



SCIENCE & MECHANICS OF BI-POLAR IONIZATION

Making Mass Timber Buildings Even Better



The Natural Air Purification Solution

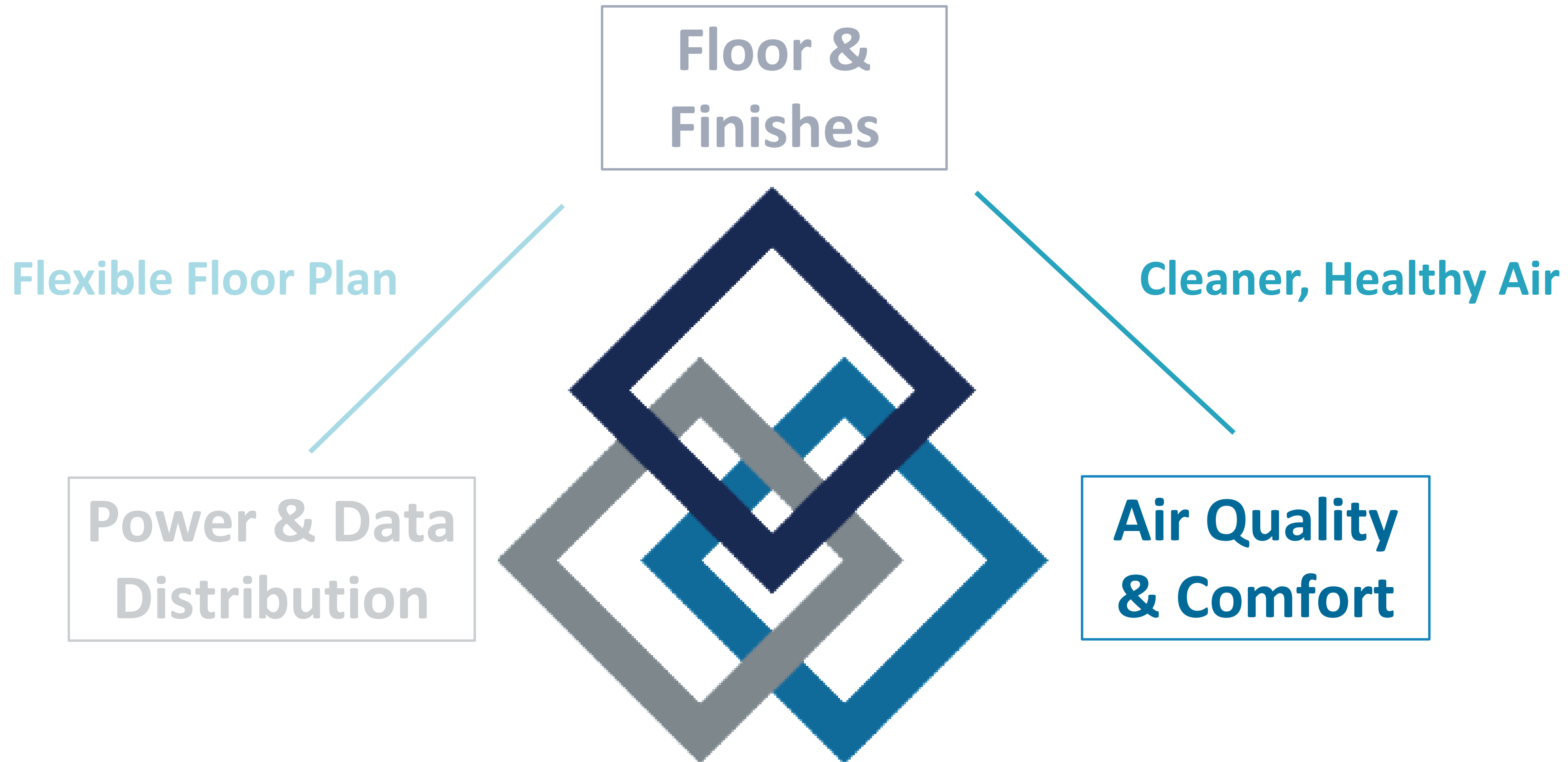
Global Integrated Flooring Solutions® can provide **AtmosAir™ Bi-Polar Ionization (BPI)** air purification technology as part of our package. Unlike most air purification systems, AtmosAir seeks out and neutralizes contaminants at their source. This is vastly superior to most air purification methods because it works “in the space” where we work and play. AtmosAir doesn’t wait for the pollutants to find their way into the filter within the air handler. Instead, air ions go to the contaminants in the space where you breathe, just as in nature.

