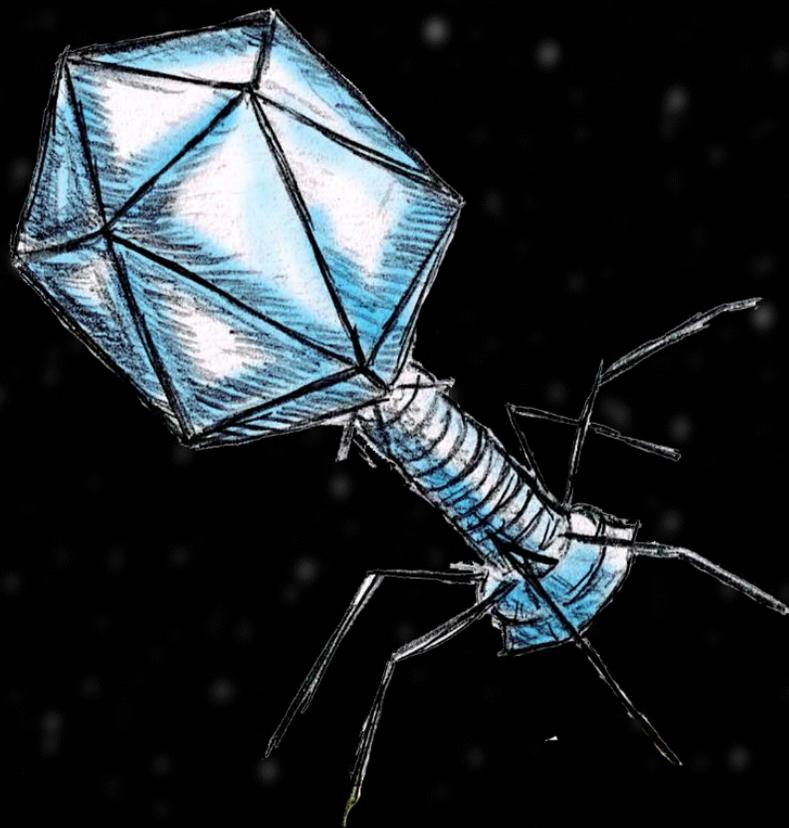


VIRUS  
HUNTERS



*T4 Virus -  
ultimate killer*

Life is an amazing thing



Giant Squid - 13 m

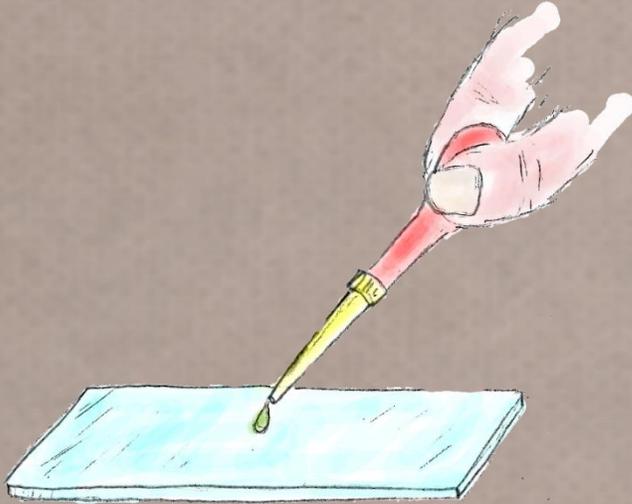
Some life forms are so large we find it hard to understand how they can even exist



Daphnia - 1mm

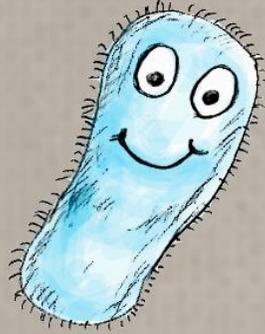
Some are so tiny we barely notice them at all

And some are too small to see



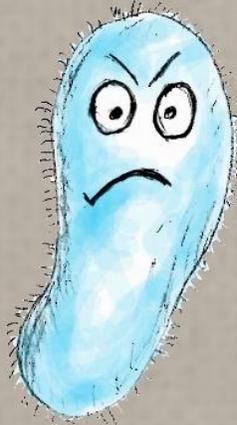
....unless you have a microscope

This is a bacterium



they live everywhere

Unkind people might



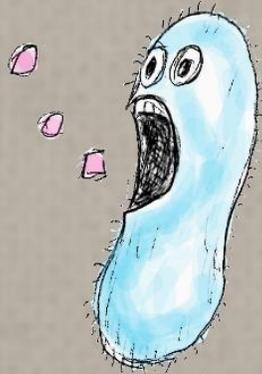
call it a germ

Bacteria are single cells.

They're very much alive.

