THE BATTLE AGAINST THE SUPER BACTERIA

DR. LIYA AND MANJU'S TIME-TRAVELING ADVENTURES

INTRODUCING THE CHARACTERS

DR. LIYA

A 40 year old medical microbiologist who studies antibiotic resistance

MANJU

A time-traveling medical robot and Dr. Liya's sidekick

ALEXANDER FLEMING

A Scottish scientist born in 1881. He is famous today for discovering penicillin, the first widely used antibiotic medicine

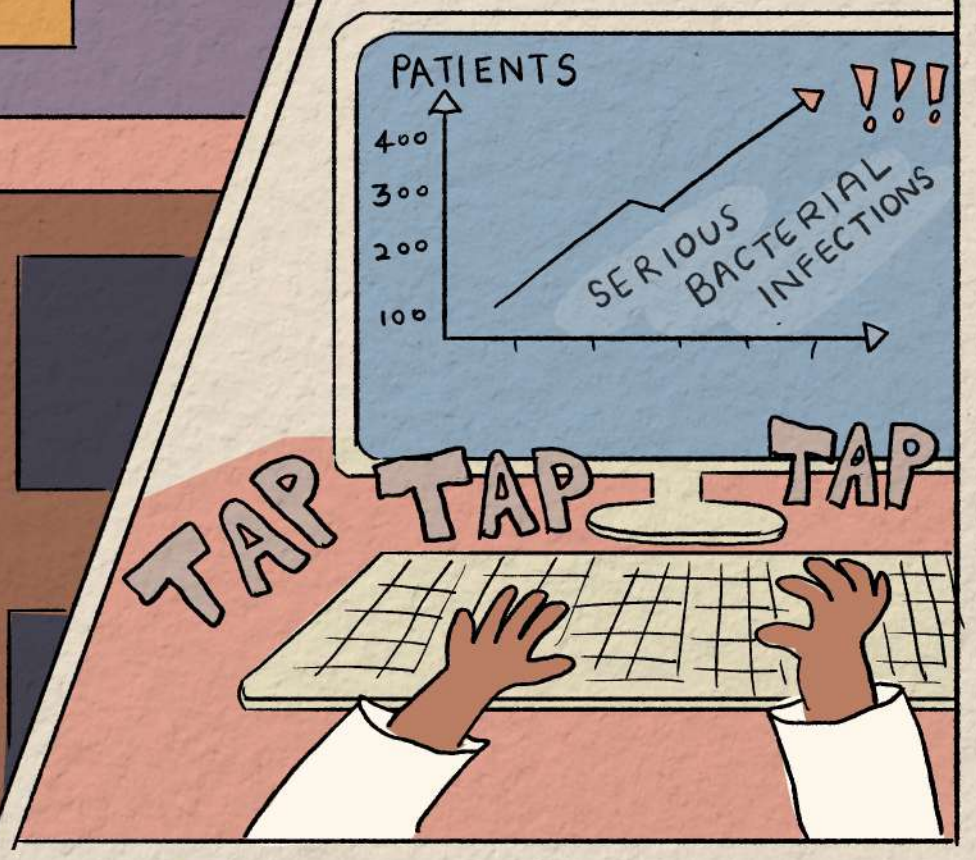
SUPER BACTERIA

Tiny germs that can make you sick. When people misuse antibiotics, ordinary bacteria can become super-bacteria by becoming resistant to antibiotics

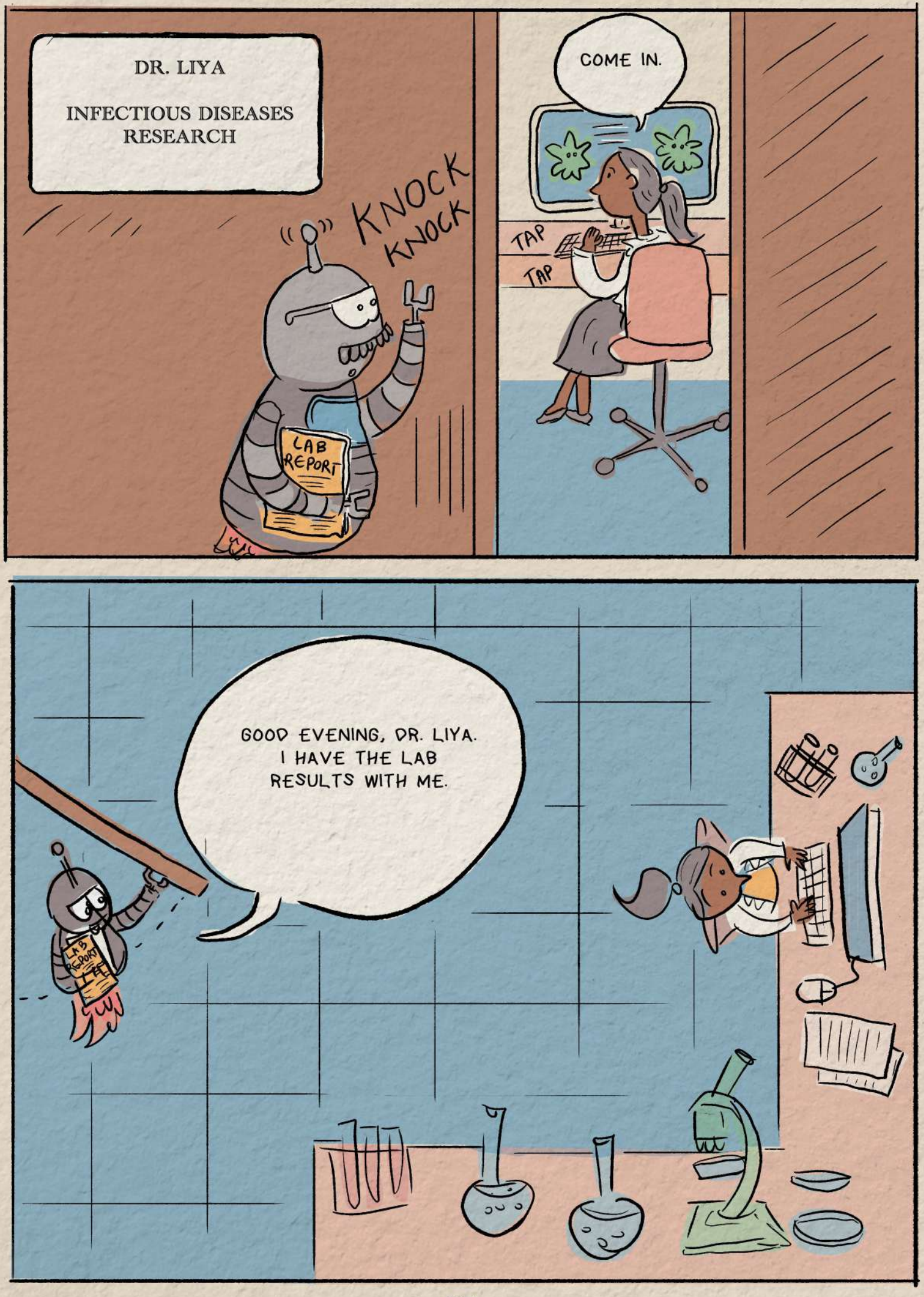

COLOMBO, SRI LANKA.
YEAR 2040.
NEWS
NEWS
FEB 2040
DOCTORS SEARCH FOR A CURE
ANTIBIOTIC RESISTANCE A GLOBAL THREAT
COUGH
ANTIBIOTIC RESISTANCE IS IN THE HEADLINES THIS WEEK TOO!
DOCTORS SEARCH FOR A CURE
ANTIBIOTIC RESISTANCE A GLOBAL THREAT
IT SEEMS EVEN THE STRONGEST ANTIBIOTICS ARE NOT CURING THOSE INFECTED AND IN HOSPITAL
LUCKILY WE HAVE THE AMAZING DR. LIYA WORKING HARD TO FIND A CURE

