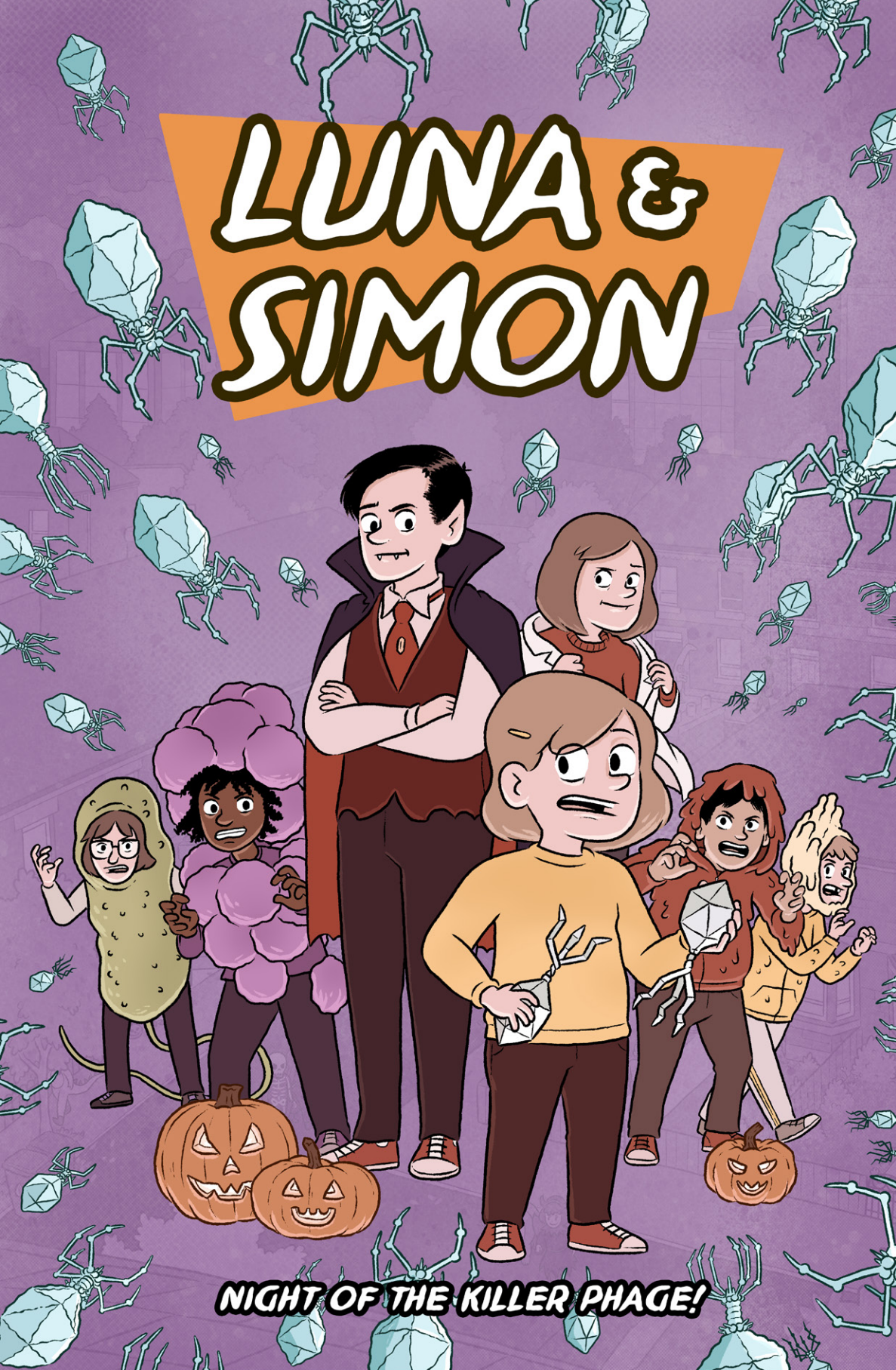
LUNA &
SIMON
NIGHT OF THE KILLER PHAGE!

'Luna & Simon: Night of the Killer Phage' is written by Jamie Hall and Edward Ross. Illustrated by Edward Ross. First Printed in 2022.

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For resources and further information visit:

