



Hosted by Lydia Missaelides

**January 27, 2021**  
**10:30 am - 12:00 pm**

**Understanding How COVID-19 Vaccines Work,  
Why They are Safe, and  
Dispelling Common Myths**



Made possible by a grant from  
Archstone Foundation



# The 2021 Webtalk + Vision Team – Thank you!

---

- **Lin Benjamin**, CA Dept of Aging
- **Raenika A. Butler**, Bayview Senior Services ADHC
- **Ellen Han**, Well and Fit ADHC
- **Lena Haroutunian**, New Sunrise ADHC
- **Sarah Holley**, Americare ADHC Center
- **Jennifer A Hurlow-Paonessa**, The Neighborhood House Association ADHC Center
- **Aida Khrimian**, New Sunrise
- **Nancy Keegan**, Senior Focus Mills-Peninsula Medical Center
- **Kay Lee**, Commonwealth ADHC
- **Richard Lee**, Beverly ADHC
- **Dawn E. Myers**, Yolo Adult Day Health
- **Kristina Lugo**, Avenidas Rose Kleiner Center
- **Renee Nashtut**, TurboTAR
- **Denise Peach**, CA Dept of Aging
- **Diane Puckett**, Peg Taylor Center for ADHC
- **Celine A. Regalia**, Collabria Care
- **Lois Sones**, Elderday ADHC
- **Jill Sparrow**, CA Dept of Aging

# Jan. 13, 2021 Webtalk Evaluation: 4.7!

1. Thanks to all organizers and speakers!
2. Excellent information, guidance and inspiration as always.
3. I like that the webinars are current and relevant. I have enjoyed many of them. Thank you.
4. Thank you for the information!
5. Thanks for all you do!
6. Great webinar again! Thank you all! We will miss Christin a lot! Have our best wishes on your career! Take care and continue to help us whenever you can! Thank you!
7. Congratulations Christin! God bless you on your new leadership role. Thank you for always responding to my emails. Thank you CAADS/ALE for another learning opportunity. I always look forward to the webinar. Thank you Lydia for always being pleasant and for your sincere, contagious smile.
8. Thank you for always bringing us up to date relevant information!
9. Very good!
10. Very informative and timely. Great!
11. Lydia, it's so nice to have you continuing to host the CAADS webinars. Your continued acknowledgement of our daily challenges really helps us remember that we're all in this together, experience the same things through the pandemic.

12. CAADS is doing a great job in having topics that are current and relevant to the work that we all do. Thank you.
13. Congratulations to Christin on her promotion. I'm excited for her! Best wishes and God bless! Thank you so much for your service to CAADS!!!
14. Great job!
15. I felt that the information was good. The portion on the budget felt too fast to me. It was difficult to follow while taking notes.
16. Thank you
17. Thank you Lydia and ALE & CAADS Team for doing great work and keeping us all updated on the regular.
18. Holding my breath with all the generally positive news!
19. Great Summary of Budget funding and Vaccine rollout information! Very much appreciated. Thank You!!
20. Very interesting
21. Thank you for all of your hard work throughout this time.
22. Great webinar as always
23. Terrific overview of the FY22 state budget. Vaccine rollout varies from county to county, so hearing some CBAS staff and participants are being vaccinated and others haven't had the opportunity yet creates some anxiety and frustration.

# Agenda

---

- I. Welcome and Overview
- II. COVID-19 Vaccines and How They Work
- III. Safety and Myths
- IV. Calendar
- V. Thought for the Week

# Featured Presenters

---

**Dawn Myers, MSW, Program Director, Yolo Adult Day Health Care**

**Angelina Crans Yoon, MD, Dignity Health Woodland Clinic Medical Group**

# Ask an Immunologist about mRNA COVID vaccines

Angelina Crans Yoon, M.D.