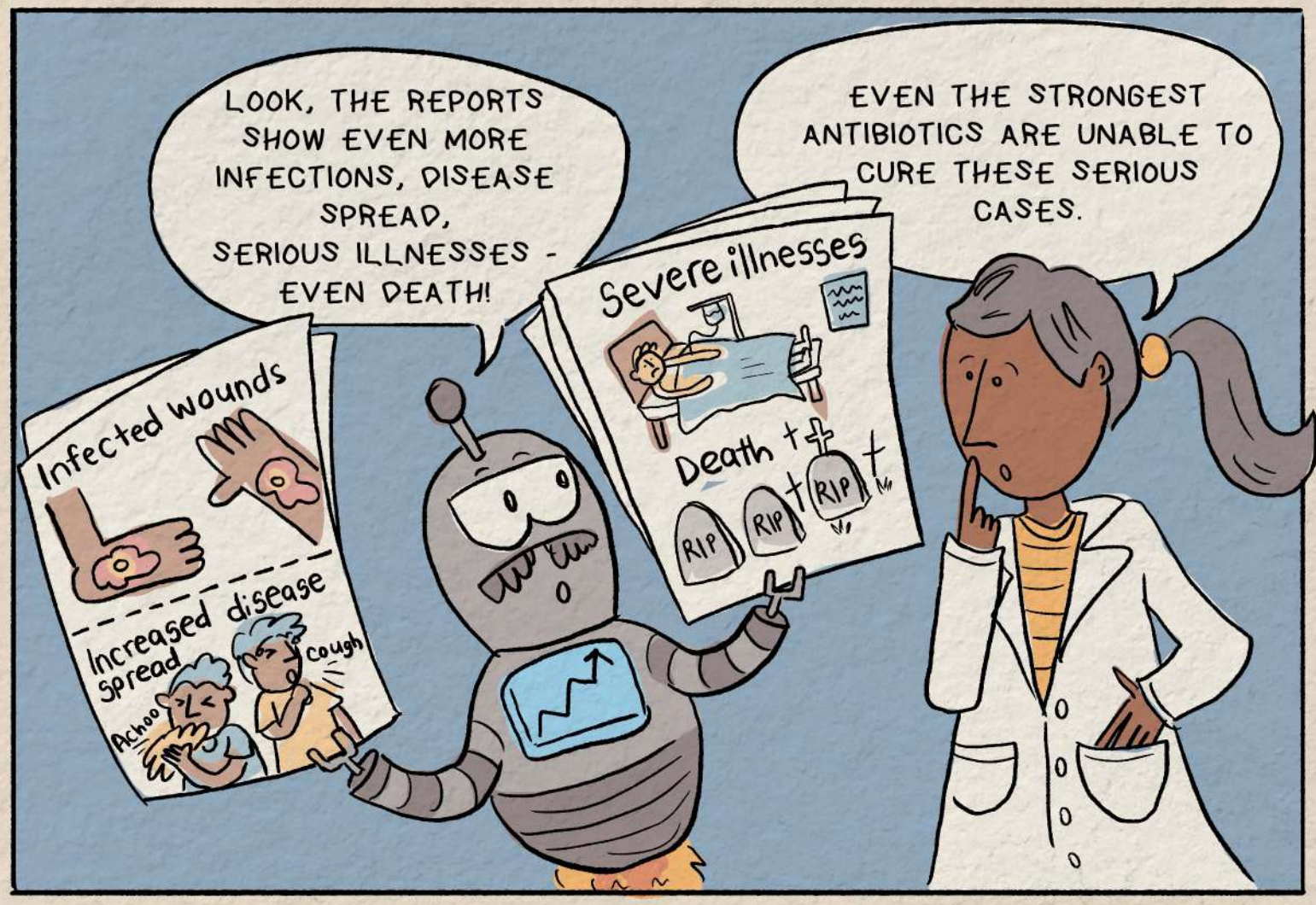
IT IS 11:00 PM AND MOST OF COLOMBO CITY IS ASLEEP. IN THE CITY HOSPITAL SOMEONE IS STILL WORKING LATE INTO THE NIGHT.

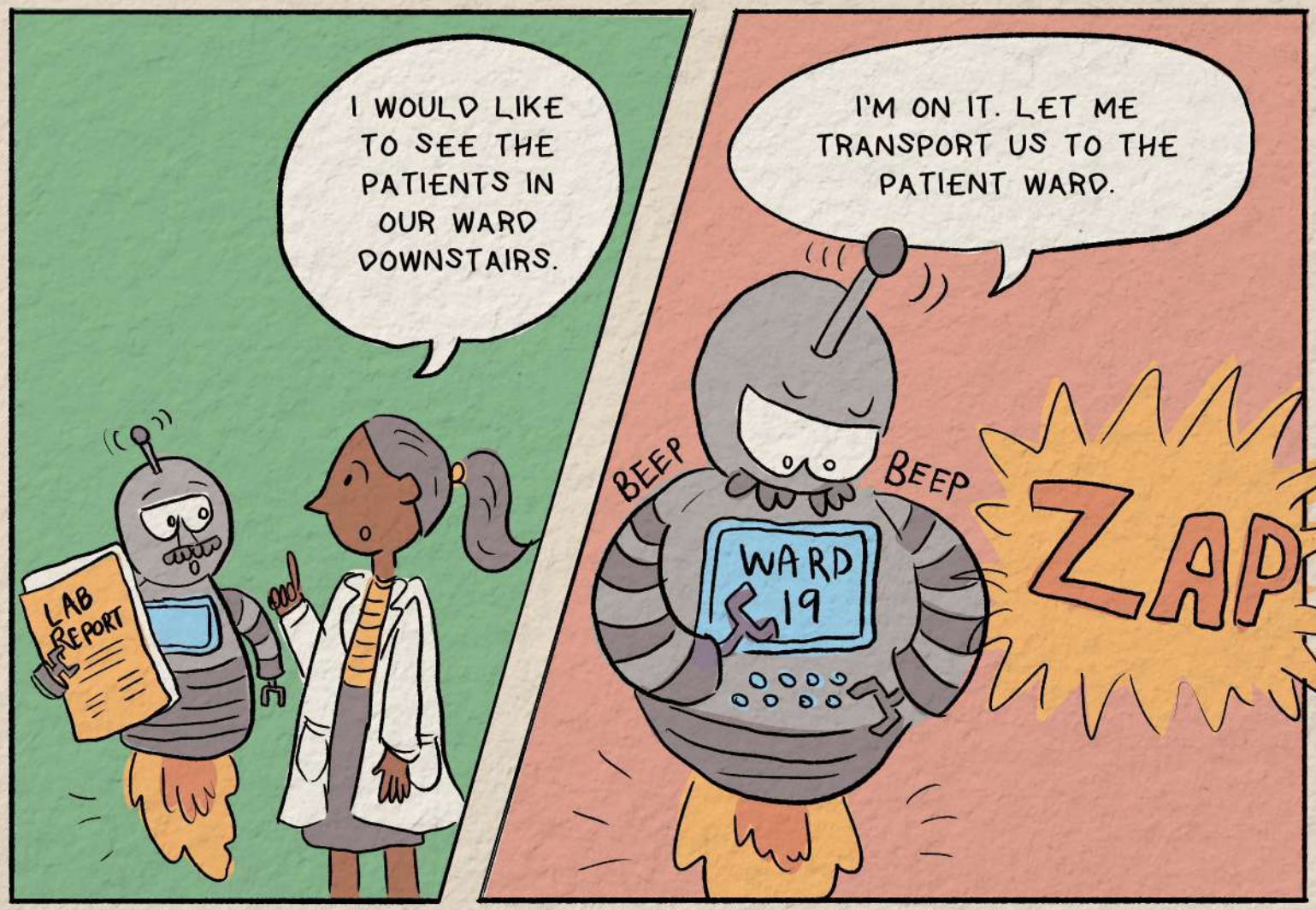
THERE IS A BIG MEDICAL PUZZLE TO BE SOLVED.




