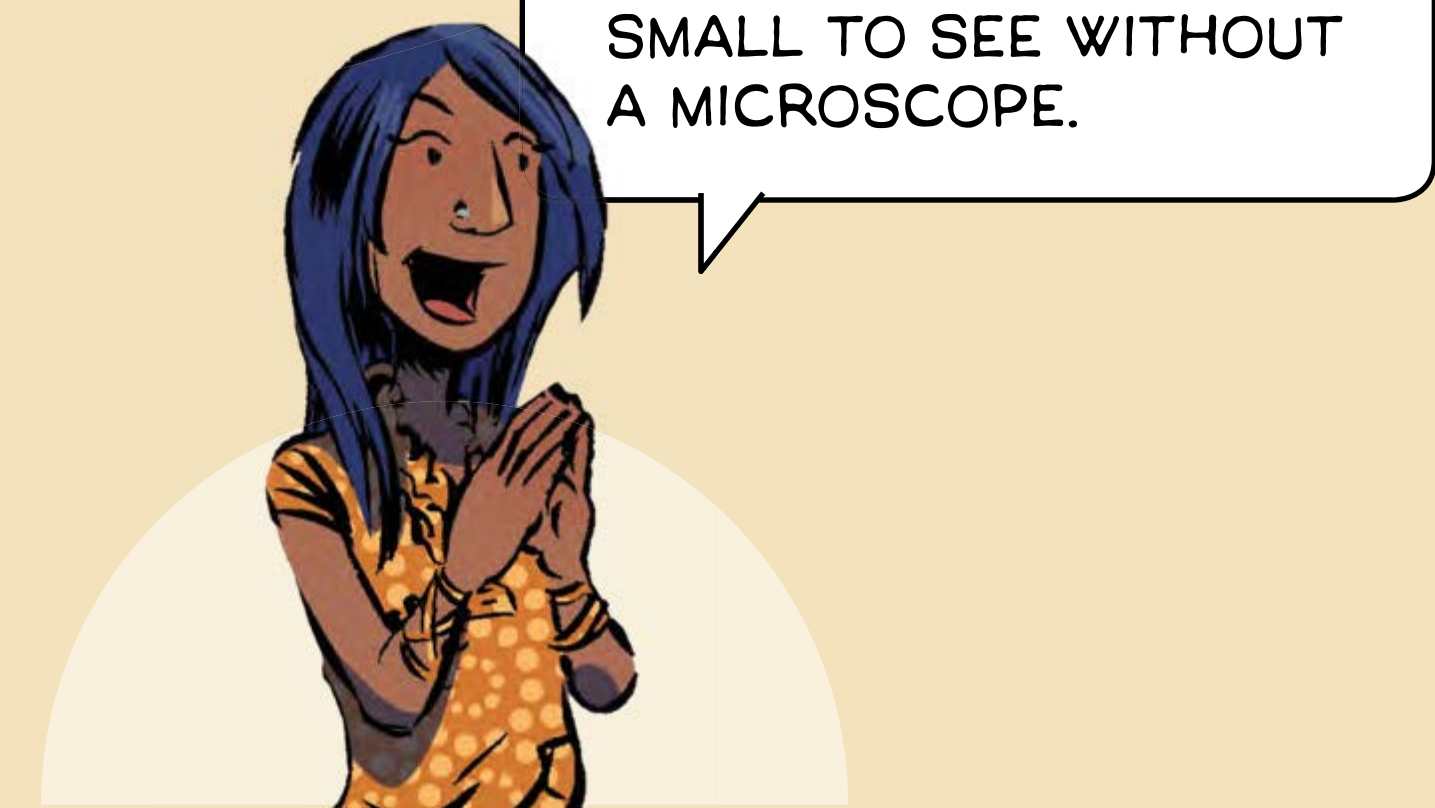
Each type of microbe has a unique chemical ID called an *antigen*. In the body, the immune cells read antigens of invading microbes, such as viruses.



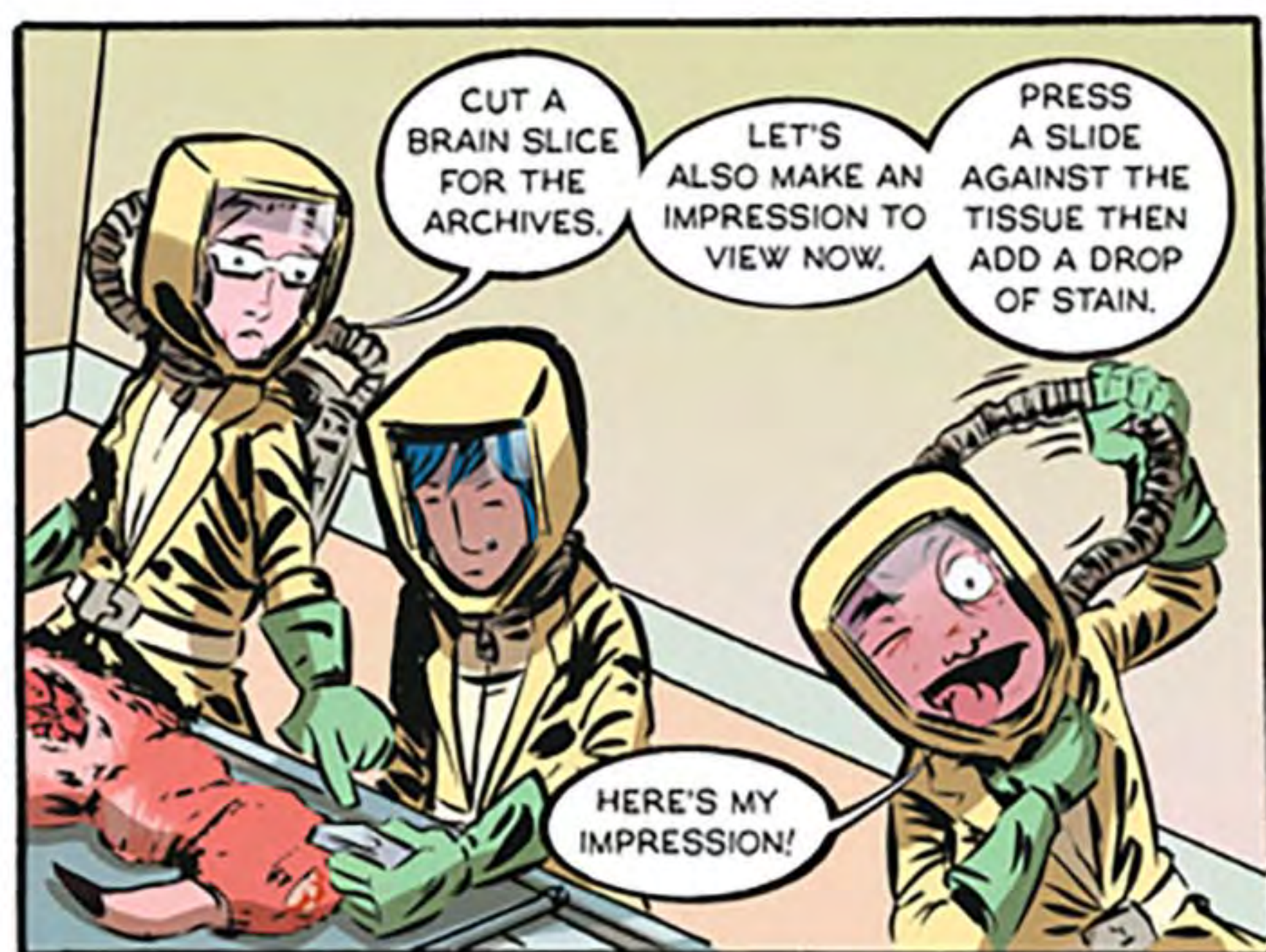
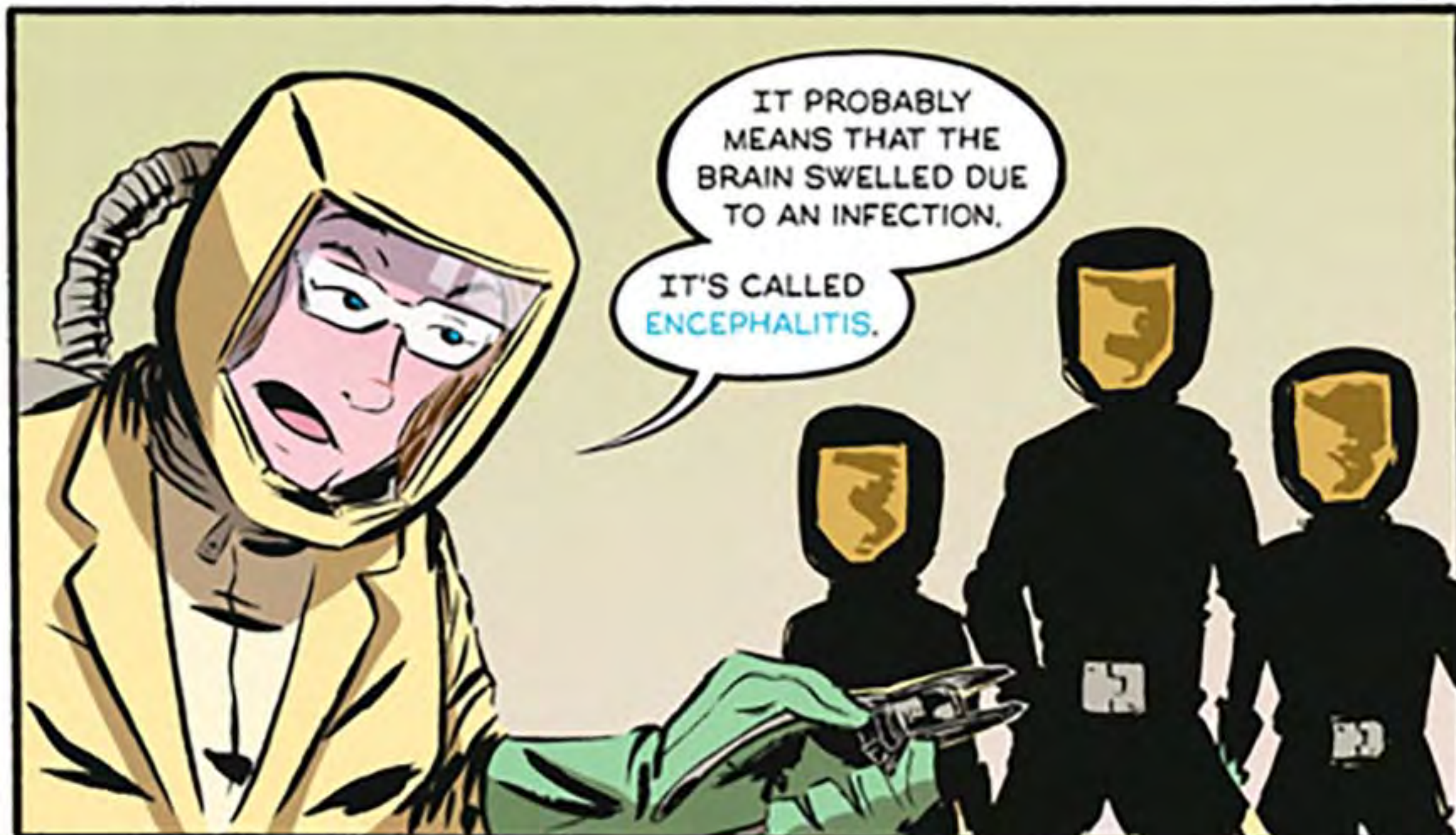
Immune cells in the blood produce chemicals called *antibodies* that are unique to each antigen.

Antibodies attach to each microbe preventing the invading microbe from causing an infection.

Testing for specific antibodies in the blood is one way of detecting a type of infection.



A MICROBE IS AN ORGANISM THAT'S TOO SMALL TO SEE WITHOUT A MICROSCOPE.





EGGS.
WHERE DID
YOU GET
THOSE?

HERE'S
THE
SCOOP.



WE FOUND A
DEAD CROW NEAR
A PUDDLE...



... THAT HAD
MOSQUITO
EGGS IN IT...



...THEN WE
BAGGED A
DEAD CROW AT
GRANDMA'S...



...AND SAW A
MAP OF DEAD
BIRDS IN OUR
NEIGHBORHOOD...

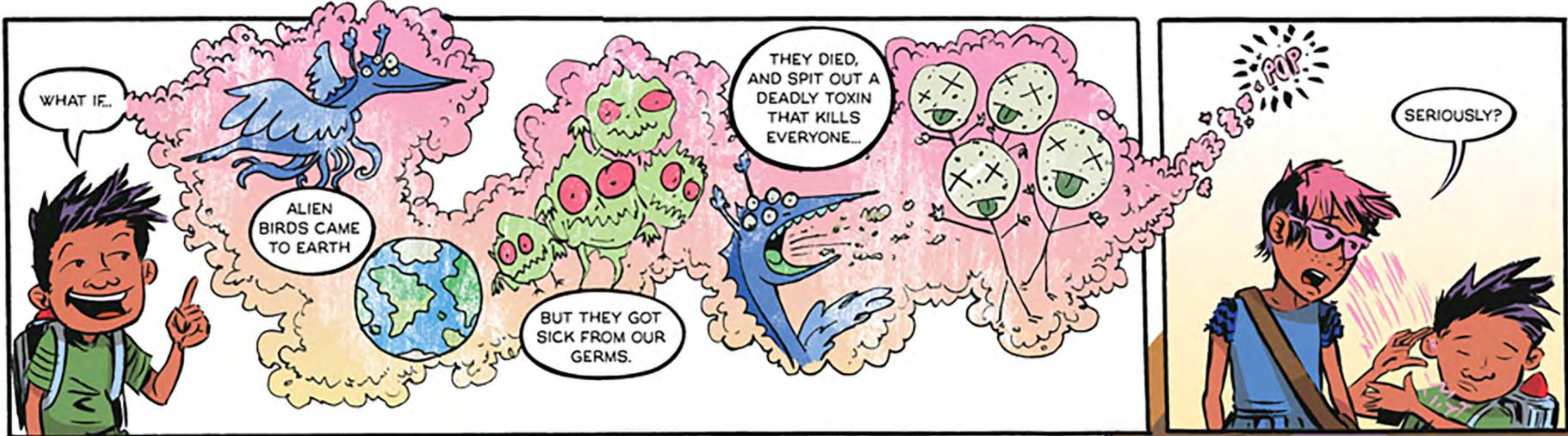


...SO WE
SNAPPED
THOSE
SPOTS...



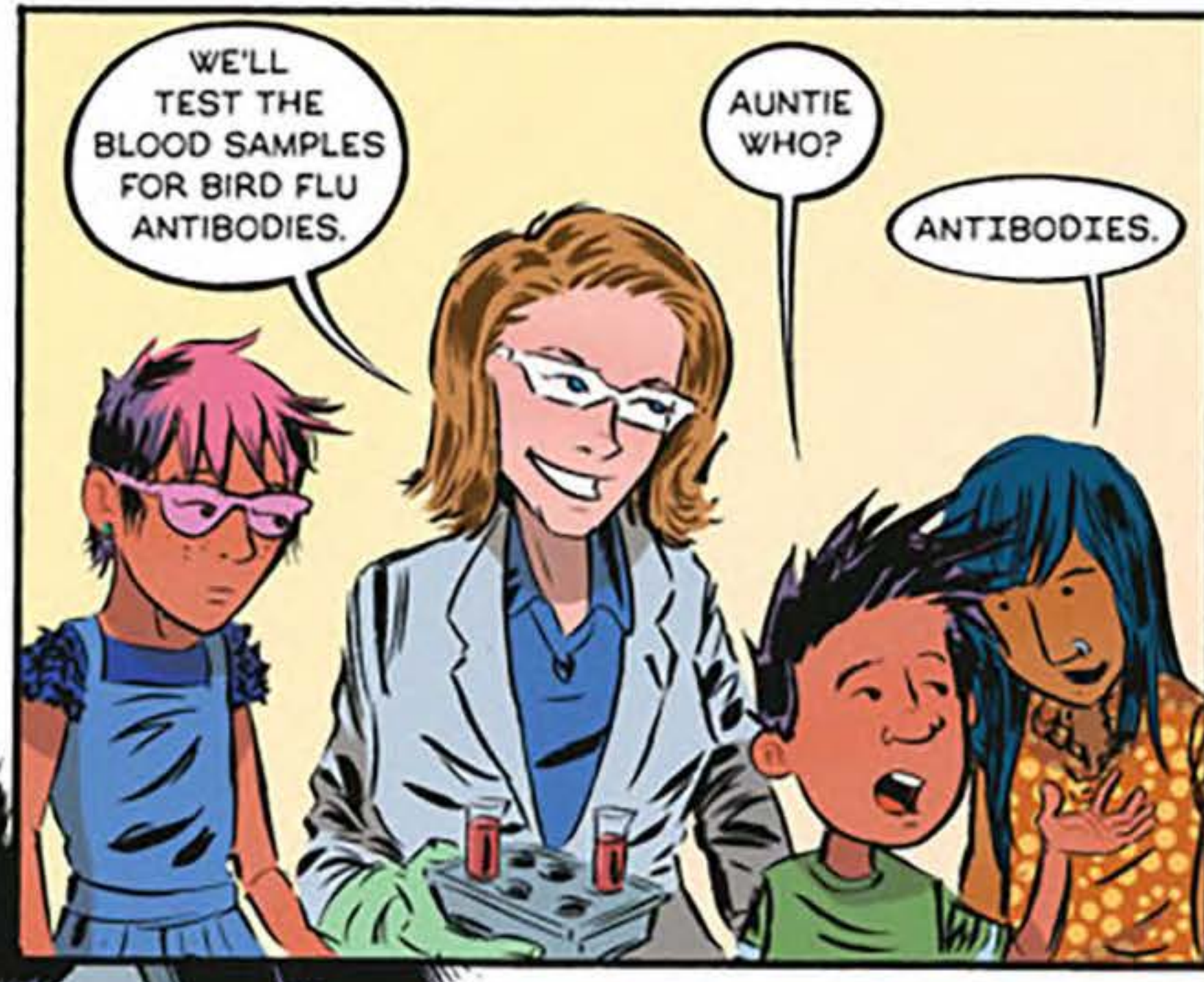
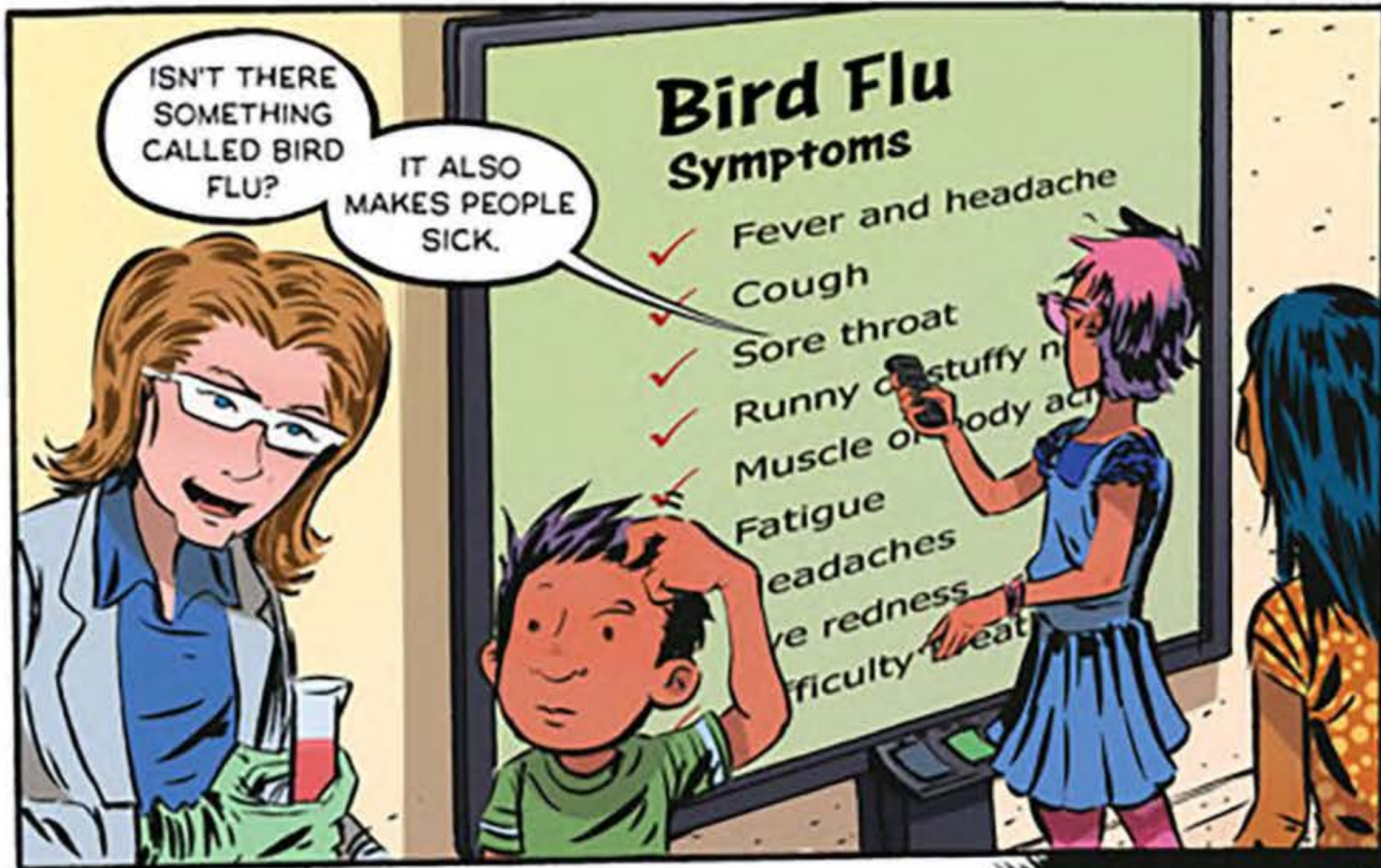
...AND CAME
TO SEE YOU.

