

**WHY WE MASK:  
IT'S NOT**

**'JUST A COLD'**



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**2024**



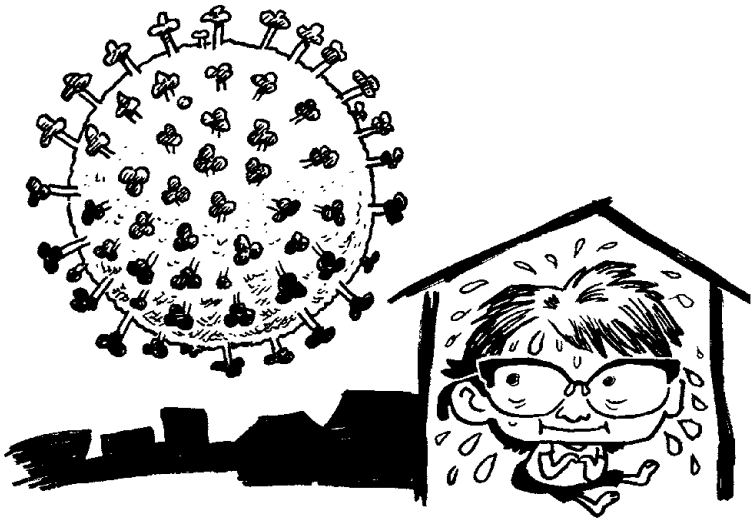
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# WHY WE MASK: IT'S NOT "JUST A COLD"

A Handy Scientific Guide To Surviving COVID-19 Together



featuring ME! ↷

## DISCLAIMER:

I am not a doctor or scientist, and this zine is not intended as a replacement for medical care. The illustrations aren't 100% to scale because I've cartoonified things for clarity. However, I based my work on free peer-reviewed scientific papers, cited in the Endnotes (pg 22) and online here:

[laurelynnleake.com/whywemask](http://laurelynnleake.com/whywemask)



# THE BASICS:

COVID-19 is a viral illness caused by SARS-CoV-2, and it spreads primarily through the air.<sup>1</sup>

A single infection (even a "mild" one) can damage nearly every organ system in your body. Repeat infections risk further harm to your immune system, heart, brain, & more, and can cause years of debilitating new disabilities.<sup>2</sup>

At least 75% of all adults are "high risk" for severe COVID-19 infections, which can leave you hospitalized, disabled for life, or dead.<sup>3</sup>

Also, since nearly half of COVID-19 cases are asymptomatic, you could be infected and contagious without ever realizing you're sick.<sup>4</sup>

# THE VIRUS:

SARS-CoV-2

Severe Acute Respiratory Syndrome

Corona Virus  
(crown-shaped, round with spikes)

similar to 2002-2003 SARS-CoV outbreak

# THE ILLNESS:

COVID-19

Corona

Virus

Disease

discovered in 2019



**COVID-19** is an **AIRBORNE ILLNESS.**<sup>5</sup>

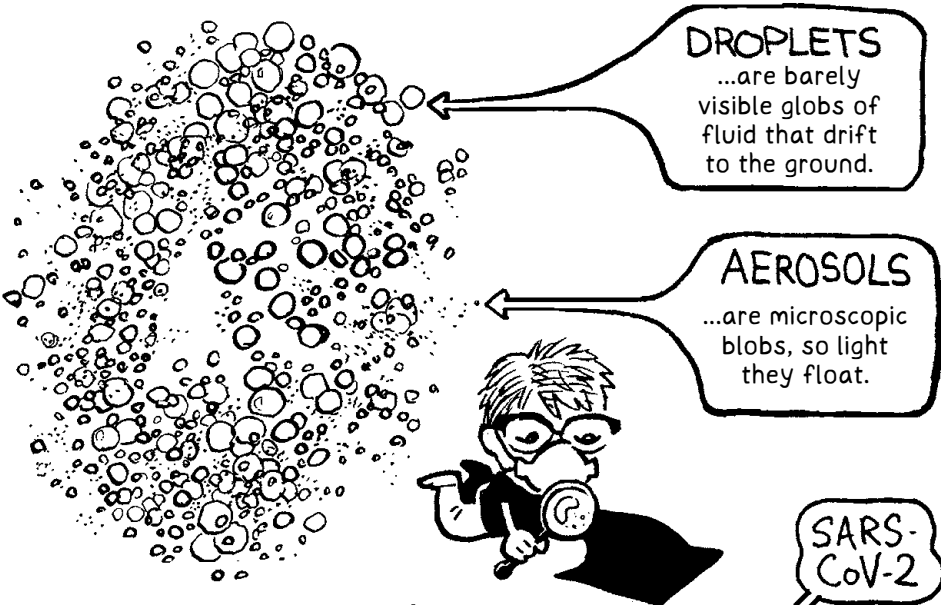
**KACHO!**



0 1m 2m 3m 4m 5m 6m

It spreads when infected people exhale, cough, or sneeze plumes of tiny **RESPIRATORY PARTICLES**. You can shed hundreds of viruses in a single minute, just by breathing.<sup>6</sup>

And sneezing can send viral gunk flying up to **6m (20ft)**! Once they're in the air, the tiniest RPs can linger in poorly ventilated spaces for **HOURS**...invisible to the naked eye.<sup>7,8</sup>



**DROPLETS**  
 ...are barely visible globs of fluid that drift to the ground.

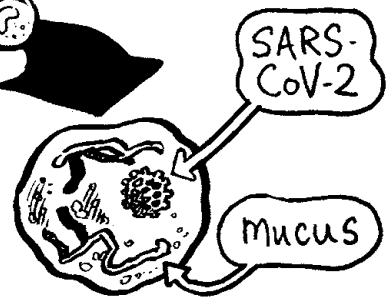
**AEROSOLS**  
 ...are microscopic blobs, so light they float.

# What's inside a respiratory particle?

RPs are made up of lung fluids, mucus, & saliva, as well as contaminants like dust, bacteria, & viruses.<sup>9</sup>

When a COVID-19 contagious person exhales, they send out lungfuls of SARS-CoV-2, hidden inside aerosols & droplets.<sup>10</sup> Aerodynamic aerosols carry the highest dose of viruses and are the most dangerous to inhale.<sup>11</sup>

The particles protect their passengers as they fly through the air, ready to be inhaled by someone new.



