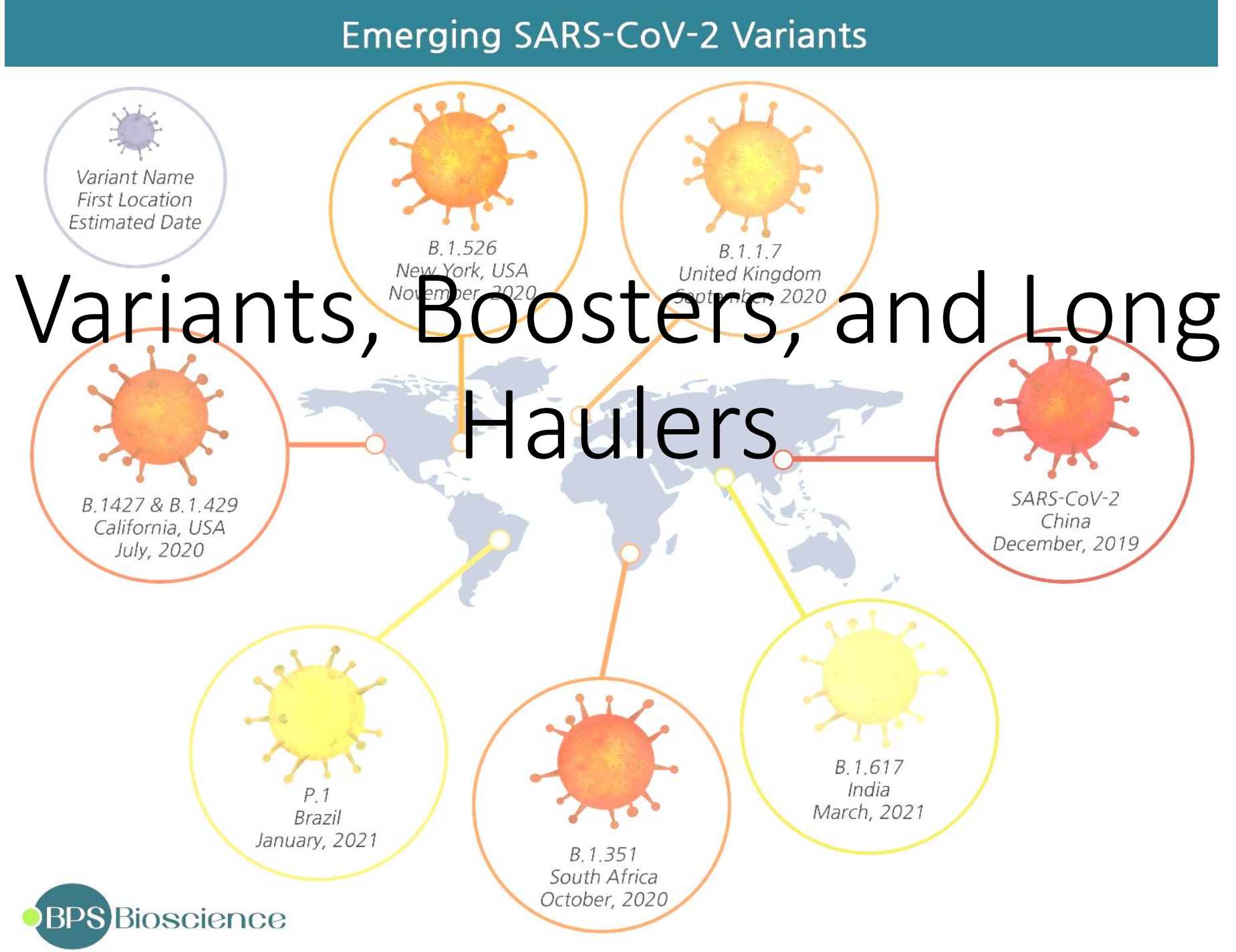
