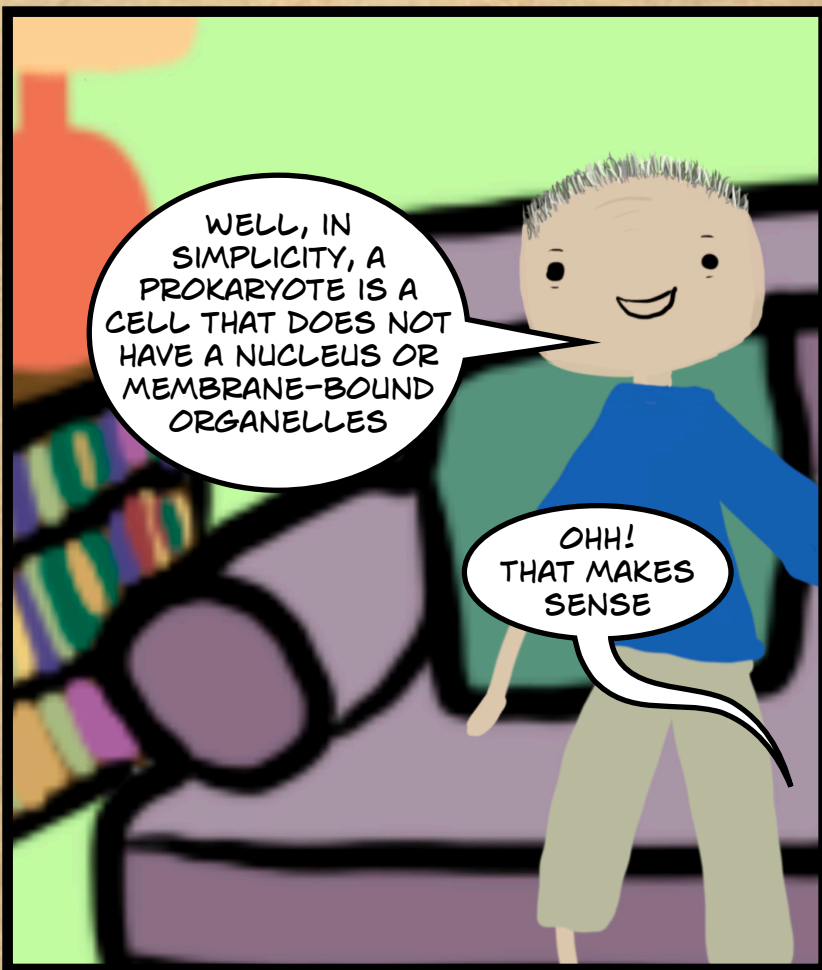
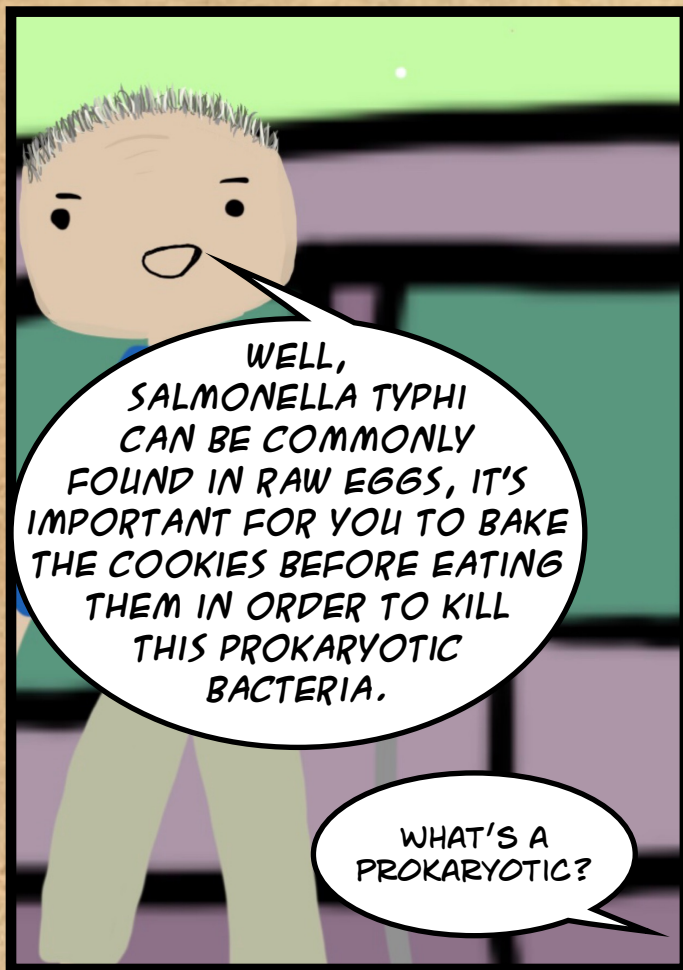