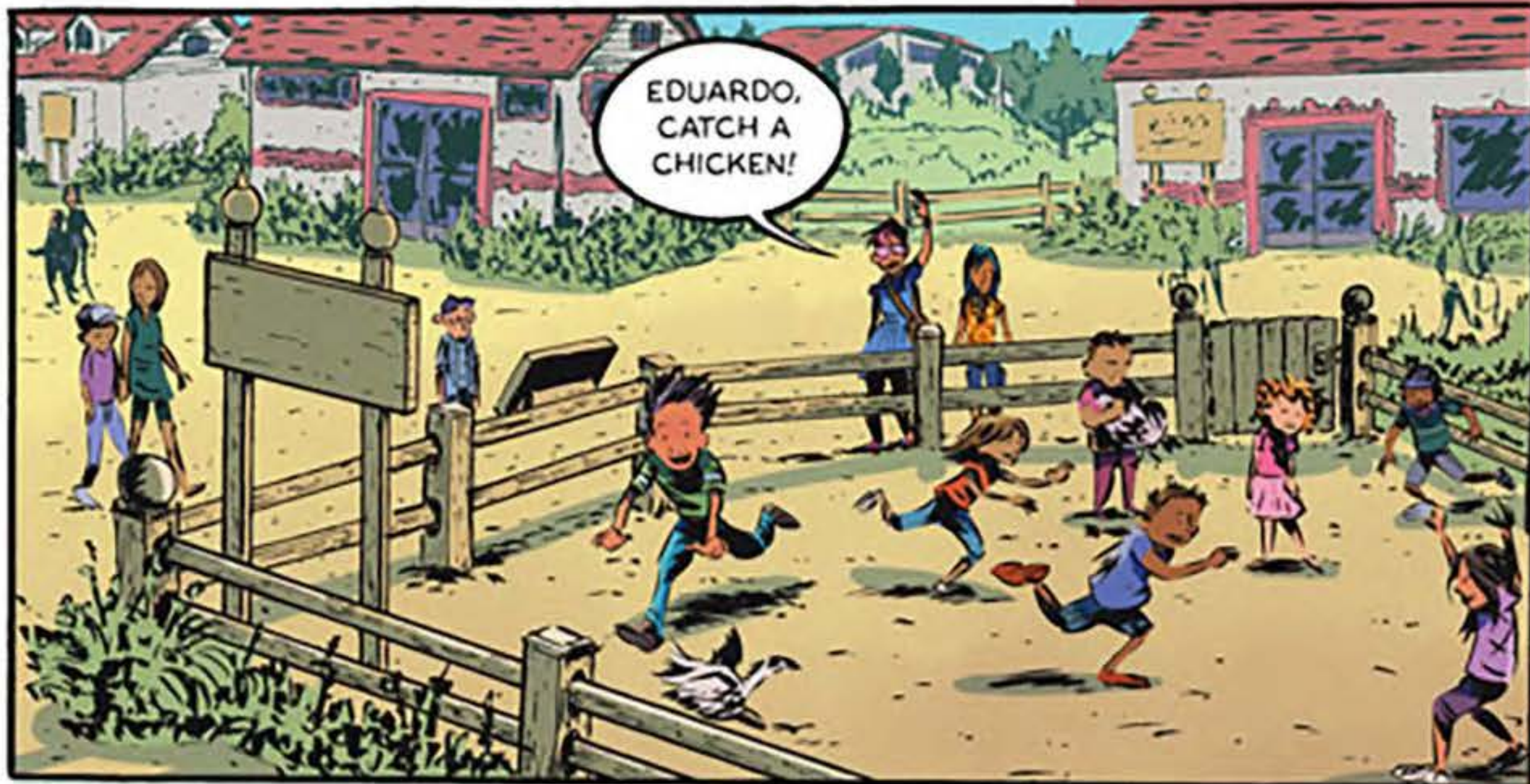
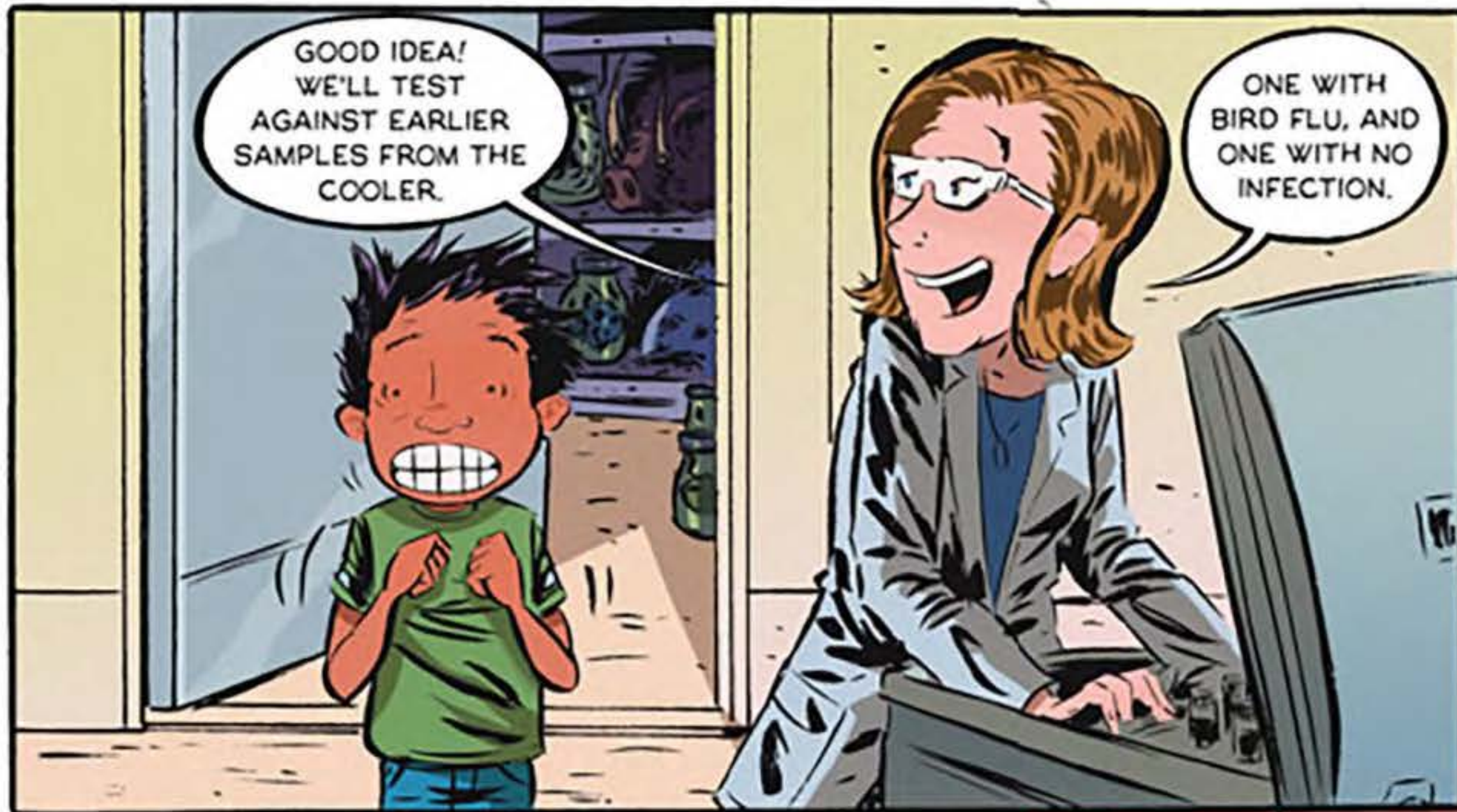




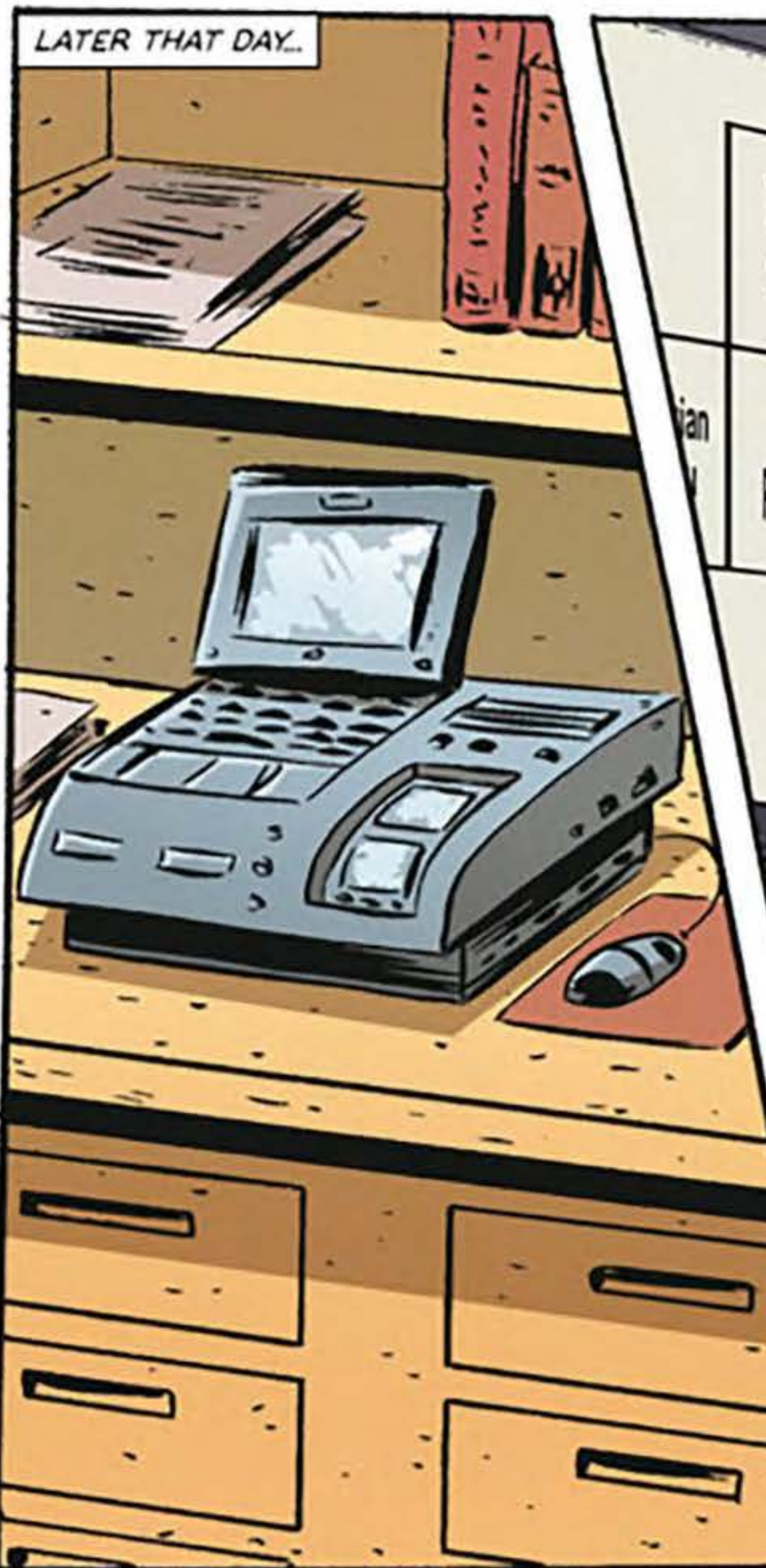
HI.
I HAVE TEST SUBJECTS.
HERE, NOW.
BRING THE THING.







LATER THAT DAY...



TEST RESULTS... OUR BIRDS, NEGATIVE.

KNOWN BIRD FLU SAMPLE, POSITIVE.

OTHER SAMPLE, NEGATIVE.

NEGATIVE IS GOOD, RIGHT? SO GRANDMA WILL BE OK?

WELL, IT MEANS OUR BIRDS DIDN'T HAVE BIRD FLU ANTIBODIES.

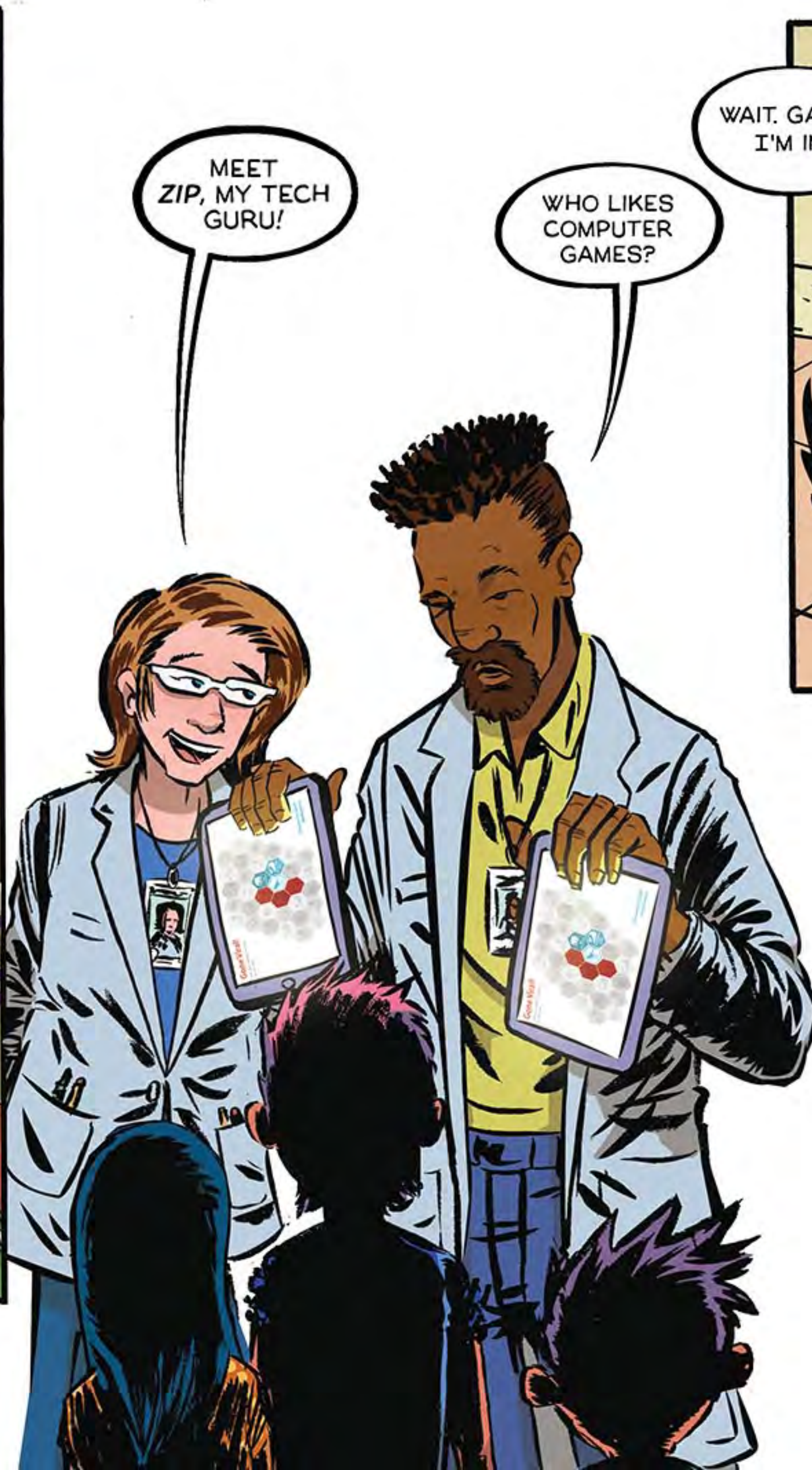
... AND HOW THEY DIED IS *STILL* A MYSTERY.







CHAPTER 4: THE SICKNESS SPREADS



HEY,
YOU OKAY?

UH... NOT
ALIEN... DID I SAY
THAT?



WAIT. GAME?

ME, TOO!



ZIP



TECHNICAL SPECIALIST, METRO CITY ZOO

ZIP works on exhibits and interactives that help teach science.

I'M
HEEEERE!



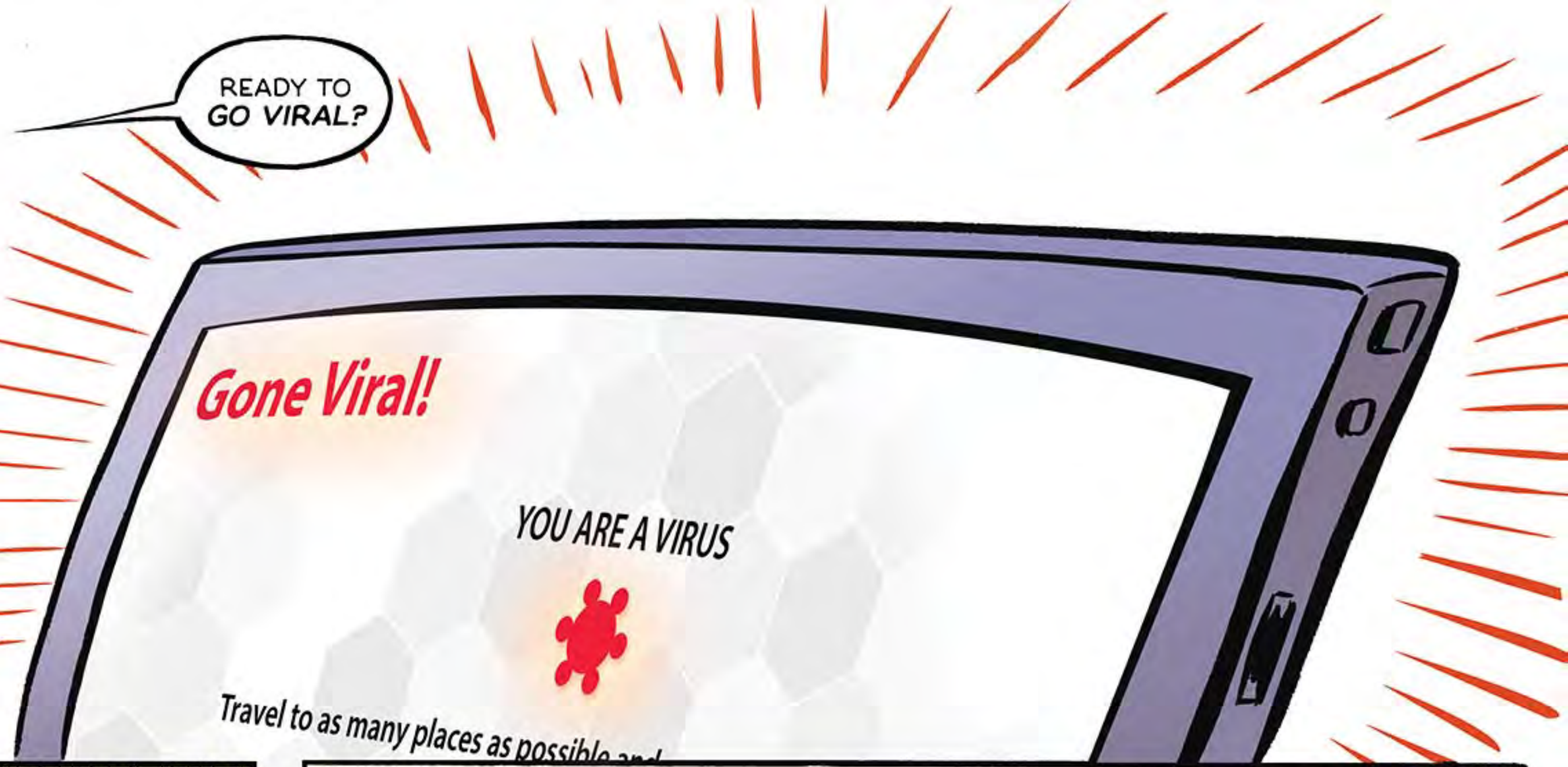
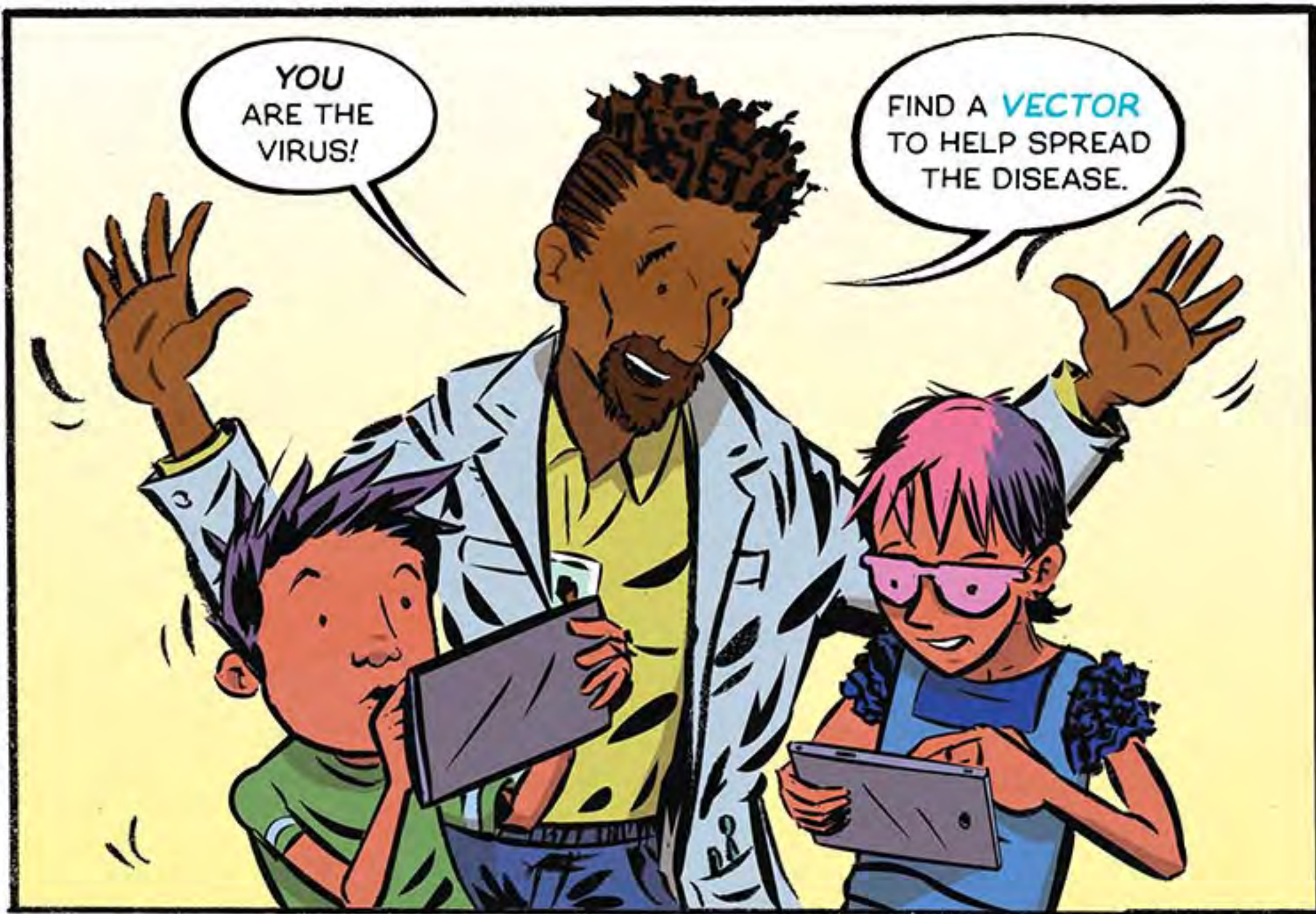
SPECIAL TALENTS

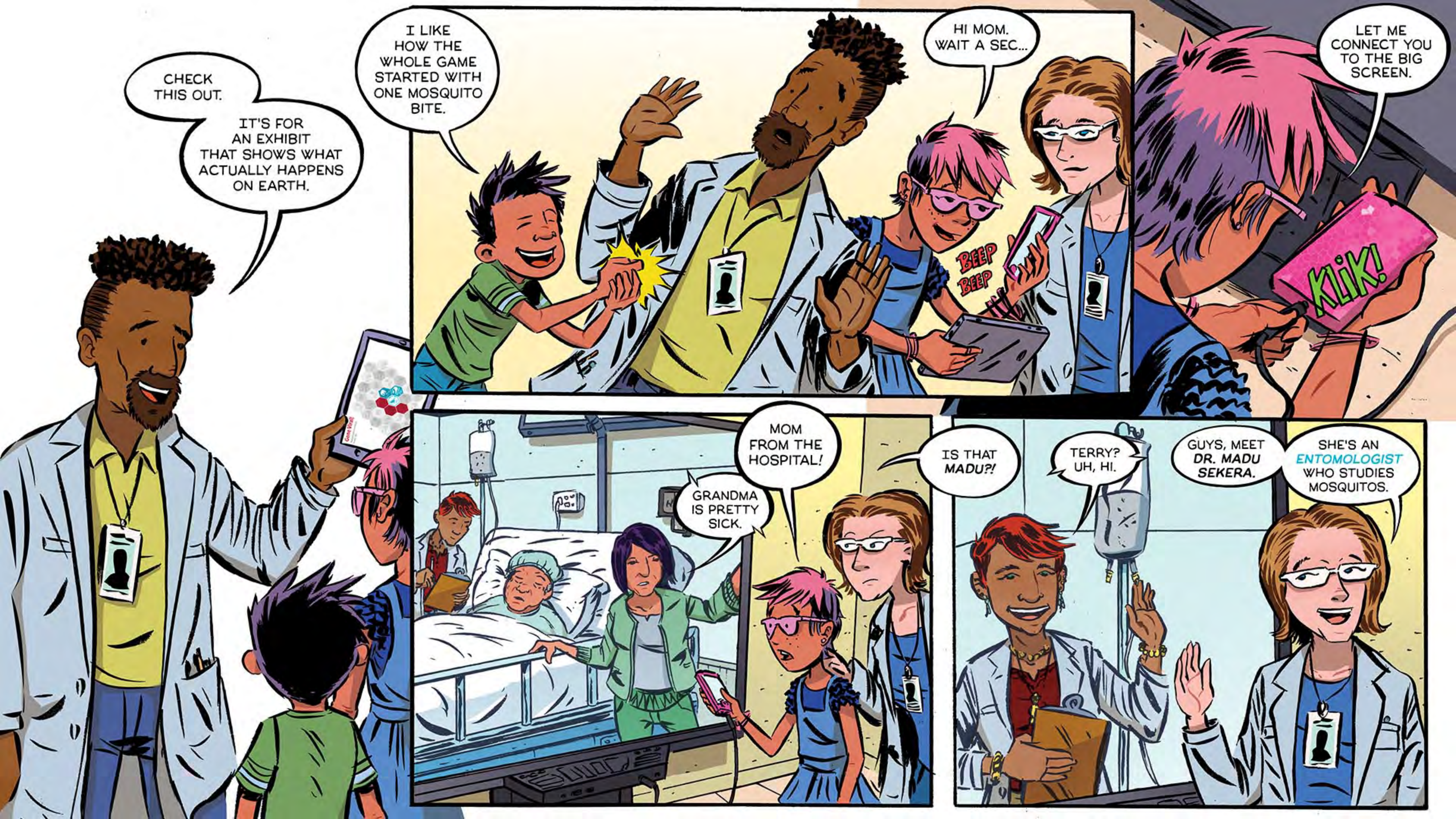
- Virtual reality
- Big imagination

YOU CAN
REAK STUFF
IN HERE.....