# SYMPTOMS

COVID-19's ACUTE PHASE symptoms start about 3-6 days after infection, & last about 12-14 days.<sup>12</sup> Symptoms & periods of contagiousness can differ by variant, but include...<sup>13</sup>



Then again, you could be one of the 32-50% of people with COVID-19 who are...<sup>14, 15</sup>

CONTAGIOUS WITH NO SYMPTOMS





# ⚠ SEVERE SYMPTOMS ⚠



STRAINED AND/OR RAPID BREATHING, WHEEZING

CHEST PAIN AND/OR PRESSURE

PNEUMONIA (fluid in the lungs)

## HYPOXEMIA

COVID-19 can impair  $O_2$  flow to your blood, even w/o obvious breathing issues.

LOW BLOOD OXYGEN symptoms can cause organ failure and even death w/o treatment.

Measure BLOOD OXYGEN LEVELS at home with a PULSE OXIMETER:



91-94% = concerning  
90% and under = emergency!!

## WARNING:

Oximeters may give FALSELY HIGH READINGS to people with dark skin &/or painted nails.<sup>16</sup>

Hypoxemia symptoms include:

CONFUSION OR DISORIENTATION



RACING HEART

INABILITY TO WAKE UP OR STAY AWAKE

CYANOSIS

PALE, GREY, or BLUE-TINTED TONGUE, LIPS, &/or NAILBEDS, depending on skintone.<sup>17</sup>

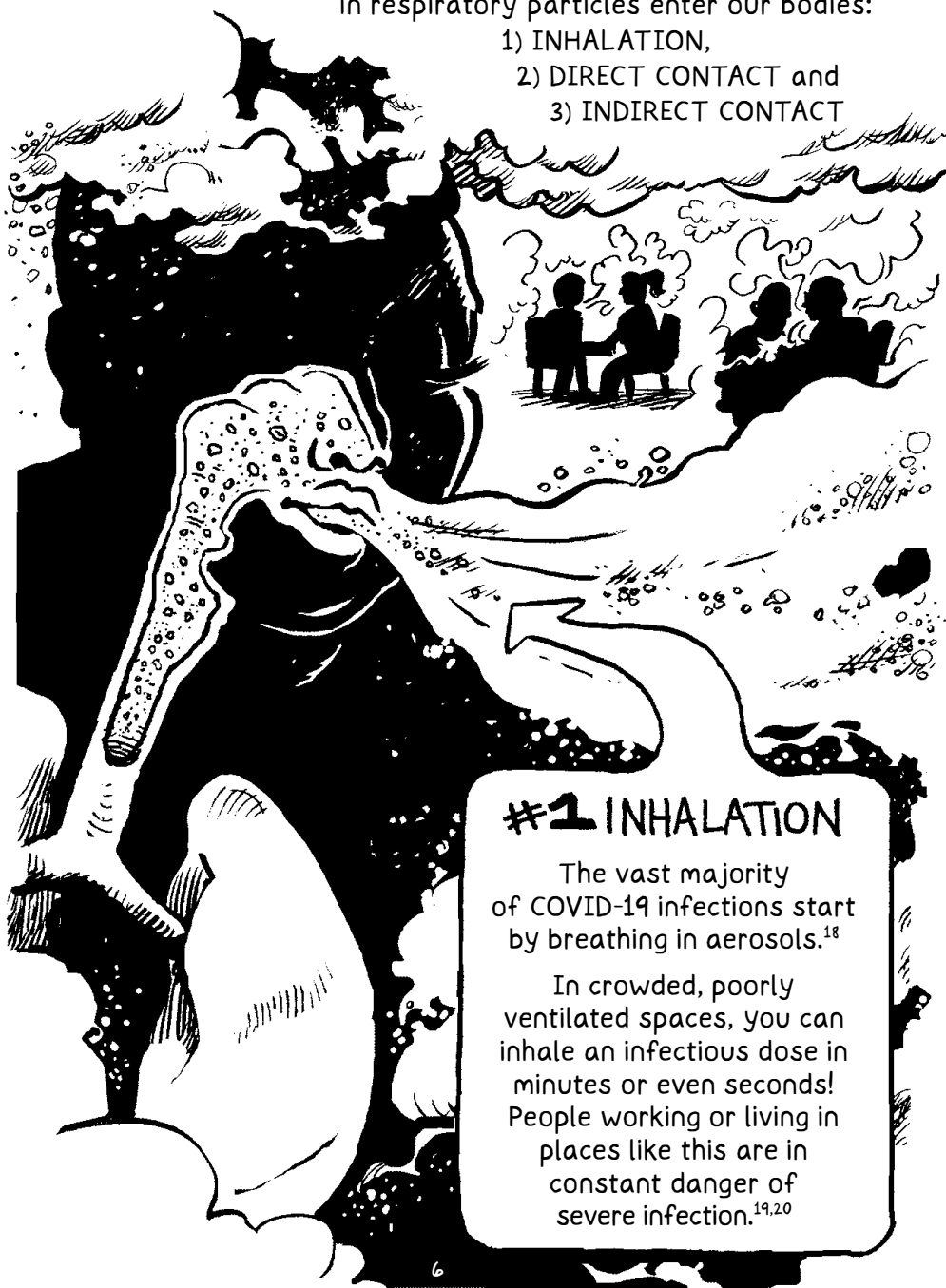


ALL THESE REQUIRE EMERGENCY HOSPITALIZATION!

# HOW COVID SPREADS

There are 3 main ways that viruses hiding in respiratory particles enter our bodies:

- 1) INHALATION,
- 2) DIRECT CONTACT and
- 3) INDIRECT CONTACT



## #1 INHALATION

The vast majority of COVID-19 infections start by breathing in aerosols.<sup>18</sup>

In crowded, poorly ventilated spaces, you can inhale an infectious dose in minutes or even seconds! People working or living in places like this are in constant danger of severe infection.<sup>19,20</sup>

## #2 DIRECT CONTACT

Viral aerosols/droplets can also collide directly with your MUCOUS MEMBRANES.<sup>21</sup> Those are the layers of soft, wet cells lining your nose, mouth, eyes, respiratory tract, etc.