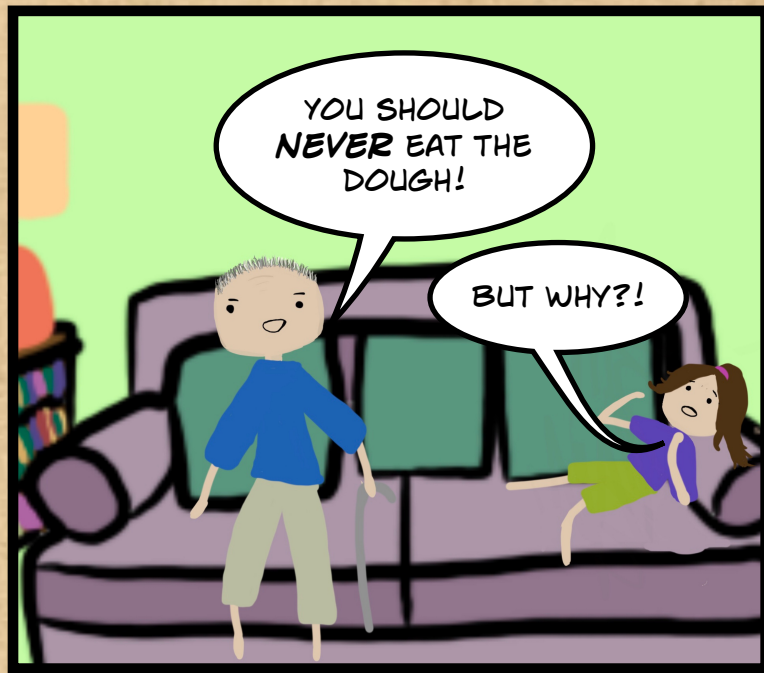
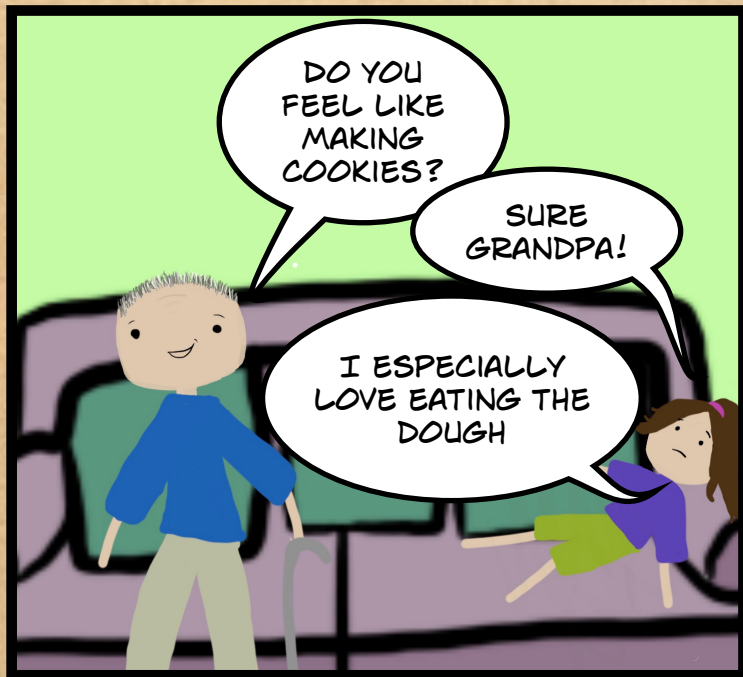
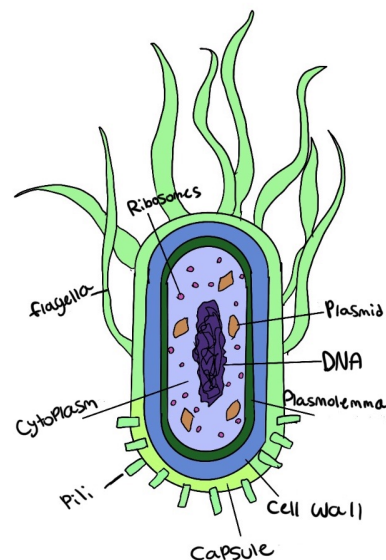