They do all the things that life needs to do to stay living

They eat



to get energy

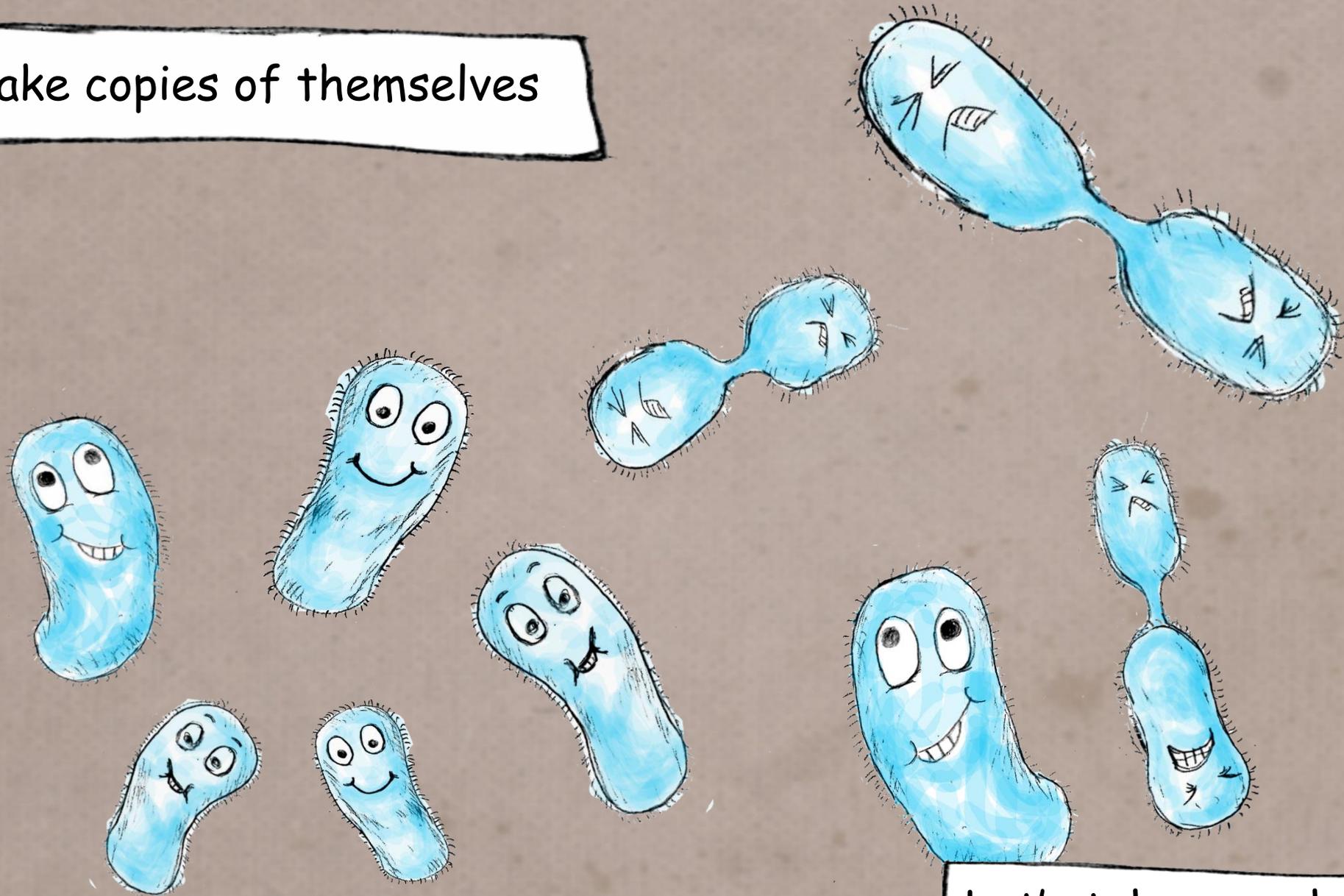