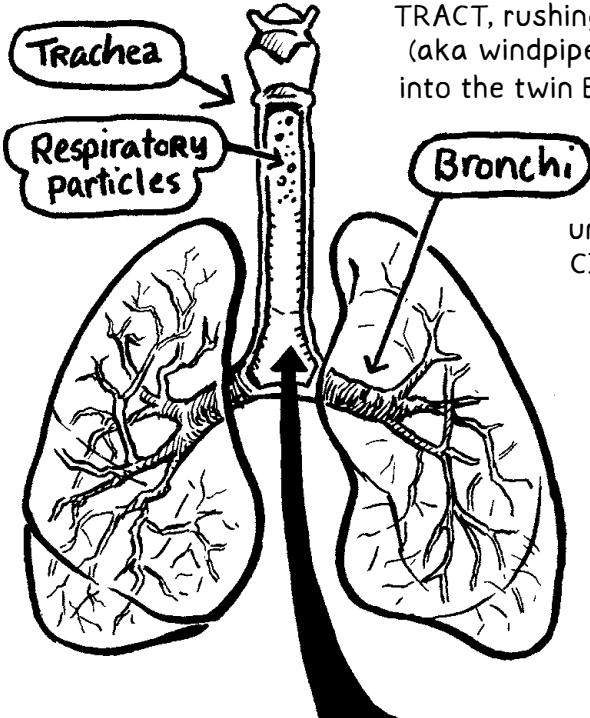


## #3 INDIRECT CONTACT

Much less likely to infect, but still possible: You get respiratory particles on your hands, & then transfer them to your mouth/nose/eyes.<sup>22</sup>

# When you breathe in...

...air enters your **RESPIRATORY TRACT**, rushing down your **TRACHEA** (aka windpipe) before splitting off into the twin **BRONCHI** of the lungs.



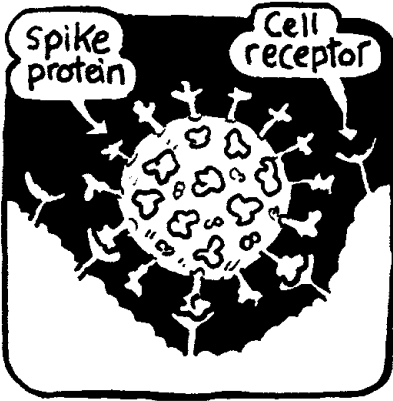
Most of the tract is lined with undulating "hairs" called **CILIA**, which are coated with a slimy layer of protective **MUCUS**.

They work together to capture pathogens (bacteria, viruses, mold) and irritating particles (pollen, dust) in clumps of gunk you then eject by coughing &/or sneezing.

But even if these defenses manage to snag the particles, they haven't neutralized the real threat hidden inside.



The droplets and aerosols start to dissolve in the warm, wet environment of the respiratory tract...and the **SARS-CoV-2** viruses break free! They kick off the initial **COVID-19** infection by attacking any nearby cells.<sup>2,3</sup>



SARS-CoV-2 uses SPIKE PROTEINS like lockpicks to trick cells into “unlocking” their outer membranes.

Once inside, the viruses re-program the cells to pump out more viruses. They swell until they burst, spreading viruses everywhere.<sup>24</sup>



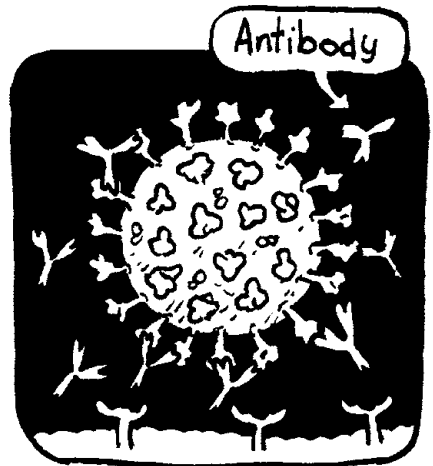
# VACCINES



Most COVID-19 vaccines teach our immune systems to create defensive ANTIBODIES that lock onto the spikes, rendering them useless.

Antibodies don't stop every single virus, but they make a difference! Vaccinated people have much better chances of surviving initial infections.<sup>25</sup>

But now we're dealing with 5 years worth of dangerously mutated VIRAL VARIANTS like Delta, Omicron, Pirola, & FLiRT! Our outdated antibodies can't lock onto all the newfangled spike proteins anymore...<sup>26</sup>



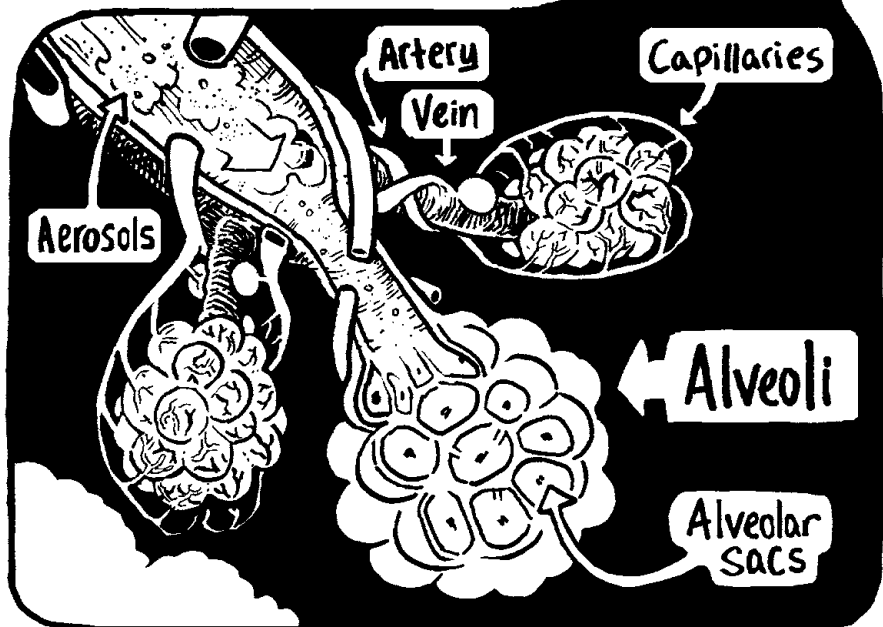
...So infections keep spreading, and scientist race to keep up with booster vaccines that can handle the latest variants.