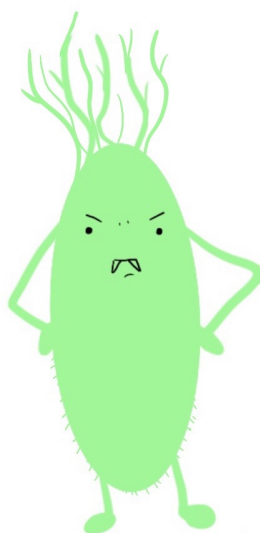
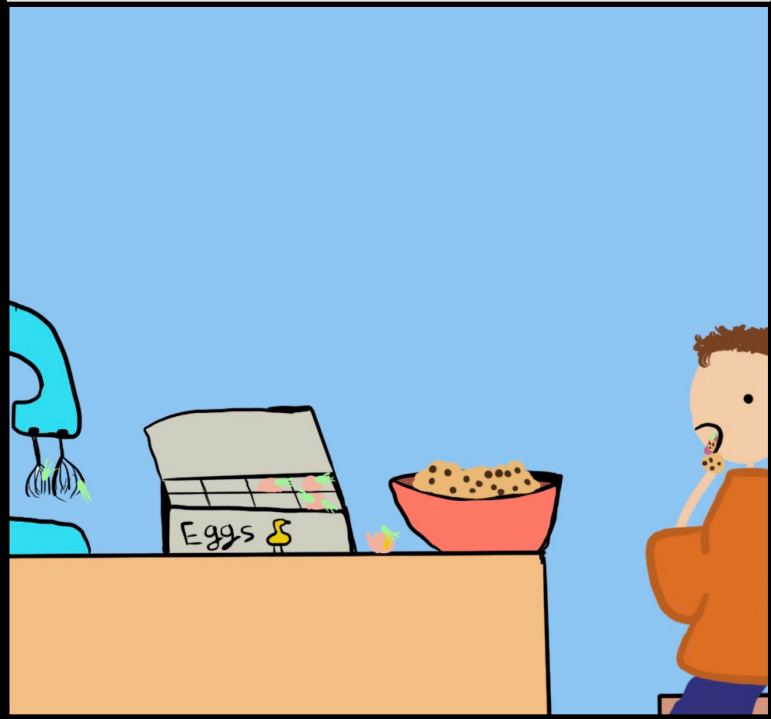