...KIDDING!







CHECK THIS OUT.

IT'S FOR AN EXHIBIT THAT SHOWS WHAT ACTUALLY HAPPENS ON EARTH.

I LIKE HOW THE WHOLE GAME STARTED WITH ONE MOSQUITO BITE.

HI MOM. WAIT A SEC...

LET ME CONNECT YOU TO THE BIG SCREEN.

BEEP BEEP

KLIK!

MOM FROM THE HOSPITAL!

GRANDMA IS PRETTY SICK.

IS THAT MADU?!

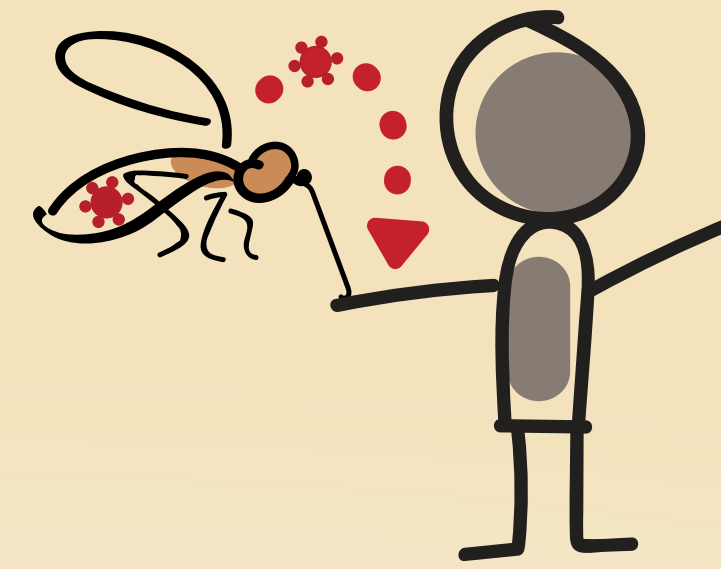
TERRY? UH, HI.

GUYS, MEET DR. MADU SEKERA.

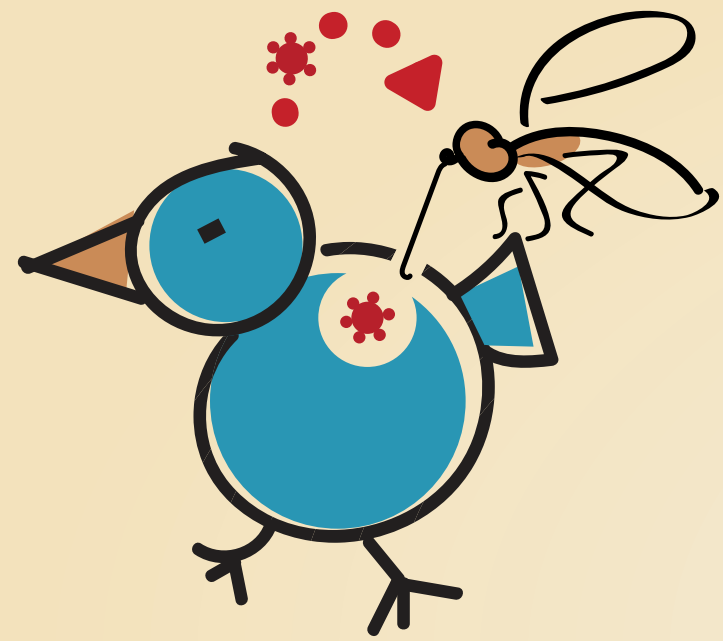
SHE'S AN ENTOMOLOGIST WHO STUDIES MOSQUITOS.

Blood Suckers Deliver Diseases

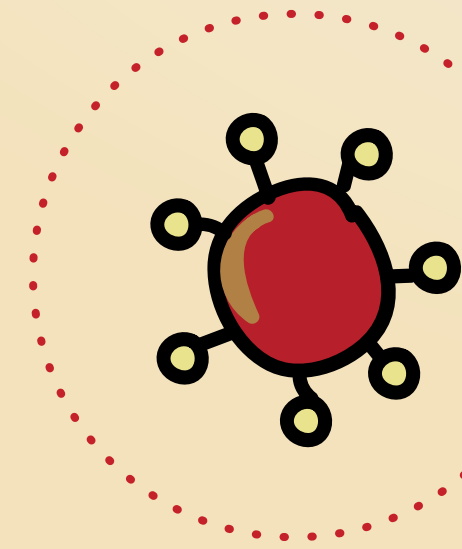
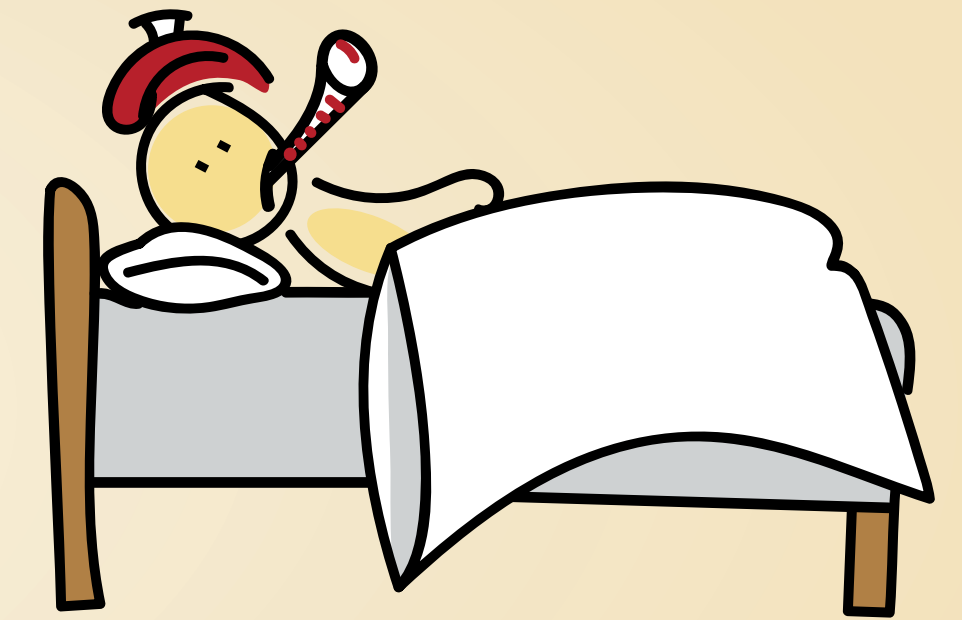
A single mosquito can move, or transmit, a disease-causing virus, bacteria or other microbe from one animal to another, including a person.



When that mosquito sucks blood from another bird or a horse or human, it also injects saliva carrying the virus and infects them.



A female mosquito bites an infected bird. It sucks up blood containing viruses.



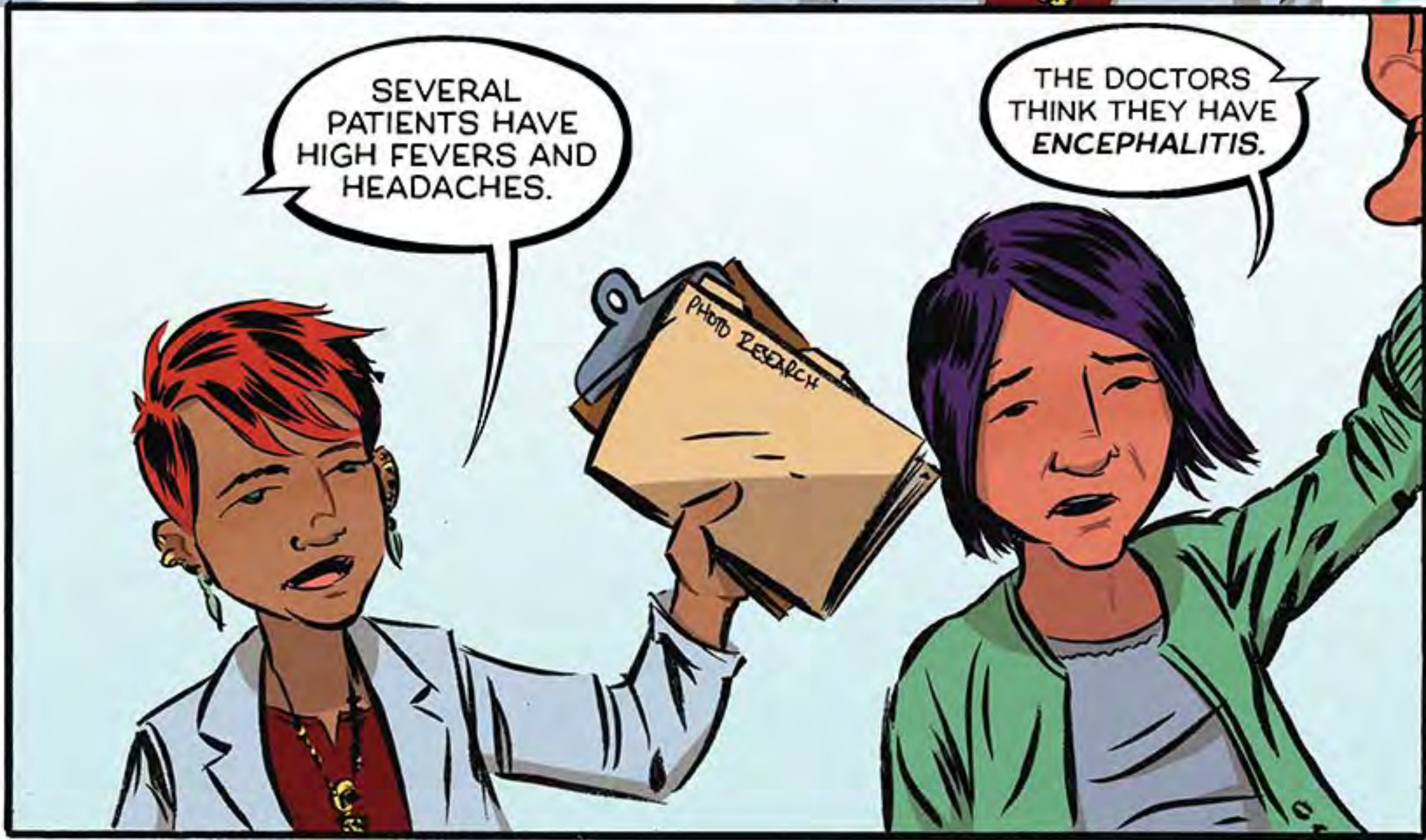
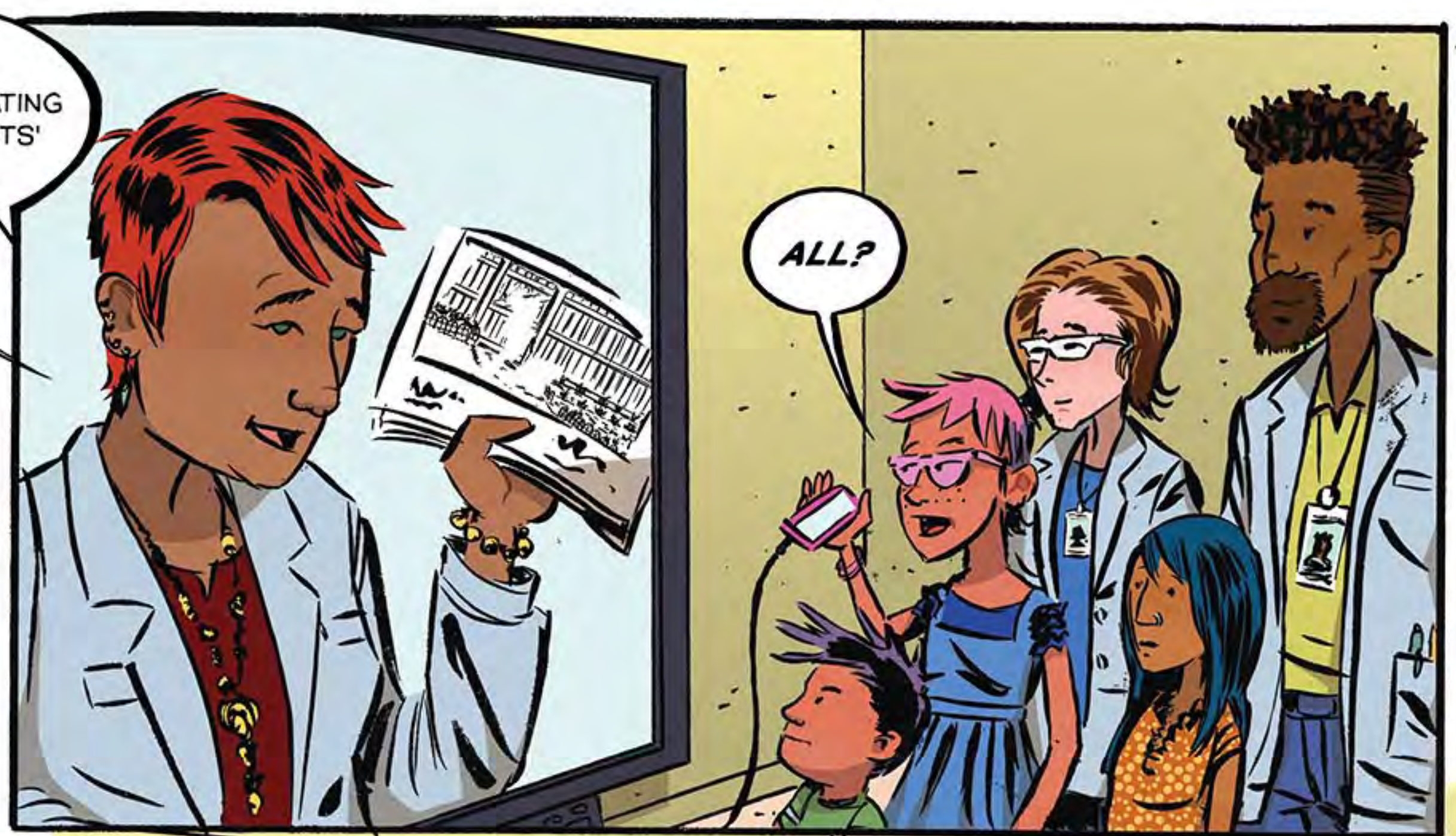
The virus infects the mosquito.

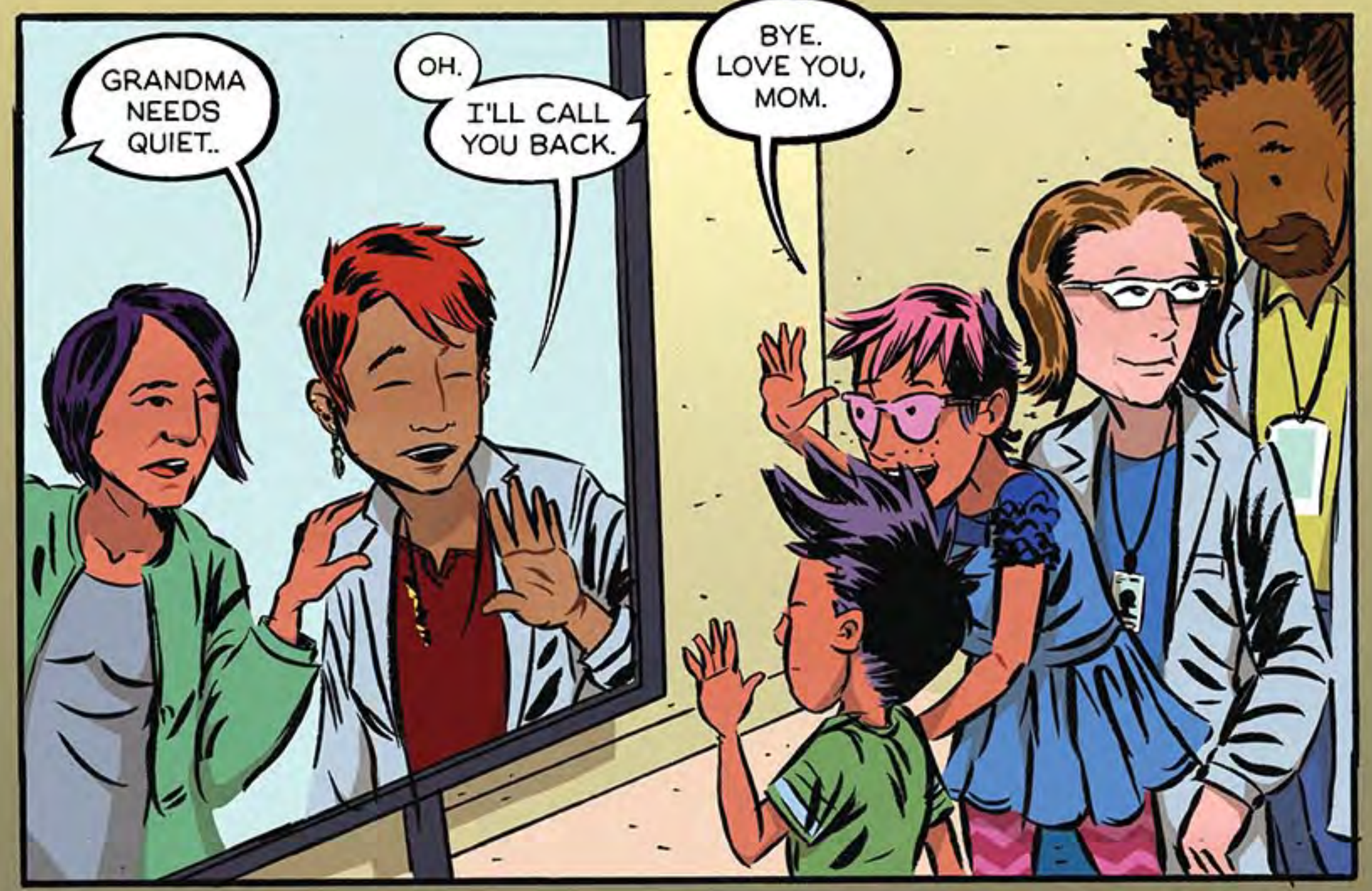
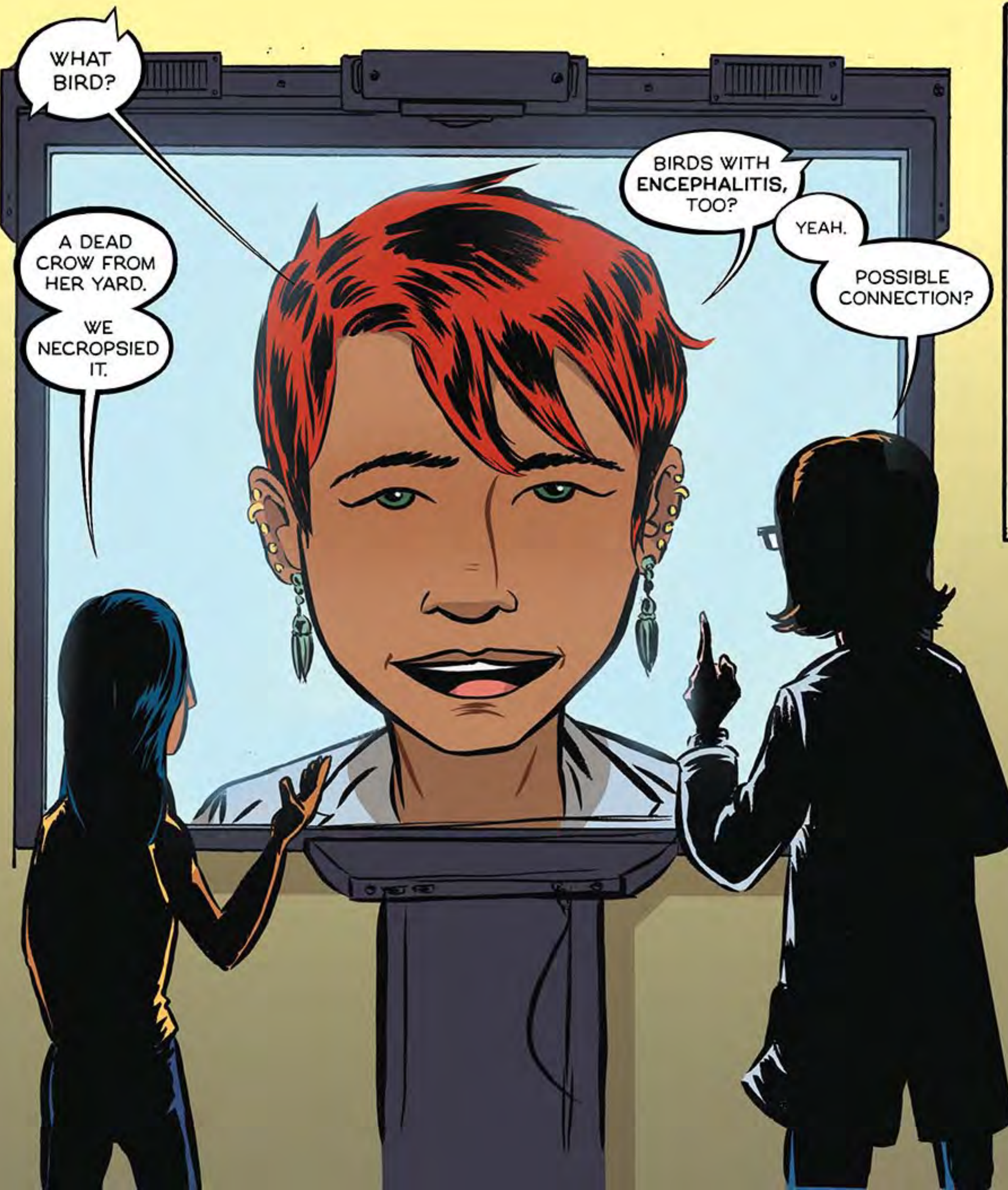
PEOPLE LIKE GRANDMA CAN'T FIGHT OFF THE INFECTION.