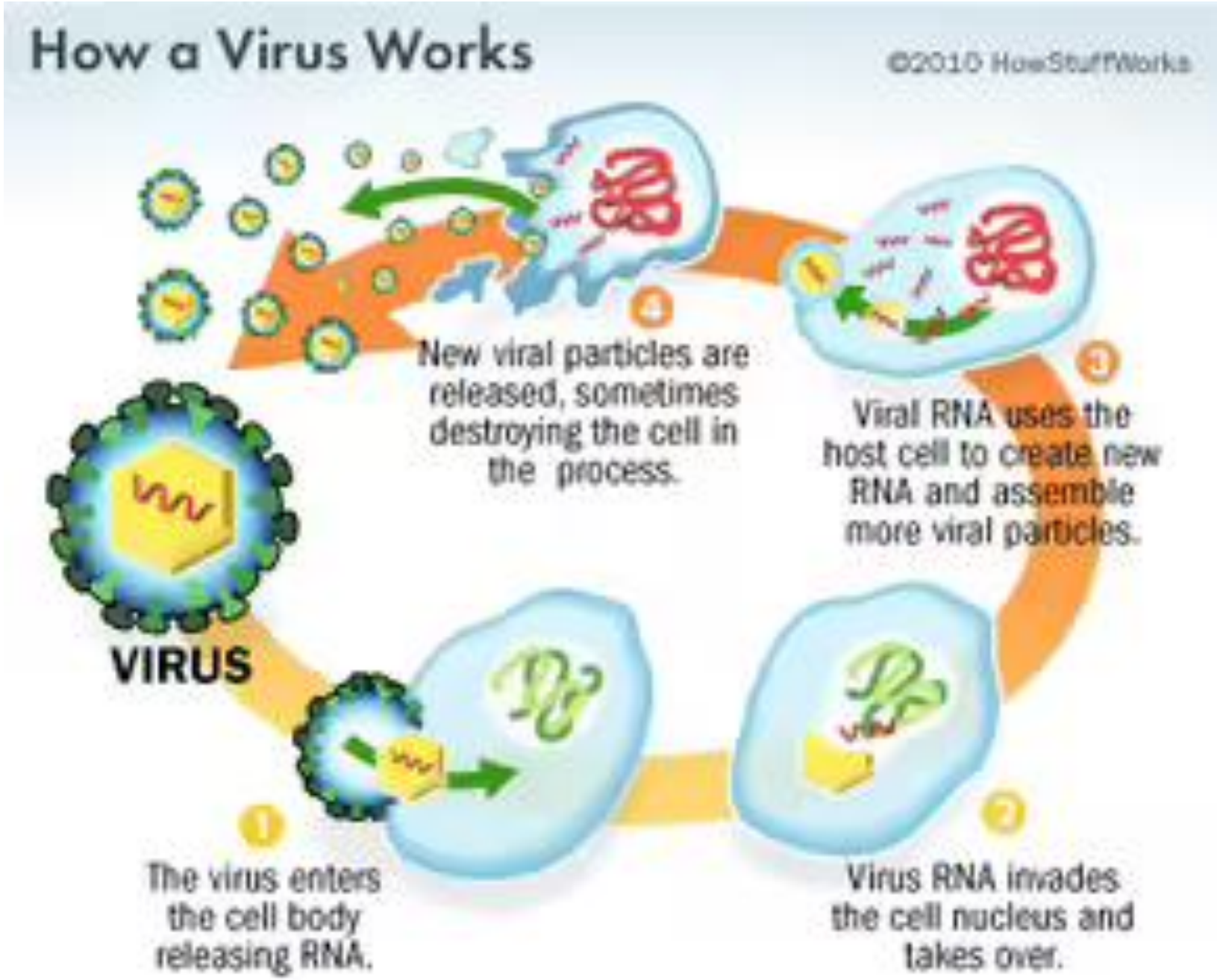