# BRONCHIOLES

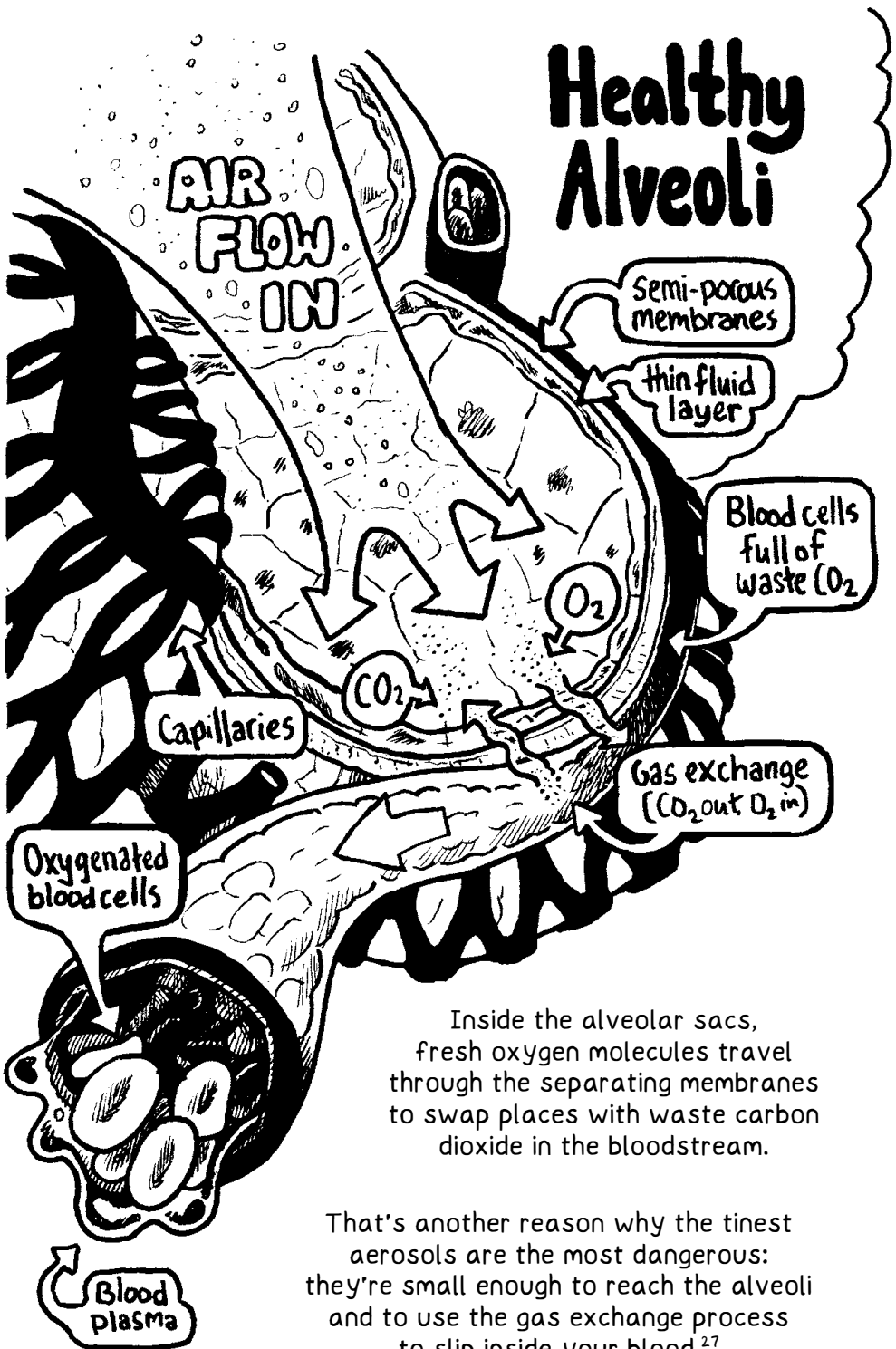
Once air reaches the lungs, it disperses through the BRONCHIAL TREE, where airways split into smaller and smaller BRONCHIOLES.

Each bronchiole is tipped with ALVEOLI, clusters of flexible, interconnected ALVEOLAR SACS. Delicate capillaries wind between them, bringing blood to and fro.





# Healthy Alveoli



Inside the alveolar sacs, fresh oxygen molecules travel through the separating membranes to swap places with waste carbon dioxide in the bloodstream.

That's another reason why the tiniest aerosols are the most dangerous: they're small enough to reach the alveoli and to use the gas exchange process to slip inside your blood.<sup>27</sup>

Our body launches into defensive action, but variants excel at turning our IMMUNE CELLS against themselves in an escalating CYTOKINE STORM.<sup>28</sup>

Infected, dying cells release CYTOKINES (chemical signals) that summon immune cells...which get attacked by viruses, so they summon even MORE immune cells...!<sup>29</sup>

The inflamed alveoli try to flush the invaders out with fluids, but that results in a suffocating state called PNEUMONIA. The swollen, pus-filled alveolar sacs struggle to continue exchanging  $O_2$ - $CO_2$  through their damaged walls. Without treatment, this can end in death.



# Meanwhile...

...SARS-CoV-2 spreads into the CIRCULATORY SYSTEM, triggering dangerous MICRO CLOTS & attacking the ENDOTHELIAL LINING.<sup>32</sup>

That's the thin layer of cells lining every artery, vein, and capillary that normally keeps all your blood and tissues functioning.

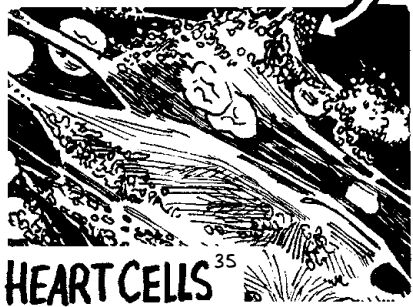
Vascular damage like this damages EVERY part of you.