BPI is a *continuous disinfection technology!!*



The Fully Integrated Solution

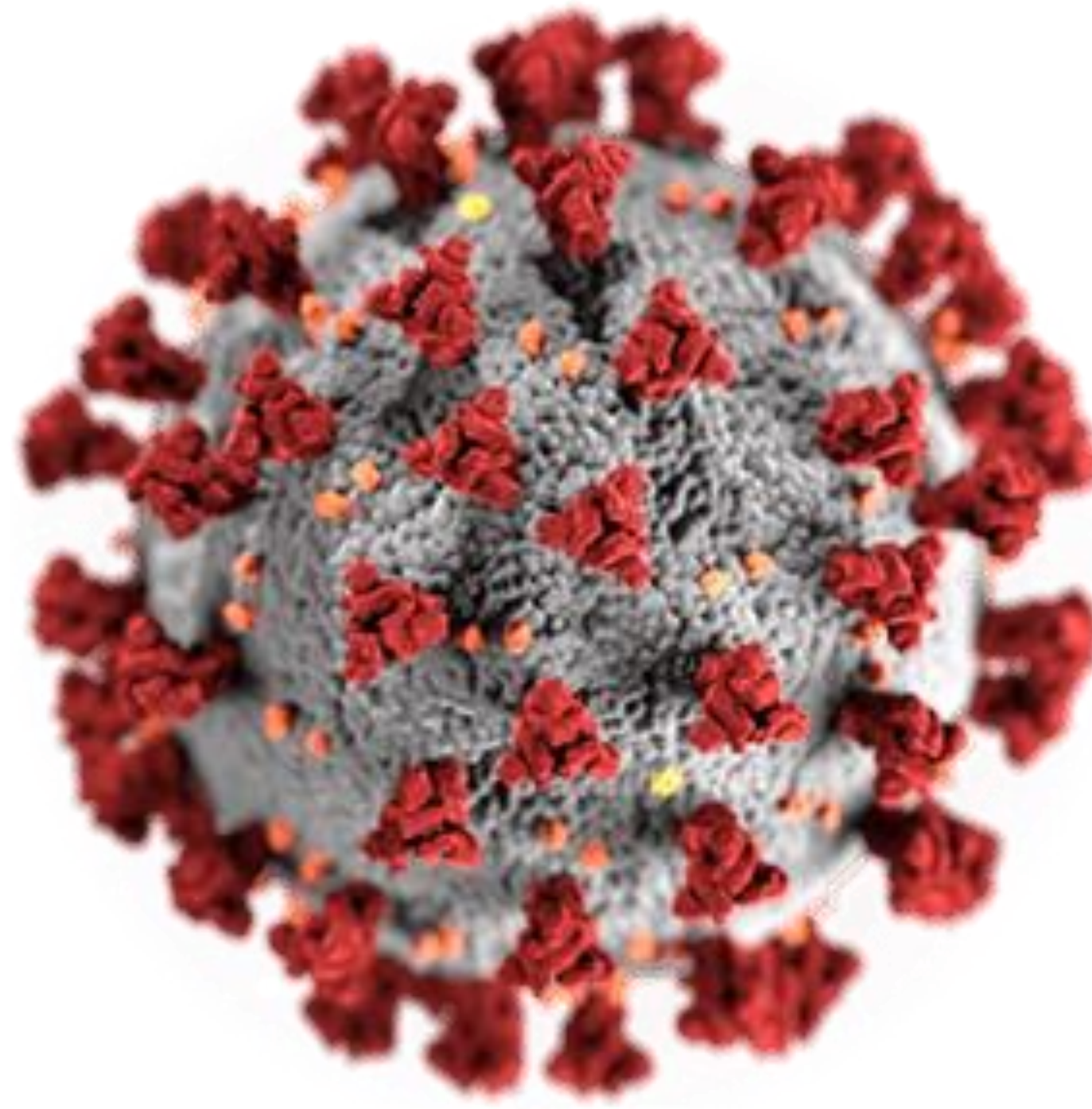
“IFS Building”



Atmos Air™ Bi-Polar Ionization Air Purification

Airborne Pathogens

Can a UFAD system with Atmos technology mitigate disease transmission?



Air Quality
& Comfort

Atmos Air™ Bi-Polar Ionization Air Purification

Airborne Pathogen Transmission

Modes of Transmission

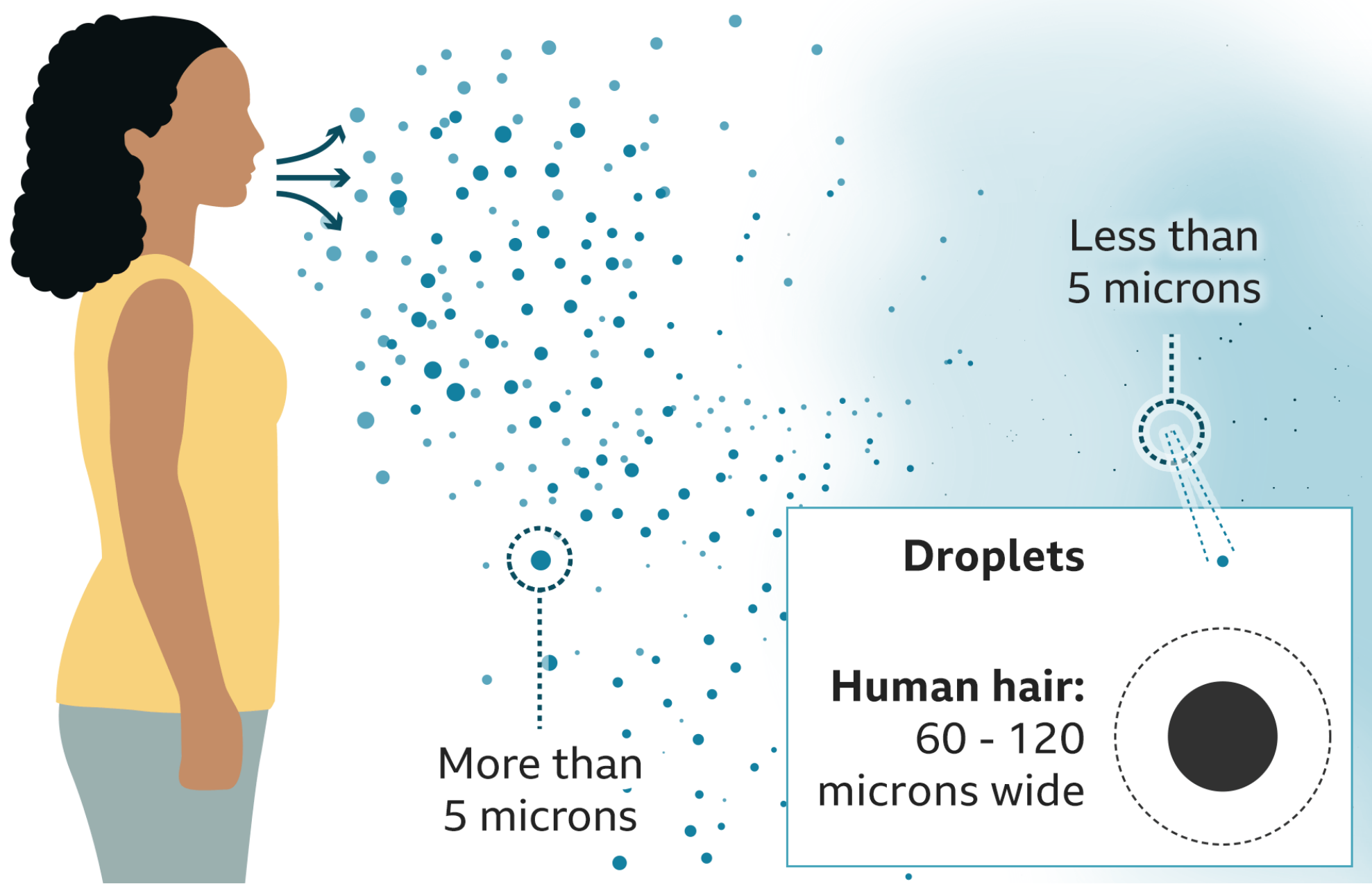
The difference between droplet and airborne transmission