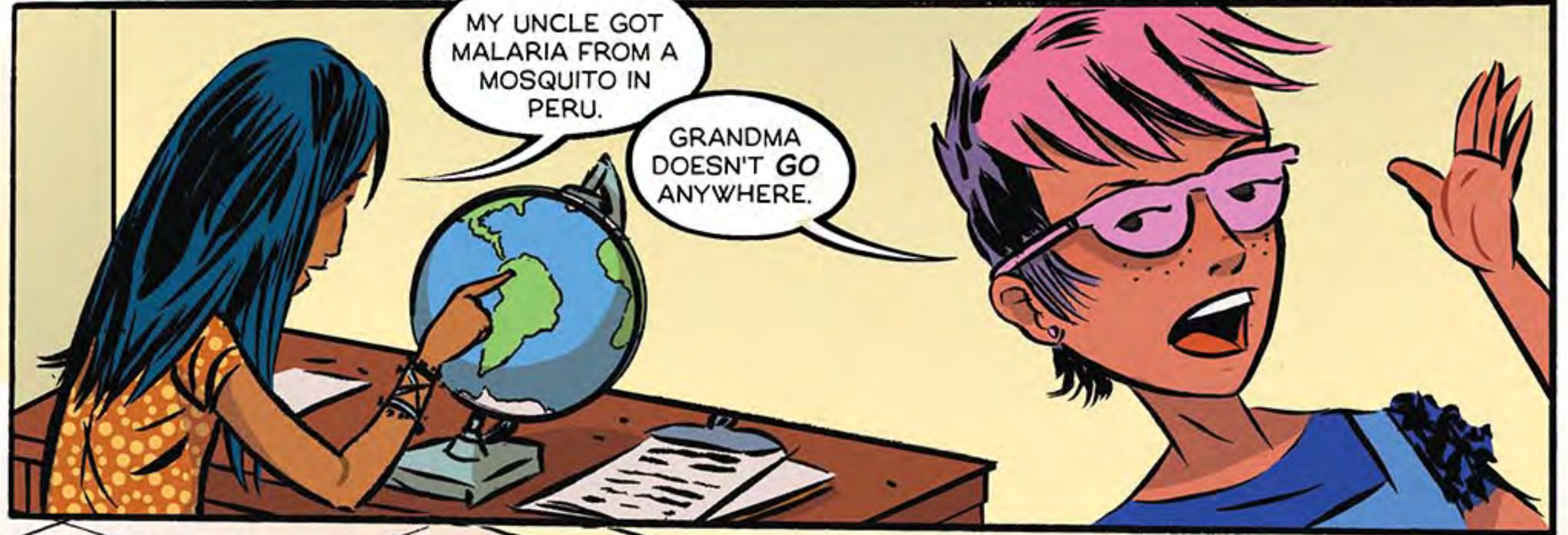




I'M A CITY SCIENTIST INVESTIGATING ALL OF THE PATIENTS' HOMES.









HI, MADU!

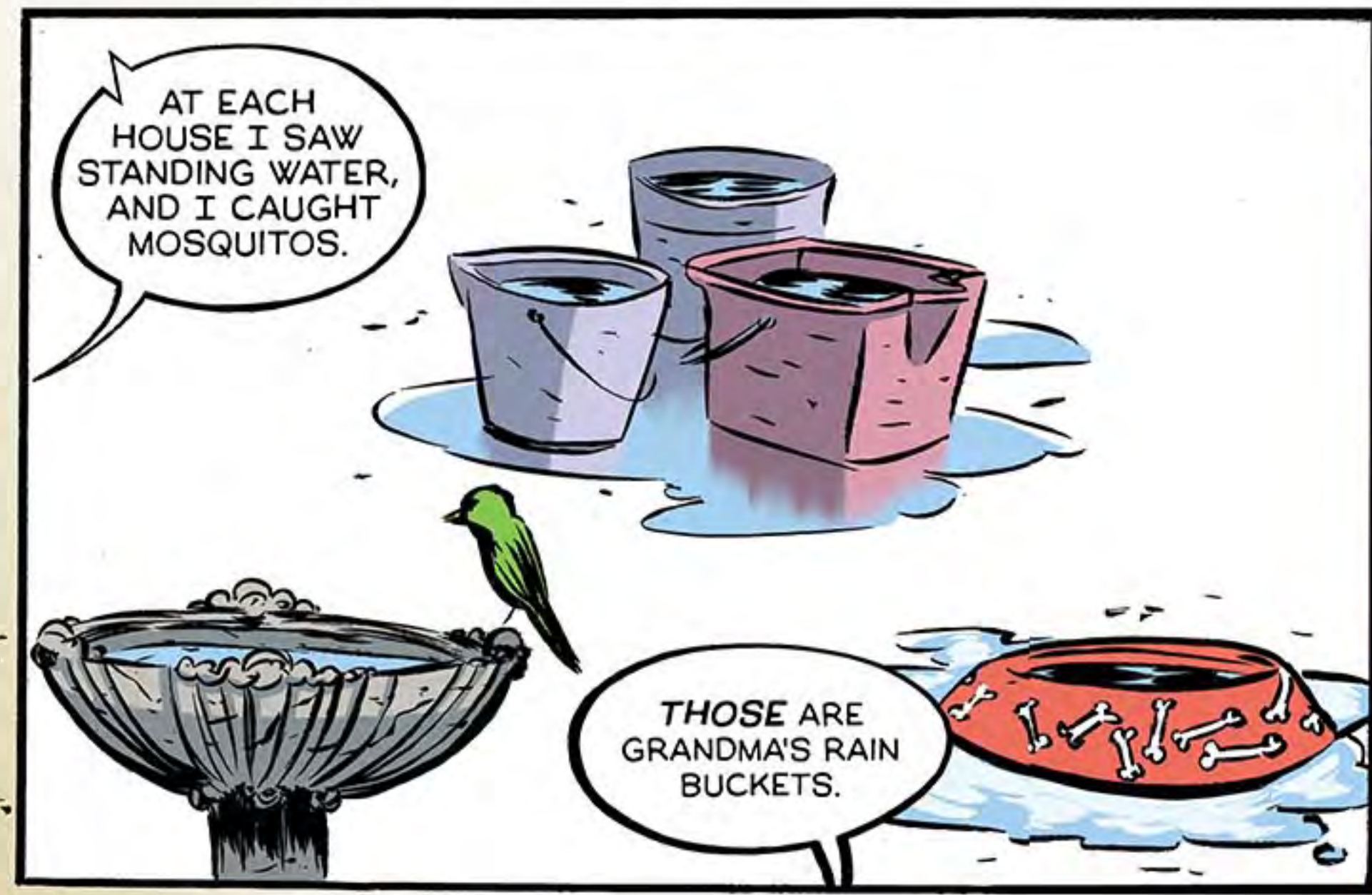
HI. YOU'RE RIGHT ABOUT THE MOSQUITOS.

RING RING

BULLSEYE!

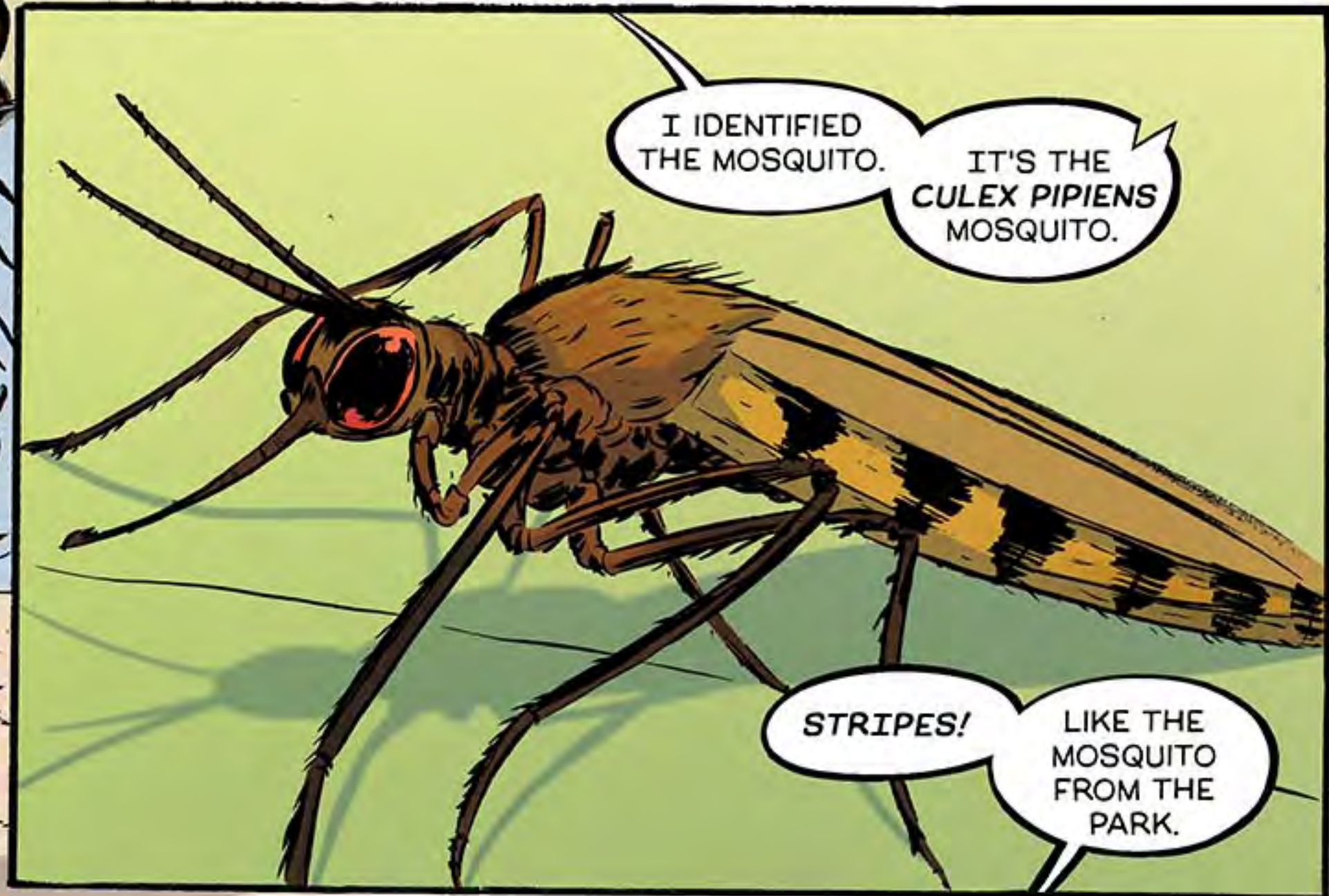
click! click!

BUMP!



AT EACH HOUSE I SAW STANDING WATER, AND I CAUGHT MOSQUITOS.

THOSE ARE GRANDMA'S RAIN BUCKETS.

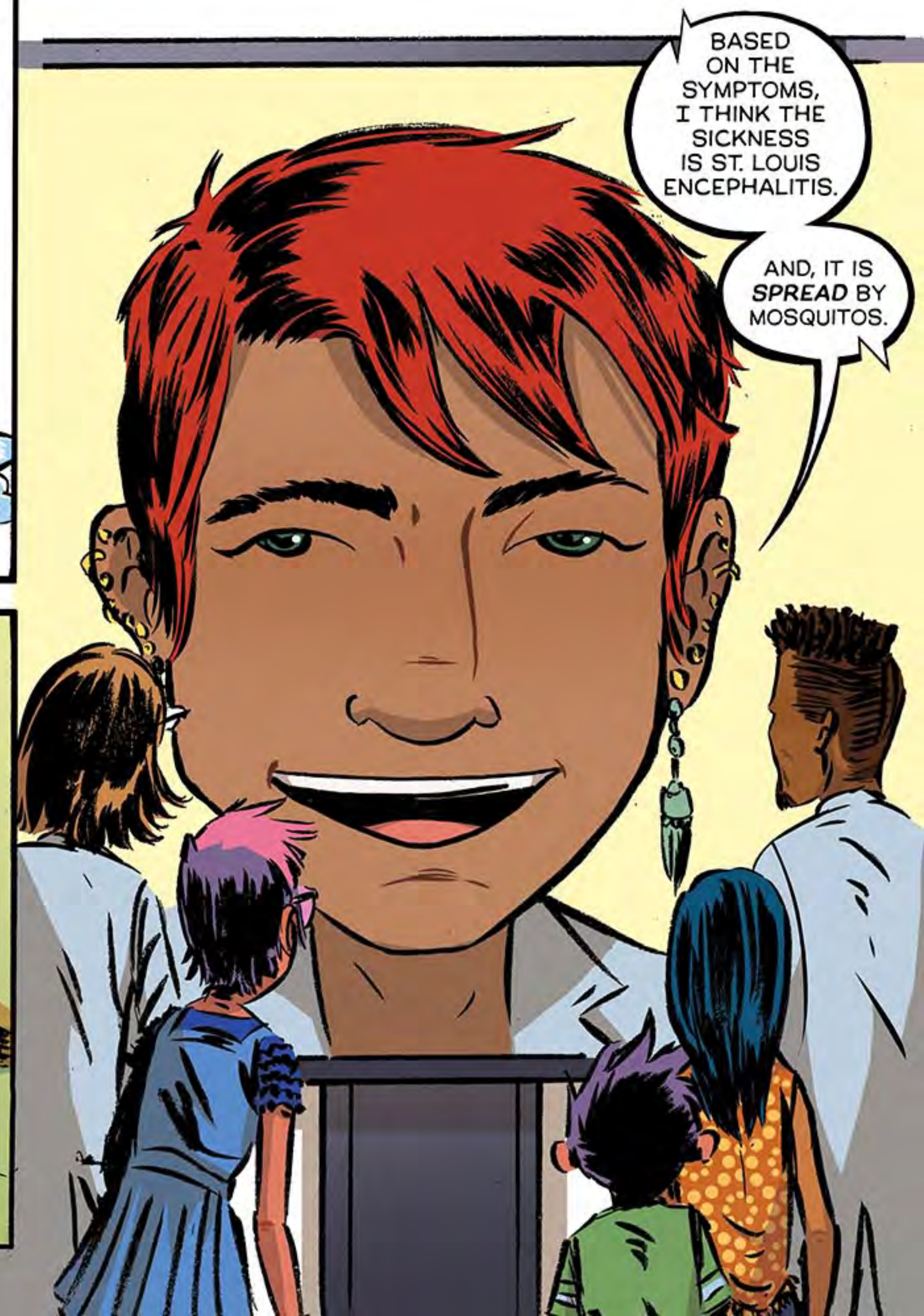


I IDENTIFIED THE MOSQUITO.

IT'S THE CULEX PIPIENS MOSQUITO.

STRIPES!

LIKE THE MOSQUITO FROM THE PARK.



BASED ON THE SYMPTOMS, I THINK THE SICKNESS IS ST. LOUIS ENCEPHALITIS.

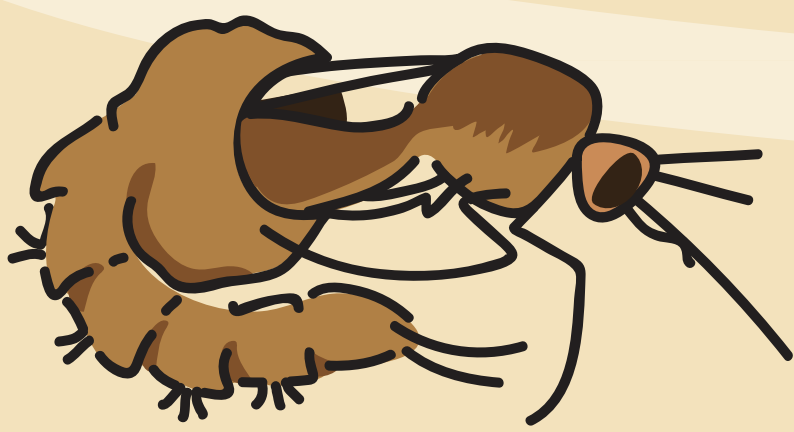
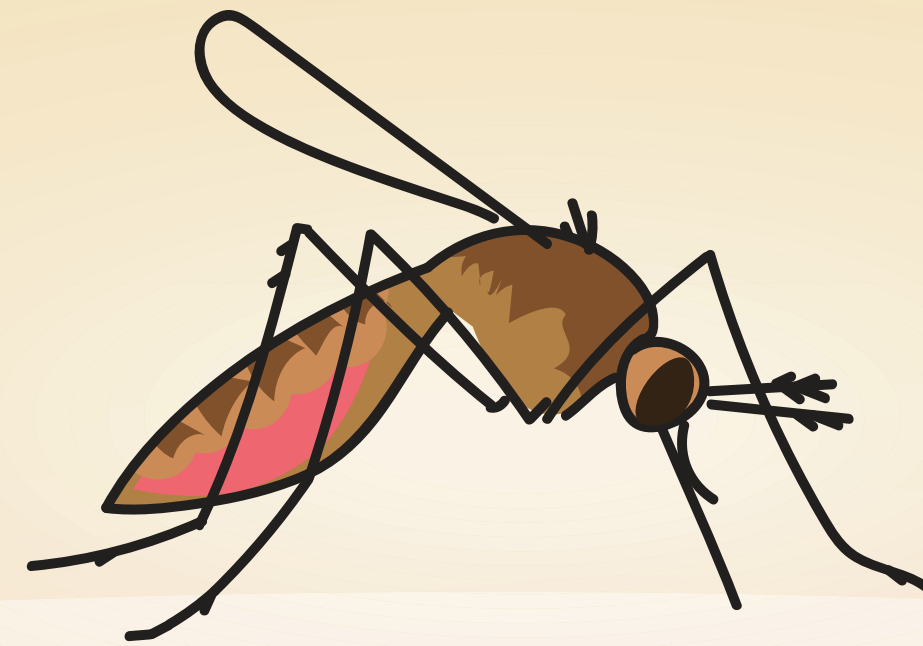
AND, IT IS SPREAD BY MOSQUITOS.

Making More Mosquitos

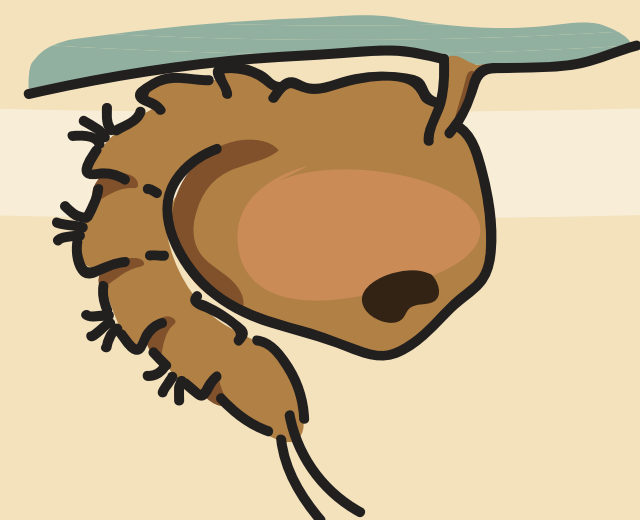
Mosquito eggs need water to hatch. Some species' eggs can survive in dry soil, but they hatch when a rainstorm floods the dirt. Small pools of water in places like the crooks of trees trunks, garbage cans, old tires or drainpipes are enough for mosquitos to reproduce.

Adult female lays eggs on water surface.

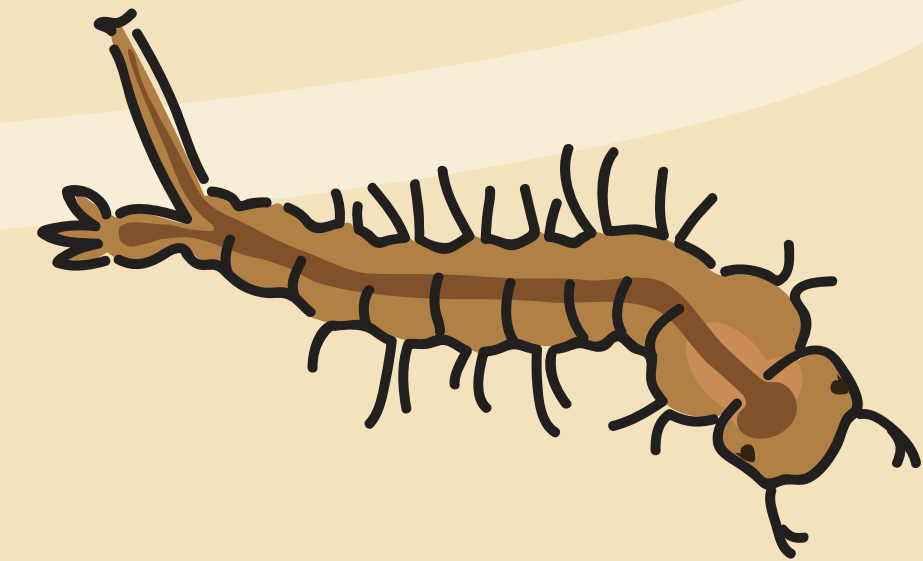
WE SAW THAT WITH THE MICROSCOPE!



Pupae develop into mosquitos that fly away.



Larvae develop into pupae, still in the water.



Eggs hatch wriggling larvae that live in water.

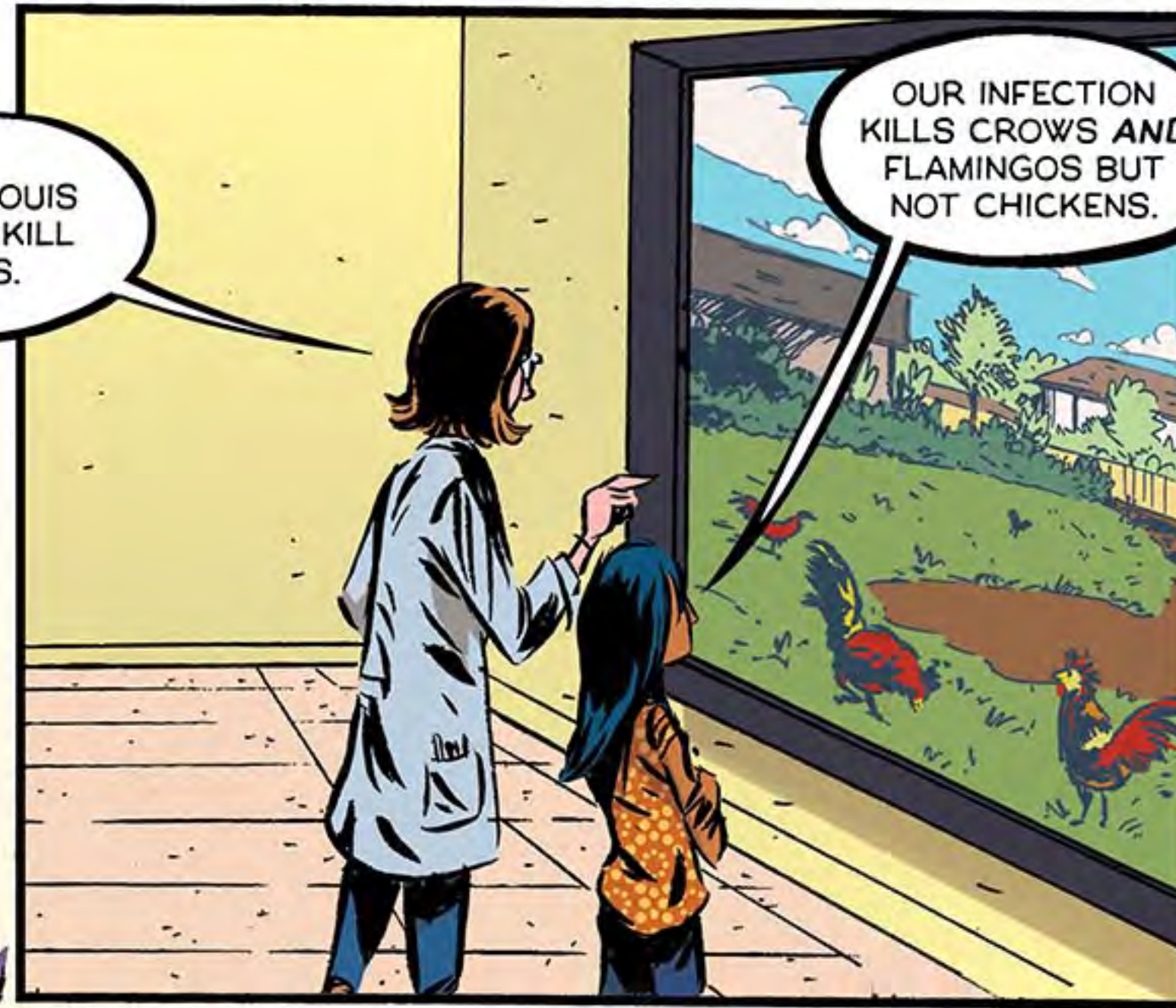


HEADACHE,
FEVER, DIZZINESS...

...I
FOUND SOME
INFO.

SOUNDS LIKE
GRANDMA.