DR. LIYA IS BUSY EXPERIMENTING WITH SOME MEDICINES IN HER LAB.
TAP
BACTERIAL INFECTION
ANTI-BIOTICS
TAP
SLURP
ANTIBIOTIC TESTING
HEALTH REPORTS
SHE CHECKS FOR ANTIBACTERIAL ACTIVITY
drop
drop
STRONGER ANTIBIOTICS
I WONDER IF THE MEDICINE IS NOW STRONG ENOUGH TO FIGHT THE INFECTIONS...
HEALTH REPORTS
MANUAL OF ANTIBIOTIC STRENGTH TESTING


DR. LIYA
INFECTIOUS DISEASES RESEARCH
KNOCK KNOCK
LAB REPORT
COME IN.
TAP
TAP
GOOD EVENING, DR. LIYA. I HAVE THE LAB RESULTS WITH ME.
LAB REPORT

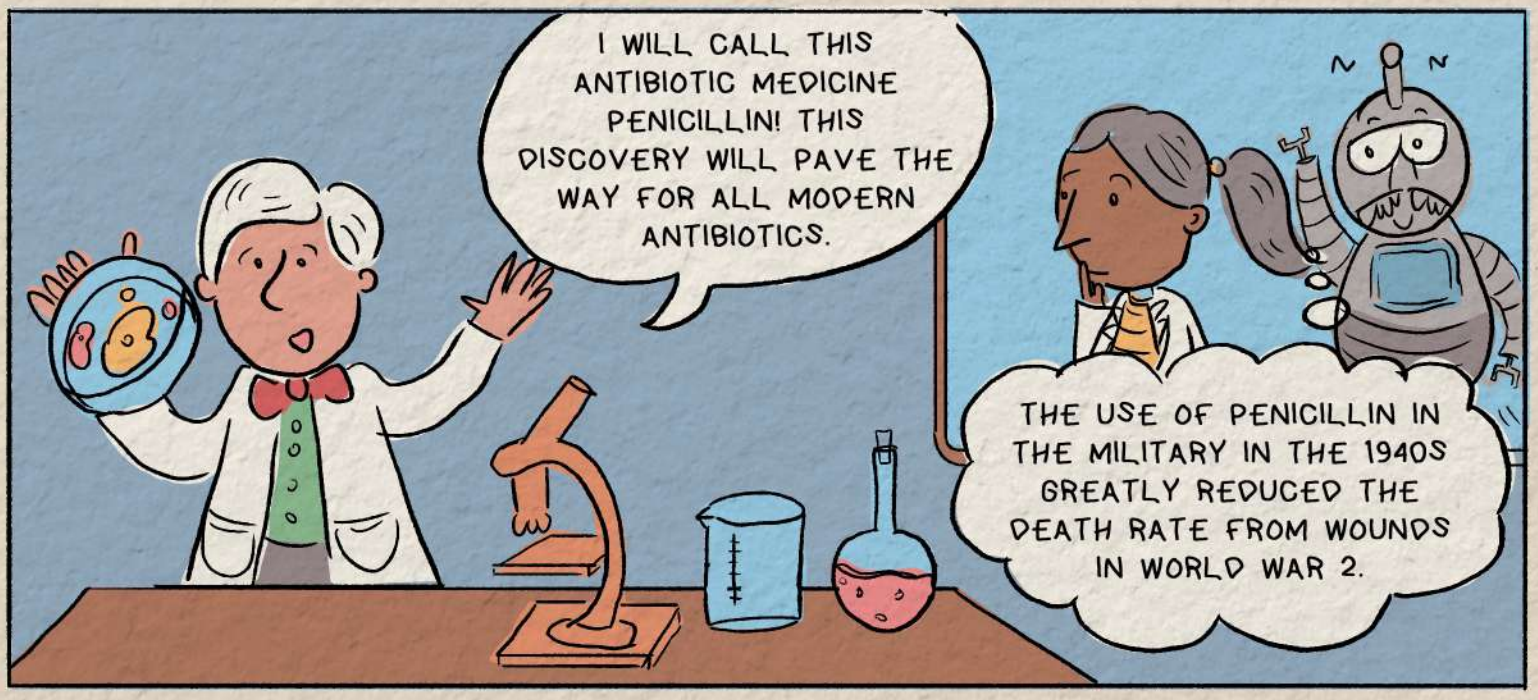

LOOK, THE REPORTS SHOW EVEN MORE INFECTIONS, DISEASE SPREAD, SERIOUS ILLNESSES - EVEN DEATH!
EVEN THE STRONGEST ANTIBIOTICS ARE UNABLE TO CURE THESE SERIOUS CASES.
Infected wounds
Increased disease spread
Achoo
cough
Severe illnesses
Death
RIP
RIP
RIP


I WOULD LIKE TO SEE THE PATIENTS IN OUR WARD DOWNSTAIRS.
I'M ON IT. LET ME TRANSPORT US TO THE PATIENT WARD.
LAB REPORT
BEEP
BEEP
WARD 19
ZAP


ZAP
OUTSIDE ST. MARY'S HOSPITAL IN LONDON, 1928
WHERE ARE WE, MANJU?
I THINK I PRESSED A WRONG BUTTON.
WE SEEM TO BE... IN THE PAST!
WHAT'S GOING ON OVER THERE?
ST. MARY'S HOSPITAL
MICROBIOLOGY LABORATORY
LOOK! IT'S ALEXANDER FLEMING!
SHHHHH! KEEP QUIET.
THAT WAS A LOVELY HOLIDAY AT HOME IN SCOTLAND. NOW BACK TO BUSINESS!
WELL, THIS IS A PLEASANT SURPRISE!

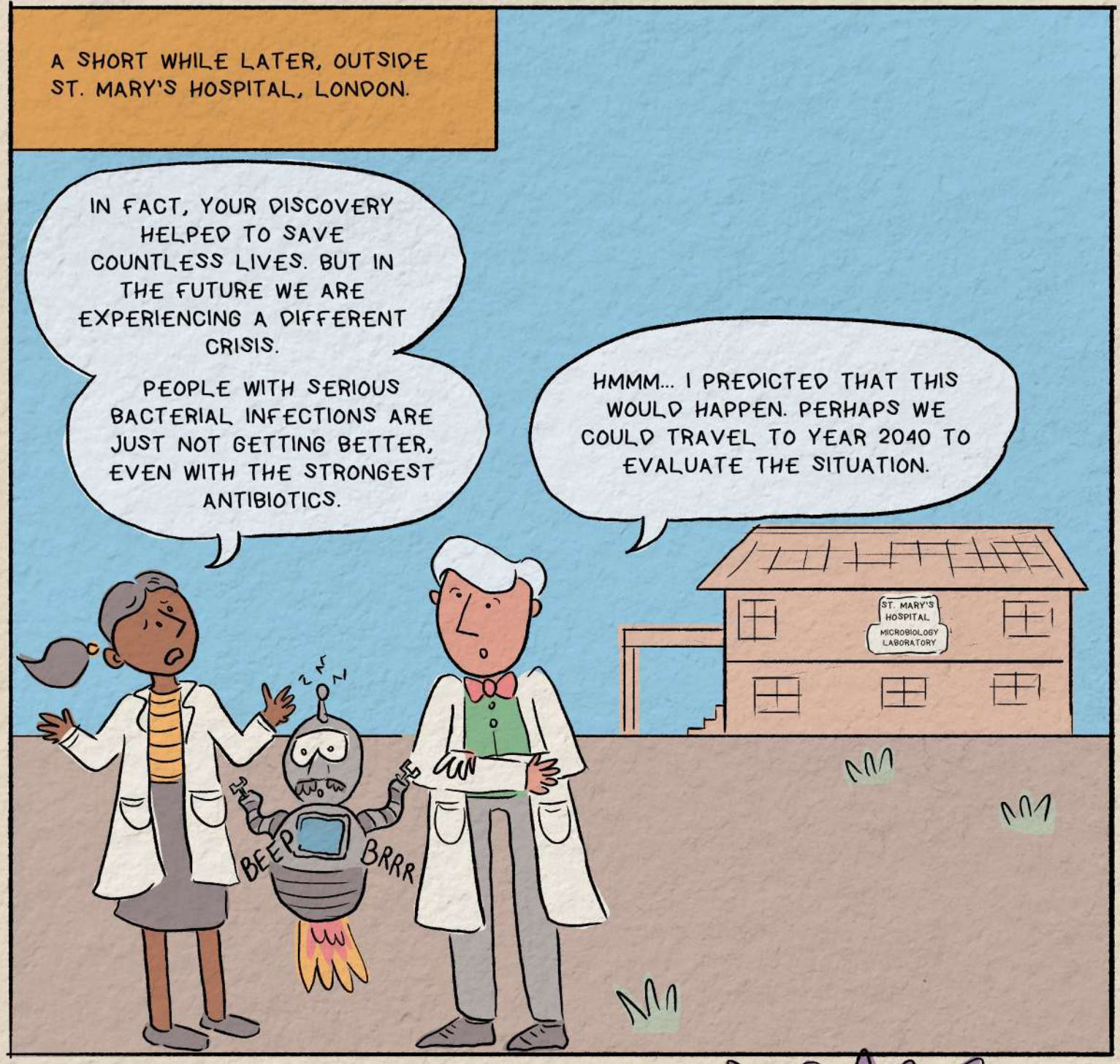

I LEFT THIS PETRI DISH WITH BACTERIA BEFORE GOING AWAY ON HOLIDAY. THE MOULD THAT HAS GROWN HAS KILLED SOME OF THE BACTERIA!