Droplet transmission

Coughs and sneezes can spread droplets of saliva and mucus

Airborne transmission

Tiny particles, possibly produced by talking, are suspended in the air for longer and travel further



(Source: World Health Organization (WHO), 2020)

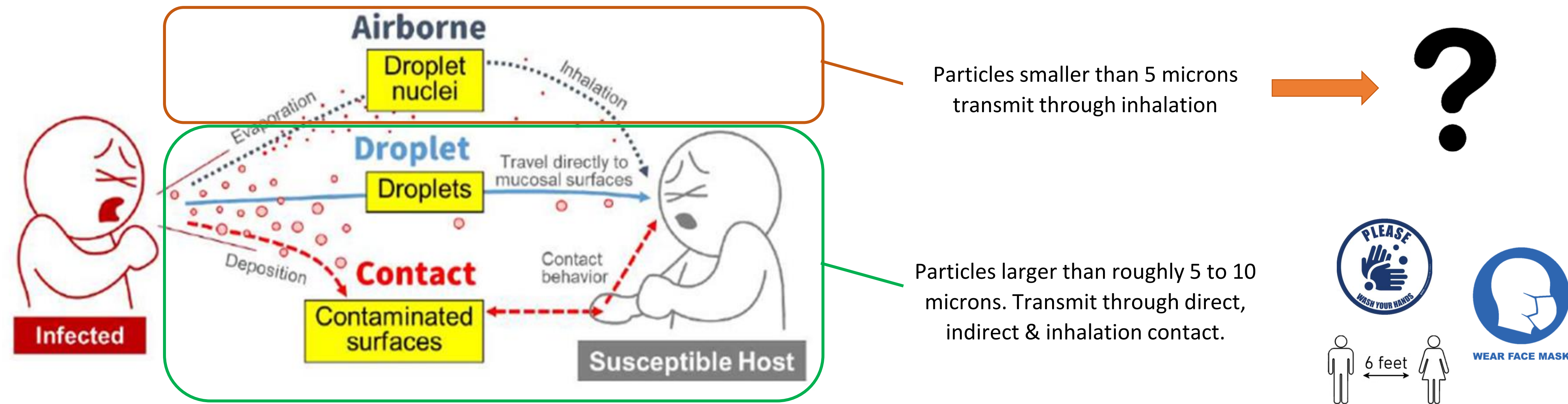


Air Quality
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Atmos Air™ Bi-Polar Ionization Air Purification

Airborne Pathogen Transmission

Modes of Transmission



Modes of Transmission from Exhaled Pathogens (adapted from leaflet of the Office of the Prime Minister and the Ministry of Health, Labor and Welfare of Japan (2020))

(Source: Taylor Engineering Covid-19 White Paper, 2020)

"These two studies suggest that "social distancing" may not be sufficient to prevent transmission due to transmission from smaller virus-carrying particles."

(Coronavirus Disease Outbreak in Call Center, South Korea, 2020); (Lu, 2020)



**Air Quality
& Comfort**

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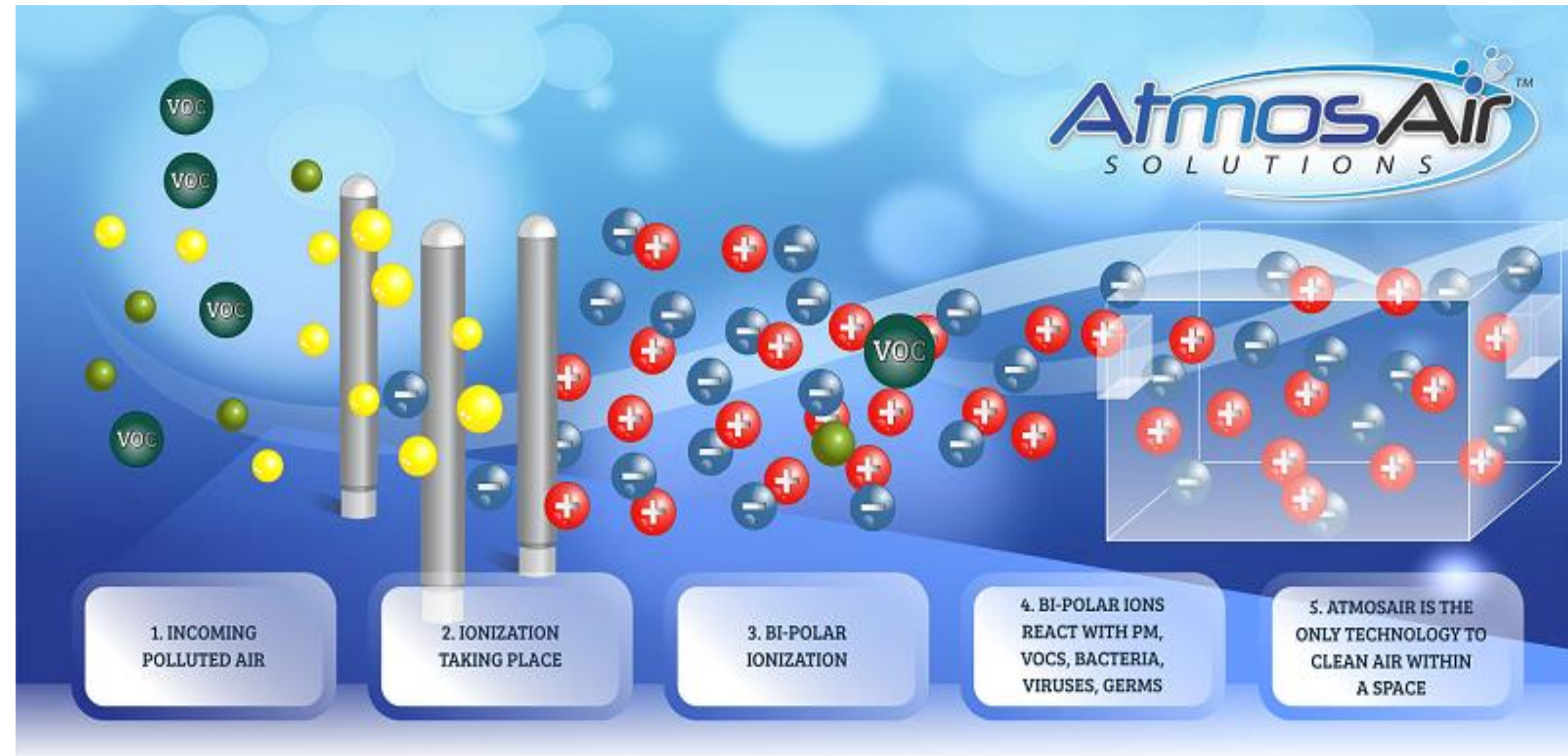
Can Ions Be Part of the Solution? YES!