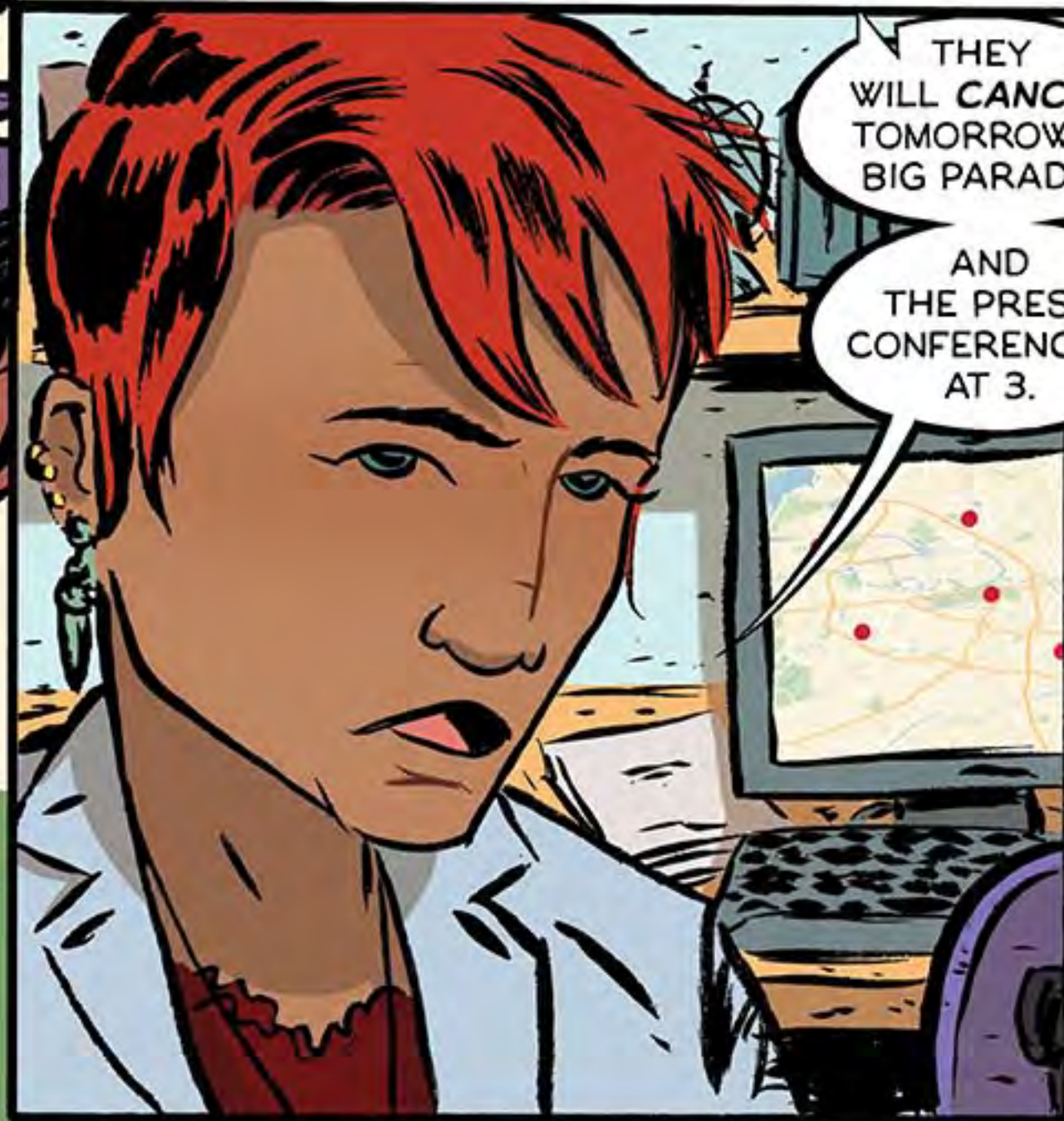
BUT ST. LOUIS
DOESN'T KILL
BIRDS.



OUR INFECTION
KILLS CROWS AND
FLAMINGOS BUT
NOT CHICKENS.



MEANWHILE, THE
CITY IS WORRIED
ABOUT AN EPIDEMIC.



THEY
WILL CANCEL
TOMORROW'S
BIG PARADE.

AND
THE PRESS
CONFERENCE'S
AT 3.

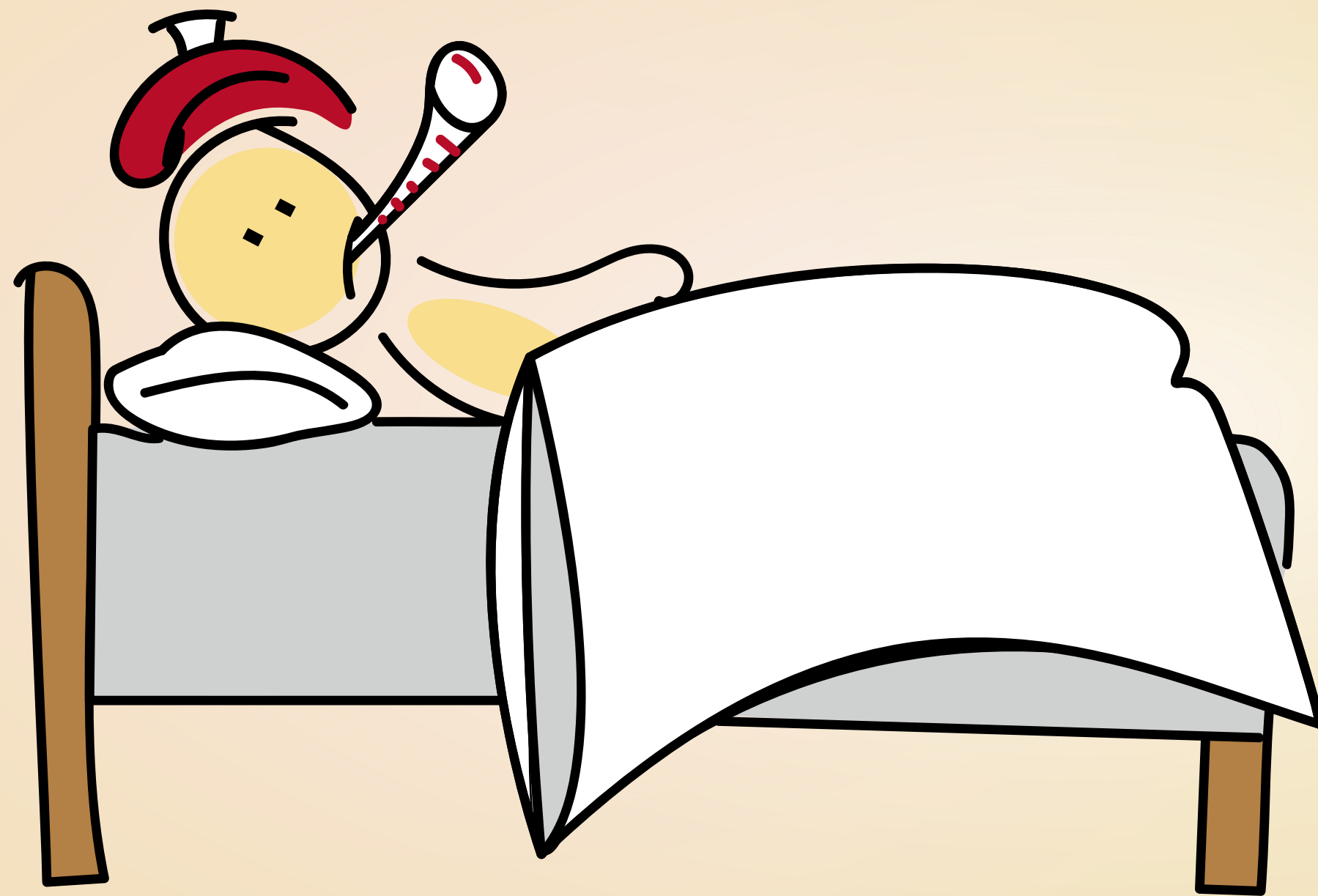


BUT MY
COSTUME!
GRANDMA
MADE IT.

THE REAL DEAL

St. Louis Encephalitis Symptoms

St. Louis Encephalitis is named for a 1933 outbreak in St. Louis, Missouri.



St. Louis Symptoms

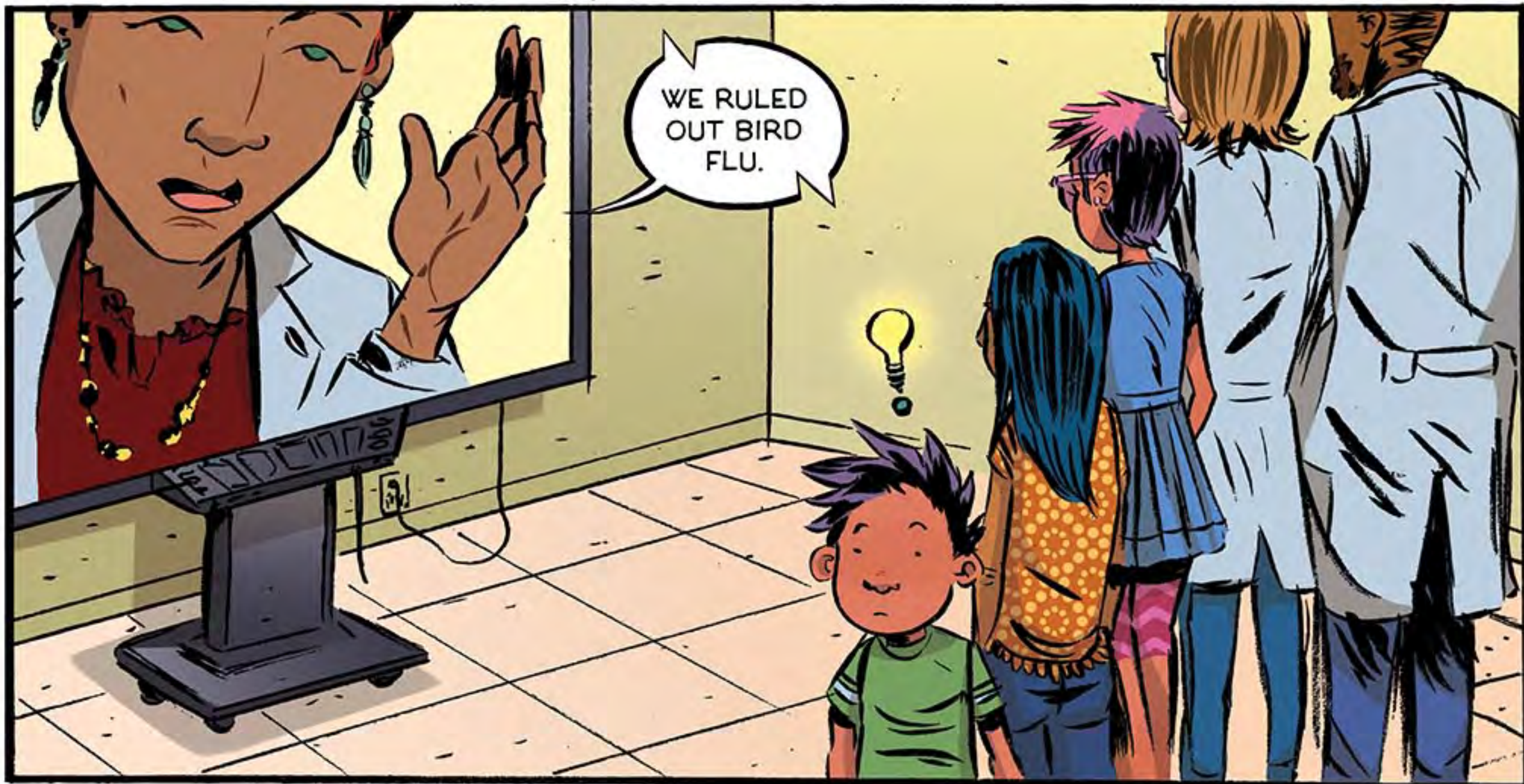
- ✓ Fever and headache
- ✓ Stiff neck
- ✓ Feeling dizzy and disoriented
- ✓ Paralysis

GRANDMA HAD SOME OF THESE SYMPTOMS.





IF THE PATIENTS AND DEAD BIRDS HAD *CULEX PIPPIENS* MOSQUITOS NEARBY, MAYBE IT'S A NEW SICKNESS.



WE RULED OUT BIRD FLU.

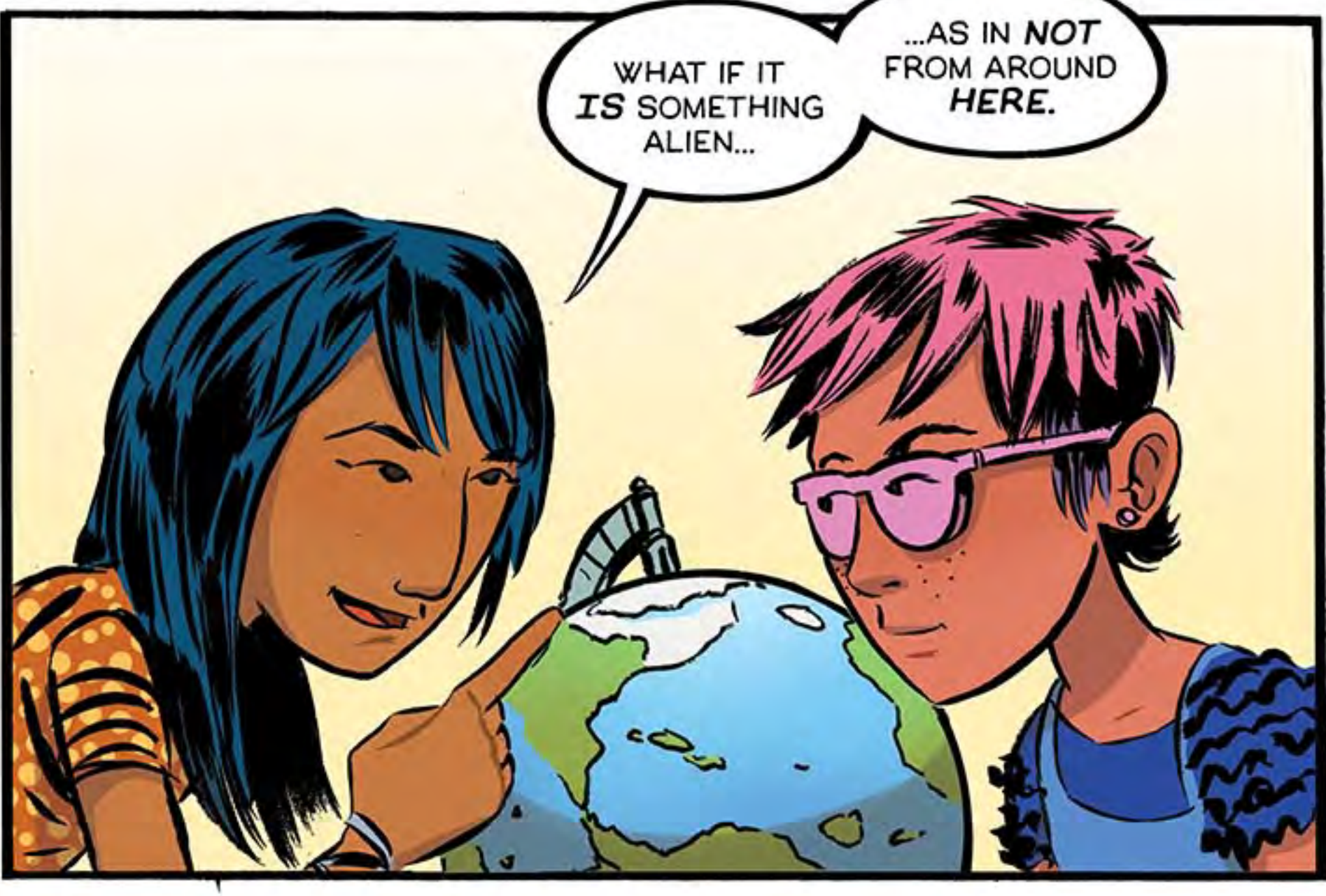


ALIEN INVASION-ITIS!



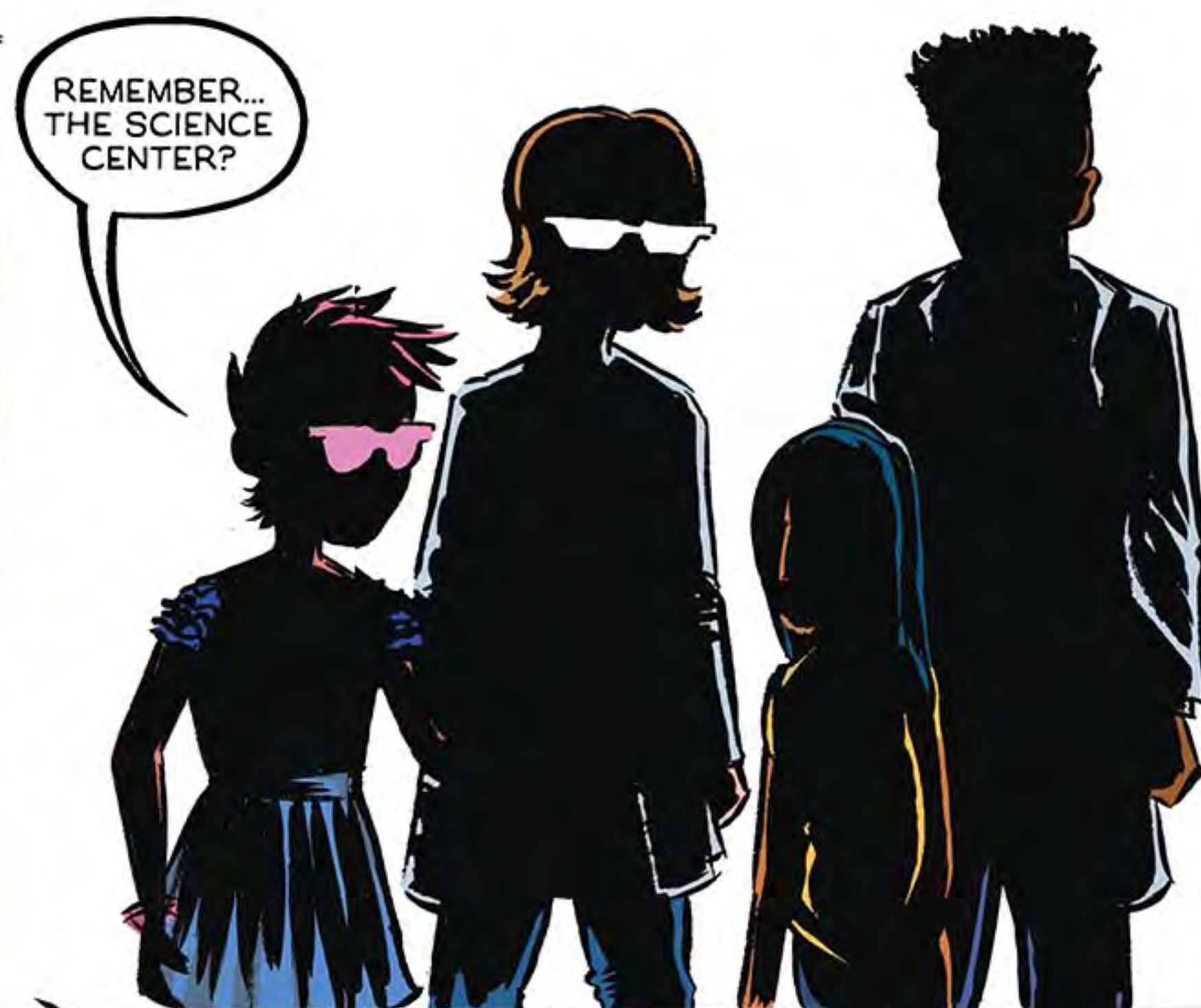
GENIUS, EDUARDO!

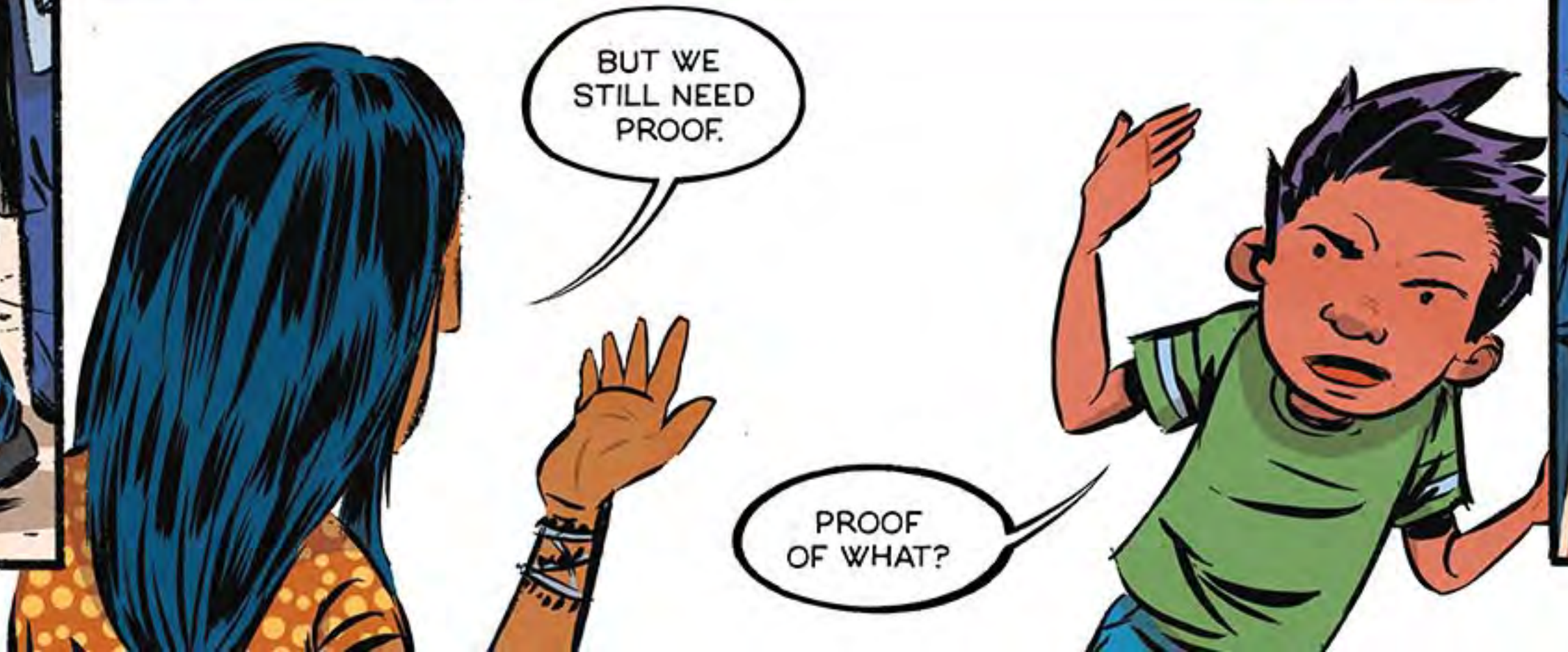
HUH?!



WHAT IF IT IS SOMETHING ALIEN...

...AS IN NOT FROM AROUND HERE.







CHAPTER 5: THE PARADE MUST GO ON!



DETECTIVE...



MOSQUITOS LAY EGGS IN WATER.



POWERS...

ACTIVATE!!!



MADU FOUND
CULEX PIPIENS
MOSQUITOS AT ALL
PATIENT HOUSES.

EMUS
ARE OK, BUT
FLAMINGOS
DIED.