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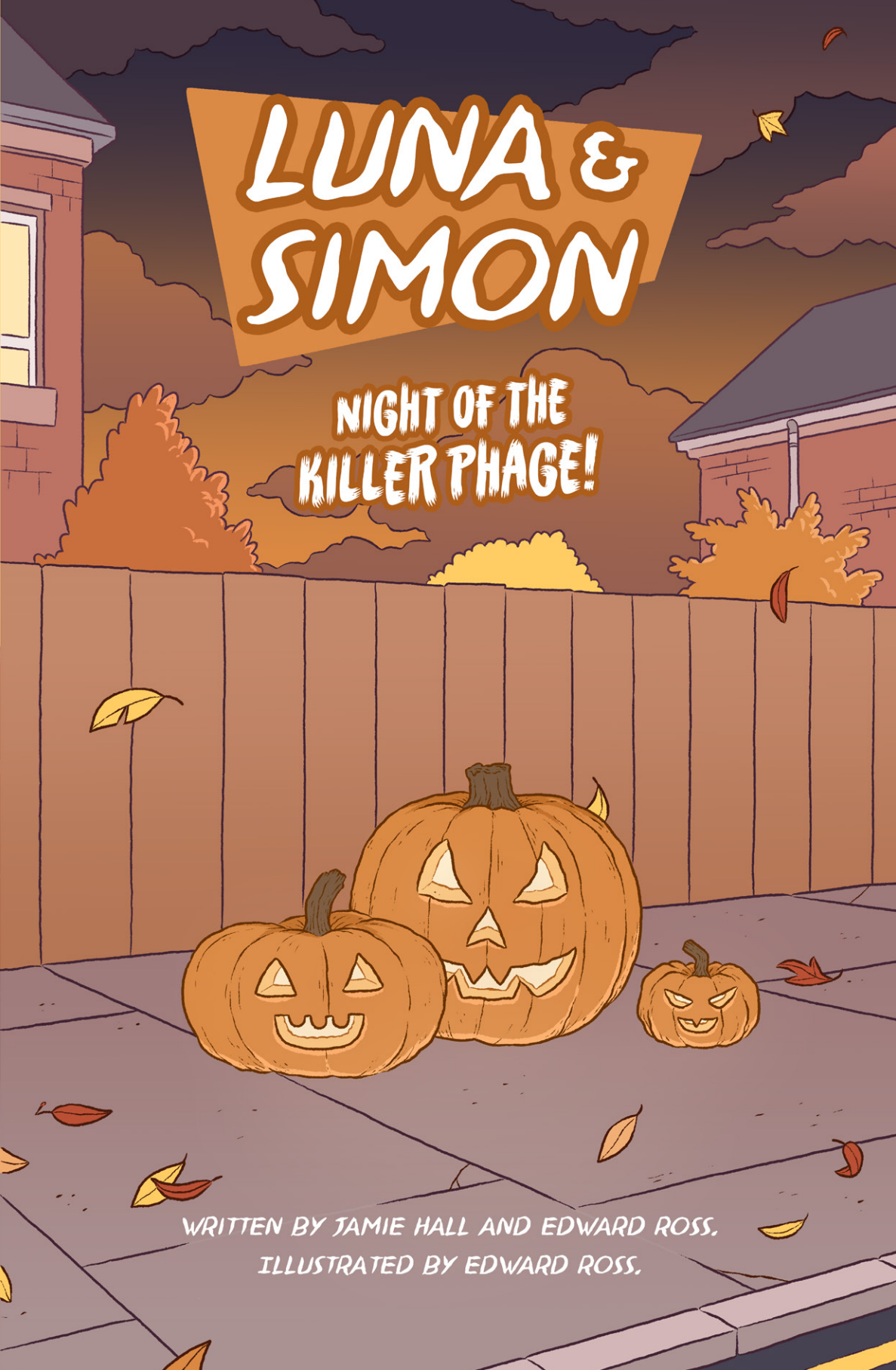
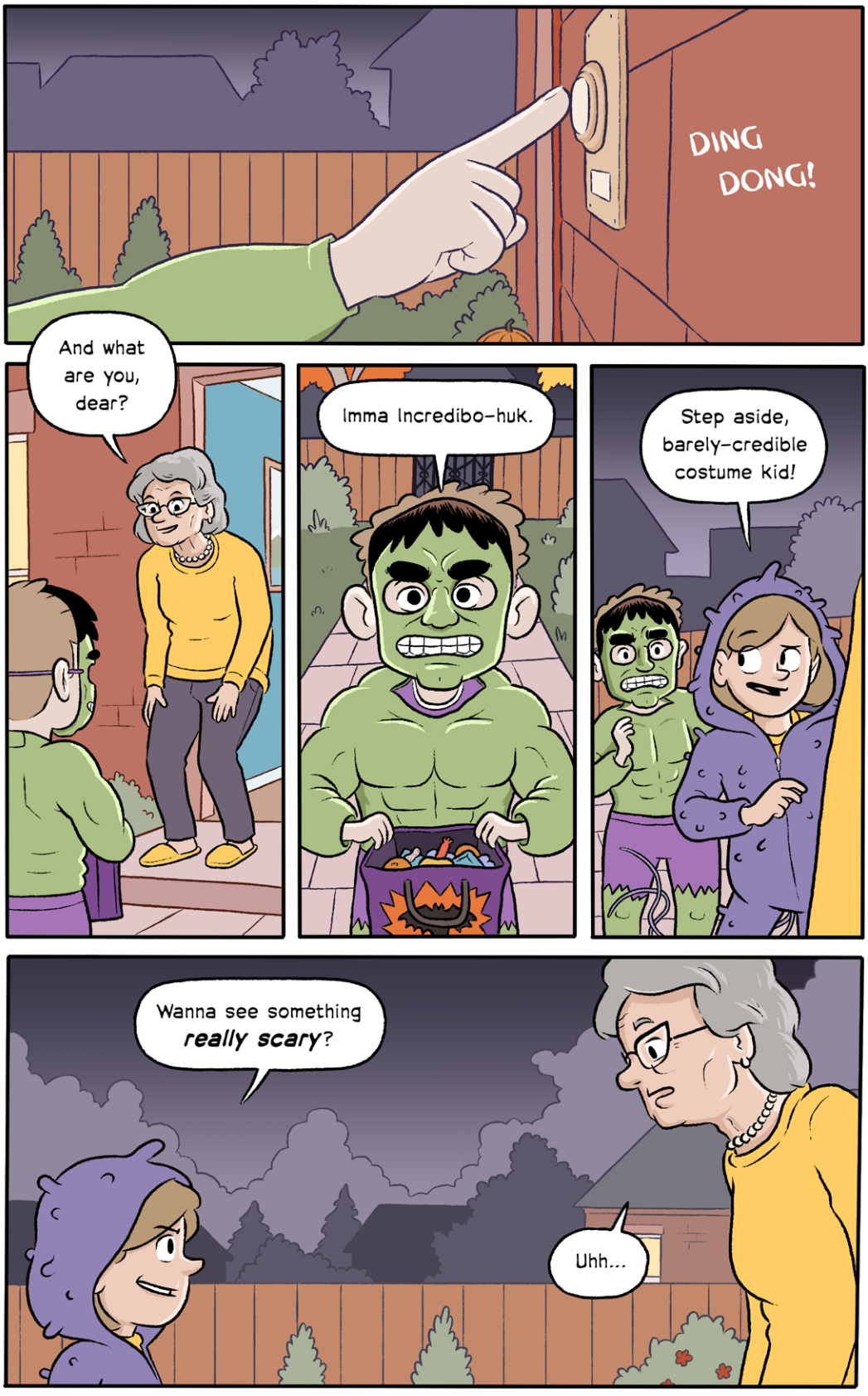