BPI is an Active Technology

- The air stream is treated, and ions delivered to the occupied space via the UFAD system
- The space is continuously cleaned by the ions
- Organics are deactivated and are unable to do further harm
- Particulate matter falls to the ground



Air Quality
& Comfort

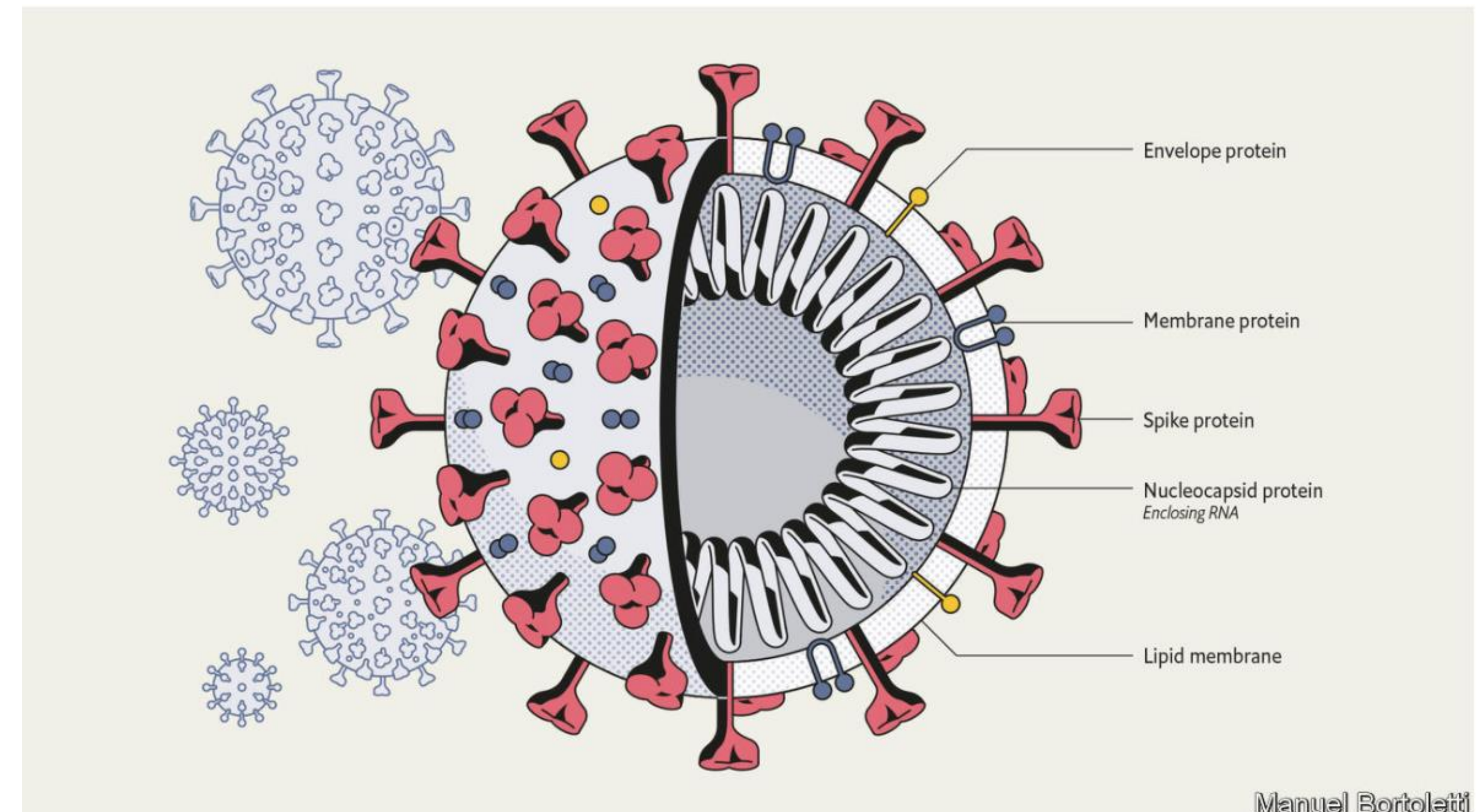


Atmos Air™ Bi-Polar Ionization Air Purification

Science & Mechanics

Bi-Polar Ionization generates → OH = Hydroxyl Radicals

- OH is one of the most powerful oxidizing agents
- Highly reactive with:
 - ✓ Dust particles & mold spores
 - ✓ Odors
 - ✓ VOC's
 - ✓ Viruses & bacteria including
 - Flu, SARS-1 & -2, MERS, MRSA, Staph & C-Diff