Excrete



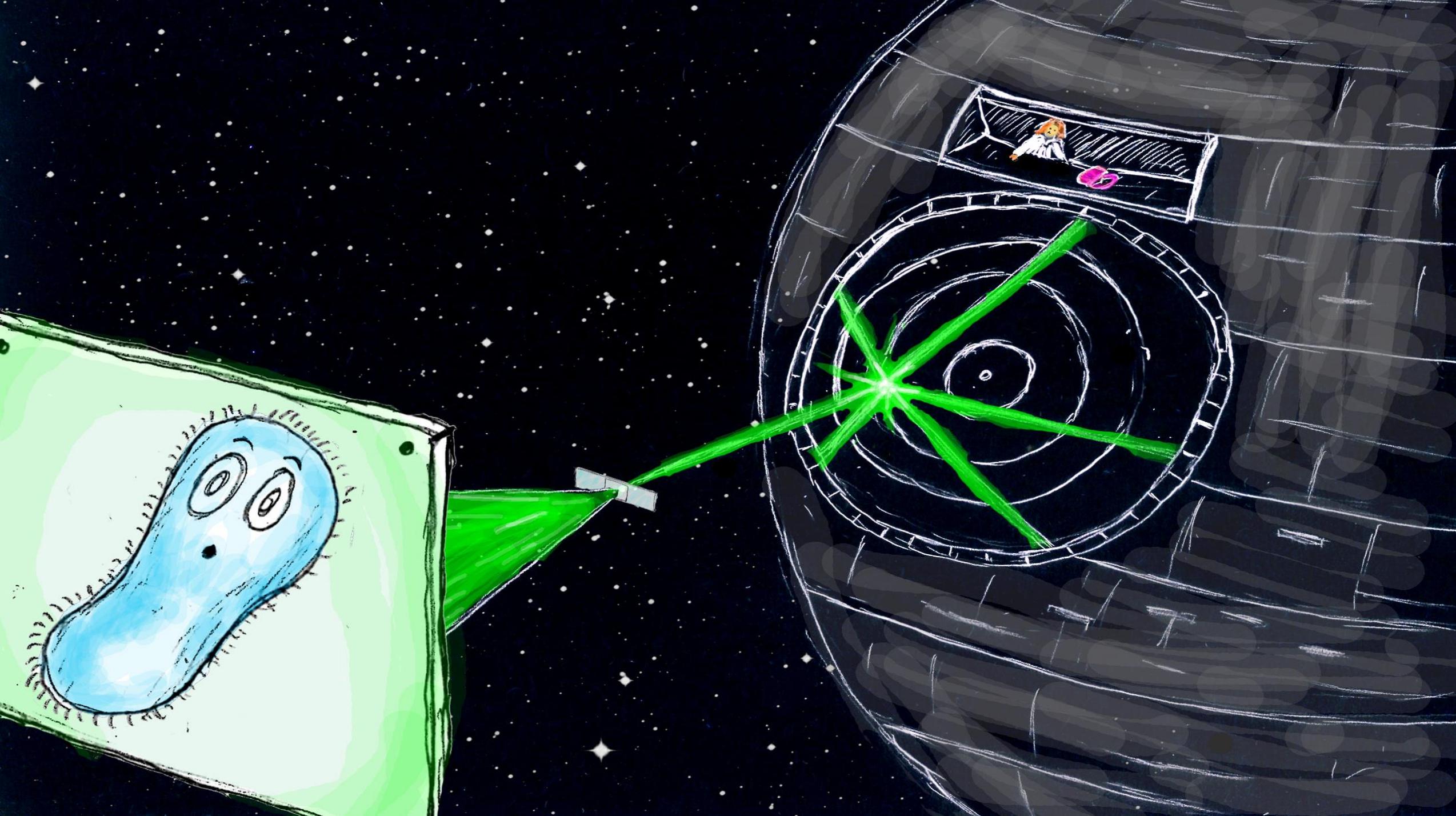
to get rid of waste

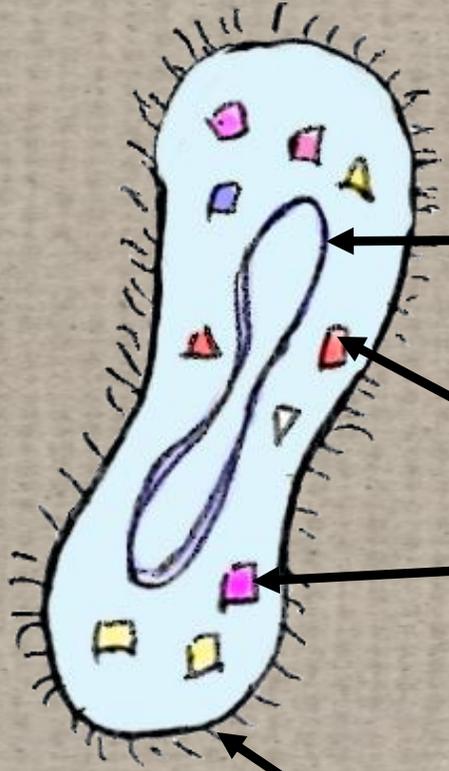
But most importantly....