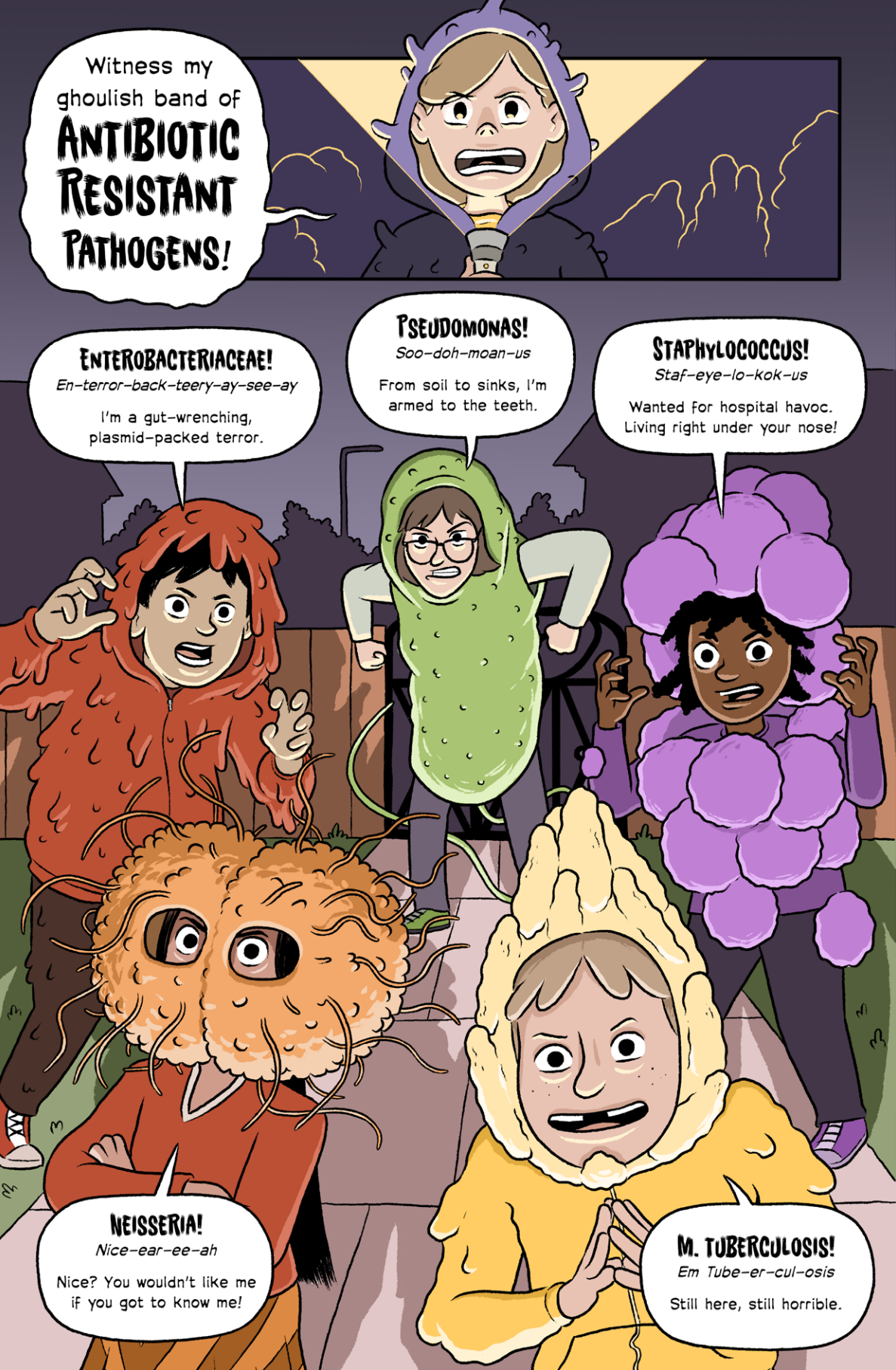
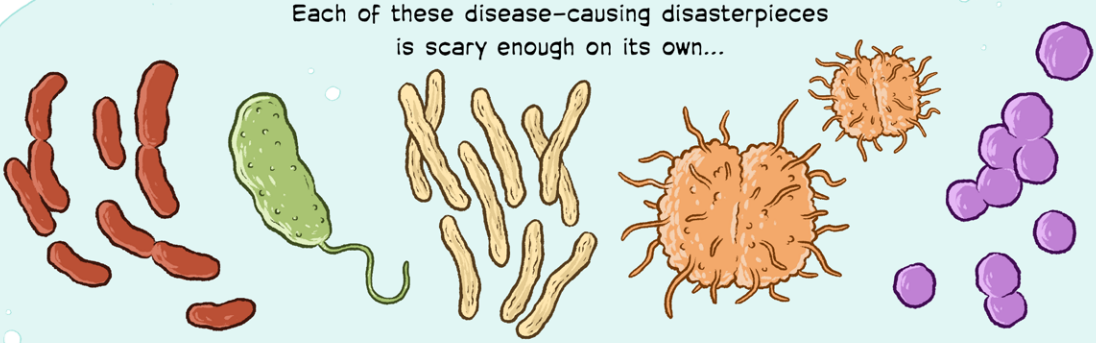