Even "mild" initial COVID-19 infections travel through the bloodstream to injure your BRAIN, HEART, & other critical organs - whether you notice that damage or not.<sup>33</sup>



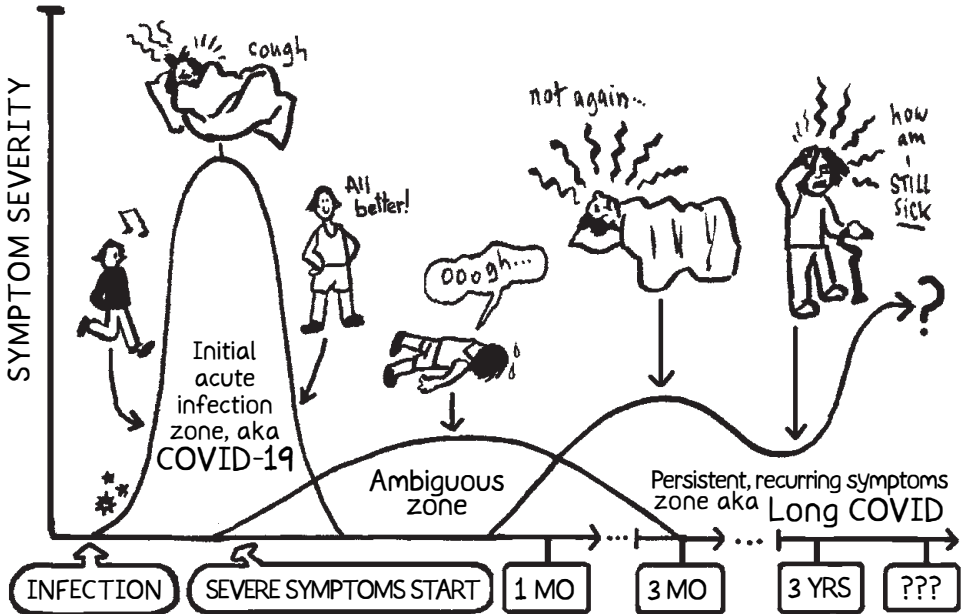
NEURONS<sup>34</sup>

SARS  
CoV-2



HEART CELLS<sup>35</sup>

# LASTING EFFECTS



At least 10-30% of people who survive COVID-19 report symptoms reappearing months or even YEARS later, regardless of their age or health. Many have had their lives changed for the worse...maybe permanently.<sup>36,37,38</sup>

Long COVID (aka POST-COVID SYNDROME or POST-ACUTE SEQUELAE OF SARS-COV-2) varies wildly from person to person, but common symptoms are lung damage, strokes, heart attacks, immune dysfunction, and debilitating exhaustion. We're only just beginning to understand it as a POST-VIRAL ILLNESS like Shingles (caused by the Chickenpox virus) & AIDS (caused by HIV).

Vaccines lower the likelihood of long-term damage, but don't eliminate it.<sup>39</sup> Long COVID hits marginalized people the hardest, and we often go undiagnosed & untreated due to systemic bigotry in healthcare.<sup>40,41,42</sup>