They make copies of themselves



Let's take a peek inside one

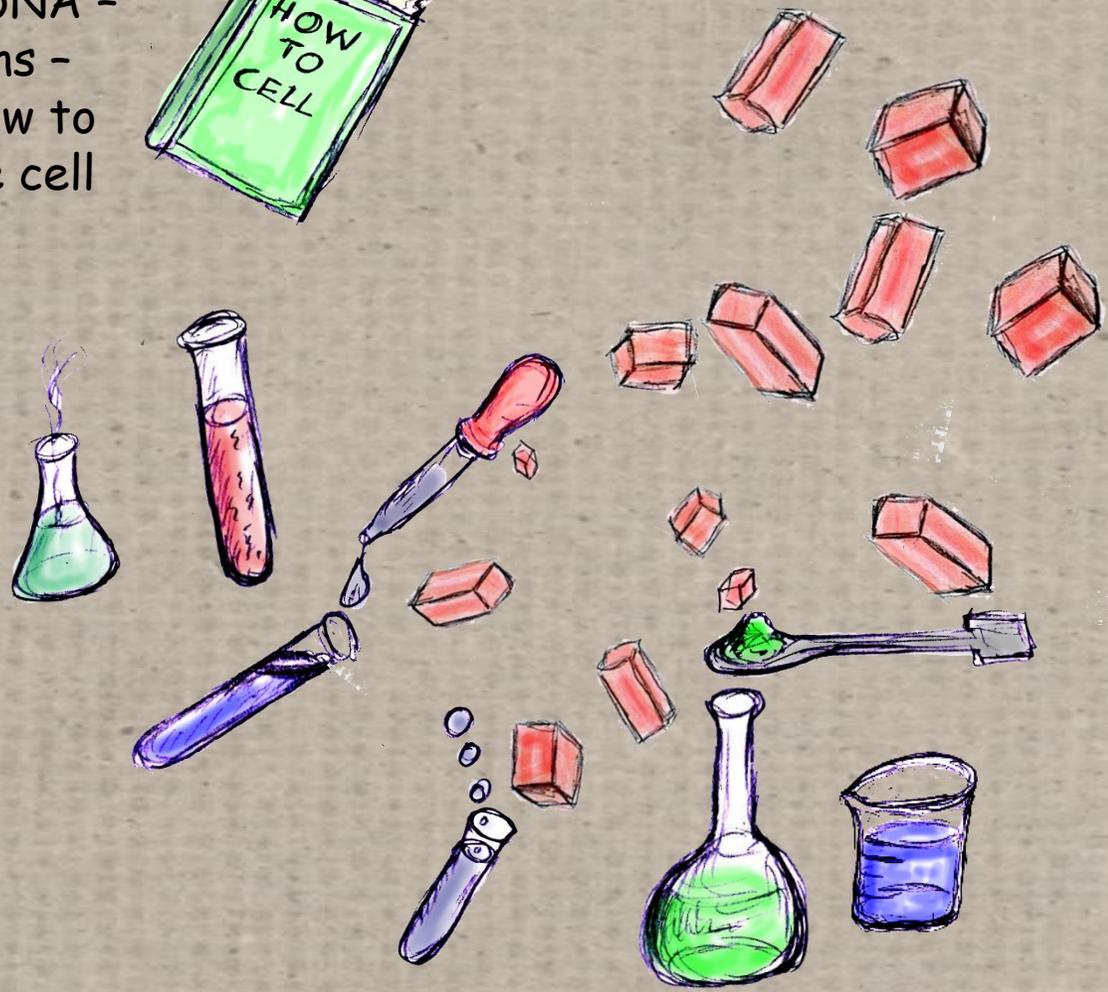
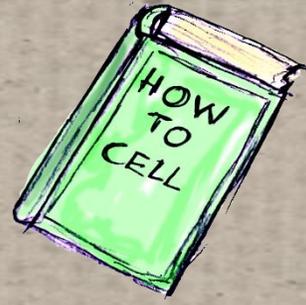




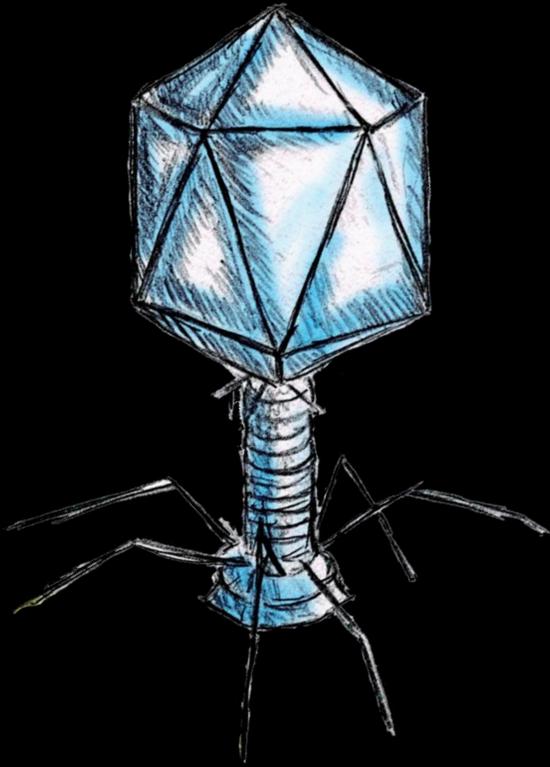
All living things contain DNA - it's the set of instructions - Genes - that describe how to make all the parts of the cell

Proteins are most of the cell. Some are building blocks, some are enzymes - proteins that do chemistry

The cell wall - keeps outside out and the inside in - unless something drills a hole in it.