LUNA & SIMON
NIGHT OF THE KILLER PHAGE!
WRITTEN BY JAMIE HALL AND EDWARD ROSS.
ILLUSTRATED BY EDWARD ROSS.


Hallowe'en night.


DING DONG!
And what are you, dear?
Imma Incredibo-huk.
Step aside, barely-credible costume kid!
Wanna see something *really scary*?
Uhh...


Witness my ghoulish band of ANTIBIOTIC RESISTANT PATHOGENS!
ENTEROBACTERIACEAE!
En-terror-back-teery-ay-see-ay
I'm a gut-wrenching, plasmid-packed terror.
PSEUDOMONAS!
Soo-doh-moan-us
From soil to sinks, I'm armed to the teeth.
STAPHYLOCOCCUS!
Staf-eye-lo-kok-us
Wanted for hospital havoc. Living right under your nose!
NEISSERIA!
Nice-ear-ee-ah
Nice? You wouldn't like me if you got to know me!
M. TUBERCULOSIS!
Em Tube-er-cul-osis
Still here, still horrible.

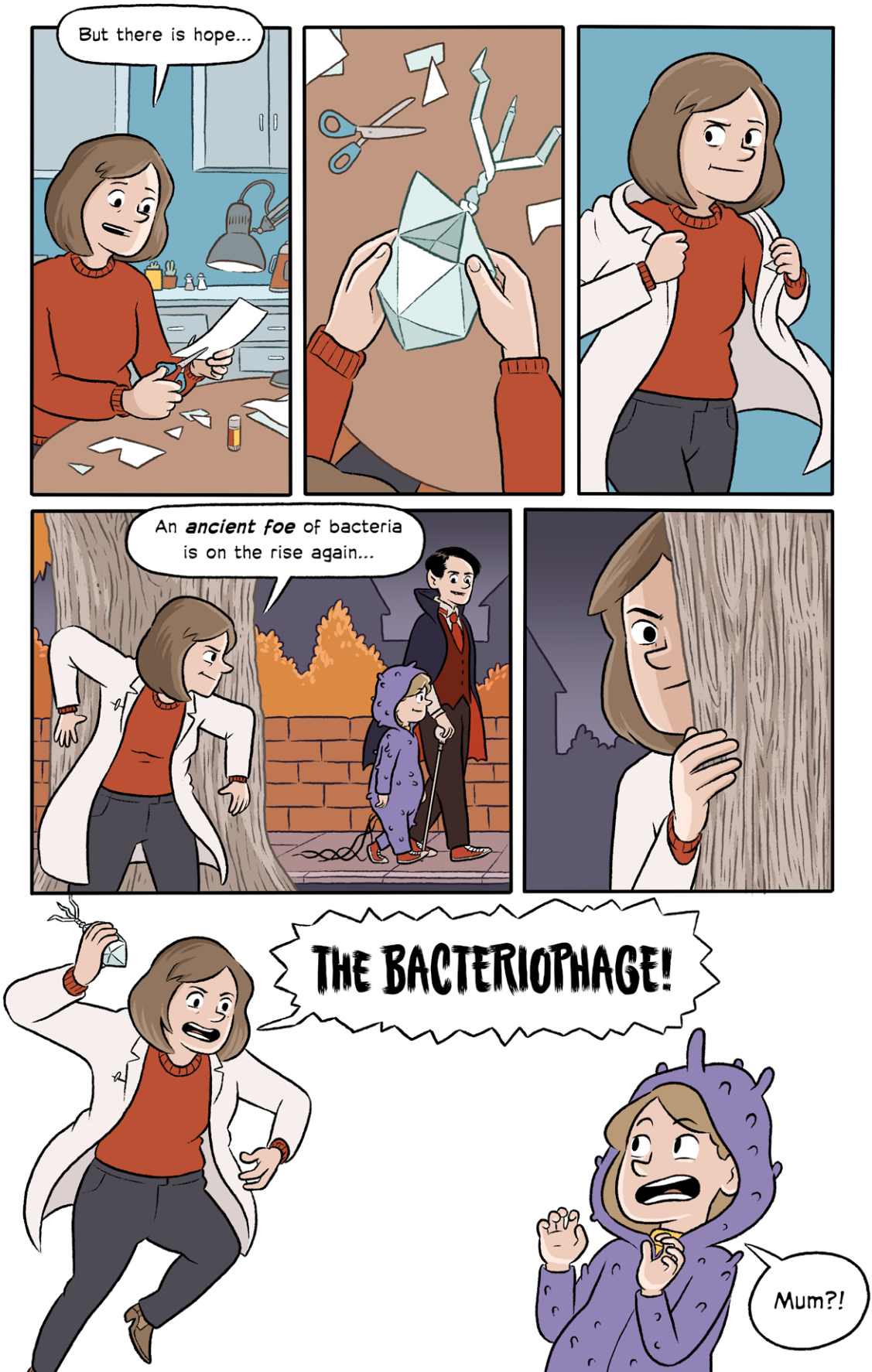
Each of these disease-causing disasterpieces is scary enough on its own...