# Salmonella Typhi

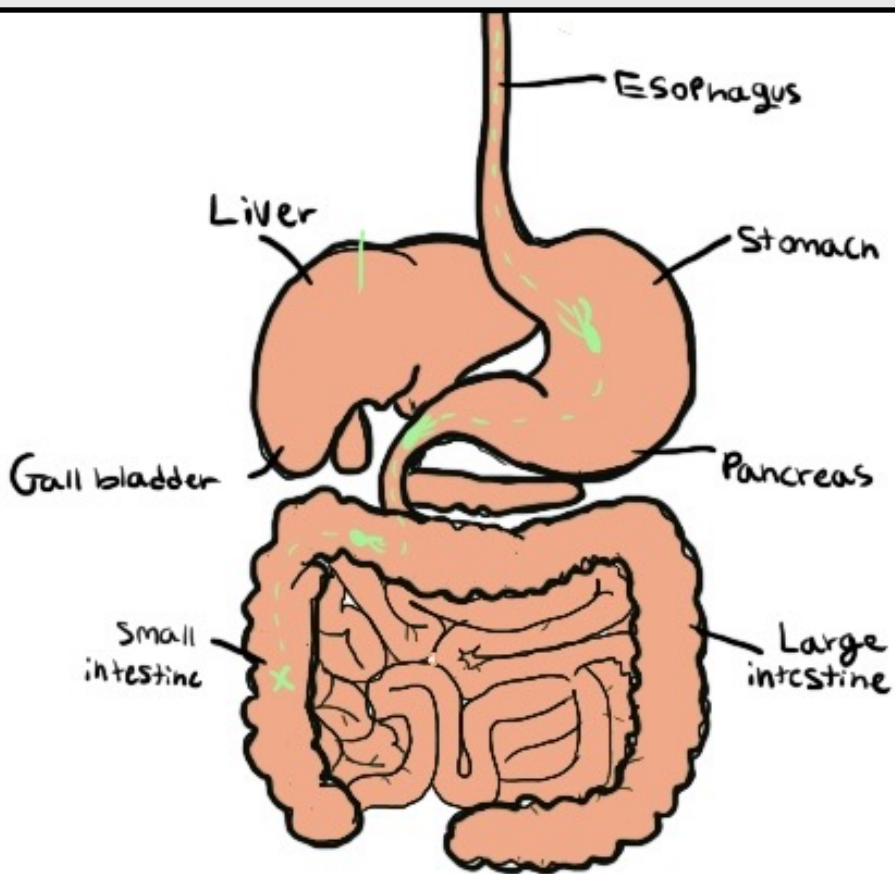


WHEN I WAS A YOUNG BOY, I WANTED TO MAKE SOME DELICIOUS CHOCOLATE CHIP COOKIES, I WAS SO EXCITED, I WAS EVEN USING MY MOTHERS RECIPE. LITTLE DID I KNOW SOMETHING TERRIBLE WOULD BE THRIVING WITHIN THE DOUGH.



# Salmonella

THE DOUGH CONTAINED A DANGEROUS BACTERIA KNOWN AS SALMONELLA TYPHI, IT TRAVELLED THROUGH MY SMALL AND LARGE INTESTINE BEFORE MY BODY TRIGGERED AN IMMUNE RESPONSE.



THAT NIGHT I FELT TERRIBLE





INSIDE THE BODY..

# WANTED FOR MURDER

**SYMPTOMS INCLUDE:**  
high fever, fatigue, headache,  
nausea, abdominal pain and  
constipation or diarrhoea.

## TYPHOID

Caused by the prokaryotic bacteria *Salmonella typhi*



Once the bacteria  
enter the immune  
system, they  
were found to damage  
neighbouring cells.

LET'S GO  
FIND THAT  
BACTERIA!



THIS BACTERIA WAS SUSPECTED TO HAVE BEEN  
AROUND EVEN BEFORE ANCIENT GREECE

# WANTED FOR MURDER

**SYMPTOMS INCLUDE:**

high fever, fatigue, headache,  
nausea, abdominal pain, and  
constipation or diarrhoea.

## TYPHOID

Caused by the prokaryotic bacteria *Salmonella typhi*



AN ESTIMATED **11-21** MILLION CASES OF  
TYPHOID FEVER AND **200,000** DEATHS  
OCCUR WORLDWIDE EACH YEAR.

Once the bacteria enters the bloodstream, the immune system detects it and calls immune cells such as monocytes and neutrophils to help out. These cells invade the infected tissue and surround the infection. In time, Typhoid toxins were found to damage DNA and accelerate cell aging of infected cells and neighbouring cells, which makes cells more susceptible to infection.

monocyte



NeutroPhil



**BOTH OF THESE WHITE BLOOD CELLS HELP FIGHT BACTERIA. MONOCYTES FIGHT INFECTIONS AND HELP OTHER WHITE BLOOD CELLS REMOVE DEAD OR DAMAGED TISSUES, DESTROY CANCER CELLS, AND REGULATE IMMUNITY AGAINST FOREIGN SUBSTANCES. NEUTROPHILS HELP PREVENT INFECTIONS BY BLOCKING, DISABLING, DIGESTING, OR WARDING OFF INVADING PARTICLES AND MICROORGANISMS.**

IN THE LARGE INTESTINE..