# It's not just cells that have genes



This is a virus

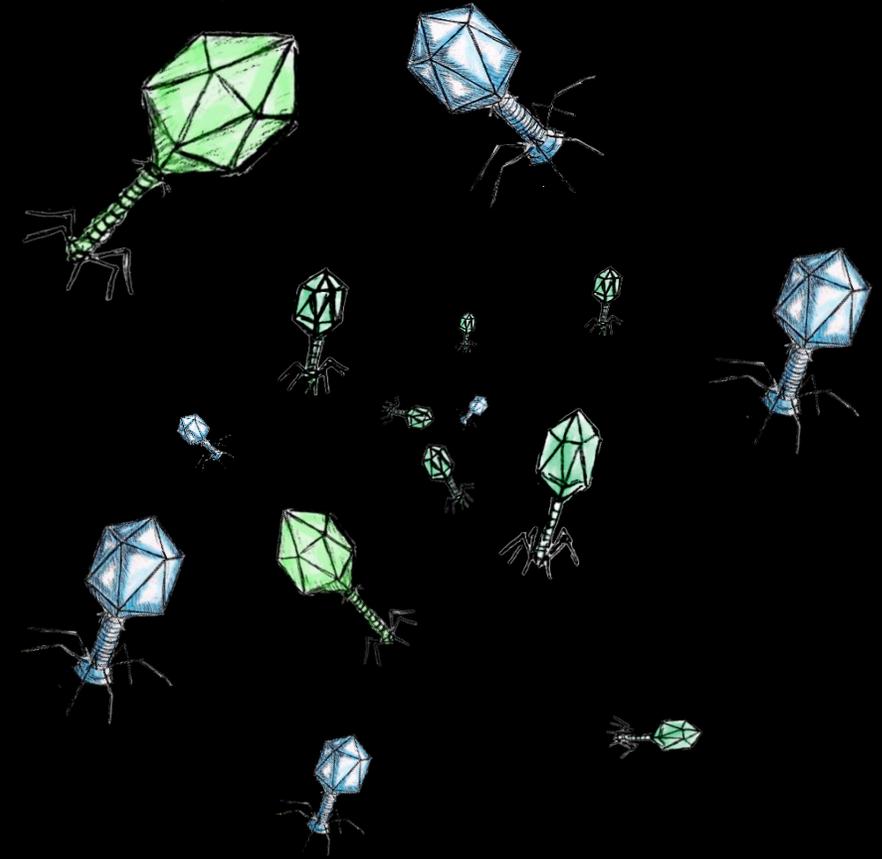
There are millions of types of virus

This one is called T4

Viruses are not alive

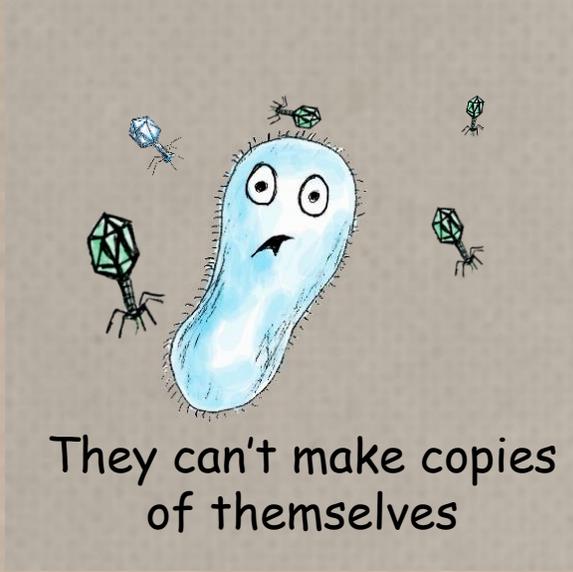
They don't feed

They can't move

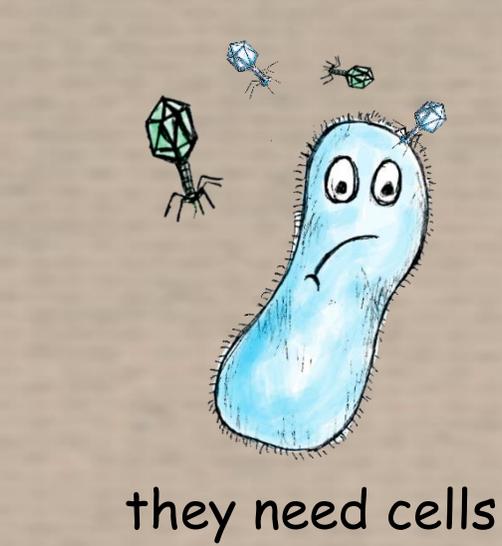


All a virus can do is float,  