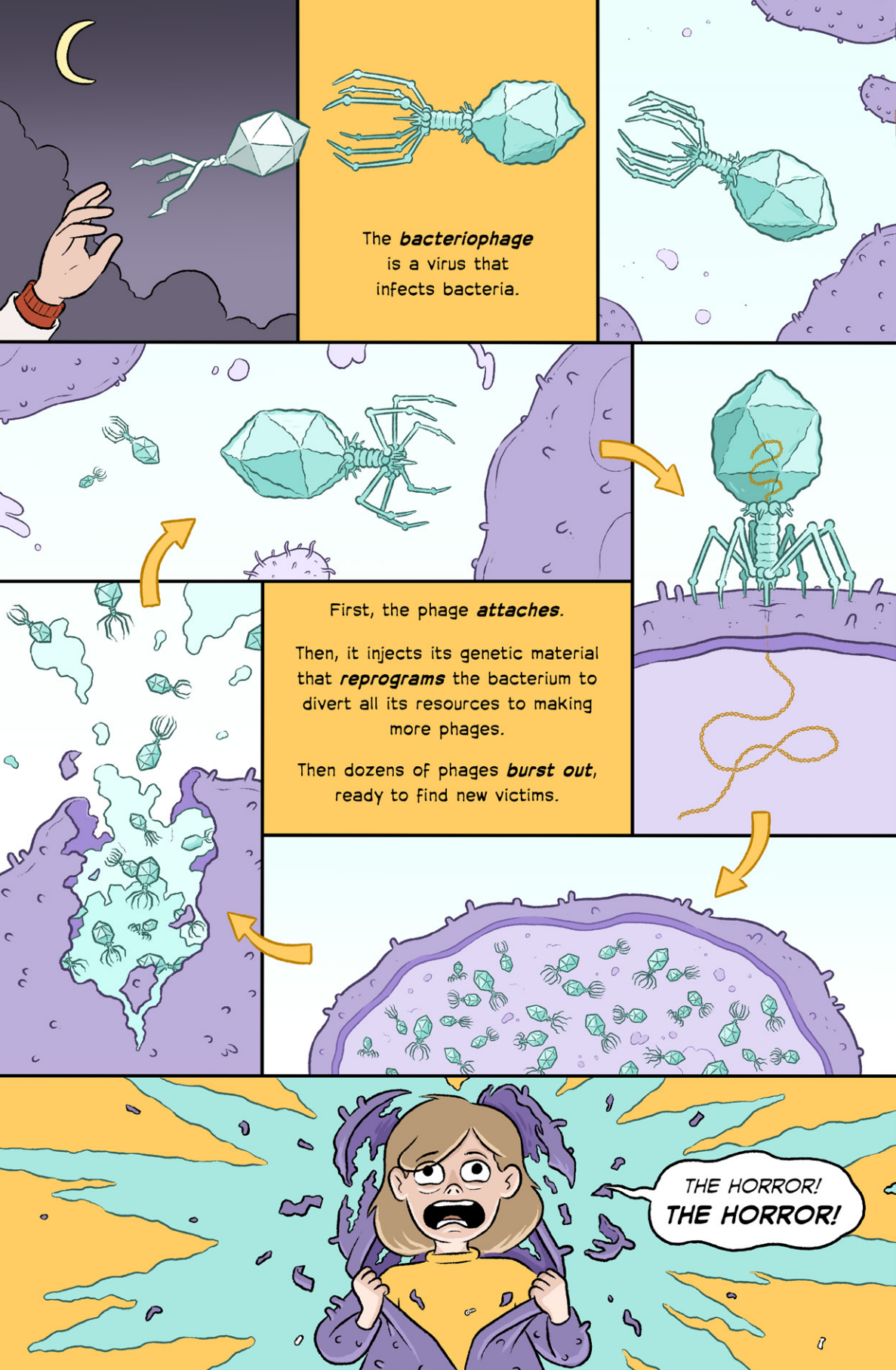


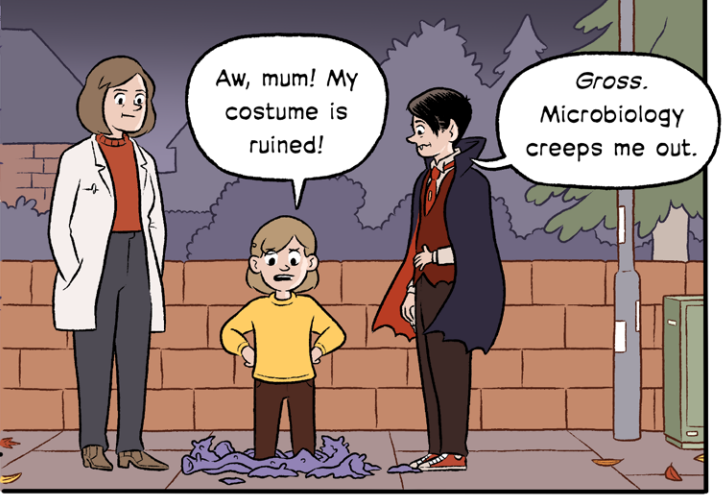

What a haul!
Best. Hallowe'en. Plan. EVER!
Let's try the next street over. I hear they've got the good sweeties!
I don't understand how you can enjoy dressing up as something so... horrible.
The sweets, Simon. The sweets!
Plus, it's ed-u-cational. People need to know about this stuff.
Think about it...


For billions of years, microbes have used toxic chemicals to attack one another.
Eventually, humans realised that we could harness these toxic chemicals, making antibiotics to wipe out deadly microbes.
It seemed like infectious disease might be a thing of the past...
But we didn't stop there. Antibiotics have been pumped into farm animals to make them bigger, or sprayed on crops to stop them rotting.
And people have taken antibiotics for diseases like the cold, which aren't even caused by bacteria.
In a world awash with human-made antibiotics, it was only a matter of time before microbes evolved to overcome our attacks.
So now when we get a dangerous infection, it's much harder to treat.
And ***that*** is terrifying.

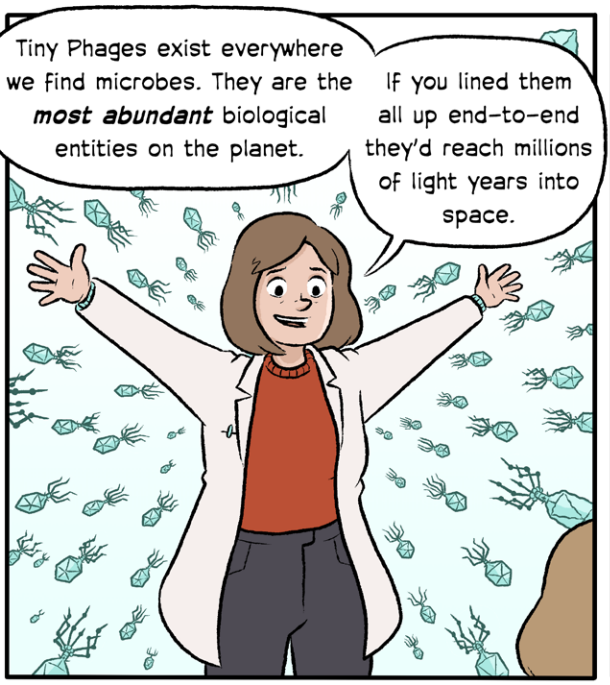

Yeah, but when people think of Hallowe'en they want scary monsters! Zombies, werewolves... P.E. teachers.
There's like a 2% chance you'll get eaten by a zombie, Simon.
But Antibiotic Resistance will affect us all!
Anyway, enough of this. I've got a street to terrify. Pathogens! Let's go!
Resistant to all known antibiotics, Luna and her gang terrorise the neighbourhood.
They're taking all the sweets!