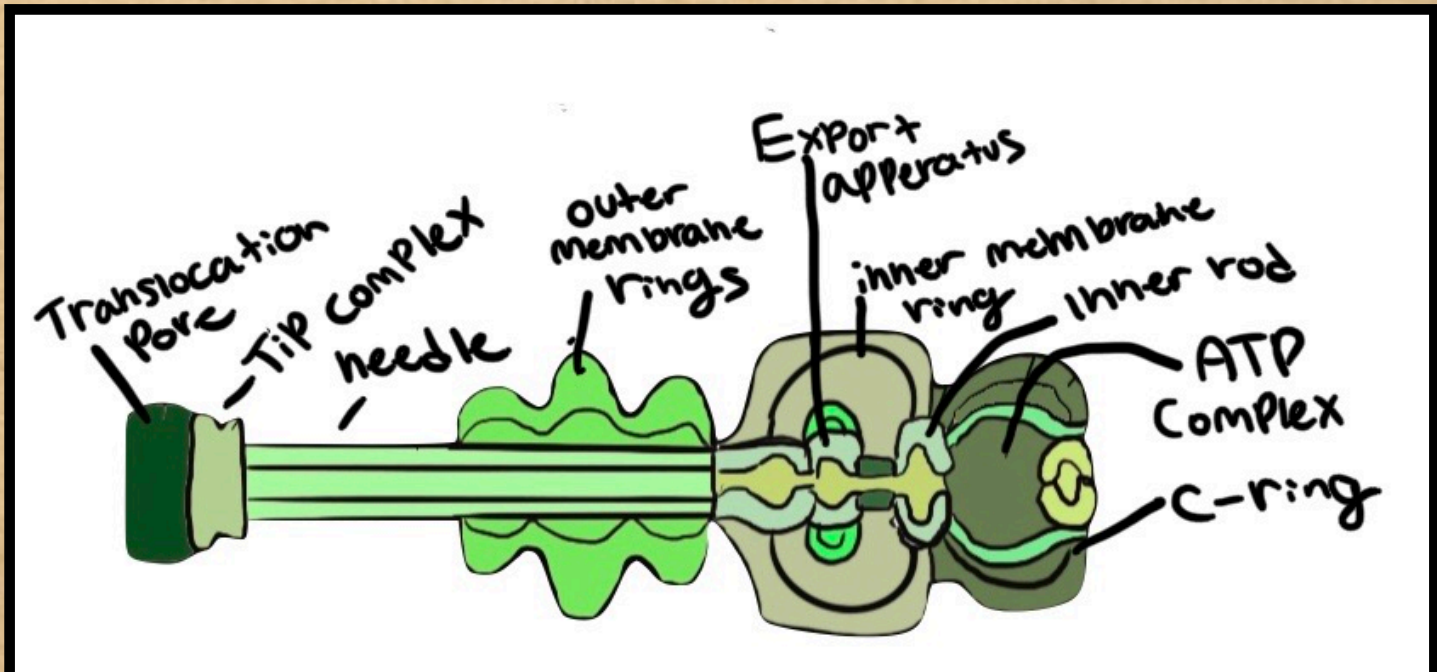
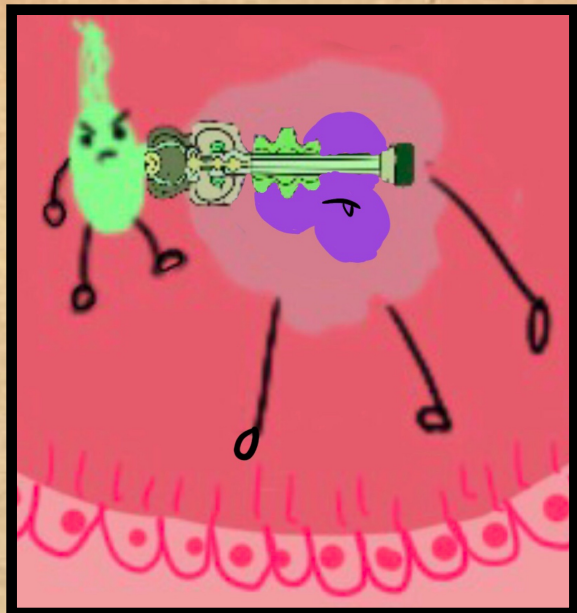
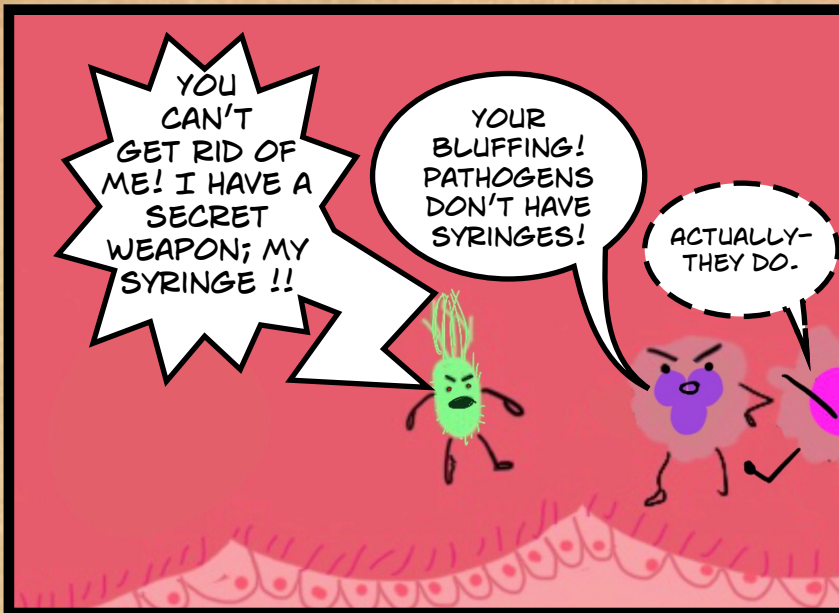
NO ONE CAN  
STOP ME, I WILL  
THRIVE IN THIS  
BODY!