until it bumps into a cell

Viruses are just  
boxes of genes



They can't make copies  
of themselves

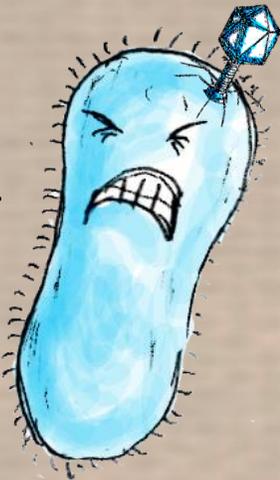


they need cells

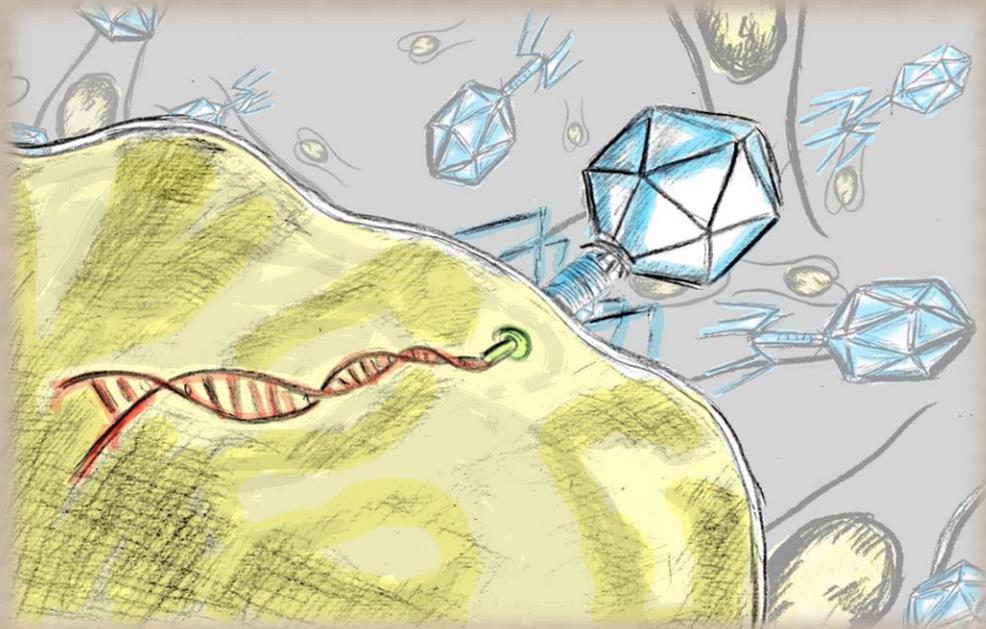


to do it for them

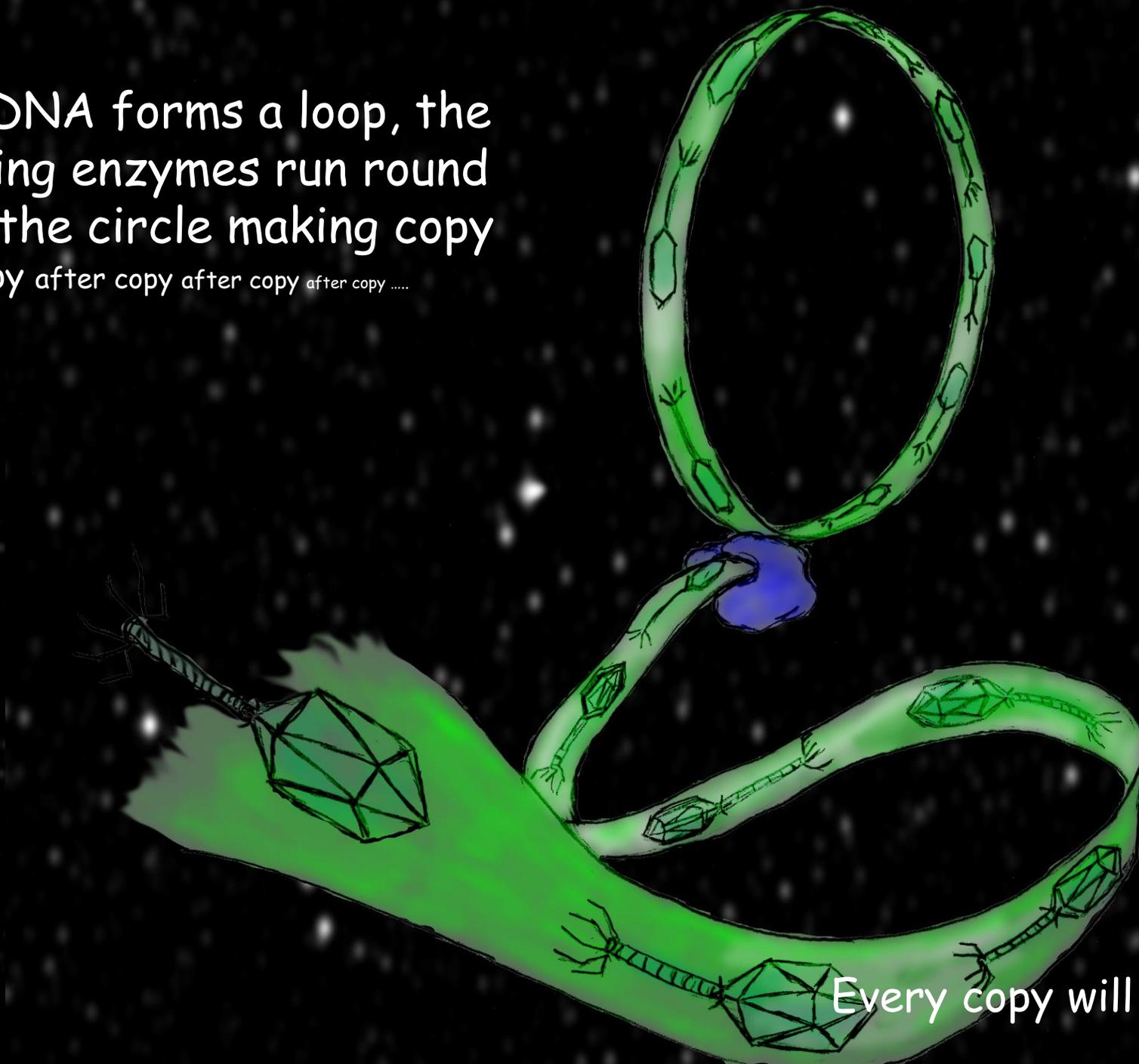
When T4  
bumps into a  
bacterium, it  
sticks



And drills a  
hole in the cell  