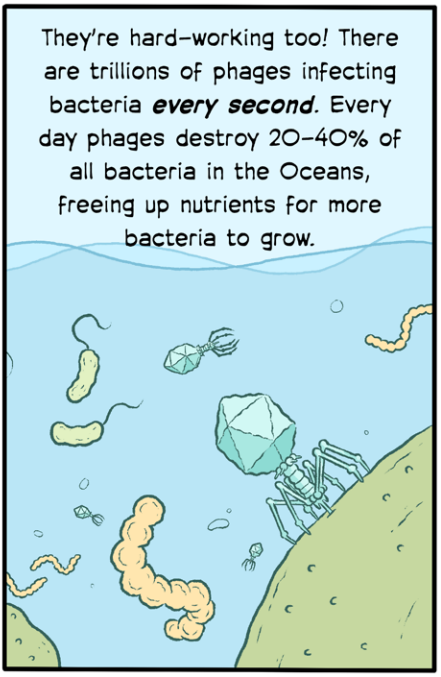

But there is hope...
An ***ancient foe*** of bacteria is on the rise again...
THE BACTERIOPHAGE!
Mum?!


The ***bacteriophage*** is a virus that infects bacteria.
First, the phage ***attaches***.
Then, it injects its genetic material that ***reprograms*** the bacterium to divert all its resources to making more phages.
Then dozens of phages ***burst out***, ready to find new victims.
THE HORROR!
THE HORROR!


Aw, mum! My costume is ruined!
Gross. Microbiology creeps me out.


But it's so ***COOOOL!***


Tiny Phages exist everywhere we find microbes. They are the ***most abundant*** biological entities on the planet.
If you lined them all up end-to-end they'd reach millions of light years into space.


They're hard-working too! There are trillions of phages infecting bacteria ***every second***. Every day phages destroy 20–40% of all bacteria in the Oceans, freeing up nutrients for more bacteria to grow.


Escoos me. Your friends are takin' all the ***sweeties***.


Oh... I'm sorry! They're antibiotic resistant pathogens. There's nothing we can do about them.
Unless...

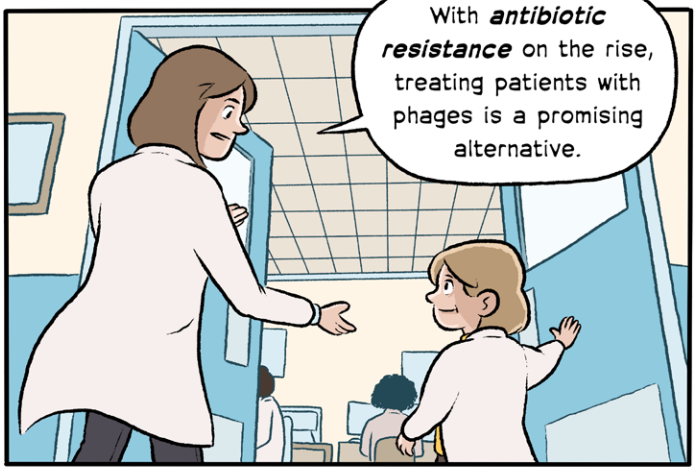

You said Bacteriophages are bacteria's biggest foe. So why not use them to ***treat infections*** that are resistant to antibiotics?
Simon! You unlikely ***genius!***
Unlikely?
Just like at Mum's lab at the university – we'll find phages to defeat my pesky pathogen pals, and free up more sweets for the littler kids!
Scientists have found useful phages in the most ***peculiar places***. Lake water. Compost heaps. Soil. Sewage treatment plants.
Or in our case, the recycling bin!
Cheese Curls
Let's go bust some ***BACTERIAL BAHOOKIE!***

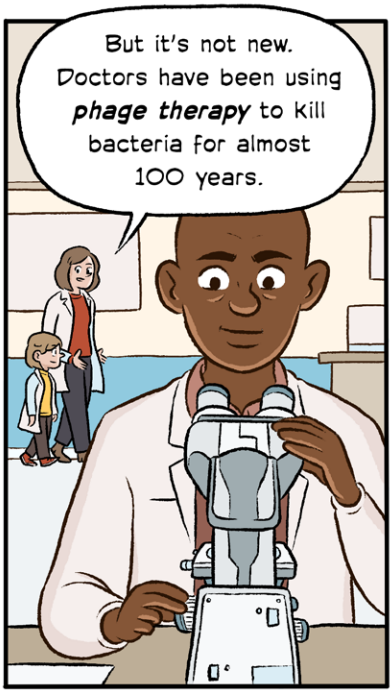

Et tu, Luna?!
Last one!
Staphylococcus!
She's getting away!
Leave it to me.
boop


Another successful Hallowe'en?
Another win for *science!* Done and dusted!
But Luna... what if the bacteria evolve *resistance* to phages? Won't we have all the same problems again?
Hmmm. I don't know, Simon.
Maybe another trip to Mum's lab will help us find out.
But right now, you can help me eat these sweeties while we watch a horror movie.