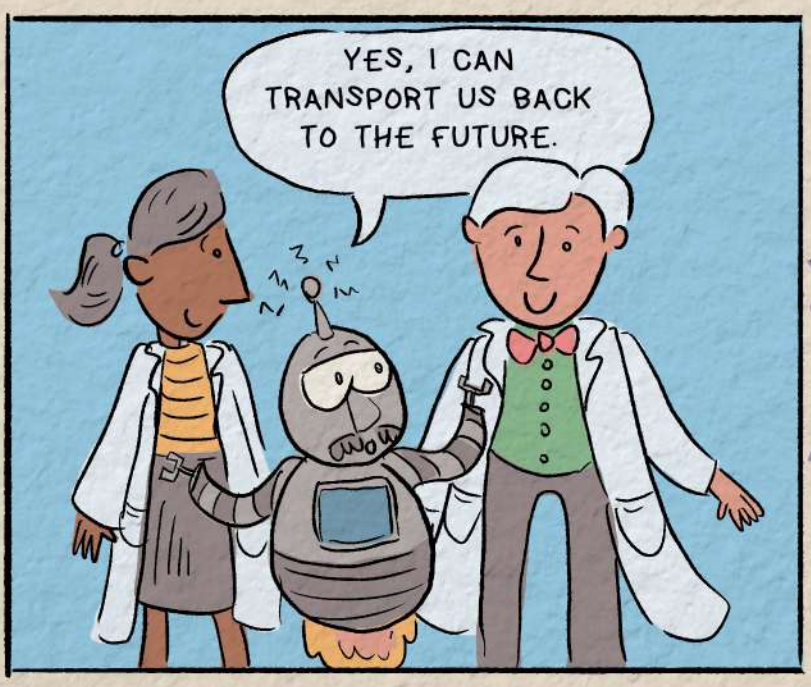

THANKS TO THIS LUCKY ACCIDENT, I HAVE DISCOVERED THAT THE PENICILLIM MOULD IS ABLE TO PREVENT THE SPREAD OF MANY HARMFUL BACTERIA.


I WILL CALL THIS ANTIBIOTIC MEDICINE PENICILLIN! THIS DISCOVERY WILL PAVE THE WAY FOR ALL MODERN ANTIBIOTICS.
THE USE OF PENICILLIN IN THE MILITARY IN THE 1940S GREATLY REDUCED THE DEATH RATE FROM WOUNDS IN WORLD WAR 2.

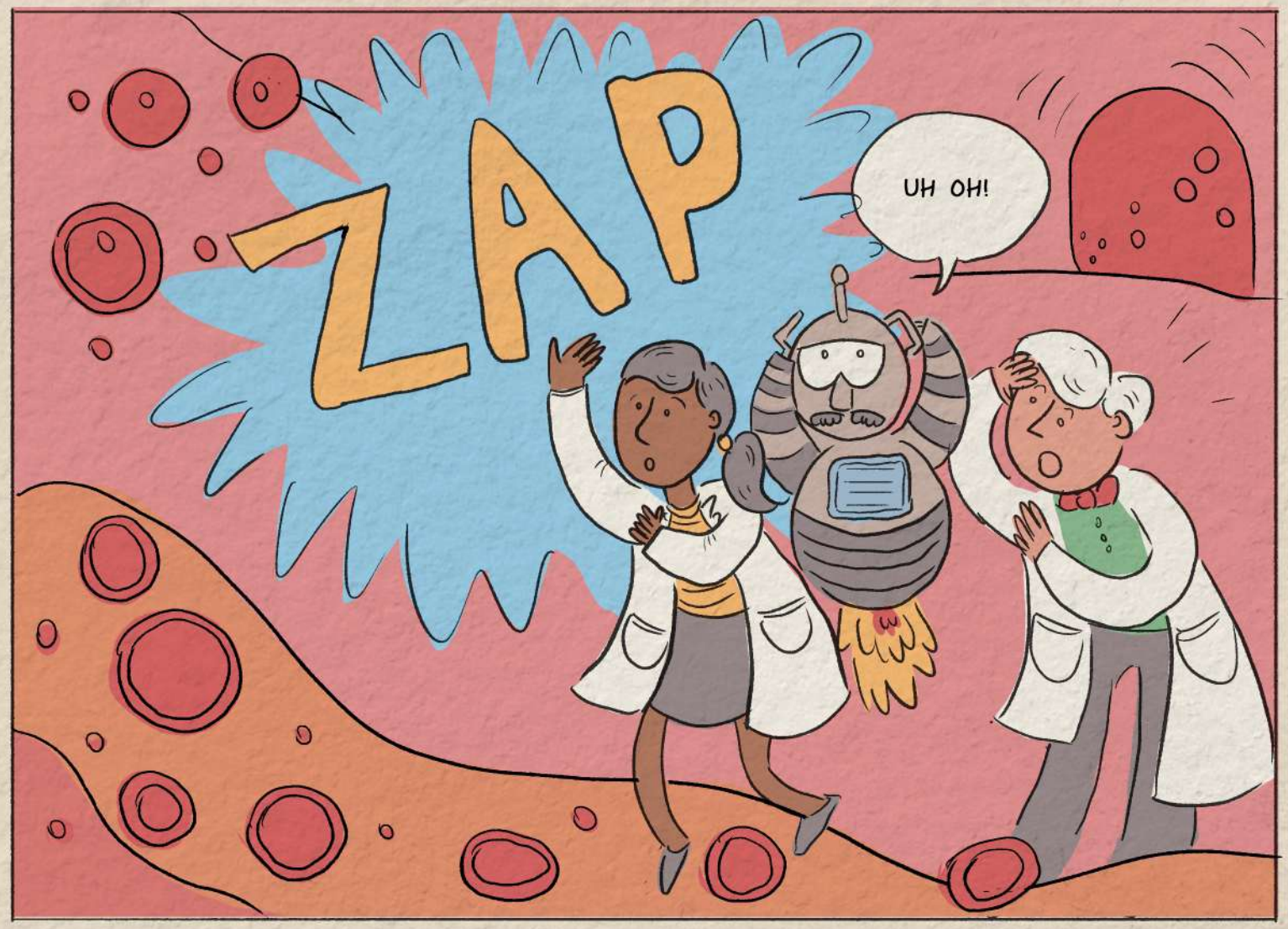

BUT THIS ANTIBIOTIC MEDICINE SHOULD BE USED WITH CAUTION BECAUSE...
BRRRRRRR


GOODNESS, A ROBOT! YOU MUST BE FROM THE FUTURE.
YES, MANJU HERE MALFUNCTIONED AND WE ACCIDENTALLY TRAVELLED THROUGH TIME. WE ARE FROM THE YEAR 2040.