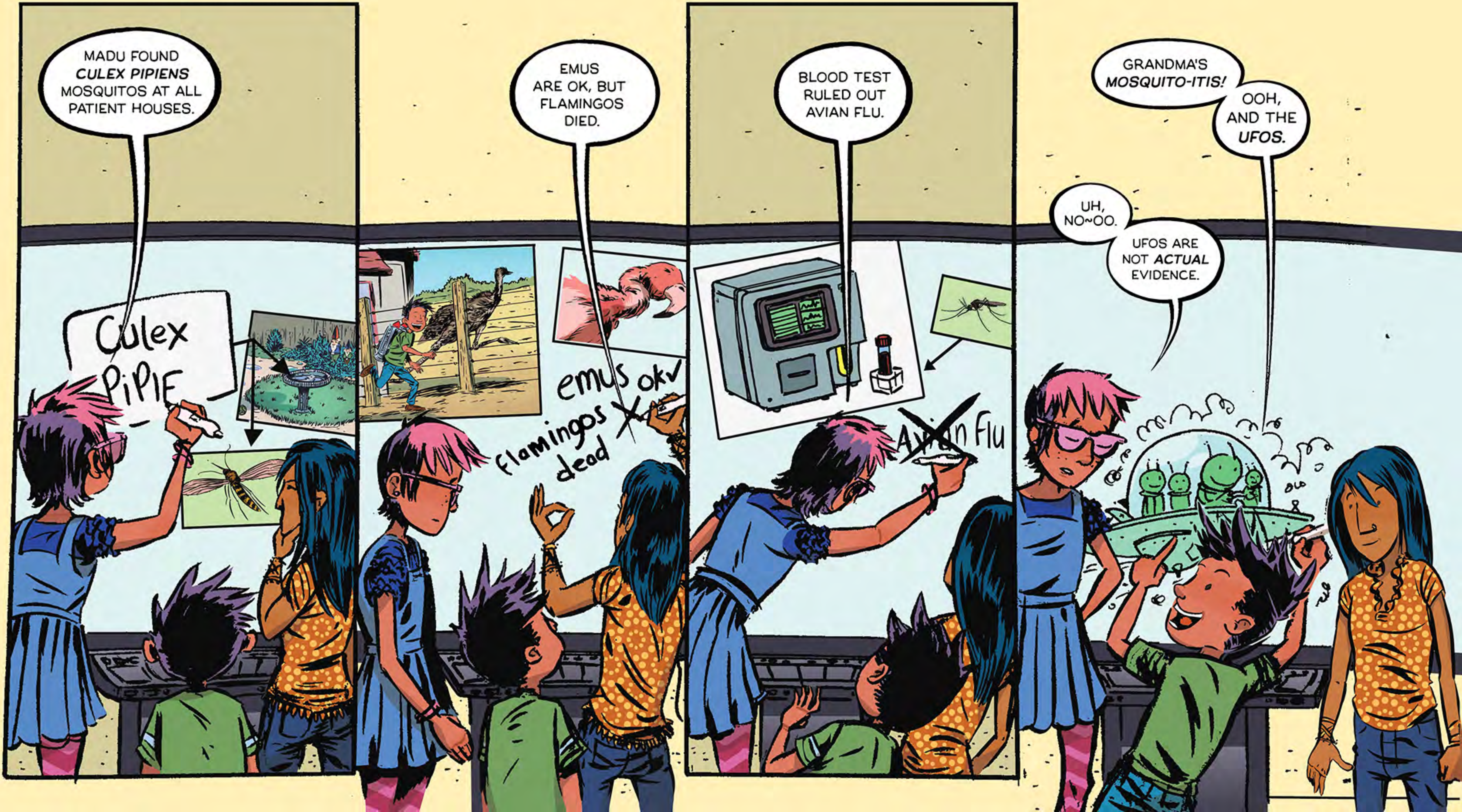
BLOOD TEST
RULED OUT
AVIAN FLU.

GRANDMA'S
MOSQUITO-ITIS!

OOH,
AND THE
UFOS.

UH,
NO~OO.

UFOS ARE
NOT ACTUAL
EVIDENCE.



WHOA!
I THINK
I GOT
IT!

SCROLL
SCROLL

WEST NILE
VIRUS!

BUT IT'S
NEVER BEEN
REPORTED
HERE...

... IN THE
WESTERN
HEMISPHERE.

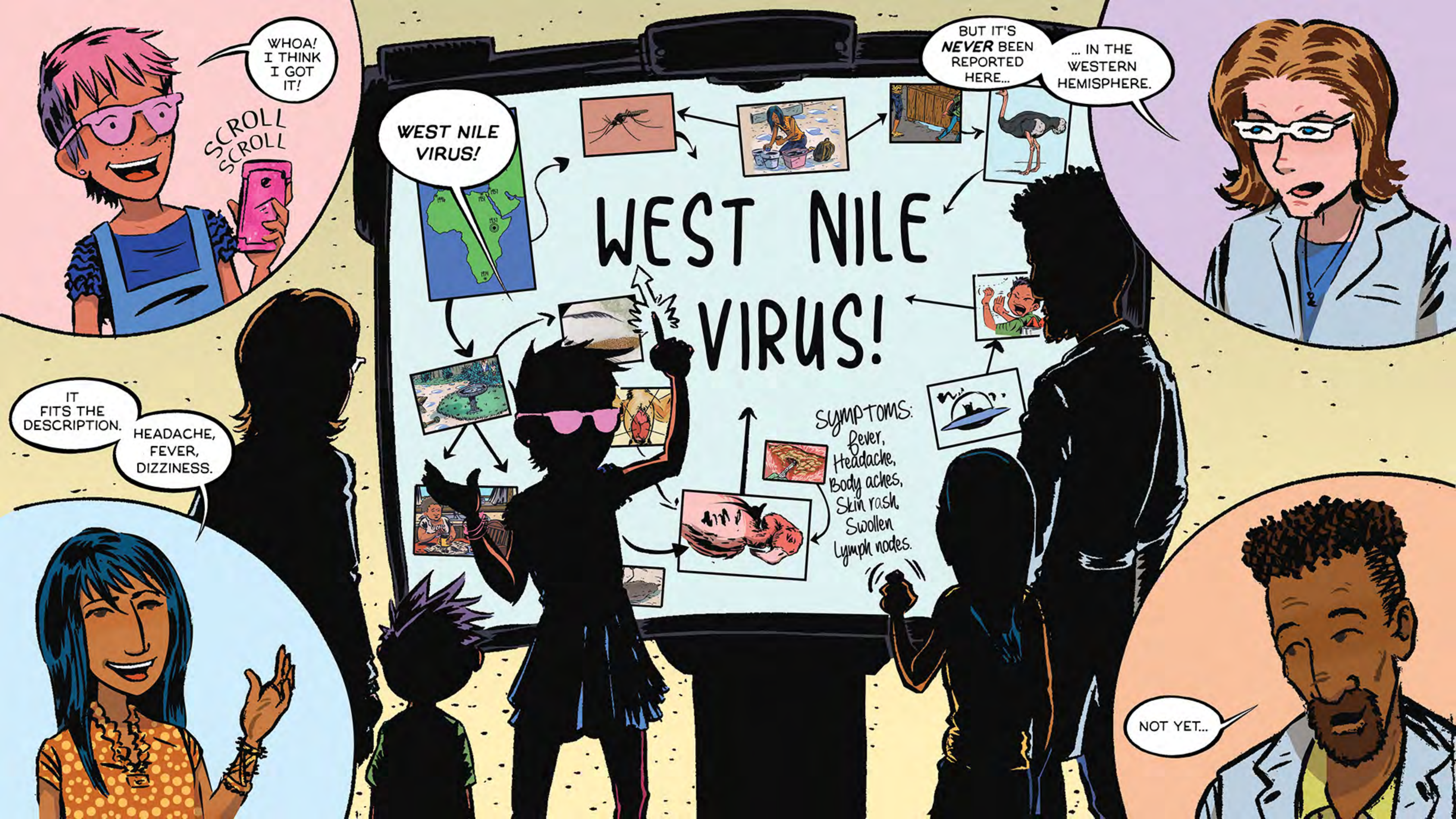
WEST NILE VIRUS!

IT
FITS THE
DESCRIPTION.

HEADACHE,
FEVER,
DIZZINESS.

SYMPTOMS:
Fever,
Headache,
Body aches,
Skin rash,
Swollen
Lymph nodes.

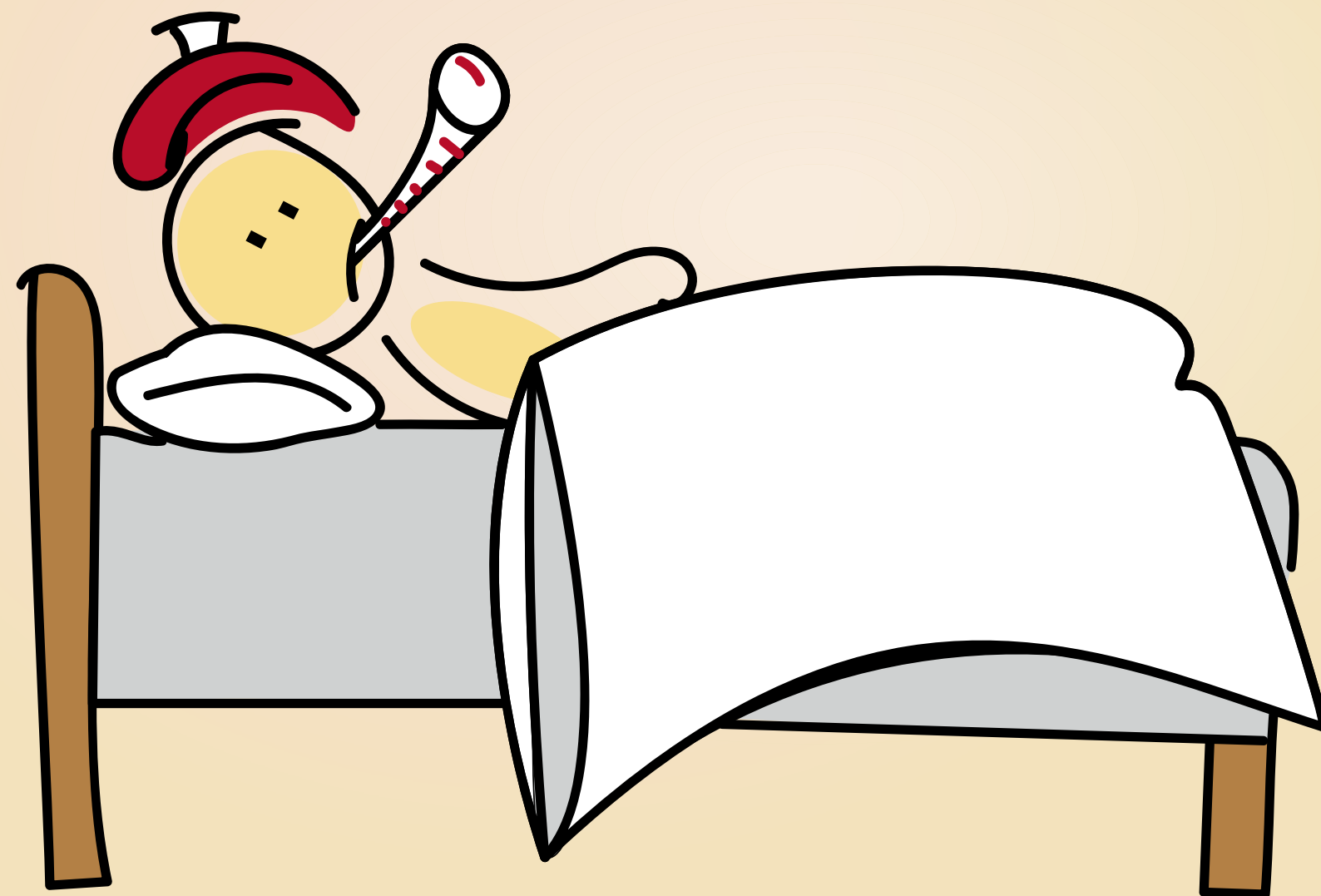
NOT YET...



West Nile Virus or St. Louis Encephalitis?

In 1999, a mysterious illness stumped doctors in the New York City region. A total of 62 patients had symptoms, and seven died. Many more were infected but didn't get sick.

Named for a 1933 outbreak in St. Louis, MO, St. Louis Encephalitis is a lot like West Nile virus. It causes similar symptoms, making it hard for doctors to tell the diseases apart.



West Nile Symptoms

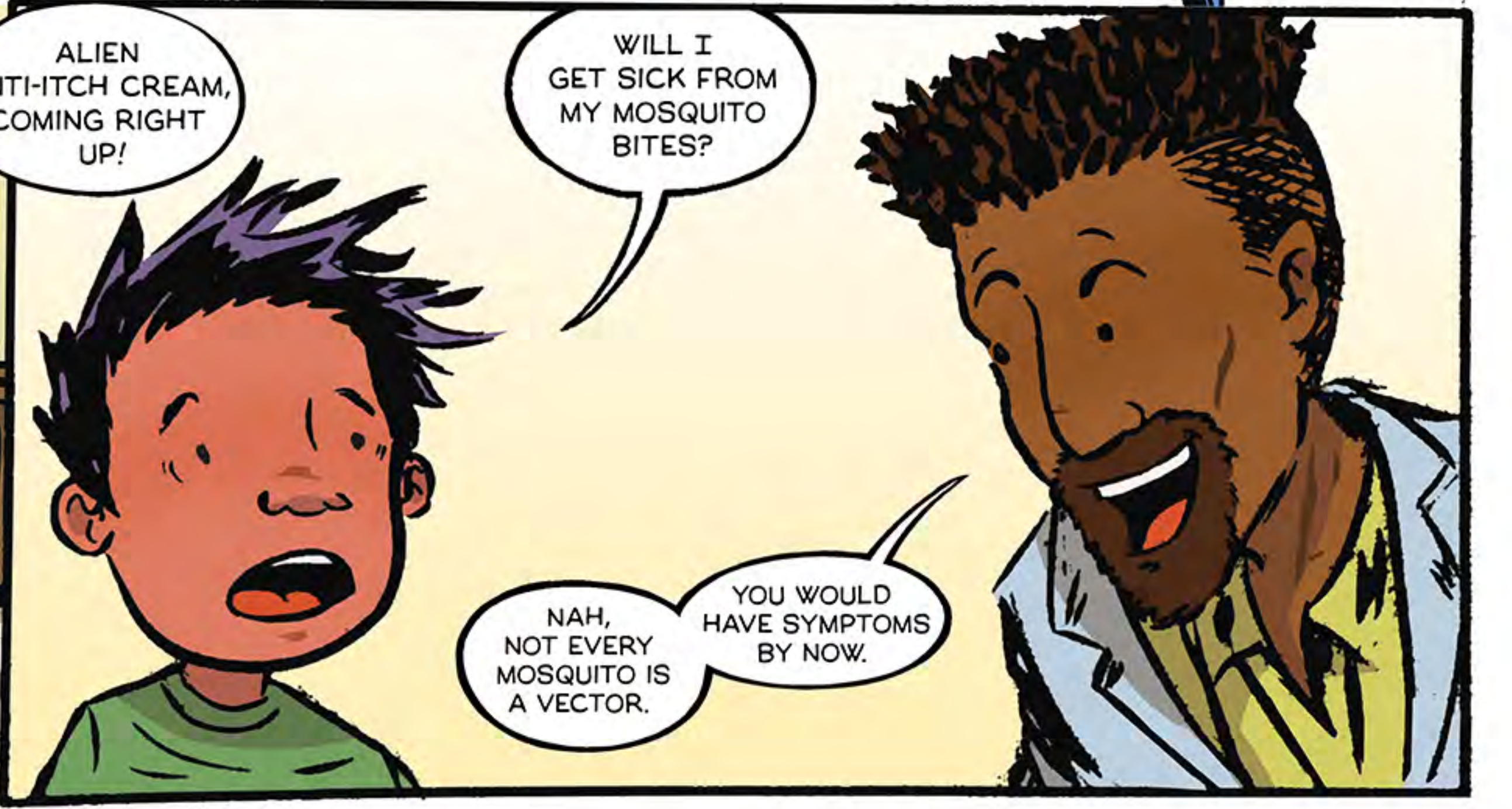
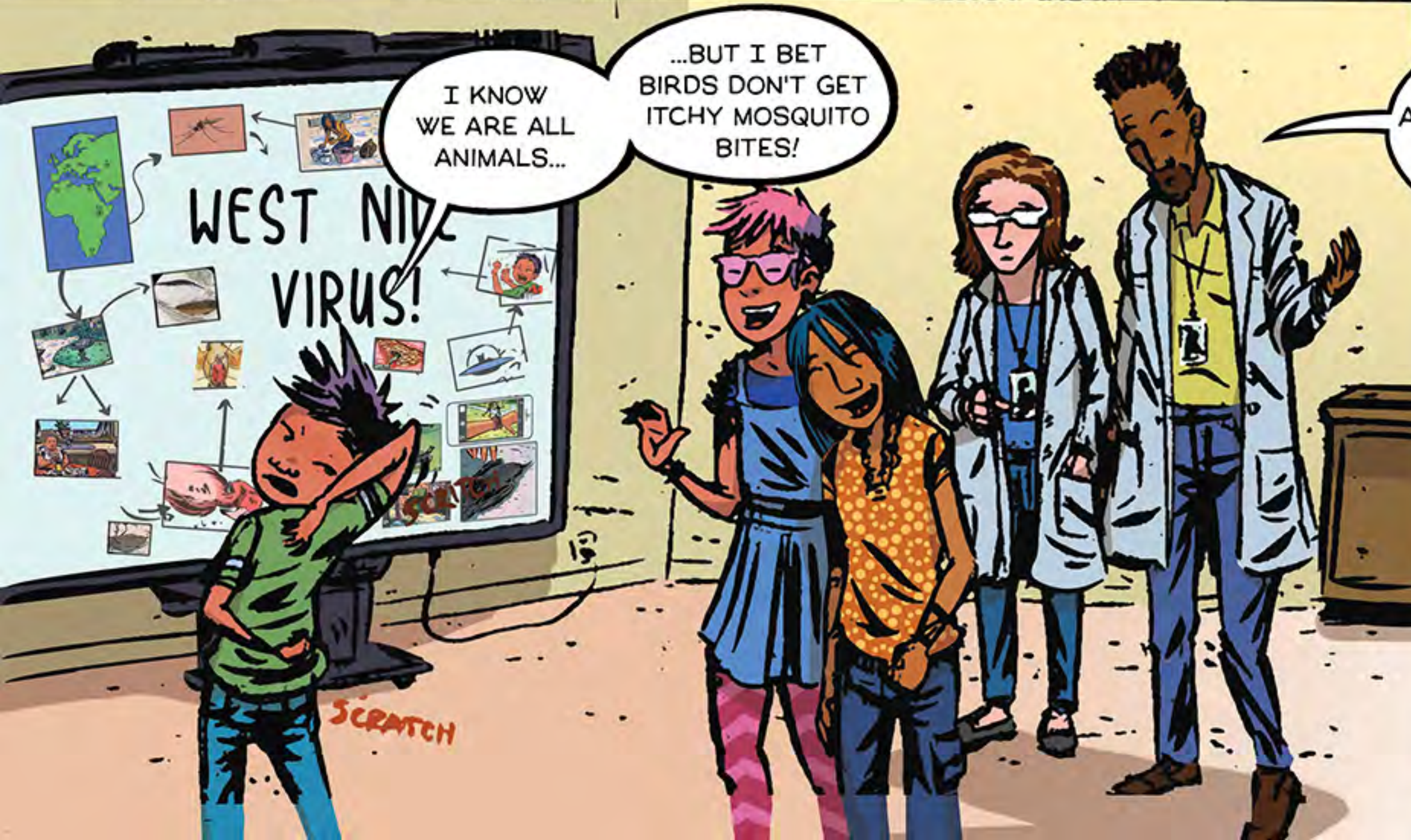
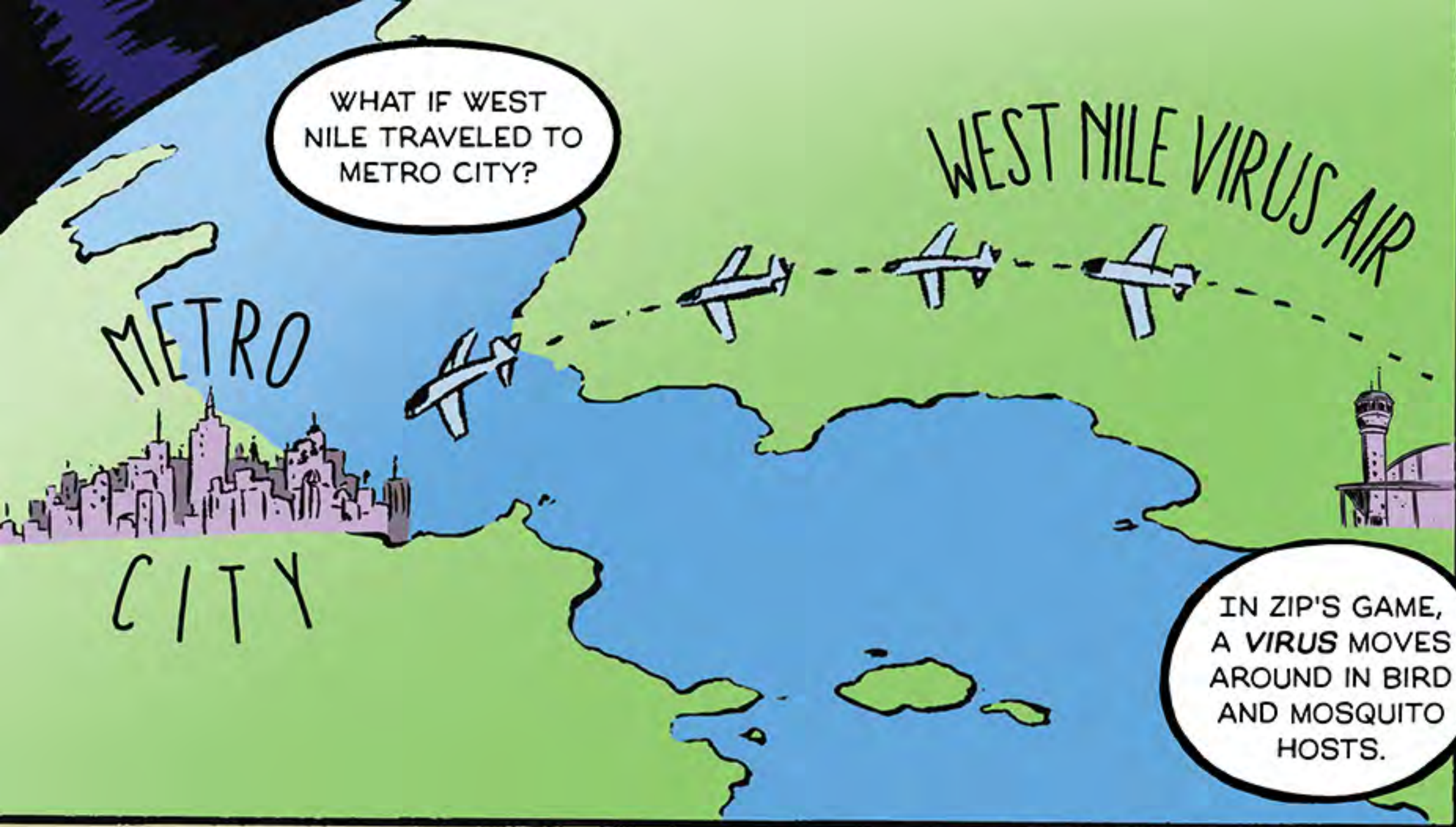
- ✓ Fever and headache
- ✓ Stiff neck
- ✓ Feeling dizzy and disoriented
- ✓ Paralysis
- ✓ Feeling tired and weak
- ✓ High fever
- ✓ Loss of muscle control
- ✓ Muscle tremors and seizure

St. Louis Symptoms

- ✓ Fever and headache
- ✓ Stiff neck
- ✓ Feeling dizzy and disoriented
- ✓ Paralysis



HARD TO TELL BETWEEN WEST NILE VIRUS AND ST. LOUIS ENCEPHALITIS.