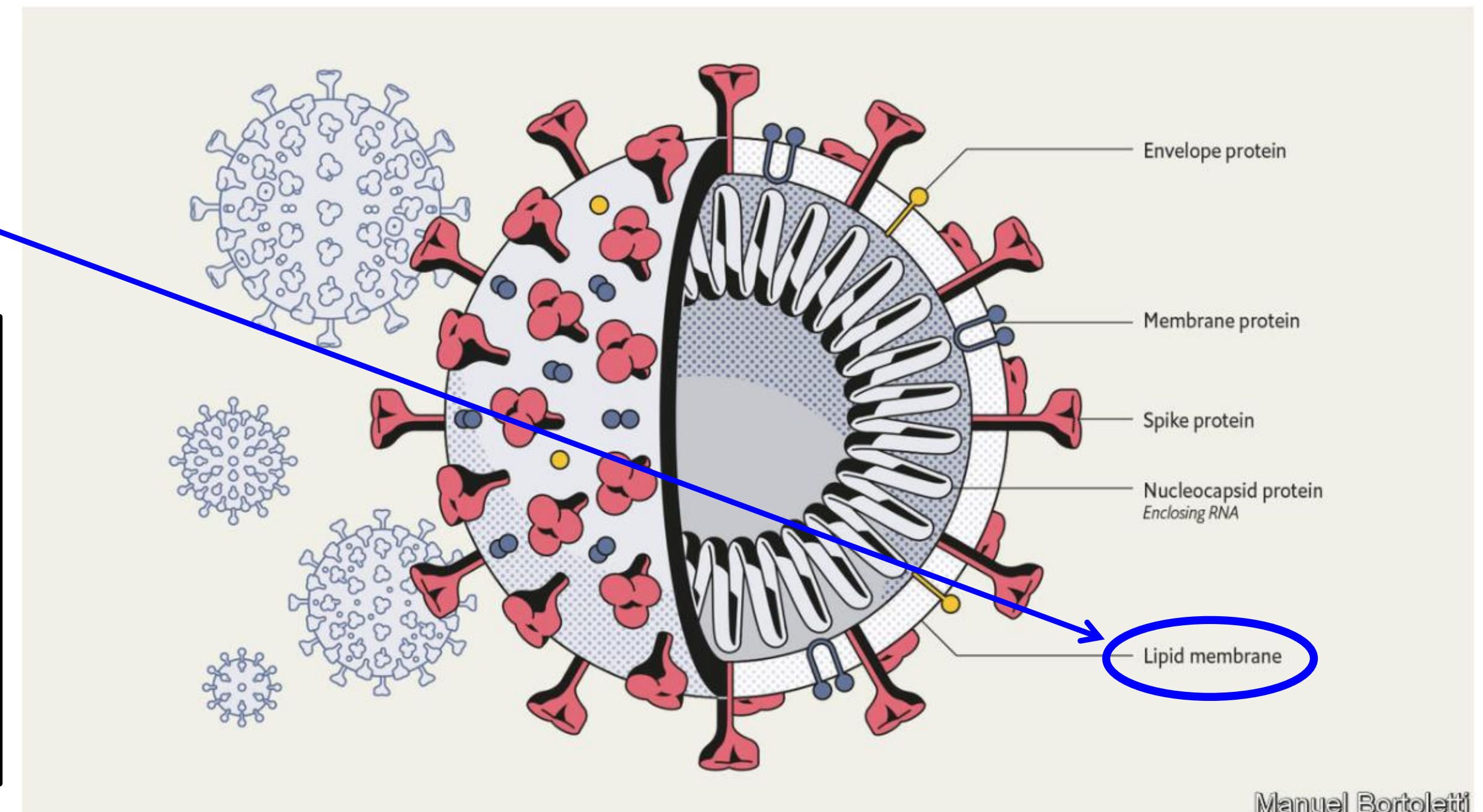
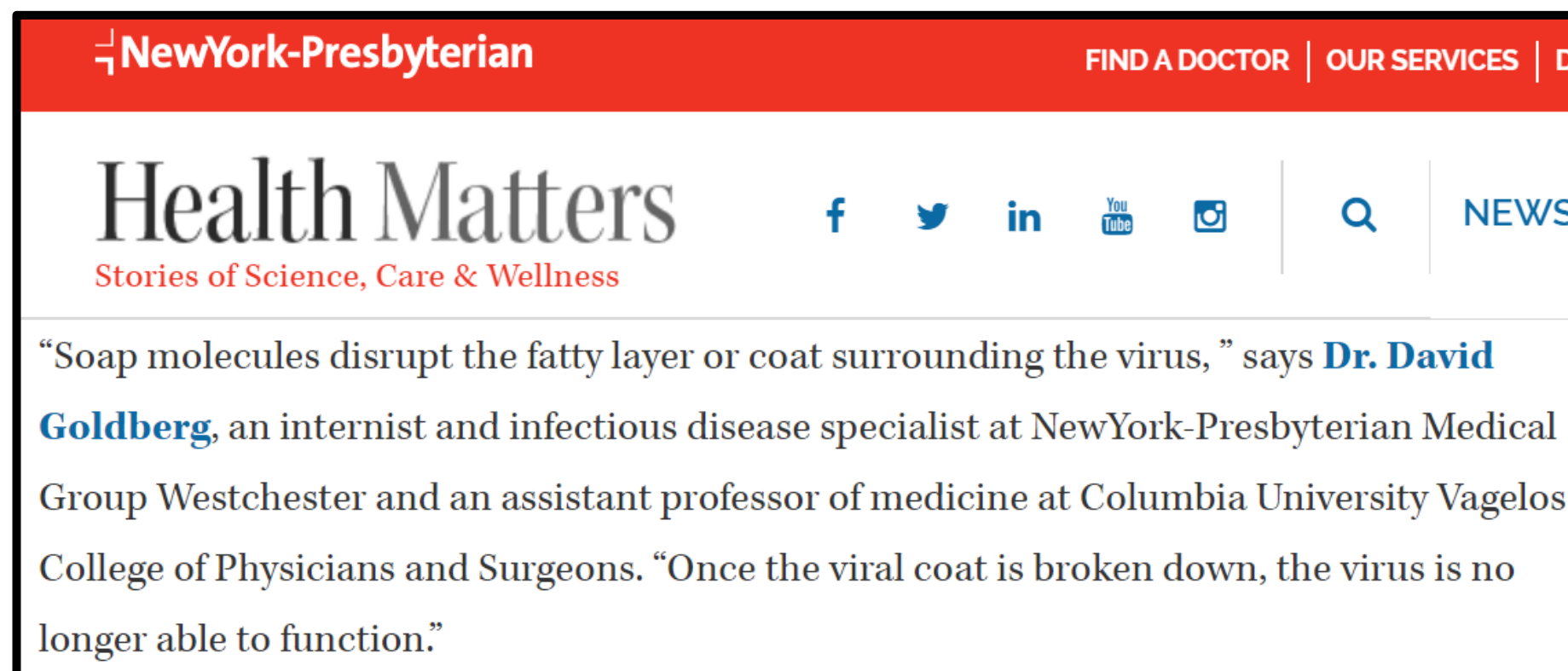
Air Quality
& Comfort