so it can inject  
its own DNA



The virus DNA forms a loop, the cell's copying enzymes run round and round the circle making copy after copy after copy after copy after copy .....



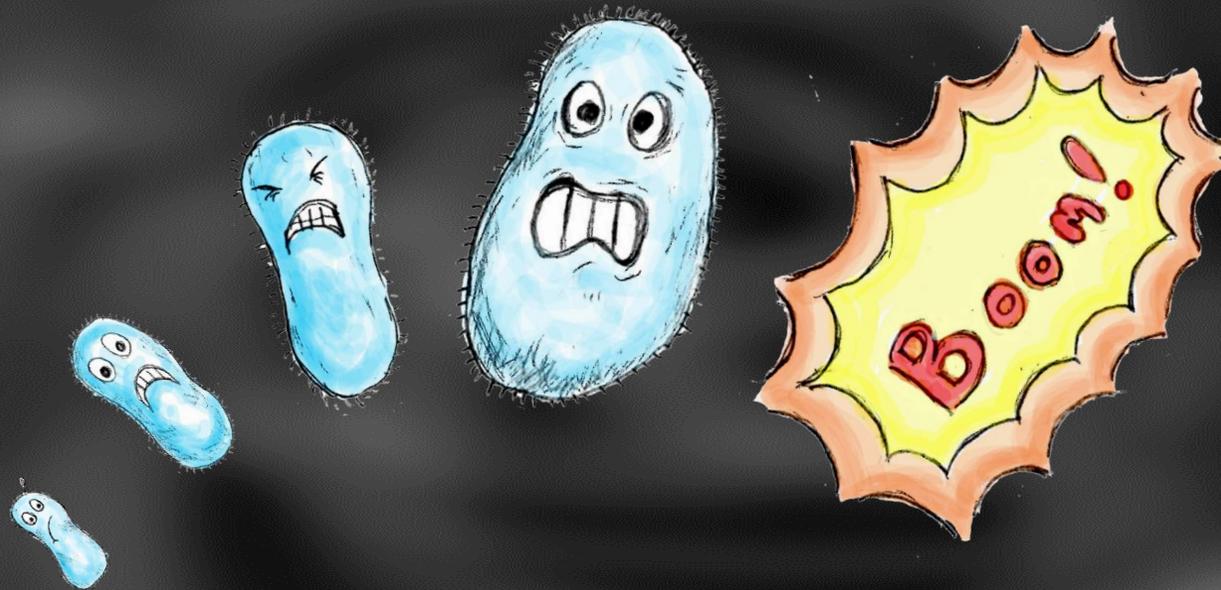
Every copy will become a new virus

Virus genes are read by the cell. Virus proteins get made instead of bacteria proteins