IT'S A  
PERFECT HOME  
FOR ME! THERE IS  
PLENTY OF  
GLUCOSE HERE

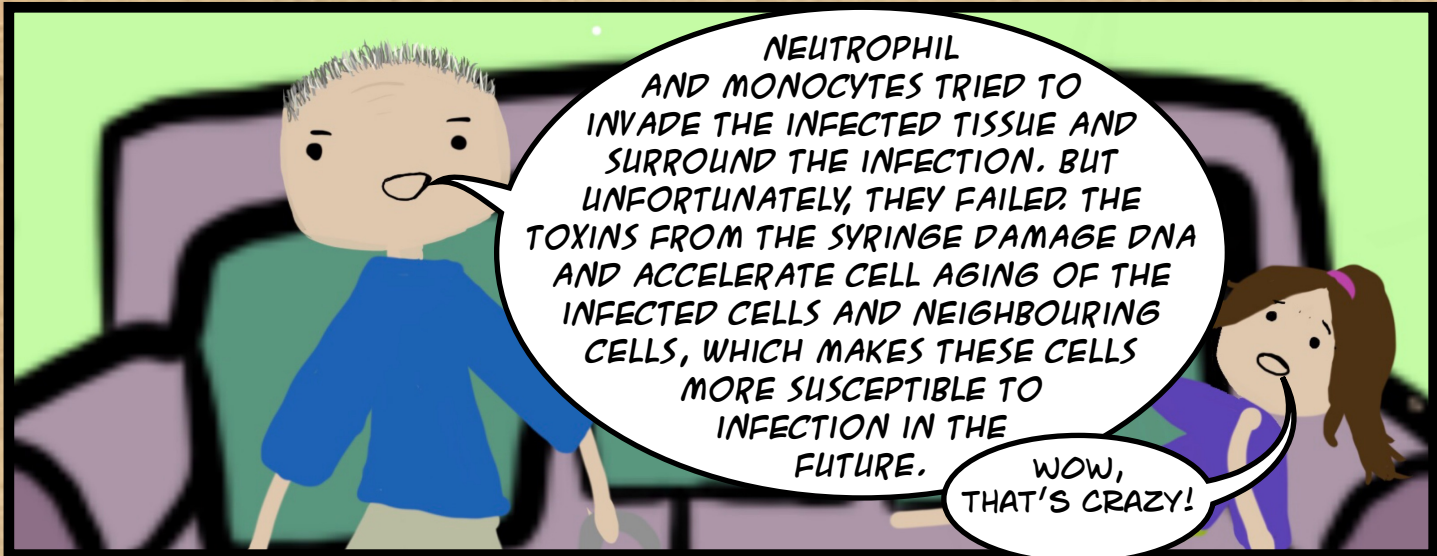


YOU  
NEED TO  
LEAVE  
IMMEDIATELY, OR  
ELSE YOU'LL HAVE  
TO LEARN THE HARD  
WAY NOT TO MESS  
WITH US HUMAN  
CELLS!