Atmos Air™ Bi-Polar Ionization Air Purification

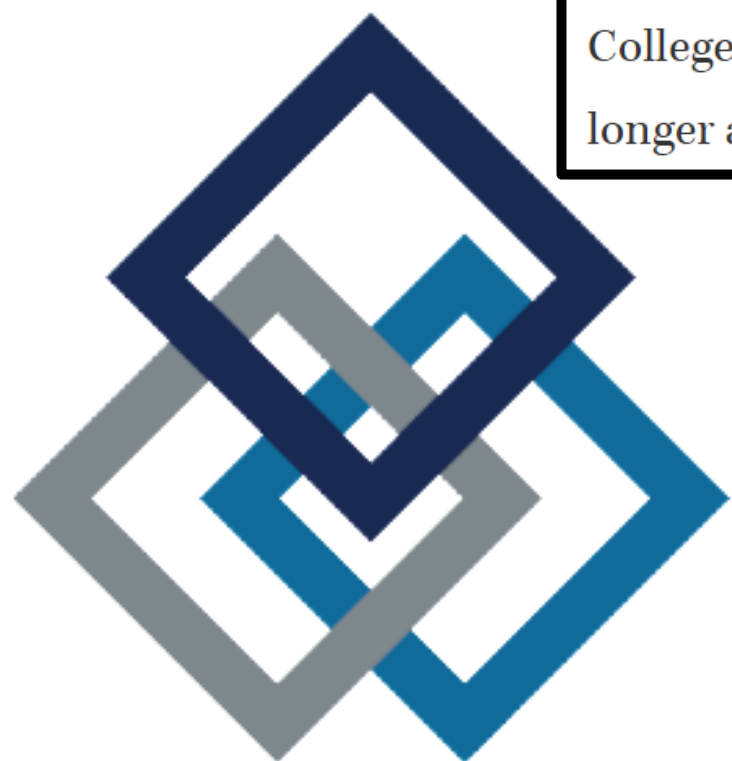
Science & Mechanics

Bi-Polar Ionization generates → OH = Hydroxyl Radicals

- Viruses are enveloped in RNA viral particles
- Handwashing is effective at breaking down the Lipid Membrane



(Source: [How Handwashing with Soap Kills Coronavirus- NewYork-Presbyterian \(nyp.org\)](#))