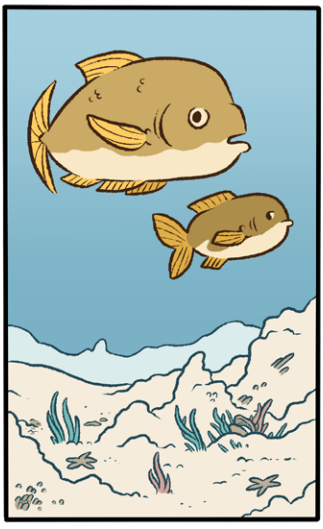

I'll be *back*, Luna. You can't keep Staphylococcus down!
MWA HA HA HA HA!

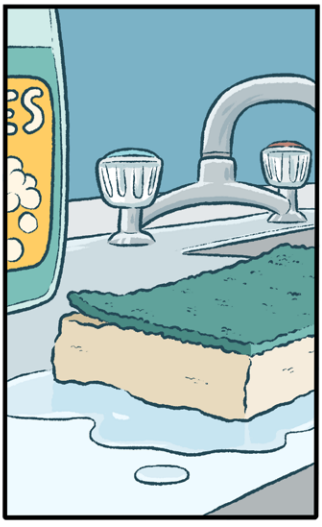
TALES FROM THE LAB!

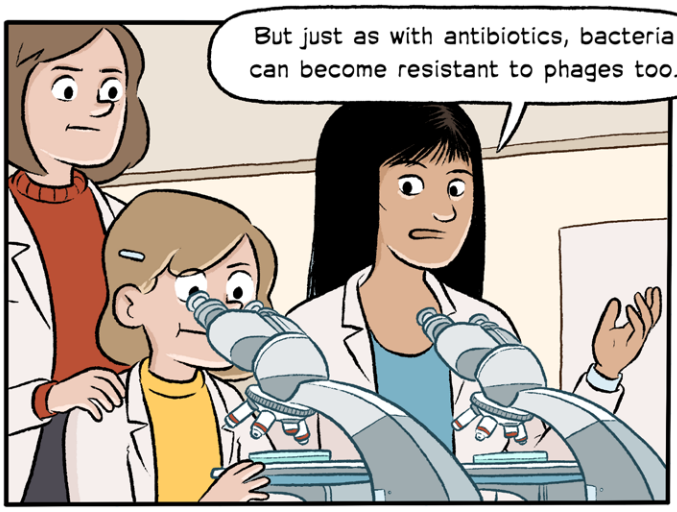




From the bottom of the ocean to the surface of the kitchen sponge, the ***search is on*** to find phages that can defeat the worst antibiotic resistant pathogens.



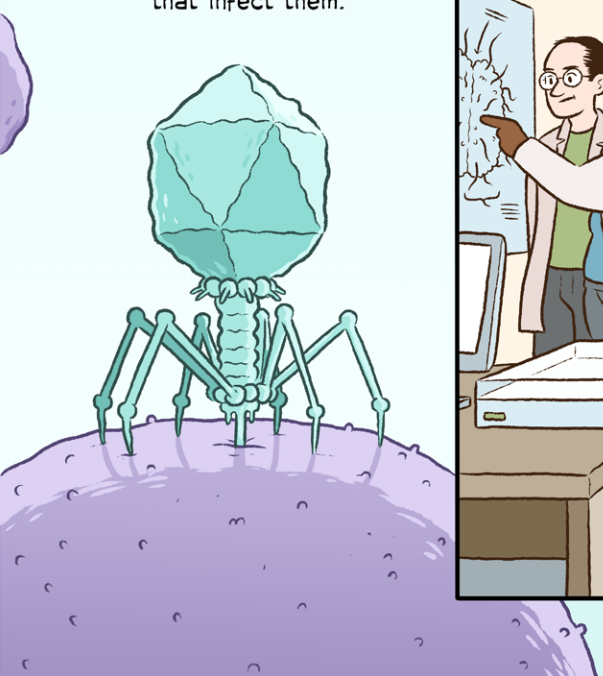




Not necessarily. Sometimes becoming resistant to phages makes bacteria ***sensitive to antibiotics*** again.

And we can design ***phage cocktails*** – mixtures of several different phages each targeting a different part of the bacterium. These cocktails make it much more ***difficult*** for resistance to evolve.

Phages can also evolve to overcome resistance. Within any microbial community there is an ***ongoing struggle*** between bacteria and the phages that infect them.



Tapping into this conflict can give us ***powerful tools*** for shaping microbial communities in ways that are better for our health and the health of the ecosystems we depend on.

It's Hallowe'en night and ***Luna*** *and her sulky brother* ***Simon*** *are out trick or treating.*

But when their sweetie-swiping trick gets out of hand, they turn to the fascinating power of ***Phages*** *to save the day.*

For further information and to read Luna & Simon's other adventure, visit:

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