**SALMONELLA CONVERTS GLUCOSE TO PYRUVATE IN A PROCESS CALLED GLYCOLYSIS, WHICH ALSO RELEASES ENERGY NEEDED TO FUEL GROWTH AND REPRODUCTION.**

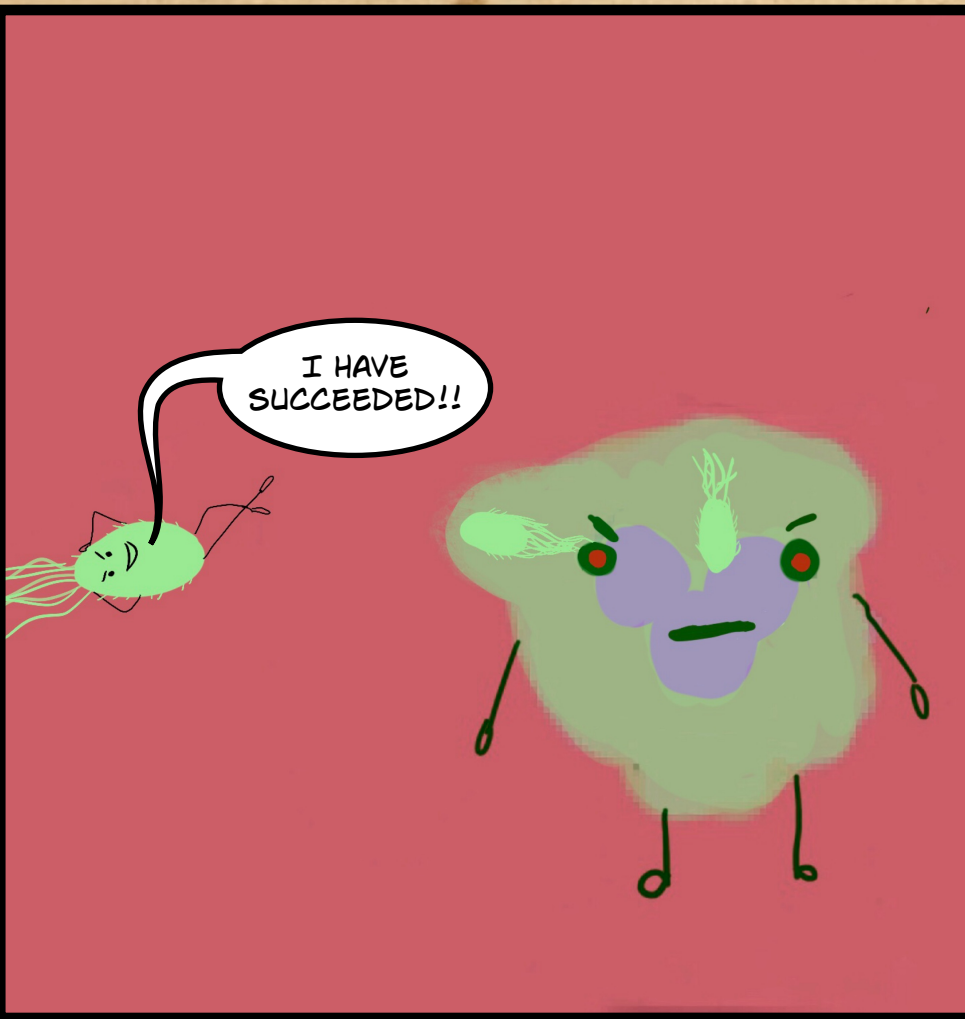
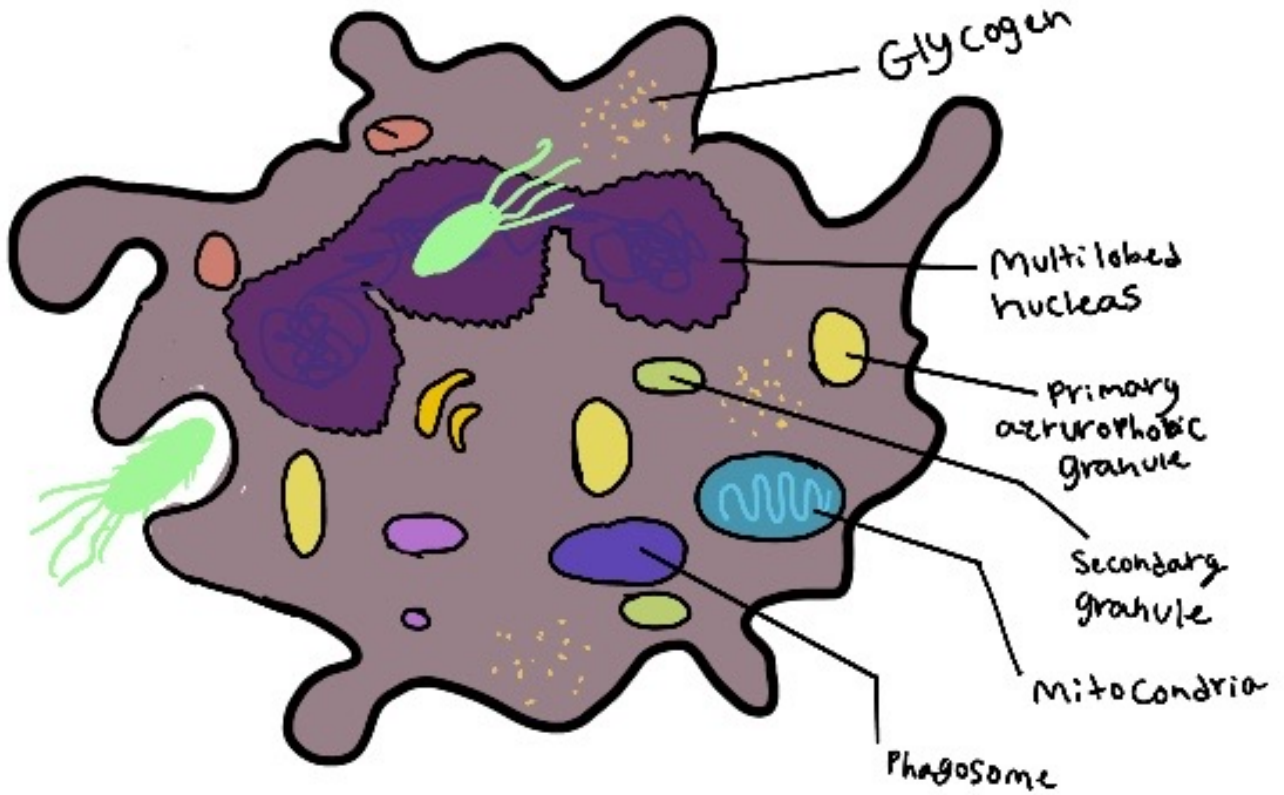