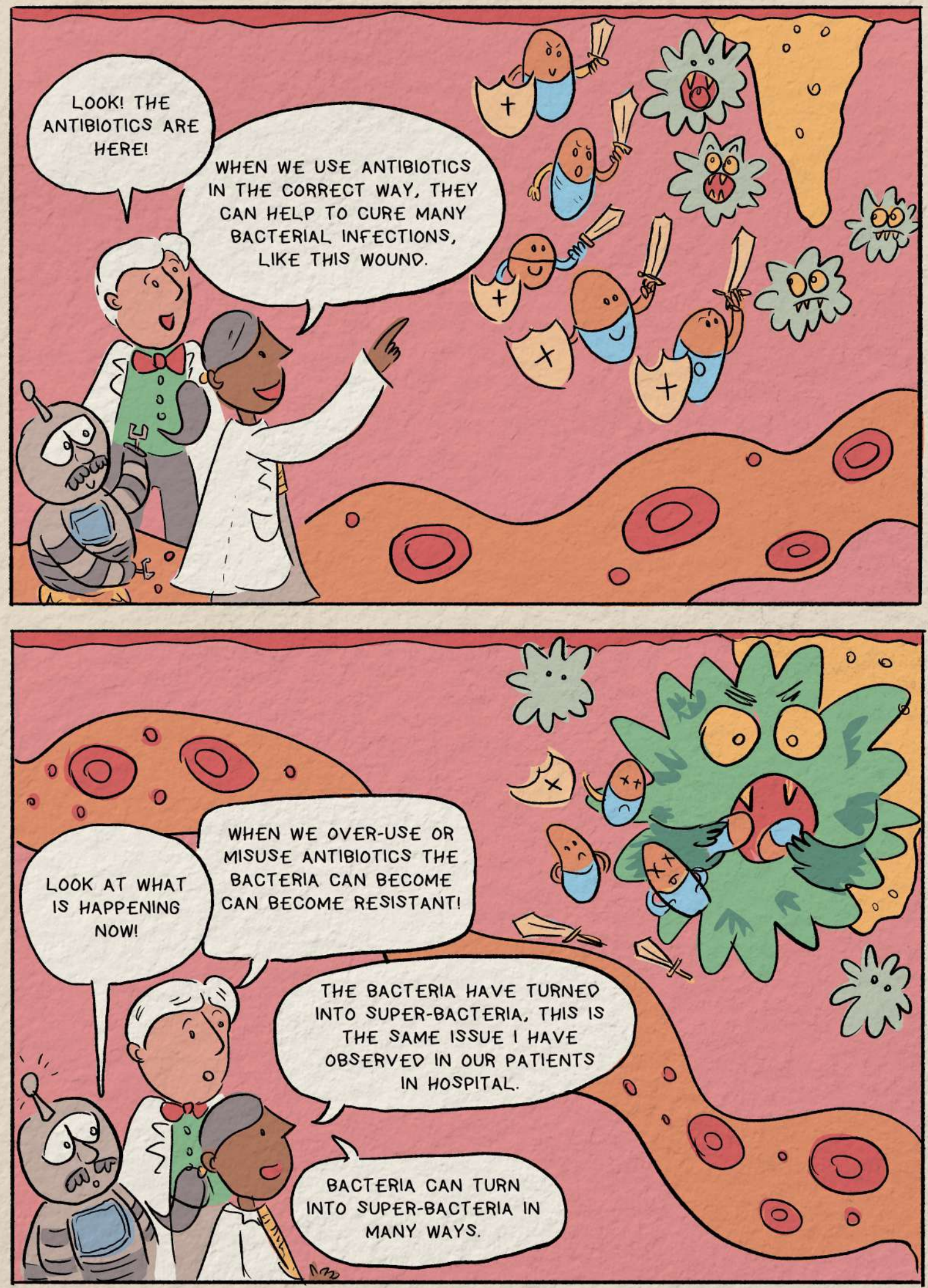

A SHORT WHILE LATER, OUTSIDE ST. MARY'S HOSPITAL, LONDON.
IN FACT, YOUR DISCOVERY HELPED TO SAVE COUNTLESS LIVES. BUT IN THE FUTURE WE ARE EXPERIENCING A DIFFERENT CRISIS.
PEOPLE WITH SERIOUS BACTERIAL INFECTIONS ARE JUST NOT GETTING BETTER, EVEN WITH THE STRONGEST ANTIBIOTICS.
HMMM... I PREDICTED THAT THIS WOULD HAPPEN. PERHAPS WE COULD TRAVEL TO YEAR 2040 TO EVALUATE THE SITUATION.
ST. MARY'S HOSPITAL MICROBIOLOGY LABORATORY
BEEP
BRRR

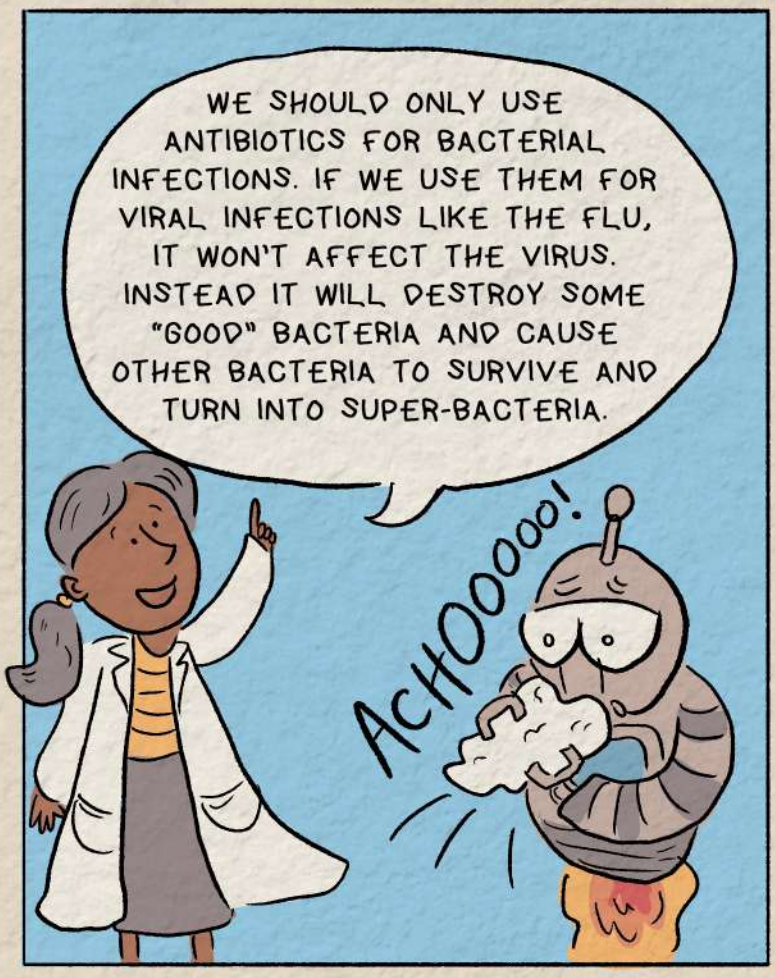

YES, I CAN TRANSPORT US BACK TO THE FUTURE.


ZAP


ZAP
UH OH!

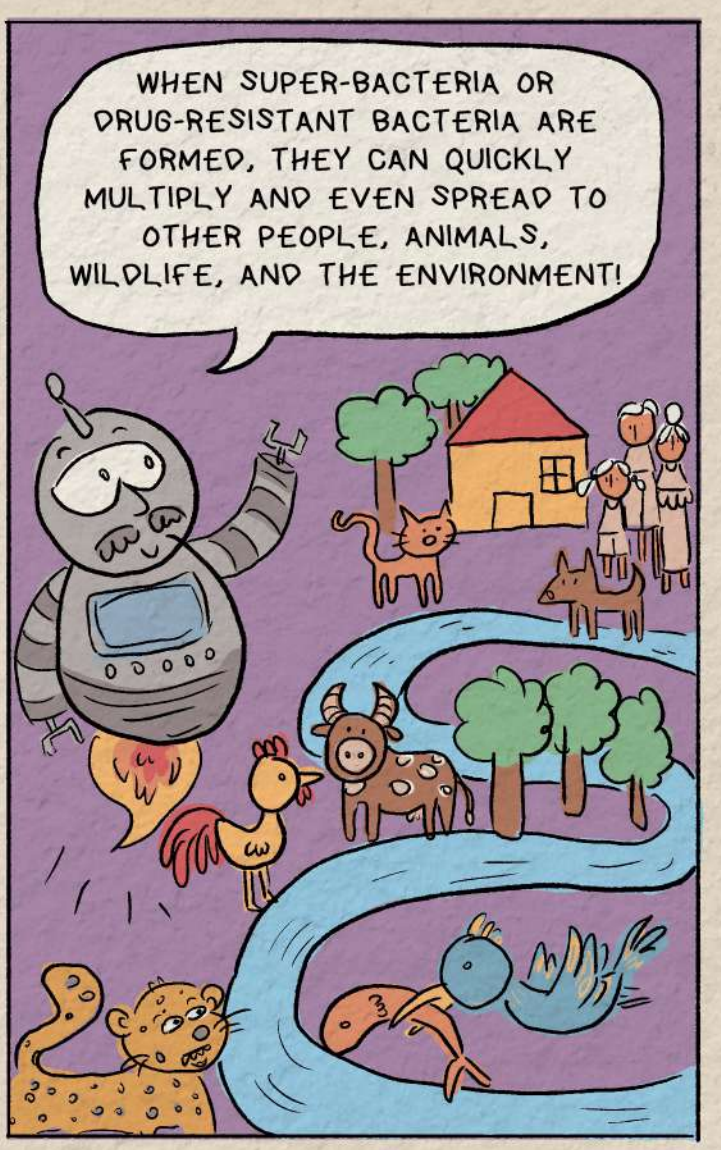

WE SEEM TO BE INSIDE A PERSON WITH A BADLY INFECTED WOUND.
YES, LOOK HOW THE BAD BACTERIA HAS SURROUNDED THE WOUND, CAUSING IT TO BECOME INFECTED WITH PUS.