# LONG COVID

Strokes and memory loss

Migraines

New or worsening mental illness

debilitating exhaustion

aka Myalgic Encephalomyelitis or Chronic Fatigue Syndrome

New or worsening cancers

brain fog

Loss of smell/taste

Immune disorders

Joint pain

Lung damage

hearing loss

Rashes

Heart attacks

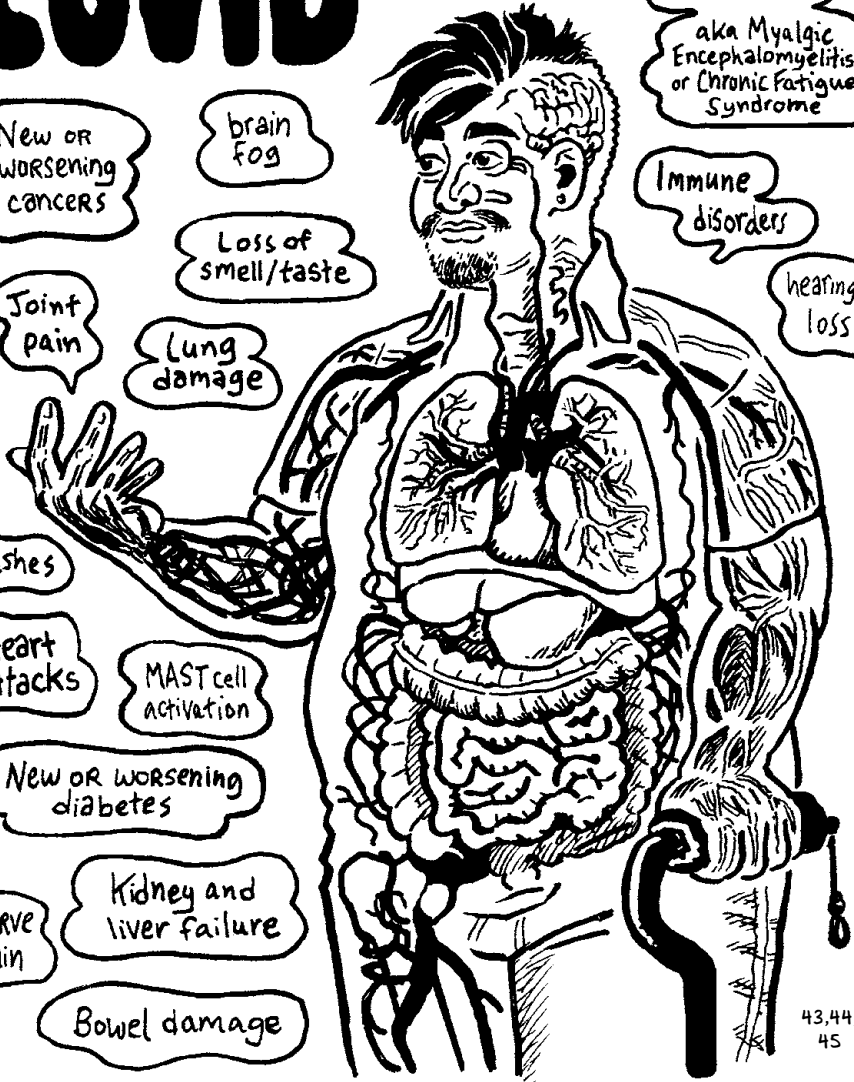
MAST cell activation

New or worsening diabetes

Nerve pain

Kidney and liver failure

Bowel damage



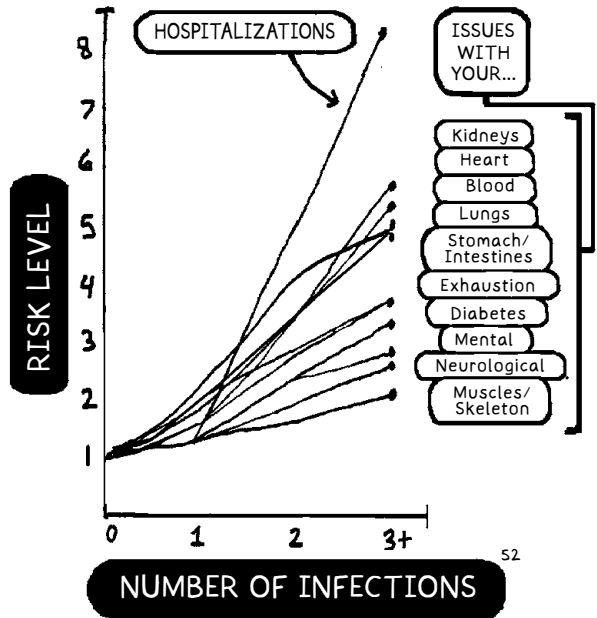
As of 2024, we keep discovering new ways Long COVID damages the body, but we still don't have a "cure". There are many ways to treat the symptoms (primarily serious, extended REST<sup>46,47,48</sup>), but no silver bullet to reverse damage.

# THE DAMAGE GETS WORSE WITH EVERY NEW INFECTION

Most people don't know that SARS-CoV-2 damage is CUMULATIVE.

So every new infection raises the odds you'll be hit by horrible new health complications that may become permanent.<sup>49,50</sup>

Even infections that feel like "just a cold" or "allergies" can cause trouble down the line.<sup>51</sup>



An easy or entirely asymptomatic initial infection may mean your immune system barely even activated to fight off the virus. Long after you recover from the "mild" symptoms, inactive viral debris can remain throughout your body.<sup>53</sup>

FDG-PET scan showing spike proteins in joints & blood vessels<sup>54</sup>



These are VIRAL RESERVOIRS: Leftover viruses & spike proteins that collect in your muscles, bones, & organs, ready to reinfect you whenever your immune system gets stressed.



# Immune Dysregulation

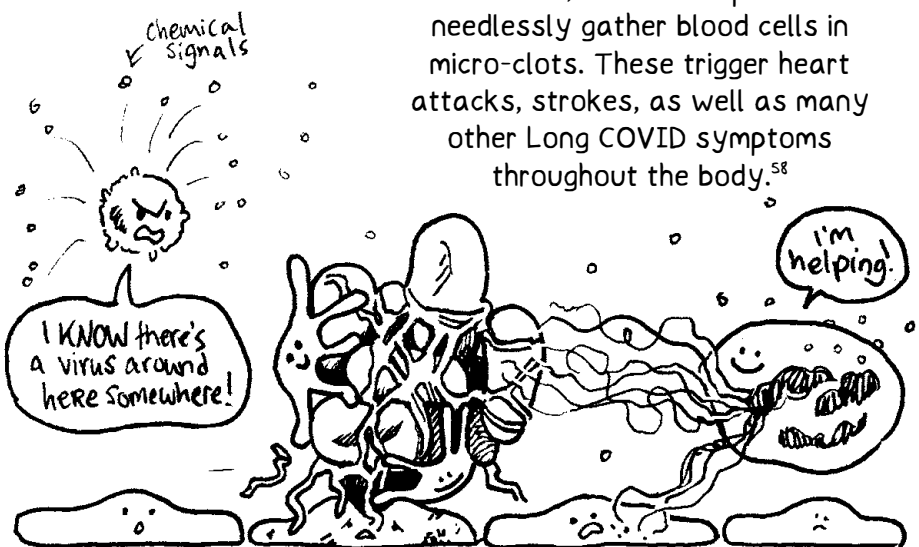
COVID-19 infections can leave your immune system depleted and unable to fight off much of anything.<sup>55</sup>

Exhausted T-cells can miss invading pathogens like bacteria or other viruses.

They might even "reset" and forget how to handle infections they've fought off before.<sup>56</sup>

COVID-19 infections can also leave you with a fired up immune system in constant high alert (aka AUTOIMMUNITY). Your T-cells and neutrophils may attack healthy cells causing systemic inflammation, especially when triggered by old virus debris.<sup>57</sup>

Meanwhile, overactive platelets needlessly gather blood cells in micro-clots. These trigger heart attacks, strokes, as well as many other Long COVID symptoms throughout the body.<sup>58</sup>