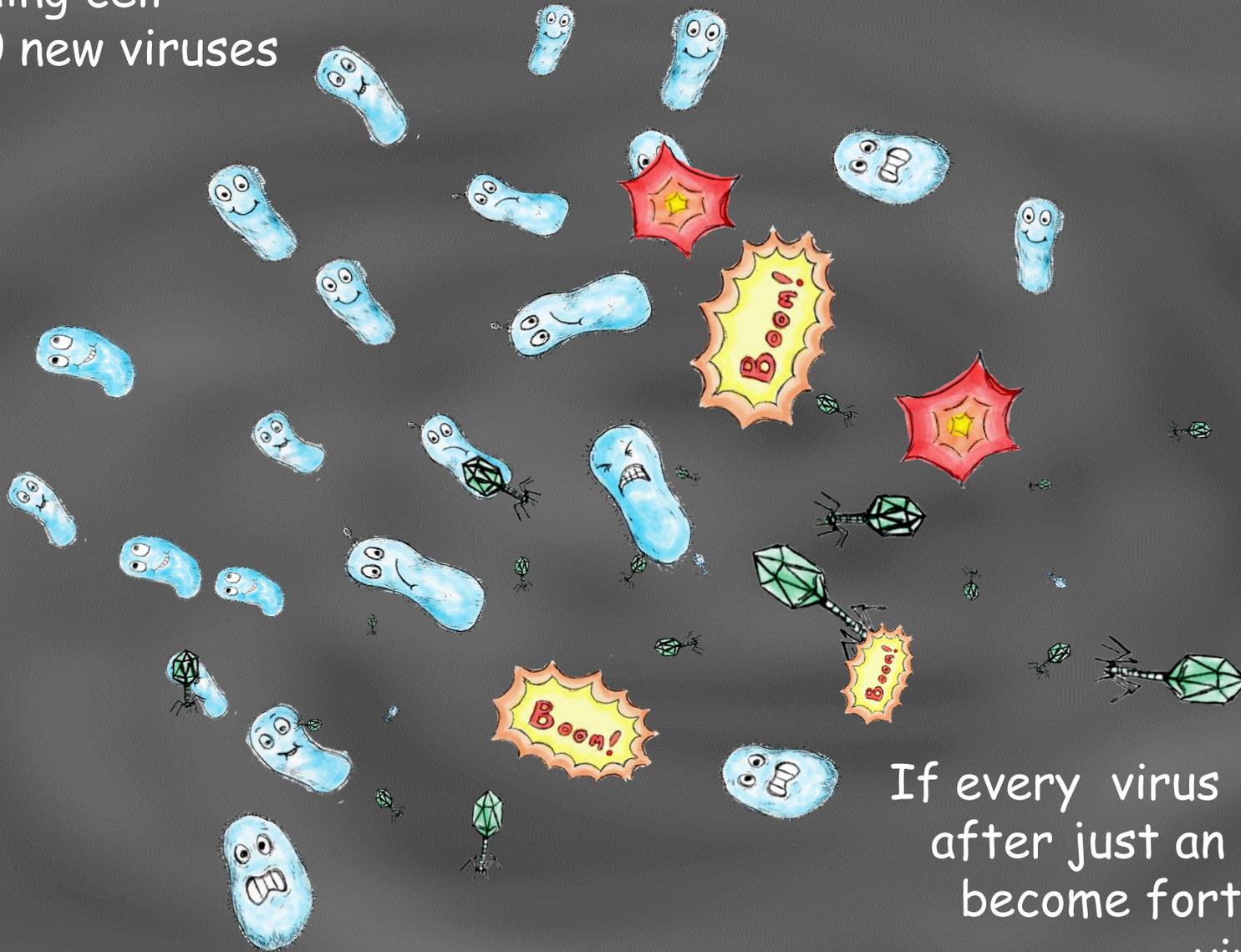
When virus proteins meet virus DNA they start to assemble into new viruses

As the cell fills up with viruses, they make the cell wall weaker and weaker



After only twenty minutes the pressure is just too much

Every exploding cell  
releases 200 new viruses



If every virus infects a new cell,  
after just an hour, one T4 can  
become forty thousand new  
viruses



Try not to think about it too much