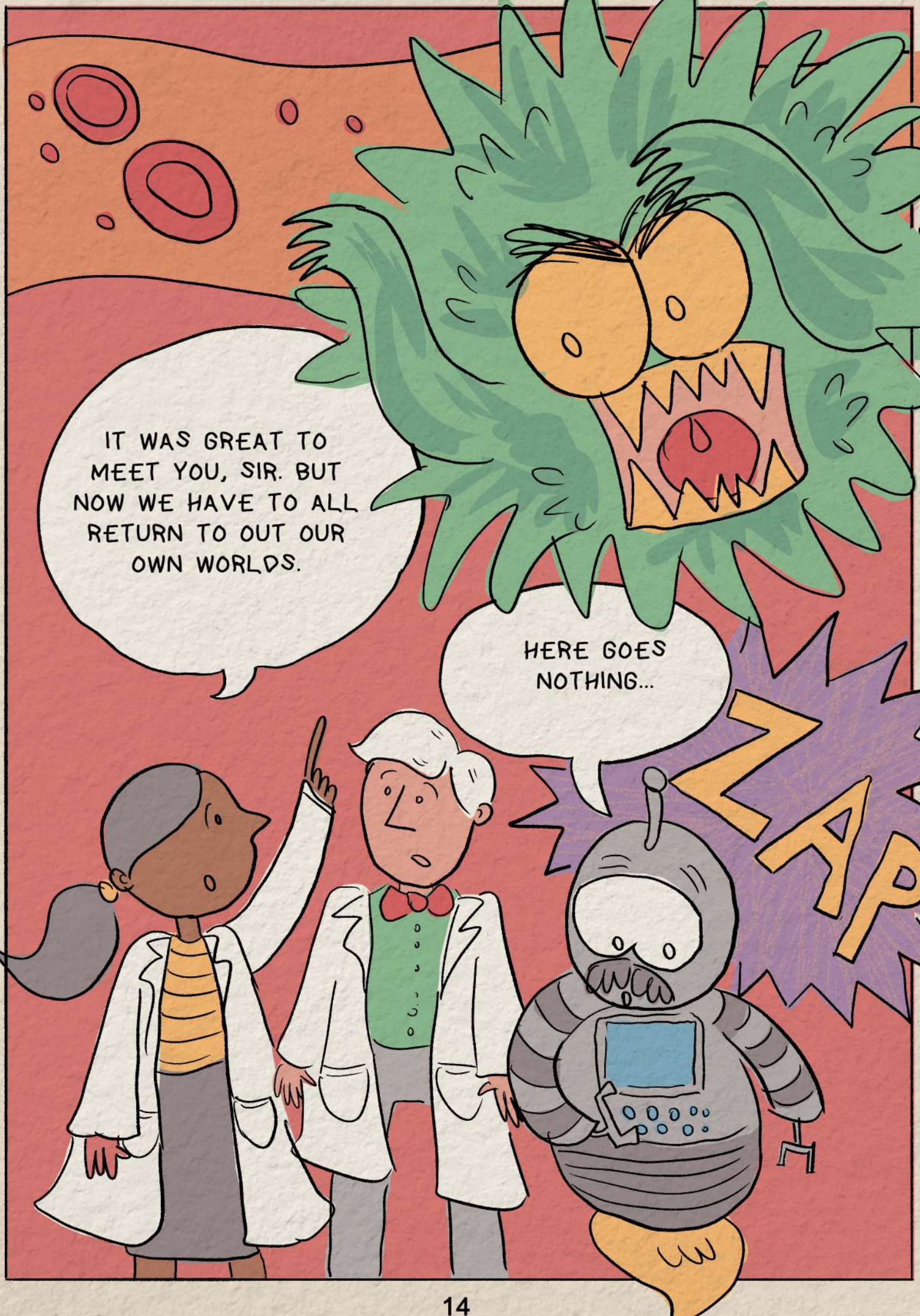

LOOK! THE ANTIBIOTICS ARE HERE!
WHEN WE USE ANTIBIOTICS IN THE CORRECT WAY, THEY CAN HELP TO CURE MANY BACTERIAL INFECTIONS, LIKE THIS WOUND.
LOOK AT WHAT IS HAPPENING NOW!
WHEN WE OVER-USE OR MISUSE ANTIBIOTICS THE BACTERIA CAN BECOME CAN BECOME RESISTANT!
THE BACTERIA HAVE TURNED INTO SUPER-BACTERIA, THIS IS THE SAME ISSUE I HAVE OBSERVED IN OUR PATIENTS IN HOSPITAL.
BACTERIA CAN TURN INTO SUPER-BACTERIA IN MANY WAYS.


WE SHOULD ONLY USE ANTIBIOTICS FOR BACTERIAL INFECTIONS. IF WE USE THEM FOR VIRAL INFECTIONS LIKE THE FLU, IT WON'T AFFECT THE VIRUS. INSTEAD IT WILL DESTROY SOME "GOOD" BACTERIA AND CAUSE OTHER BACTERIA TO SURVIVE AND TURN INTO SUPER-BACTERIA.
ACHOOOOO!