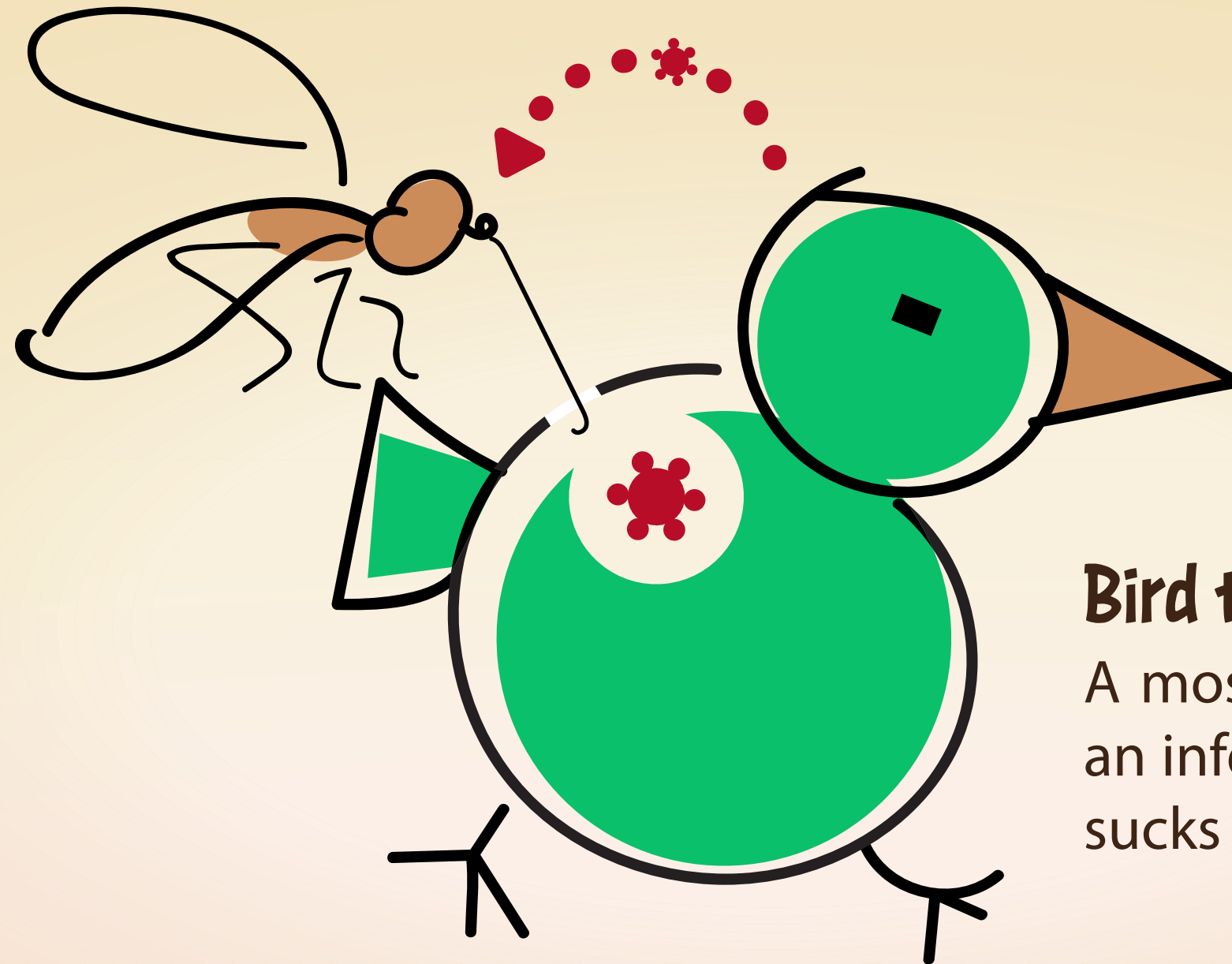
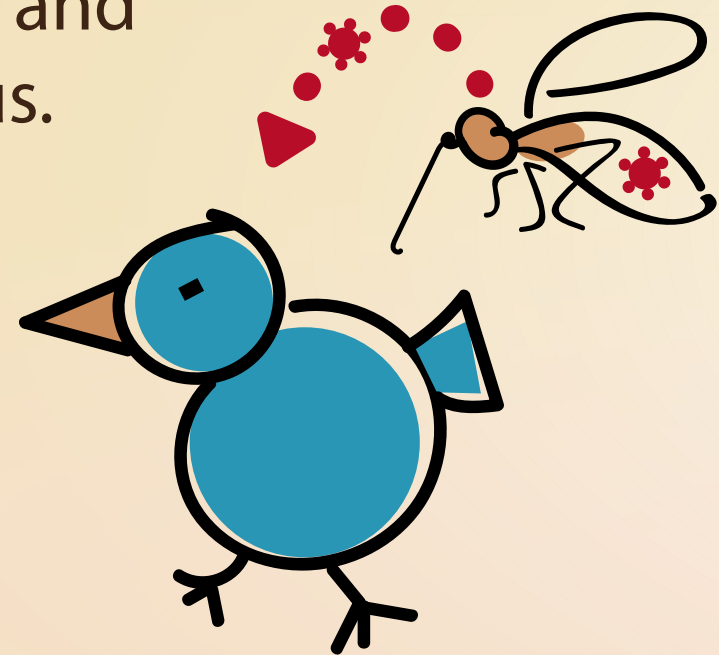


How West Nile Virus Spreads

Here are some ways that West Nile Virus gets around:

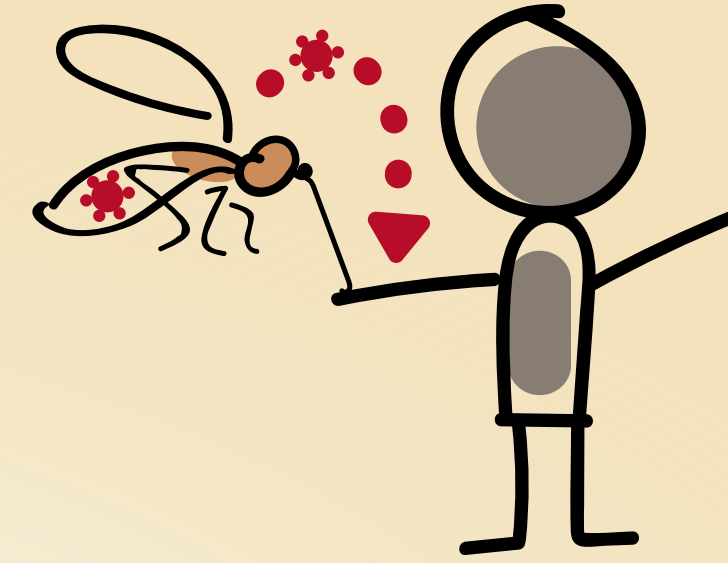
Mosquito to Bird

The infected mosquito may bite uninfected birds. Some birds die but others live and can spread the virus.



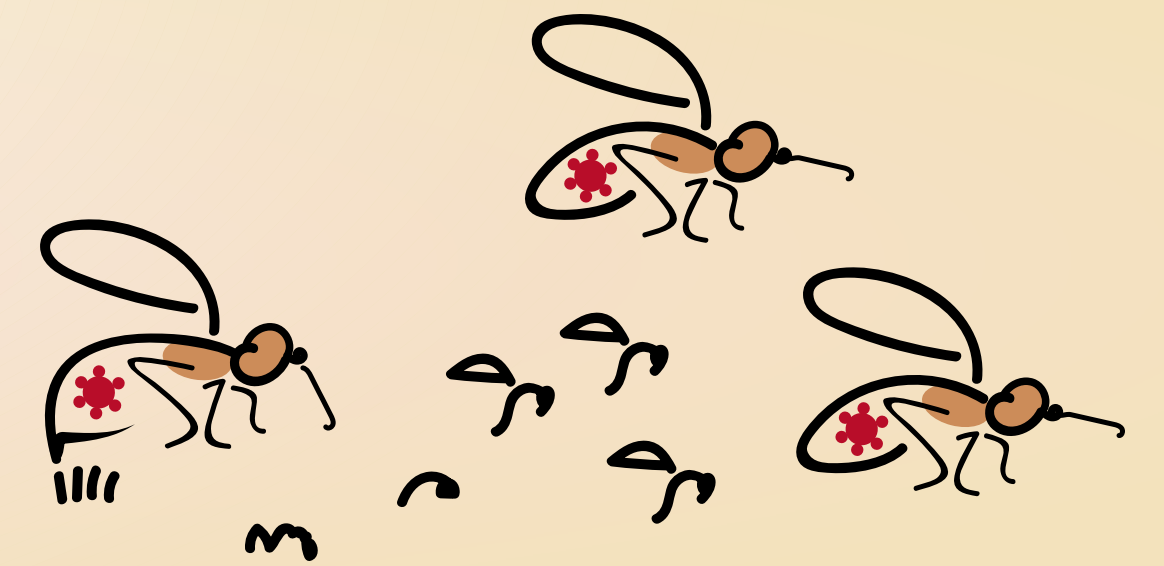
Bird to Mosquito

A mosquito bites an infected bird and sucks up the virus.



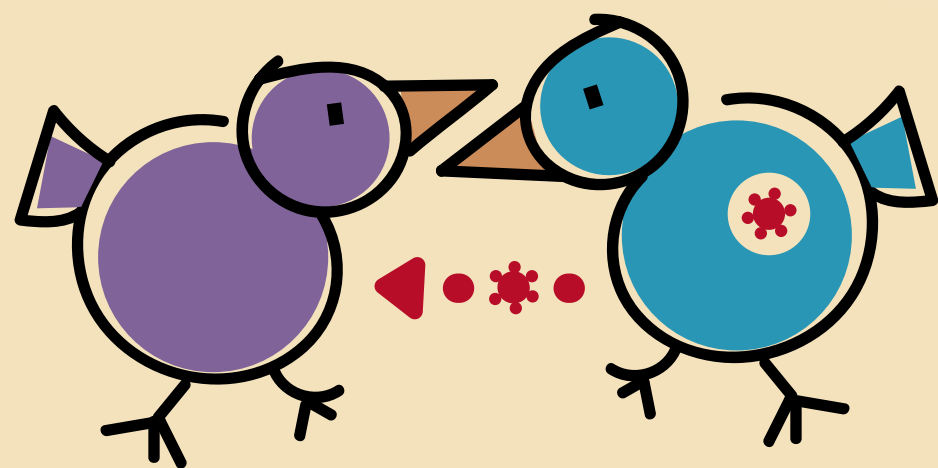
Mosquito to Mammal

When a mosquito bites a human or other mammal, they can get sick. But they cannot pass on the virus through new mosquito bites.



Mosquito to Mosquito

An infected mosquito can pass the virus to her offspring, which are born infected.



Bird to Bird

An infected bird can spread West Nile virus to other birds at watering holes or breeding grounds.

NO LASER BEAMS
NEEDED!

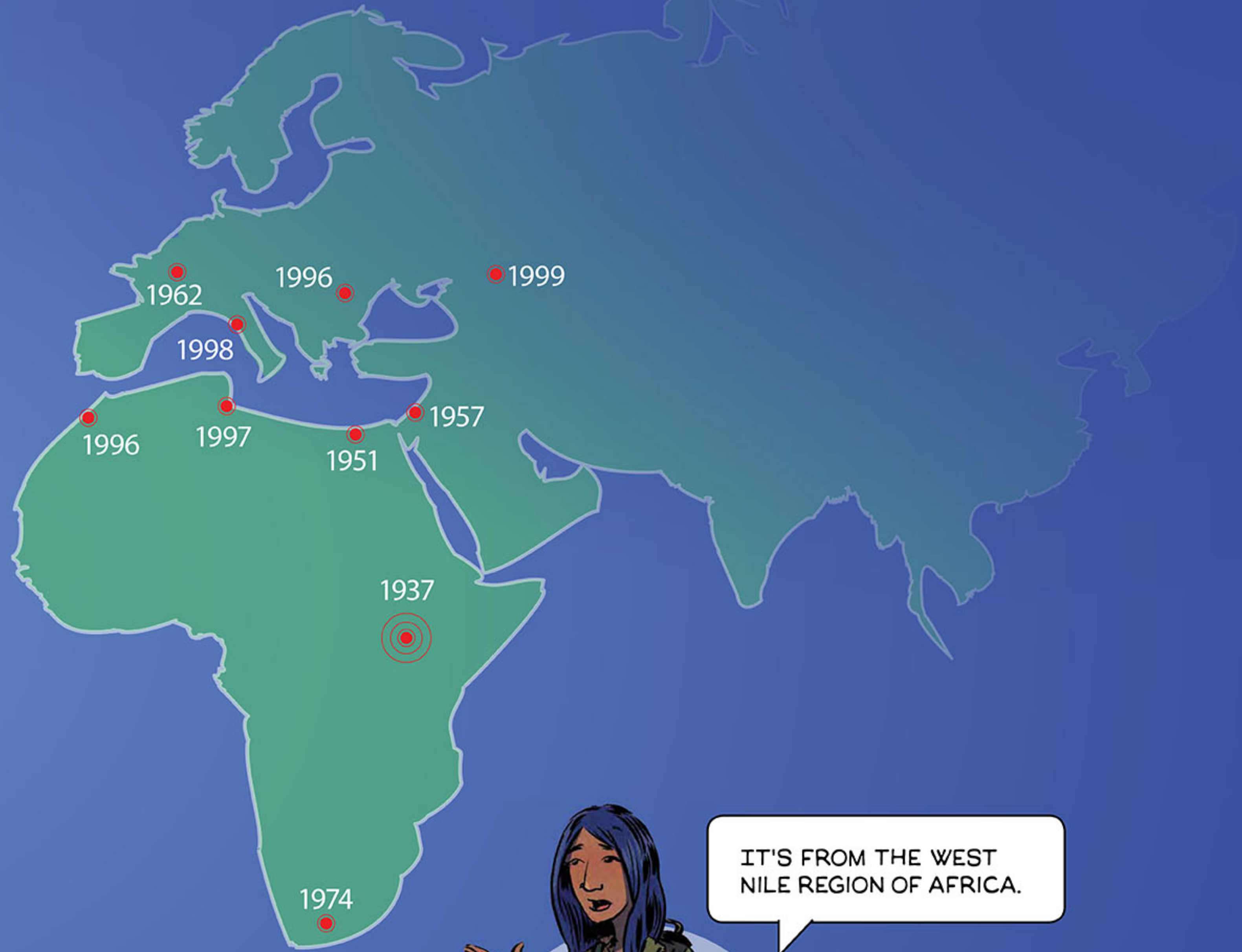


West Nile Virus Outbreaks

We know West Nile virus has been infecting people since 1937, when it was first identified. The disease spread — most likely by mosquitos and birds — throughout Africa, into Asia and then to Europe.

- **Outbreaks**

- 1937 West Nile region
- 1951 Egypt
- 1957 Israel
- 1962 France
- 1974 South Africa
- 1996 Romania
- 1996 Morocco
- 1997 Tunisia
- 1998 Italy
- 1999 Vovlgrograd



IT'S FROM THE WEST NILE REGION OF AFRICA.

THE REAL DEAL

West Nile Virus Outbreaks

No one knows exactly how, but in 1999 the disease moved to North America — specifically to New York City and surrounding area.

By 2003, West Nile virus spread across the country, making about 10,000 people sick. This disease remains a threat throughout the United States.



THE MYSTERY
REMAINS UNSOLVED!



MADU.

BEEP-BEEP!
BEEP-BEEP!
BEEP-BEEP!

WE THINK
IT'S WEST NILE
VIRUS.

CAN YOU
IDENTIFY IT
FOR SURE?

I'LL TEST THE
MOSQUITOS YOU
FOUND FOR THE
VIRUS.

MOSQUITOS
COMING RIGHT
UP!

WEST NILE
VIRUS!

THE
DOCTORS CAN
TEST GRANDMA'S
BLOOD.



MEANWHILE,
WE NEED A CLOSER
LOOK AT THE TISSUE
SAMPLES FROM THE
FLAMINGO AND
CROW.

HOW CAN
YOU GET
CLOSER?

WITH A
SCANNING ELECTRON
MICROSCOPE, CALLED
AN **SEM**.

SUPERZOOM!

YOU CAN
SEE THINGS
TOO TINY FOR MY
MICROSCOPE.

.....
BUT, UH,
WHAT ARE
WE LOOKING
FOR?

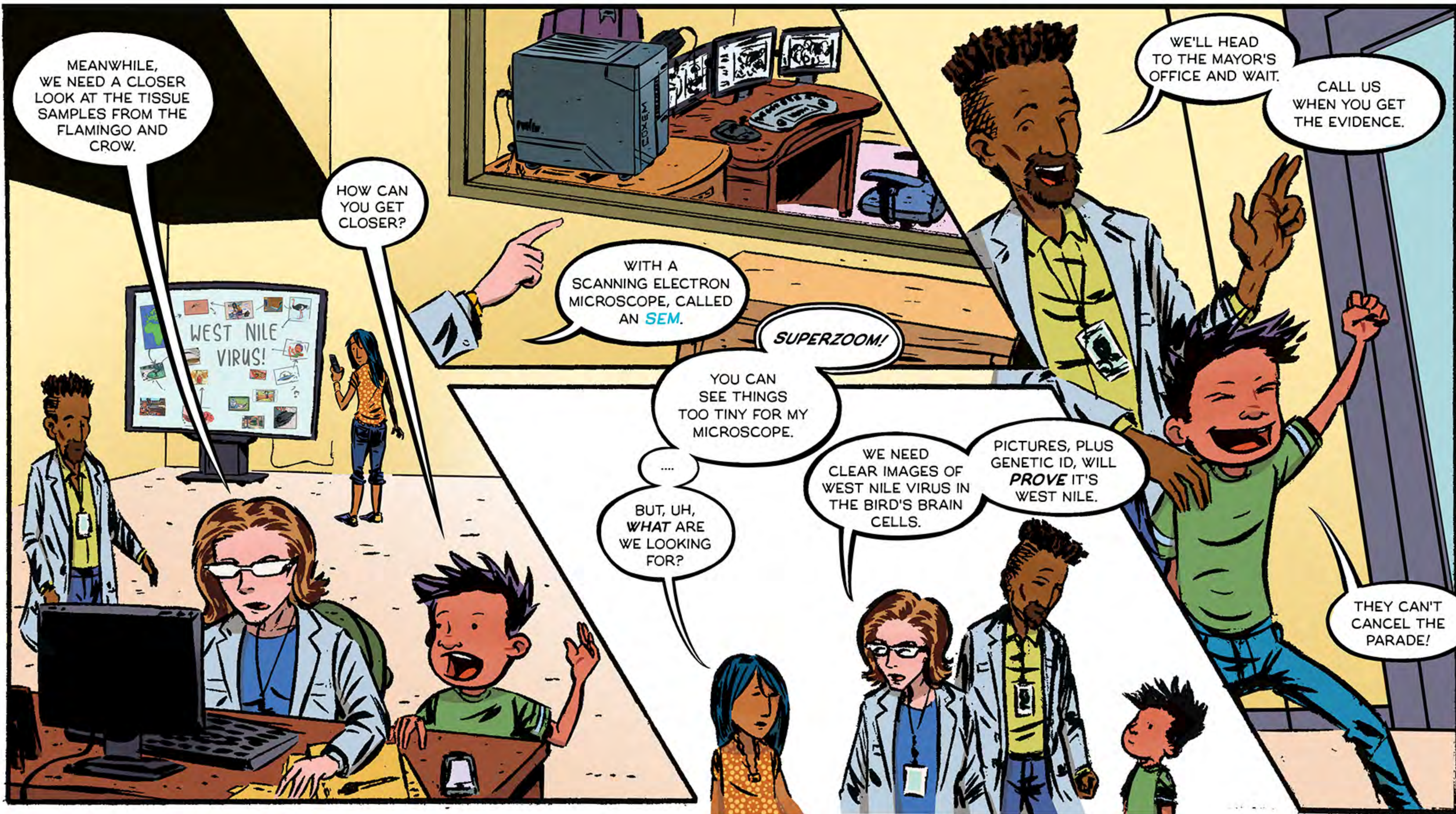
WE NEED
CLEAR IMAGES OF
WEST NILE VIRUS IN
THE BIRD'S BRAIN
CELLS.

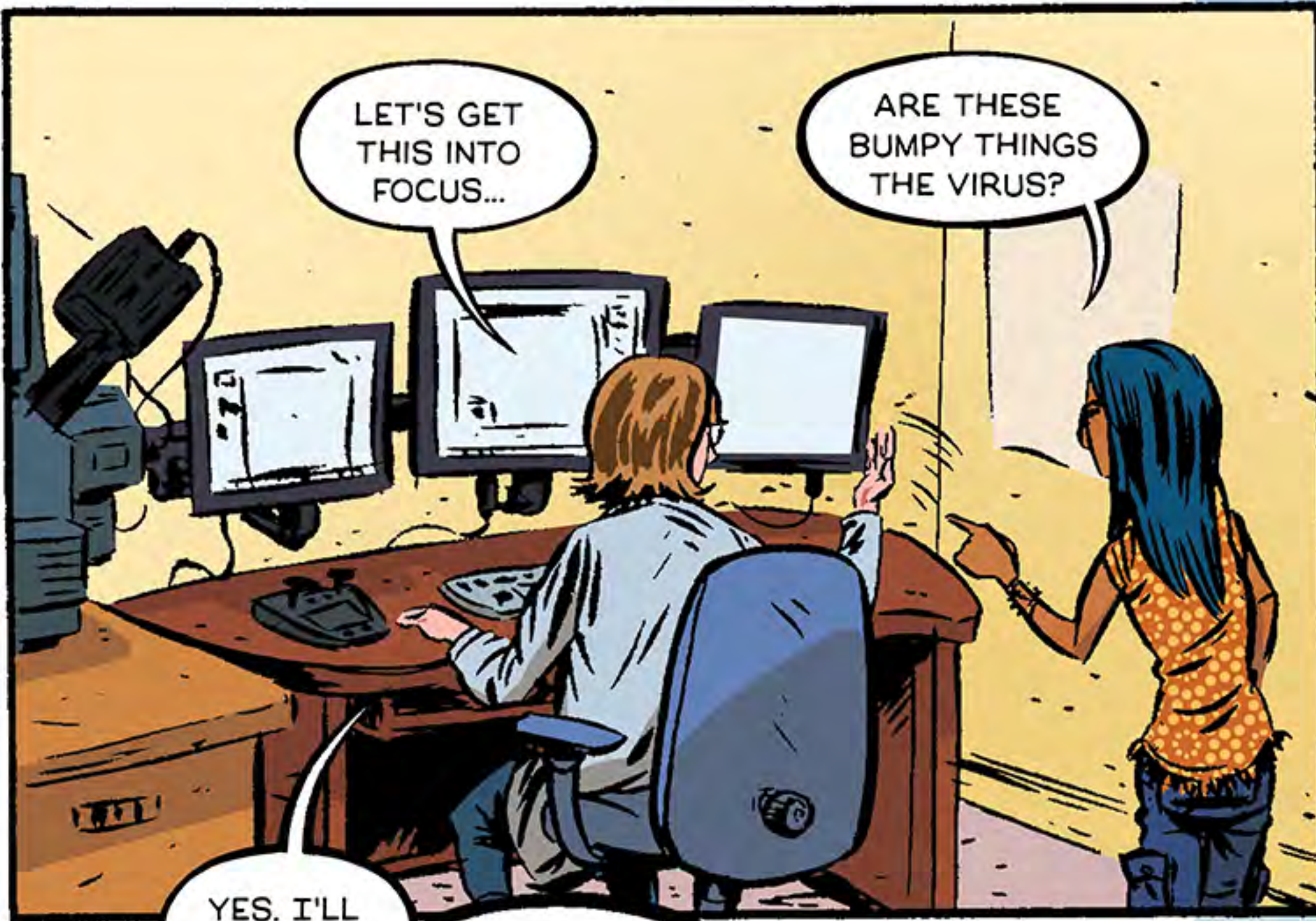
PICTURES, PLUS
GENETIC ID, WILL
PROVE IT'S
WEST NILE.

WE'LL HEAD
TO THE MAYOR'S
OFFICE AND WAIT.

CALL US
WHEN YOU GET
THE EVIDENCE.

THEY CAN'T
CANCEL THE
PARADE!