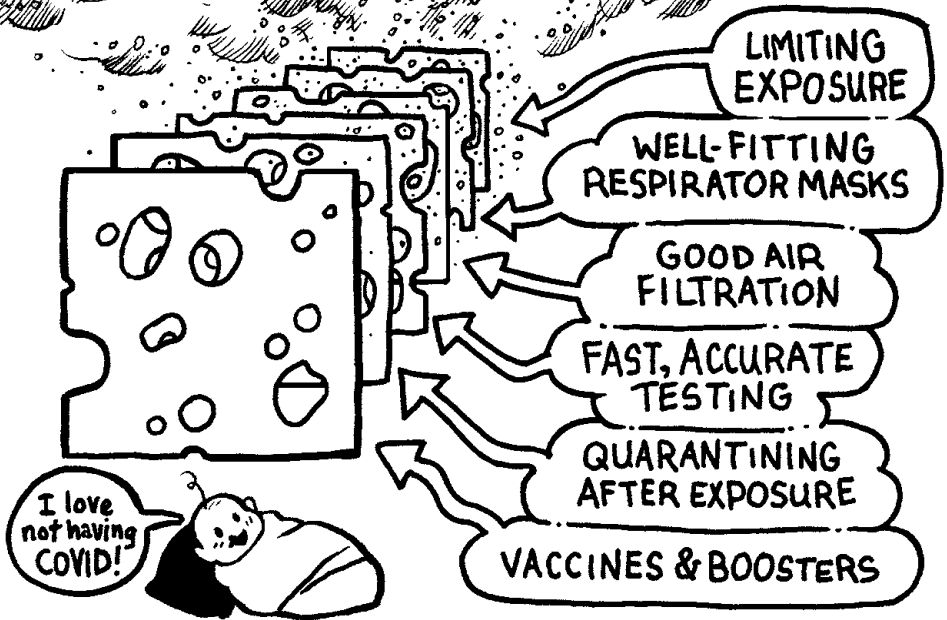


# STOPPING THE SPREAD

So obviously we want to stop getting sick, but how? We can't end pandemics through individual action alone.

So we work together! And we combine many strategies, both individual and systemic.

The SWISS CHEESE MODEL OF INFECTION PREVENTION is an easy, cheesy way to visualize this tactic.<sup>59</sup>



Just like how each Swiss cheese slice has holes, no single protection method against SARS-CoV-2 works 100% perfectly. So we stack together methods until we've covered up all the holes, and maximized protection!



## COMMUNITY CARE

To survive this pandemic, we must follow the lead of Disability Justice and survive TOGETHER.

That means all of us - the infants and toddlers too young to mask, the disabled and the neurodiverse, Black and Indigenous people, all people of color, queer and trans people, sex workers, pregnant people, immunocompromised people, the undocumented, the unhoused, the incarcerated and institutionalized...

People forced into constant exposure at home, work, and school until they've lost count of infections, people forced into indefinite isolation because one infection could kill them or permanently change their life for the worse, people who get fired when they run out of sick days and evicted when they run out of money...

Everyone abused by our medical industry and abandoned by our governments.

All of us.

So why do we mask?  
Because we refuse to accept  
a world where any one  
of us is disposable.

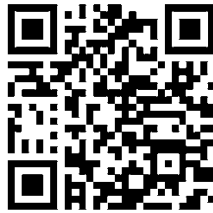
We fight for a future  
where we all survive -  
together.



# RESOURCES

ENDNOTES with all works cited,  
plus useful GUIDES & TOOLS,  
For a web version with working URLs,  
use the link or scan the QR code:

[laurellynnleake.com/whywemask](https://laurellynnleake.com/whywemask)



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- 53** Zuo W, He D, Liang C, et al. The persistence of SARS-CoV-2 in tissues & its association with long COVID symptoms: a cross-sectional cohort study in China. *The Lancet: Infectious Diseases*. Pub online April 1, 2024
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## PAGE 17: IMMUNE DYSREGULATION

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- 56** Winheim E, Rinke L, Lutz K, et al. Impaired function and delayed regeneration of dendritic cells in COVID-19. *Suthar M, ed. PLOS Pathogens*. 2021;17(10):e1009742.
- 57** Yin K, Peluso MJ, Luo X, et al. Long COVID manifests w/ T cell dysregulation, inflammation & an uncoordinated adaptive immune response to SARS-CoV-2. *Nature Immunology*. Pub online Jan 11, 2024:1-8.
- 58** Lechuga GC, Morel CM, De-Simone SG. Hematological alterations associated with long COVID-19. *Frontiers in Physiology*. 2023;14:1203472.

## PAGE 18: STOPPING THE SPREAD (SWISS CHEESE MODEL)

- 59** Mackay AM, PhD. The Swiss cheese infographic that went viral. *Virology Down Under*. Pub Dec 26, 2020.

# Guides & Tools

For currently sick &/or chronically ill people:

END VIRAL EUGENICS Database - [tinyurl.com/currentlysick](https://tinyurl.com/currentlysick)  
Find COVID-19 Medications (USA) - [treatments.hhs.gov/](https://treatments.hhs.gov/)  
Drug Interaction Checker - [Covid19-DrugInteractions.org/checker](https://Covid19-DrugInteractions.org/checker)  
COVID Safe Providers - [covidsafeproviders.com/](https://covidsafeproviders.com/)  
Treatment Research - [C19early.org/](https://C19early.org/)  
Long COVID Physio - [LongCovid.physio/pacing/](https://LongCovid.physio/pacing/)

Mask buying/fitting resources:

Mask Database - [tinyurl.com/maskdb](https://tinyurl.com/maskdb)  
Respirator Repository - [tinyurl.com/PDXMaskLibrary](https://tinyurl.com/PDXMaskLibrary)  
Buy Lower Cost Masks (USA) - [linktr.ee/buymasks](https://linktr.ee/buymasks)  
[reddit.com/r/Masks4All/](https://reddit.com/r/Masks4All/) - (caution: advice very white cis man centric)



Other resources:

[CleanAirCrew.org/](https://CleanAirCrew.org/) - Recommendations & DIY guides for air filtration

**What's Up With COVID & How To Protect Yourself, 2024 Ed**

[newlevant.com/COVIDzine](https://newlevant.com/COVIDzine) - Hazel Newlevant's excellent free printable COVID minicomic! Includes advanced safety tips (ex: nasal sprays, CPC mouthwash, air circulation/filtration). (English/Espanol)

**We Keep Each Other Safe** - [ForwardTogether.org/tools/we-keep-each-other-safe/](https://ForwardTogether.org/tools/we-keep-each-other-safe/)  
A Guide By & For Black, Indigenous, Latinx, POC & LGBTQ Communities. From 2020 but still very relevant (English/Espanol)

**How To Get On** – [howtogeton.wordpress.com/](https://howtogeton.wordpress.com/)

Lily Silver's self-advocacy guide for homebound/bedbound people, ME/CFS focused but helpful for all disabilities. Covers financial aid, affordable housing, medical care, mobility devices, etc. (USA)

Mutual aid databases ("global", always updating):