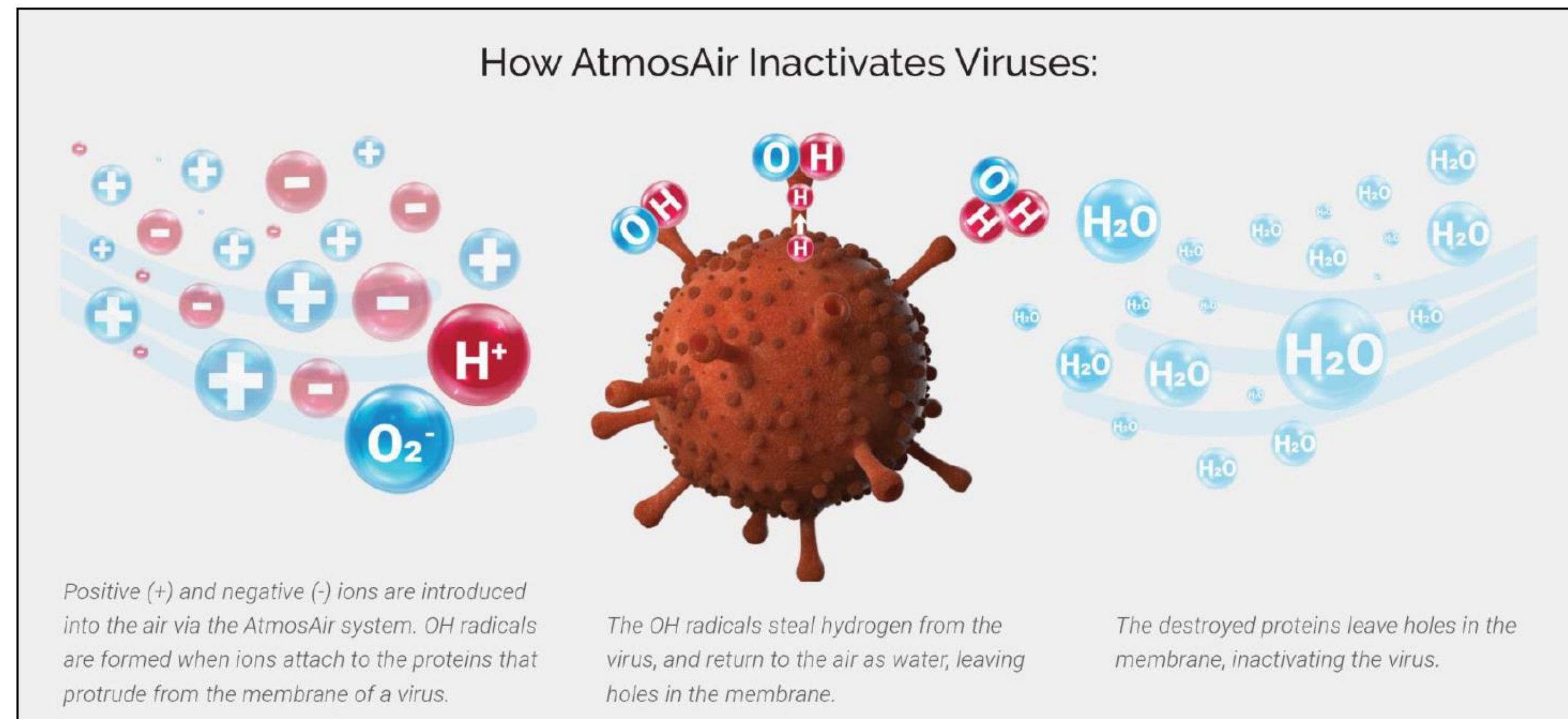
**Air Quality
& Comfort**

Atmos Air™ Bi-Polar Ionization Air Purification

Science & Mechanics

Bi-Polar Ionization generates → OH = Hydroxyl Radicals

- When Positive and Negative ions are introduced into the air, they attach to the Proteins Spikes that protrude from the virus
- The ions pull Hydrogen molecules away from the spikes and deactivate the virus. The virus can't infect even if it enters the body
- **OH + (stolen) H = H₂O = Water**



Air Quality
& Comfort

Atmos Air™ Bi-Polar Ionization Air Purification

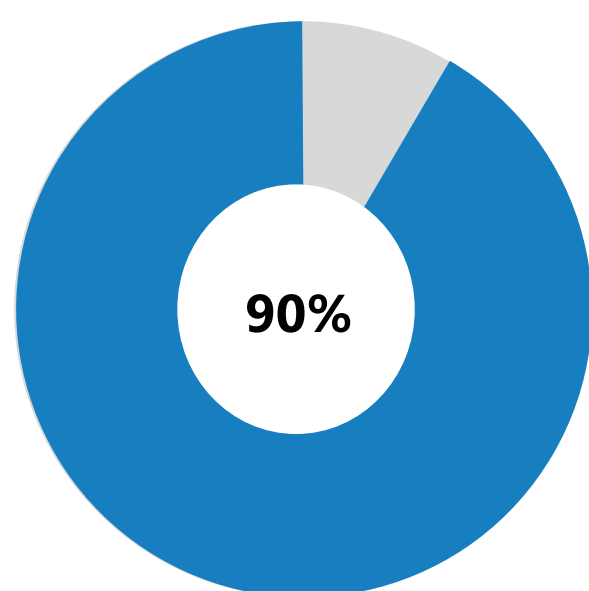
Effective Against More Than Viruses

When BPI Goes To Work

- Effective against:
 - ✓ Fungi & allergens
 - ✓ Dust particles & mold spores
 - ✓ Odors
 - ✓ VOC's
- And...BPI naturally reduces static electricity in the air!