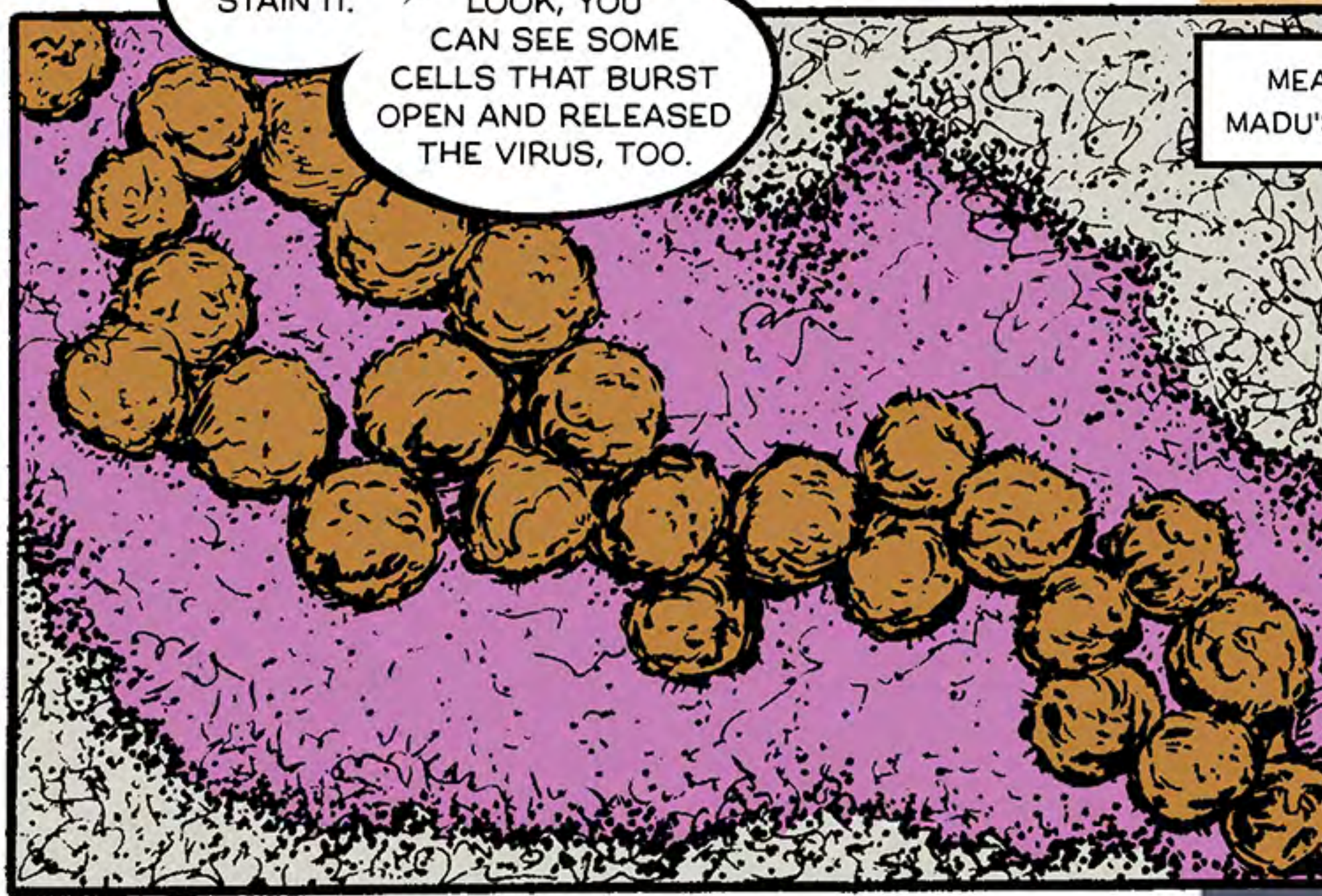


LET'S GET THIS INTO FOCUS...

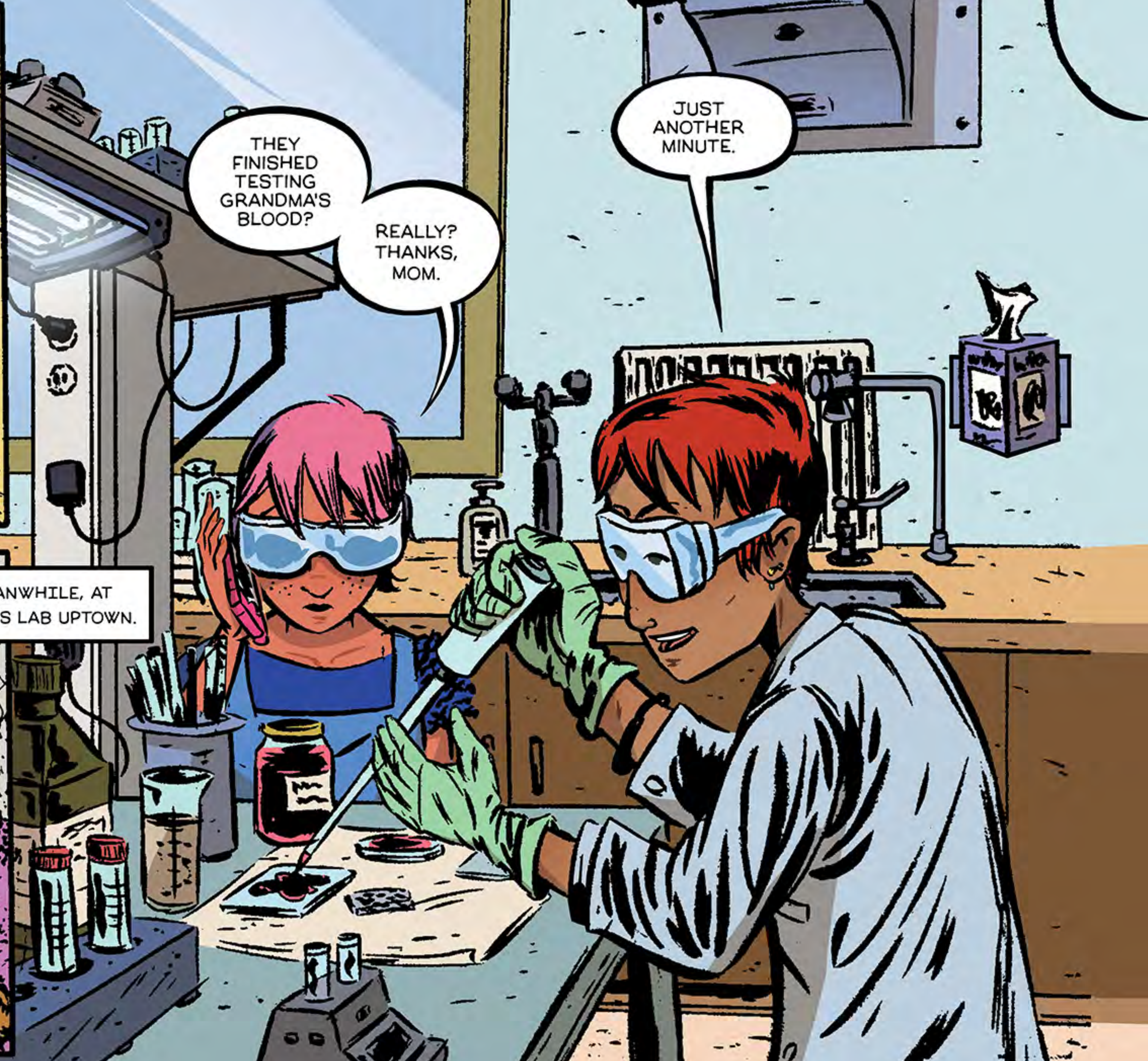
ARE THESE BUMPY THINGS THE VIRUS?

YES. I'LL STAIN IT.

LOOK, YOU CAN SEE SOME CELLS THAT BURST OPEN AND RELEASED THE VIRUS, TOO.



MEANWHILE, AT MADU'S LAB UPTOWN.



THEY FINISHED TESTING GRANDMA'S BLOOD?

REALLY? THANKS, MOM.

JUST ANOTHER MINUTE.

IT'S WEST NILE VIRUS!

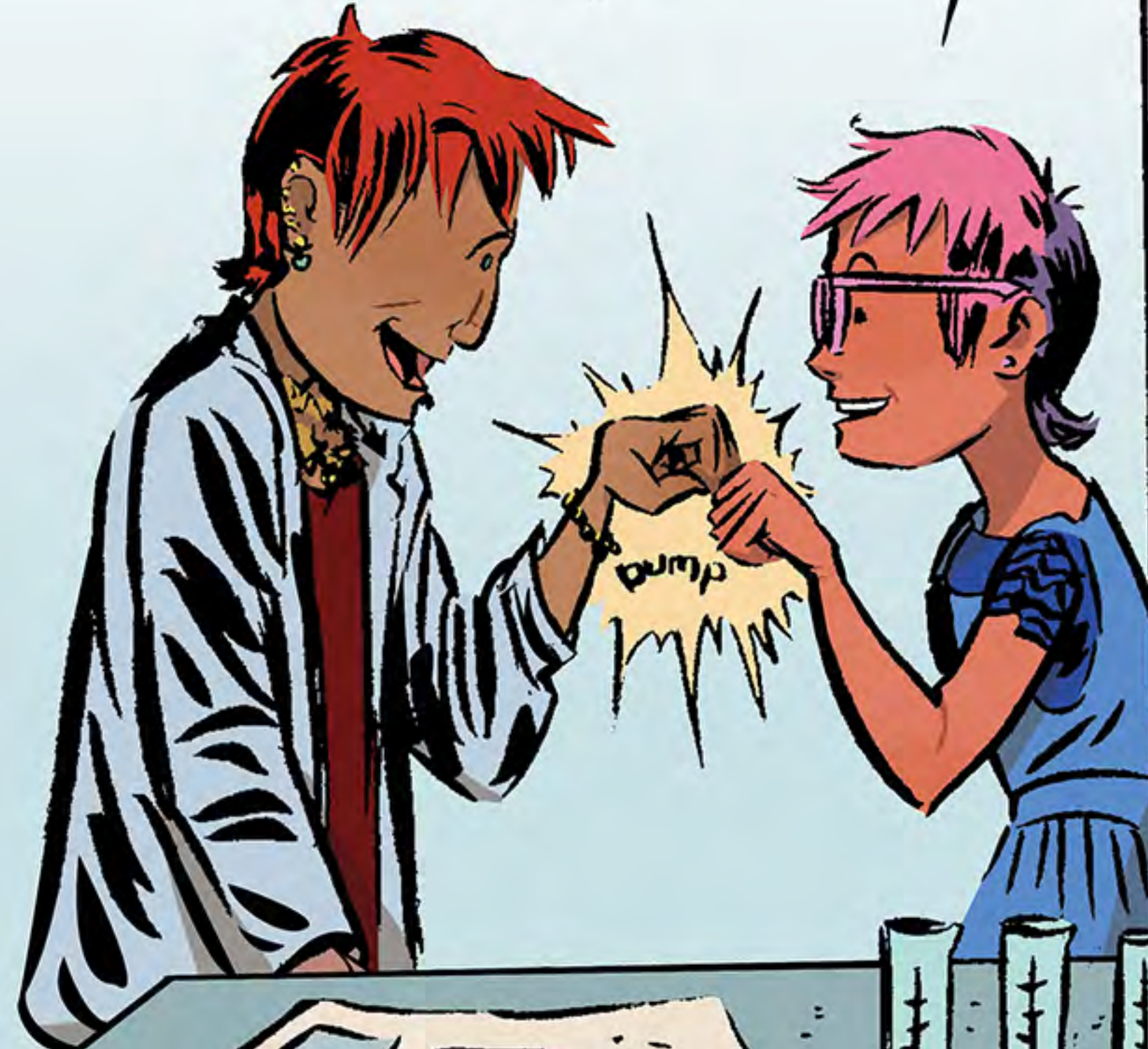
WILL THEY STOP THE MAYOR'S ANNOUNCEMENT IN TIME?



HI, ZIP.

WE GOT THE EVIDENCE.

STOP THE MAYOR!



THE MAYOR'S PRESS CONFERENCE, CITY HALL.



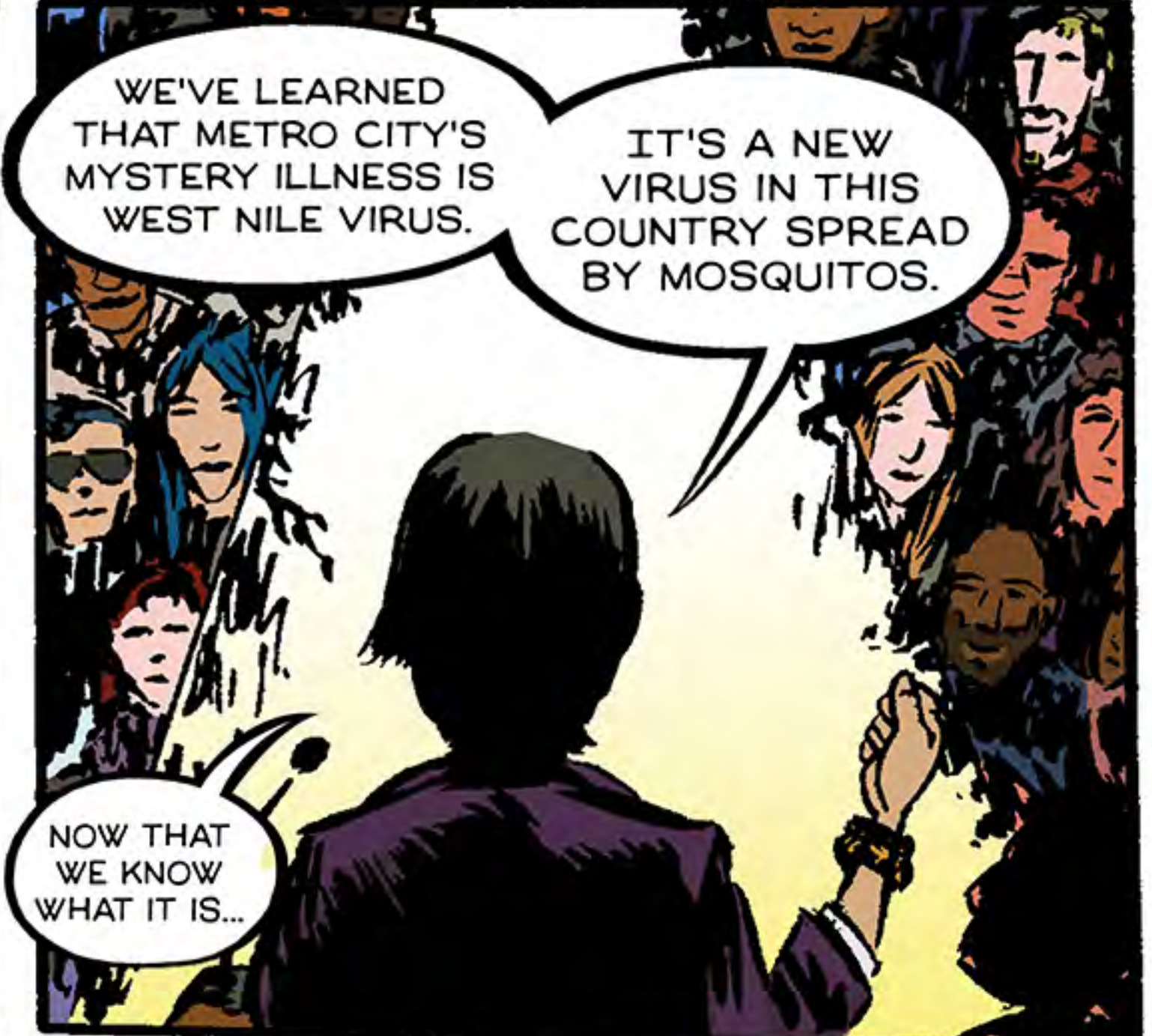
WAIT!!

YOU CAN'T CANCEL THE PARADE!

MAYOR, WE HAVE BIG NEWS!



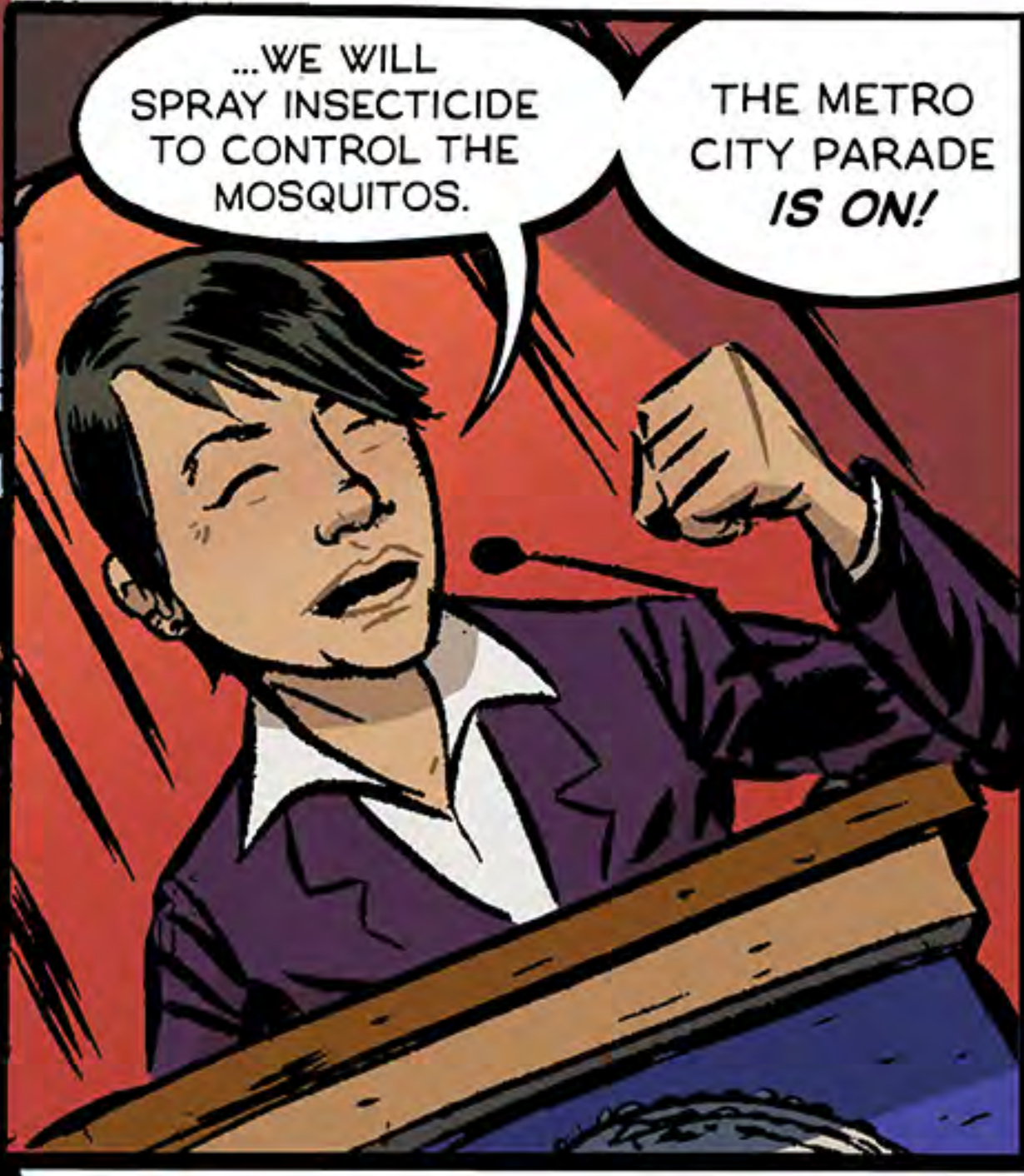
WHISPER WHISPER (HMMM.) WHISPER WHISPER WHISPER. (OH!) WHISPER WHISPER. (UH HUH) WHISPER. (I SEE!) WHISPER



WE'VE LEARNED THAT METRO CITY'S MYSTERY ILLNESS IS WEST NILE VIRUS.

IT'S A NEW VIRUS IN THIS COUNTRY SPREAD BY MOSQUITOS.

NOW THAT WE KNOW WHAT IT IS...



...WE WILL SPRAY INSECTICIDE TO CONTROL THE MOSQUITOS.

THE METRO CITY PARADE IS ON!



WOO HOO!

YEAH!

Hi

FIVE!



THAT EVENING THE HELICOPTERS SPRAY AS THE SUN SETS.



GLAD TO HEAR SHE IS FEELING A LITTLE BETTER.

I CAN'T BELIEVE GRANDMA FINISHED THE COSTUMES WHILE SHE WAS SICK.



YUP.
HER BODY IS BEATING THE VIRUS.

KA-POW!
GRANDMA, ONE; ALIENS, NADA.



YOU KNOW, IF I GET ONE OF THOSE OUTFITS...

...WE COULD BE A WACKY SCIENCE MYSTERY TEAM!

THE NEXT DAY.



The End.

THE REAL DEAL

Dr. Tracey McNamara

When Dr. Tracey McNamara became a veterinarian, she didn't know she would help solve one of the biggest medical mysteries ever to hit New York City. In 1999, birds began mysteriously dying at the Bronx Zoo, where she was the Senior Zoo Pathologist. Meanwhile, people were also dying of a mystery disease in the city's hospitals.



Wildlife World Conservation Society's Wildlife Health Center, New York City, 1999

Government officials said the cause was St. Louis encephalitis. But Dr. McNamara knew that her evidence pointed to something different—something new to New York City. She didn't give up investigating until she found the truth.

The sickness was caused by West Nile virus. This was the first time it appeared in North America. Dr. McNamara is a science hero! Her work helped protect millions of people and animals in New York City and beyond.

THIS SUPER SCIENCE SLEUTH CRACKED THE WEST NILE VIRUS CASE!



THE REAL DEAL

Dr. Varuni Kulasekera

Whether it's the swamps in the Amazon or still ponds on Staten Island, nothing stops Dr. Varuni Kulasekera from hunting mosquitos. In 1999, New York City called her in to inspect the homes of hospital patients suffering from a mysterious illness. She found *Culex pipiens* mosquitos at all of the houses. Since these mosquitos spread disease, Dr. Kulasekera helped solve the West Nile virus mystery.



*Tasmania,
circa 2016*

After this outbreak, Dr. Kulasekera became Medical Entomologist for the New York City Department of Health and Mental Hygiene. There, she monitored New York's mosquito populations there for three years. Her work counting and identifying mosquitos helped New York City decide when to spray insecticide to reduce the risk of more West Nile outbreaks.

DIFFERENT TYPES OF
MOSQUITOS CAN
SPREAD DIFFERENT
DISEASES.



Glossary

ANTIBODIES

Take care. When a microbe invades your body, unique chemicals, called antibodies, are created for each type of microbe. These antibodies tell your immune system to protect you against the invaders.

ENCEPHALITIS

Now, don't get a big head! Really! This inflammation, or swelling, of the brain is usually caused by an infection.

ENTOMOLOGIST

Imagine life as an insect. That's what an entomologist does. These scientists study everything about insects, like where they live, how they grow and how to control their populations.

MICROBES

Get the microscope! These tiny organisms, like viruses or bacteria, are too small to see without zooming in--sometimes WAY in.

NECROPSY

Dead things don't lie. Animal pathologists perform this examination of dead animals to find out how and why they died. They look for evidence of diseases or injuries.

PATHOLOGIST

Disease detective at your service! A pathologist studies how diseases make plants and animals sick and sometimes kill them.

S.E.M.

It stands for Scanning Electron Microscope. This very high-powered microscope can super zoom and magnify teeny tiny organisms, including viruses.

VECTOR

Dangerous things can come in small packages like vectors. These small organisms, such as mosquitoes, ticks or sand flies, carry and spread viruses and other microbes from infected animals to healthy ones.

ZOONOSIS

Sound catchy? Zoonosis is a disease that can be spread from other animals, such as mammals, birds, reptiles, amphibians and fish to humans.

 **CHAPTER 5: THE PARADE MUST GO ON!**

[GLOSSARY](#)

[BLOG](#)

[CHARACTERS](#)

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Writer, Interactive Content Developer: Karen de Seve, Creative Content Studios

Design & Development Partner: Blue Telescope
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Producer: Brad Barton
Comic Book Art: Charlie LaGreca
Comic Book Lettering: Mario A. Gonzalez
Comic Book Colorists: Jennifer Xu and Kate Rhodes of KaiJu
UI Design: Patrick Snee
UX Design: Tonian Irving
Developer: Valeria Valoueva
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Additional Artwork: Daniel Loi, Senior Graphic Designer, New York Hall of Science
Animation: Ray Ferrer, Ray Ferrer Art
Voiceover: Anais Cardenas, Digital Education Resident, New York Hall of Science