Variants, Boosters, and Long Haulers


How a Virus Works
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VIRUS
1
The virus enters the cell body releasing RNA.
2
Virus RNA invades the cell nucleus and takes over.
3
Viral RNA uses the host cell to create new RNA and assemble more viral particles.
4
New viral particles are released, sometimes destroying the cell in the process.

Definitions

- **Mutation:** A mutation refers to a single change in a virus's genome (genetic code).
  - Mutations happen very frequently, but only sometimes change the characteristics of the virus.
  - The world's longest Covid sufferer had the virus for nearly 11 months during which time it mutated 40 times, using her as a "*gym*" to get fitter, scientists have discovered.
  - Since it emerged in 2019, more than 1,500 mutations detected from time the SARS-CoV-2 emerged in China

- **Variant:** A variant is a viral genome (genetic code) that may contain one or more mutations.

Variants

- Many mutations don’t have any effect on the virus
  - Infectiousness
  - Symptoms
  - Outcomes
- Some mutations that can become a variant and may have affects on the virus, like being more infectious (Delta)
  - Some variants are “*of interest*”
  - Some variants are “*of concern*”
- The more people infected creates more opportunities for mutations and eventual variants to emerge

Variants of concern

Detected:
September 2020

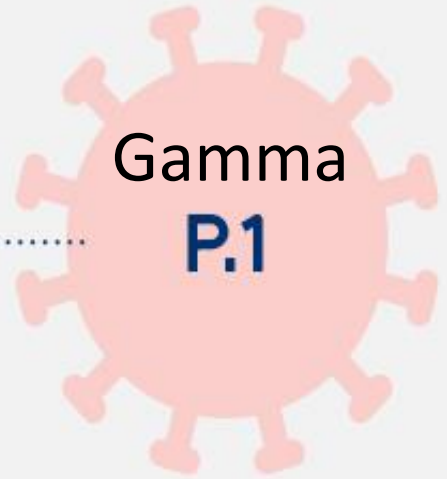
Location of first detection: UK

Why it's concerning:
Spreads more easily and could increase death rate

Detected:
August 2020

Location of first detection: South Africa

Why it's concerning:
Spreads more easily and some vaccines may be less effective against it



Detected:
December 2020

Location of first detection: Brazil

Why it's concerning:
Spreads more easily and some vaccines may be less effective against it

Detected:
October 2020

Location of first detection: India

Why it's concerning:
Early studies show it spreads more easily

Source: ecdc.europa.eu/en/publications-data/covid-19-infographic-mutations-current-variants-concern

SP-7328.21

Boosters

- A COVID booster shot is an additional dose of a vaccine given after the protection provided by the original shot(s) has begun to decrease over time.
- Typically, you would get a booster after the immunity from the initial dose(s) naturally starts to wane.
- The booster is designed to help people maintain their level of immunity for longer.
- MMR (Measles, Mumps, Rubella) 2 vaccinations
- DTaP (Diphtheria, Tetanus & acellular Pertussis) 5 vaccinations
- Hepatitis B 3 vaccinations

Who can get a third dose of a COVID-19 vaccine?

- Older adults and 50–64-year-old people with medical conditions
- Residents aged 18 years and older of **long-term care settings** should get a booster shot of Pfizer-BioNTech vaccine.
- People aged 18–49 years with **underlying medical conditions** may get a booster shot of Pfizer-BioNTech vaccine based on their individual benefits and risks.
- People aged 18–64 years at **increased risk for COVID-19 exposure and transmission because of occupational or institutional setting** may get a booster shot of Pfizer-BioNTech vaccine based on their individual benefits and risks.
- As always, if you are not sure, speak with your medical provider.

The Flu vaccine and Covid Vaccine

- Influenza season has started and will run into May 2022.
- Recommendation is to be vaccinated by the end of October 2021
- Yes, the COVID-19 vaccine and the Influenza vaccine can be administered at the same time
  - Different injection sites

Long Covid

One of the first studies

- In the first study, the *Lancet's* analyzed survey responses from 3,762 COVID-19 survivors from 56 countries who still had symptoms 28 days after becoming ill.

- **Affected organ systems included:** systemic; neuropsychiatric; cardiovascular; dermatologic; gastrointestinal; pulmonary and respiratory; immunologic and autoimmune; musculoskeletal; reproductive, genitourinary, and endocrine; and head, ear, eye, nose, and throat.
- Basically, every organ and system in the body can be affected by covid

Signs and Symptoms

- After 6 months, the most common symptoms included:
  - fatigue,
  - malaise after exertion,
  - cognitive problems, or "*brain fog*“ which affected about 88%

- A 33-50% of respondents reported:
  - insomnia and other sleep problems
  - heart palpitations and rapid heartbeat,
  - muscle aches and joint pain,
  - shortness of breath, and dizziness and vertigo.

- Overall, 85.9% of participants had relapses,
- Triggered by exercise, physical or mental activity, and stress
- 86.7% reported fatigue
- **Nearly a third** of those patients had no symptoms during their original infection.
- A **study from the University of Washington** published in February found that 32.7% of COVID-19 **outpatients** developed long-haul symptoms
- 31.3% of hospitalized patients became long haulers.

Other issues

- Mental health problems can arise from grief and loss, unresolved pain or fatigue, or from post-traumatic stress disorder (PTSD) after treatment in the intensive care unit (ICU).
- Some are minor, but other people may need continuing care and even readmission to the hospital.
- Researchers found that after infection, the insulin-producing cells of the pancreas started acting strangely.
  - Leaving some with diabetes

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