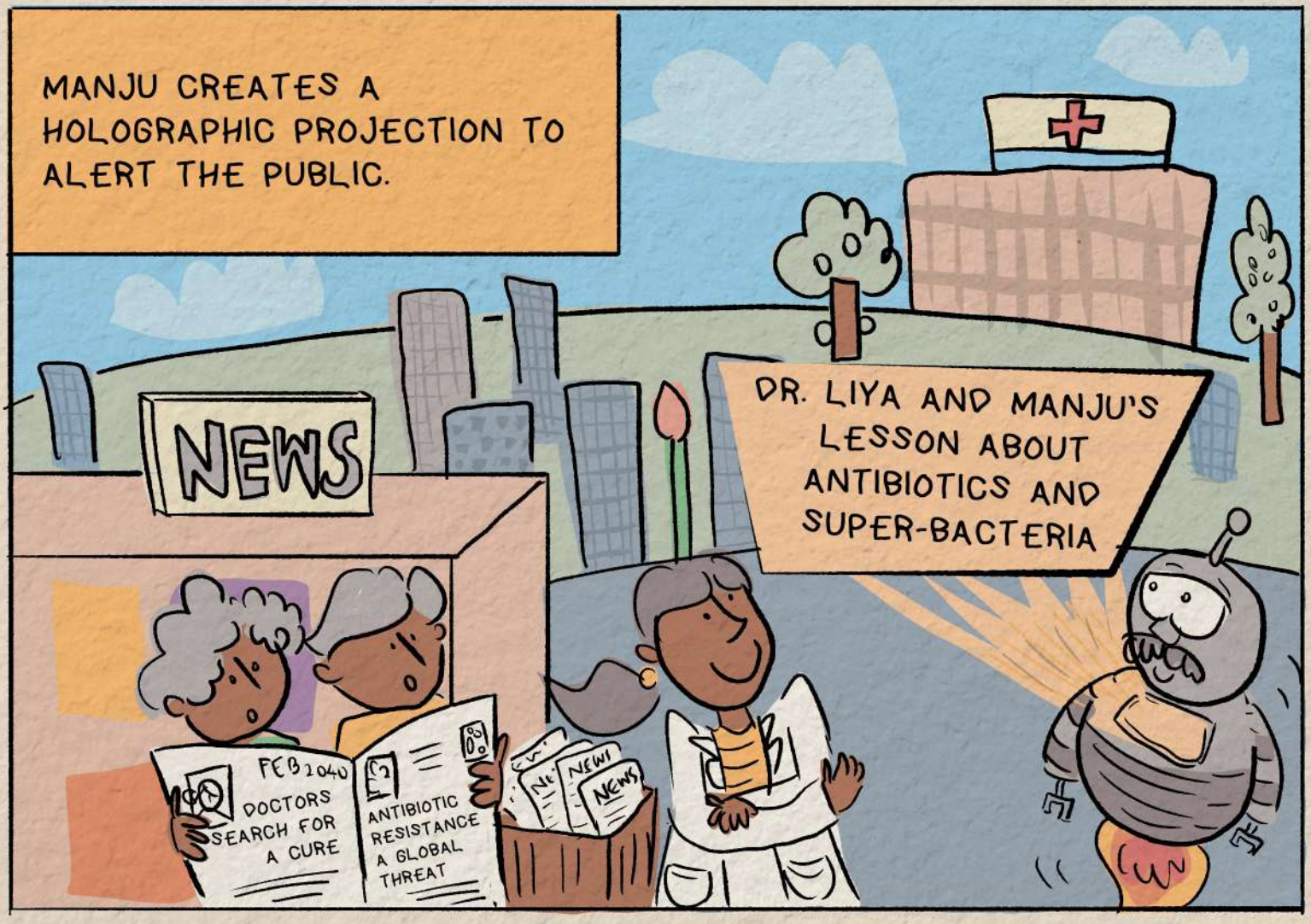

WE SHOULD NOT USE OLD ANTIBIOTIC MEDICINES OR EXPIRED MEDICINES.
EXPIRATION
2023 JAN

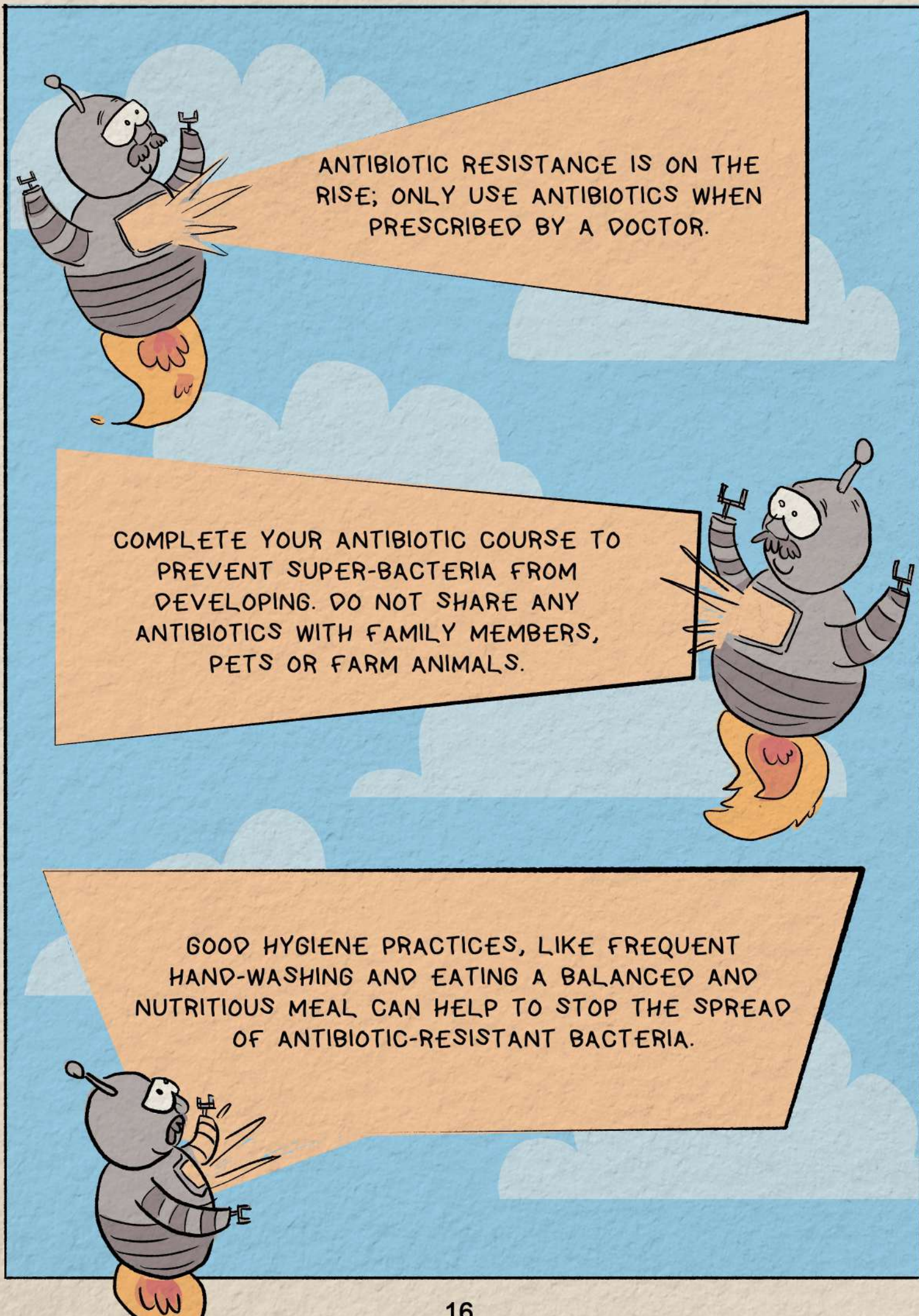

ONLY USE ANTIBIOTICS AS PRESCRIBED BY A DOCTOR. NEVER SAVE ANTIBIOTICS FOR FUTURE USE, AND DO NOT SHARE ANTIBIOTICS WITH FAMILY MEMBERS OR PETS.