IT'S TRUE, SALMONELLA DOES HAVE A NEEDLE. THE SUBSTANCES INJECTED INTO THE NEUTROPHIL MANIPULATE ESSENTIAL METABOLIC PROCESSES AND DISABLE THE IMMUNE SYSTEM OF THE INFECTED CELLS. THE CONSEQUENCES ARE FATAL AS THE PATHOGENS CAN NOW SPREAD WITHIN THE ORGANISM WITHOUT ANY OBSTACLES.





SALMONELLA INFECTING THE NEUTROPHIL...



THE NEXT DAY I DECIDED I NEEDED TO GO TO THE DOCTOR, SOMETHING WAS NOT RIGHT.

WHAT SEEMS TO BE THE PROBLEM? COULD YOU EXPLAIN YOUR SYMPTOMS?

I WAS MAKING COOKIES ABOUT TWO DAYS AGO, EVER SINCE I FELT TERRIBLE. I HAD DIARRHEA, VOMITED, AND HAD A REALLY BAD STOMACH ACHE.

HMM, DID YOU EAT ANY RAW INGREDIENTS WHILE MAKING COOKIES?

YEAH

WE'LL NEED A BLOOD SAMPLE TO BE SURE, BUT IT SOUNDS LIKE YOU MAY HAVE TYPHOID FEVER.

THIS HURTS.

-POKE-

UNFORTUNATELY YOU HAVE TYPHOID FEVER. LUCKILY I HAVE THESE ANTIBIOTICS THAT WILL HELP!

THANKS! IS THERE ANYTHING ELSE I SHOULD DO?


IT'S IMPORTANT TO DRINK LOTS OF WATER, BUT OTHER THAN THAT YOU SHOULD FEEL BETTER IN ABOUT 2 WEEKS



2 WEEKS LATER...



I FEEL SO MUCH BETTER! THOSE ANTIBIOTICS REALLY HELPED ME.



AND THAT'S WHY YOU DON'T EAT RAW COOKIE DOUGH, YOU NEVER KNOW IF IT COULD BE INFECTED WITH SALMONELLA TYPHI!



OK WHATEVER YOU SAY GRANDPA

The end