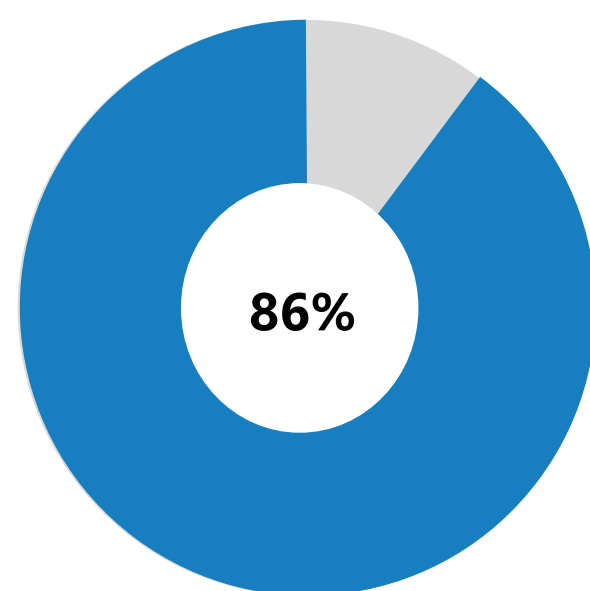


Air Quality
& Comfort



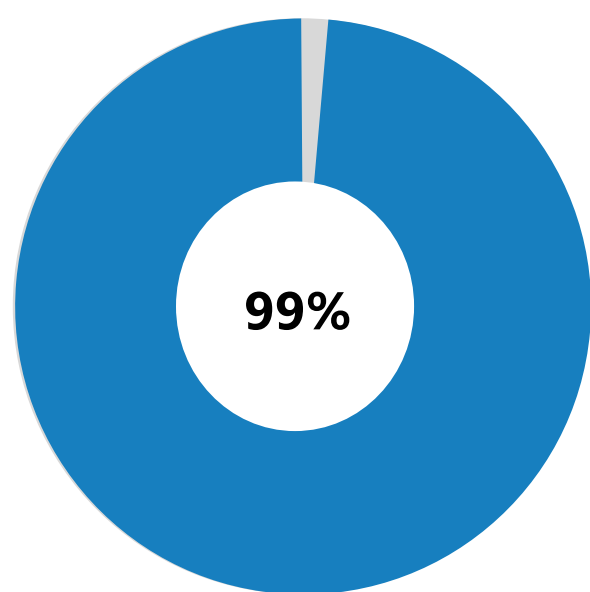
Reduction in
VOC's

Source: Univ. of Syracuse Testing 2019



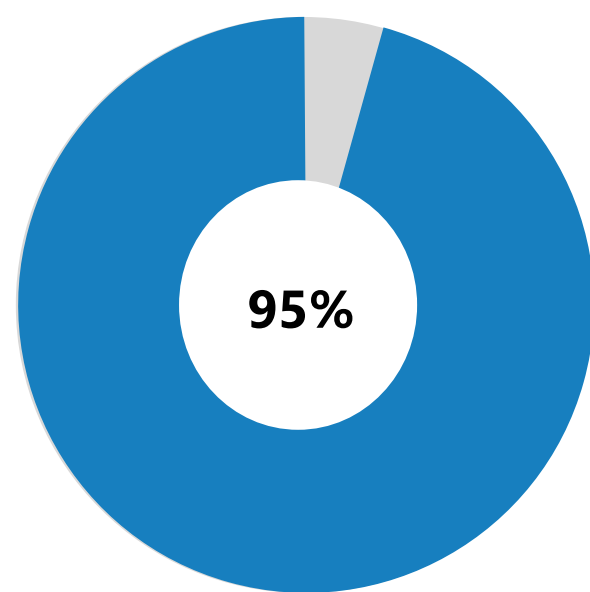
Reduction in
PM 0.3

Source: EDL CADR Testing



Reduction in
Staph & MRSA

Source: ATL Labs, 2016



Reduction in
MS2 Bacteriophage

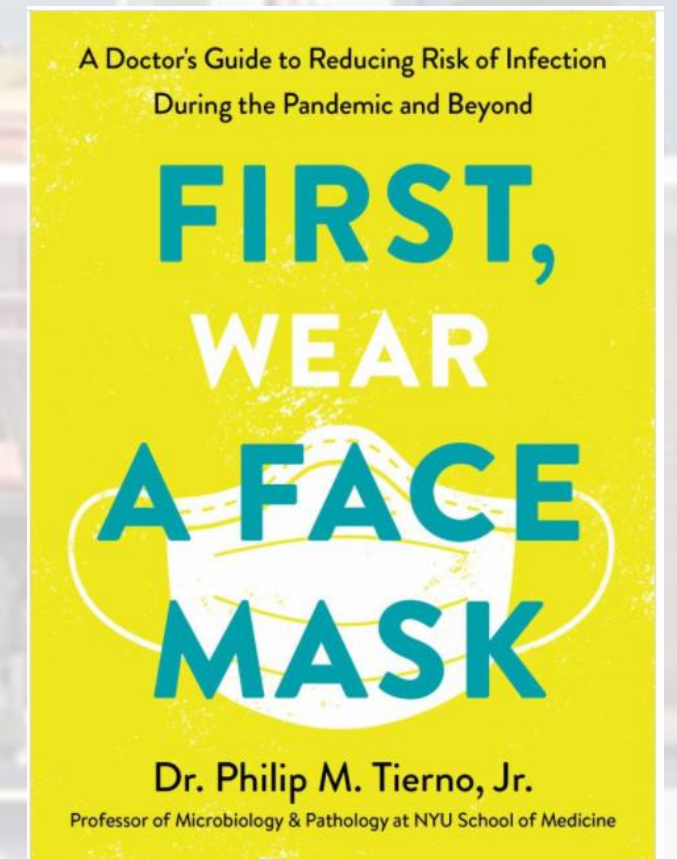
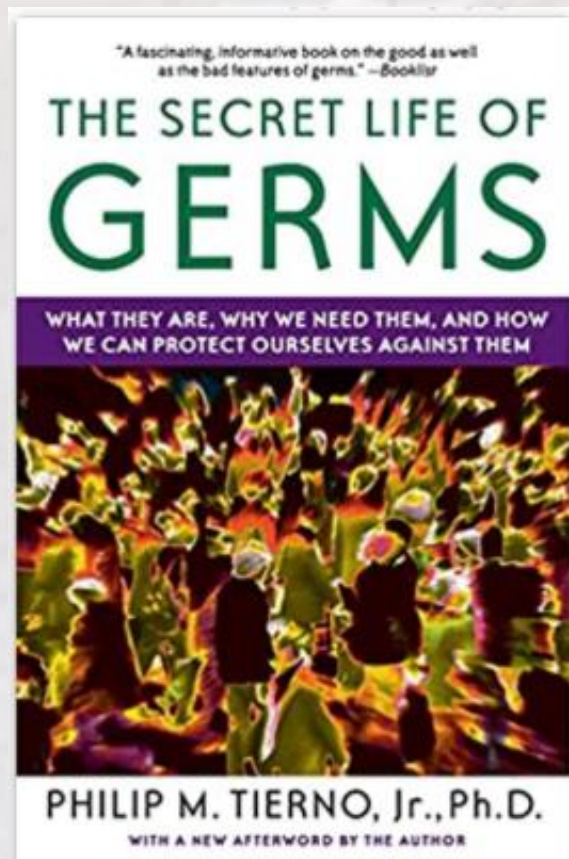
Source: ATL Labs, 2016

IN A STUDY LAST WEEK,
MICROCHEM LABORATORY,
FOUND THAT:

*The presence of
coronavirus was reduced
by **99.92% within 30
minutes** of exposure to
AtmosAir's bi-polar
ionization technology*

Science Behind AtmosAir™

Click Here to Take a Deep Dive!!



<https://www.youtube.com/watch?v=nB0QH8kaTv8>