COVID Action Map - [t.co/DvrGjRPzhm](https://t.co/DvrGjRPzhm)

MASK Bloc Org - <https://maskbloc.org/>

COVID Meetups - [COVIDMeetups.com](https://COVIDMeetups.com)

Online communities/support groups/events:

COVID Isn't Over - <https://linktr.ee/covidisntover>

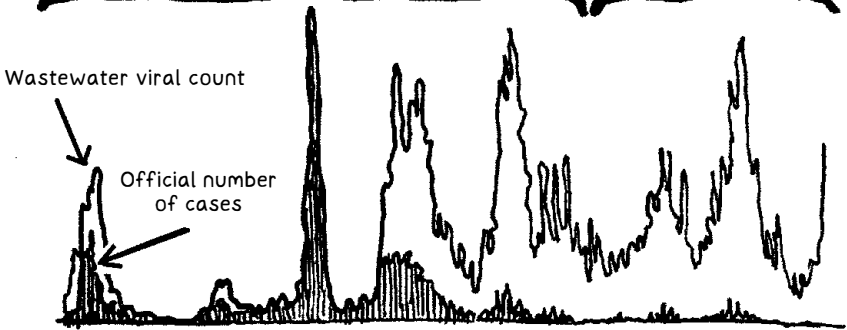
Long COVID Justice - <https://longcovidjustice.org/Support>

Disability Visibility Project - [DisabilityVisibilityProject.com](https://DisabilityVisibilityProject.com)

# Updating COVID Trackers

"DURING THE PANDEMIC"

"POST-PANDEMIC"



Source: Santa Clara County Public Health Dept, inspired by Lee Altenberg, PhD.

Wastewater trackers test sewage at processing plants for viral debris (including HSN1, influenza, etc). They're far more accurate than government or corporate numbers. "Official" trackers for COVID-19 cases, hospitalizations, and deaths are almost always SIGNIFICANTLY UNDERCOUNTED.

Wastewater trackers still SKEW LOW, and run at a 2 week delay. Also, since they depend on gov access, they can get forced into removing their public datas (RIP Biobot Tracker :C).

## TURTLE ISLAND

WastewaterScan Dashboard  
[data.wastewaterscan.org/](https://data.wastewaterscan.org/)

Canadian Tracker  
[COVID19Tracker.ca](https://COVID19Tracker.ca)

"Weather Reports"  
on the PeoplesCDC.org/

Iowa COVID Tracker  
[iowacovid19tracker.org](https://iowacovid19tracker.org)  
(Covers the whole USA)

Pandemic Mitigation Collaborative - [PMC19.com/](https://PMC19.com/)  
Weekly COVID-19 forecasts, plus research on respirators & air quality

## GLOBAL

KFF Global Tracker  
<https://t.co/7fmeb93fYI>

Worldometer  
[worldometers.info/coronavirus/](https://worldometers.info/coronavirus/)

This comic would not exist without my partner Kimball Anderson's digital editing, emotional support and COVID know-how.  
Thank you!

I'm grateful to everyone who gave me feedback, with an extra big thank you to Dupe & Caitlin for copy edits.

Thank you to everyone making SARS-CoV-2 resources accessible online, & to everyone fighting to keep each other alive out there.

## Laurel Lynn Leake

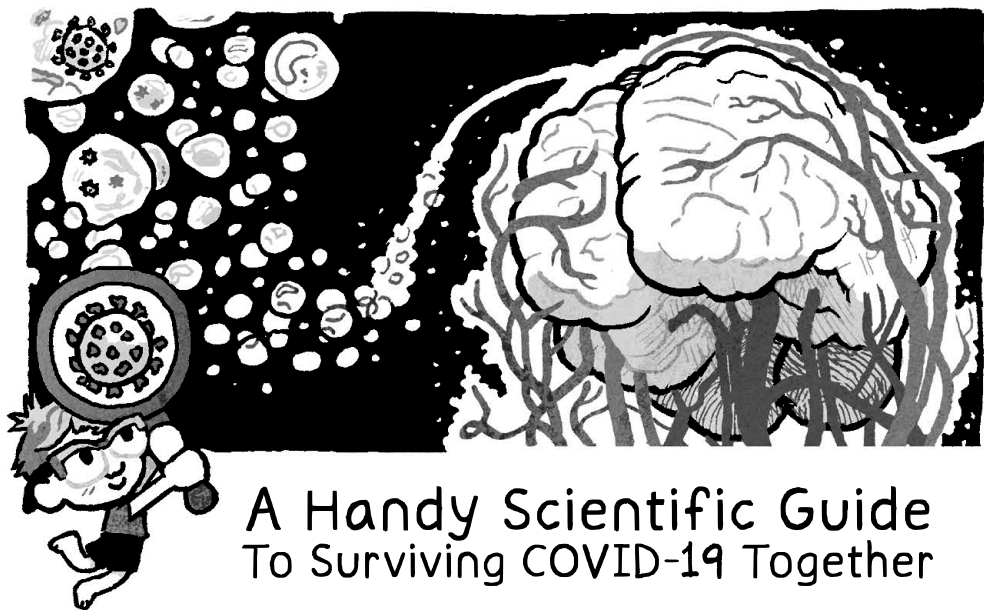


...is a white, queer, and disabled artist who believes in the subversive power of empathy. They graduated from the Center for Cartoon Studies in 2013 with their MFA, and live in "Providence, RI." She's taking care of herself even though it's hard!

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[laurel-lynn-leake.itch.io](https://laurel-lynn-leake.itch.io)

### THANK YOU FOR READING

If you stopped masking, let this be the excuse to start again!  
And if you never stopped - thank you, thank you, thank you.



## A Handy Scientific Guide To Surviving COVID-19 Together

Why's everyone sick all the time?  
Well, it's not "just a cold", and it's definitely not "mild"...  
It's SARS-CoV-2, and it can change your life forever.

Whether you've been too burned out to keep up  
with COVID-19 news, or if you're still masking and  
sick of explaining why, this zine is for you!

WHY WE MASK cuts through 5 years of COVID chaos with  
simple, non-judgemental language and fun science illustrations  
featuring masked-up queer & trans disabled people.  
Plus resources for protecting you and your loved ones!