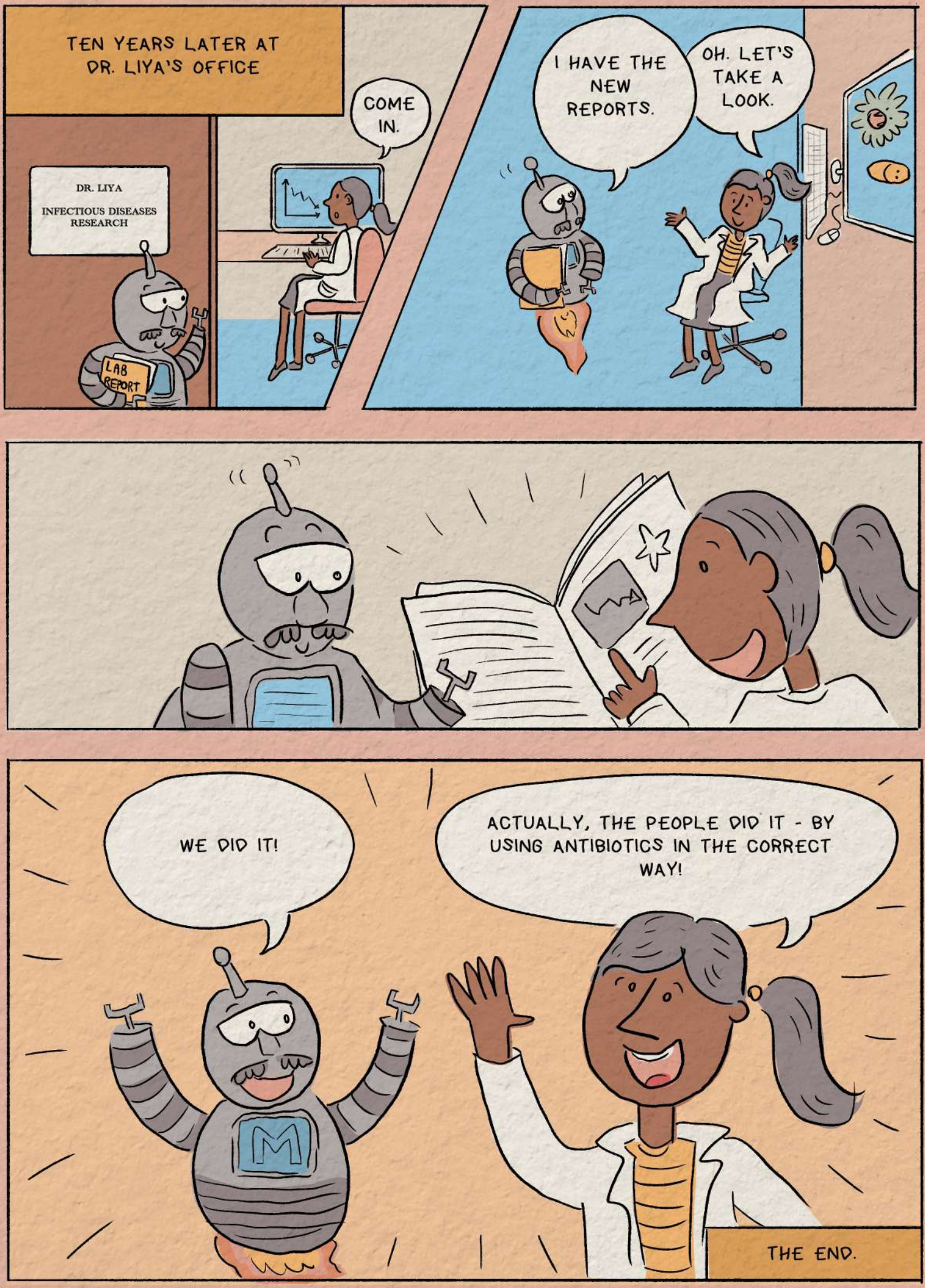

WHEN SUPER-BACTERIA OR DRUG-RESISTANT BACTERIA ARE FORMED, THEY CAN QUICKLY MULTIPLY AND EVEN SPREAD TO OTHER PEOPLE, ANIMALS, WILDLIFE, AND THE ENVIRONMENT!


IT WAS GREAT TO MEET YOU, SIR. BUT NOW WE HAVE TO ALL RETURN TO OUT OUR OWN WORLDS.
HERE GOES NOTHING...
ZAP

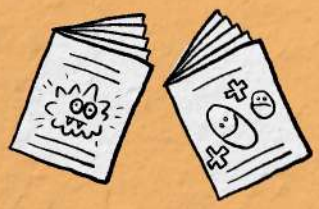

BACK IN THE STREETS OF COLOMBO, YEAR 2040.
NEWS
ZAP
WE'RE BACK!!!
FEB 2040
DOCTORS SEARCH FOR A CURE
ANTIBIOTIC RESISTANCE A GLOBAL THREAT


MANJU CREATES A HOLOGRAPHIC PROJECTION TO ALERT THE PUBLIC.
NEWS
DR. LIYA AND MANJU'S LESSON ABOUT ANTIBIOTICS AND SUPER-BACTERIA
FEB 2040
DOCTORS SEARCH FOR A CURE
ANTIBIOTIC RESISTANCE A GLOBAL THREAT


ANTIBIOTIC RESISTANCE IS ON THE RISE; ONLY USE ANTIBIOTICS WHEN PRESCRIBED BY A DOCTOR.
COMPLETE YOUR ANTIBIOTIC COURSE TO PREVENT SUPER-BACTERIA FROM DEVELOPING. DO NOT SHARE ANY ANTIBIOTICS WITH FAMILY MEMBERS, PETS OR FARM ANIMALS.
GOOD HYGIENE PRACTICES, LIKE FREQUENT HAND-WASHING AND EATING A BALANCED AND NUTRITIOUS MEAL CAN HELP TO STOP THE SPREAD OF ANTIBIOTIC-RESISTANT BACTERIA.


TEN YEARS LATER AT DR. LIYA'S OFFICE
DR. LIYA
INFECTIOUS DISEASES RESEARCH
LAB REPORT
COME IN.
I HAVE THE NEW REPORTS.
OH. LET'S TAKE A LOOK.
WE DID IT!
ACTUALLY, THE PEOPLE DID IT - BY USING ANTIBIOTICS IN THE CORRECT WAY!
THE END.

ACTIVITY:
LET'S MAKE A ZINE ABOUT ANTIBIOTIC RESISTANCE!



A Zine is a small magazine made with folded paper that can convey a message in a creative way.

You will need:

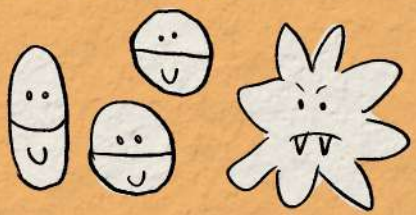
- A4 size paper (regular printer paper)
- Internet or library access to find important information
- Pens, pencils, markers, and/or colored pencils
- Scissors, Glue or tape
- Magazines or newspapers (for collaging)

Preparing to make your zine

Ask a teacher or parent to help you to gather reliable information about antibiotic resistance. You can visit a library or search on the internet.

Some ideas:

- What are germs? Can you make a zine about good and bad germs?
- What are antibiotics? When are they needed?
- What is antibiotic resistance?
- How can we help to stop antibiotic resistance?



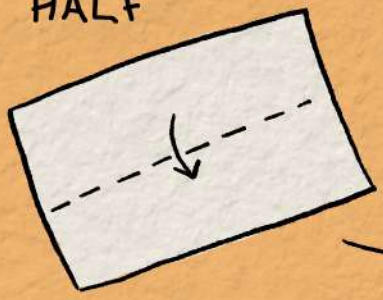
Let's create!

Create a story that can be told in 8 pages (including a cover!)

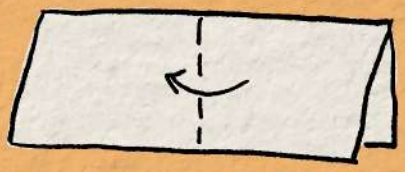
You can use comic speech bubbles, thought bubbles and action words in your story (WOW! OUCH!)

HOW TO MAKE A ZINE!

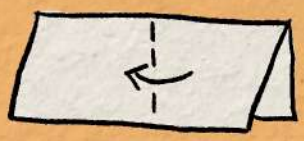
1. FOLD IN HALF



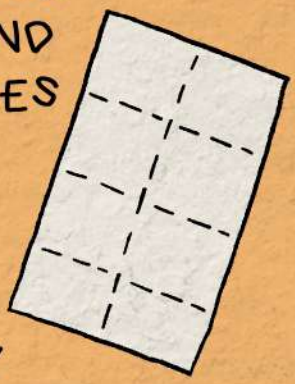
2. FOLD IN HALF (AGAIN)



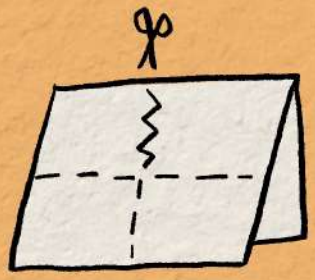
3. FOLD IN HALF (AGAIN)



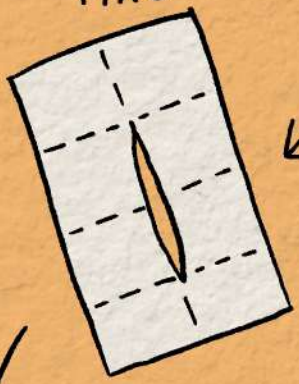
4. UNFOLD TO FIND 8 PAGES



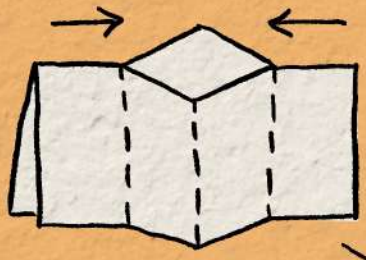
5. FOLD IN HALF AND CUT THE CENTER



6. UNFOLDED, IT SHOULD LOOK LIKE THIS



7. FOLD IN HALF AND PUSH TOGETHR



8. NUMBER YOUR PAGES IN THE RIGHT ORDER AND ROTATION