Allergy/Immunology

Woodland Clinic Medical Group

1/27/2021

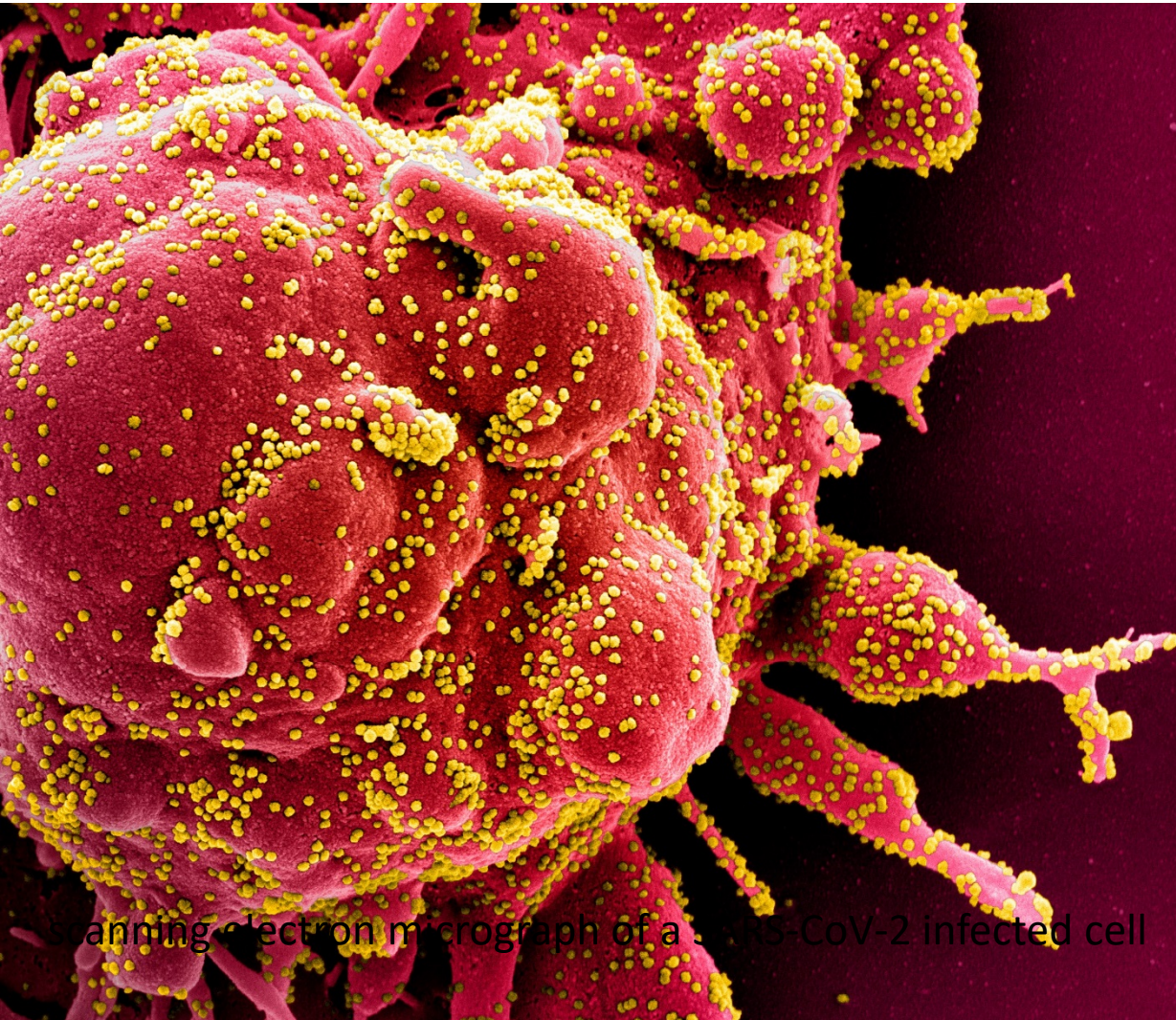


**Dignity Health**  
**Medical Foundation**™

# Outline

---

- Basics of cell biology
- How the mRNA COVID vaccines work
- Common questions
- Myths
- Q&A



Scanning electron micrograph of a SARS-CoV-2 infected cell

# Cells: how do they work?

- Cells are the basic building blocks of all living things.
- The human body is composed of trillions of cells.
- They provide structure for the body, take in nutrients from food, convert those nutrients into energy, and carry out specialized functions.
- Cells also contain the body's hereditary material and can make copies of themselves.

# Cytoplasm

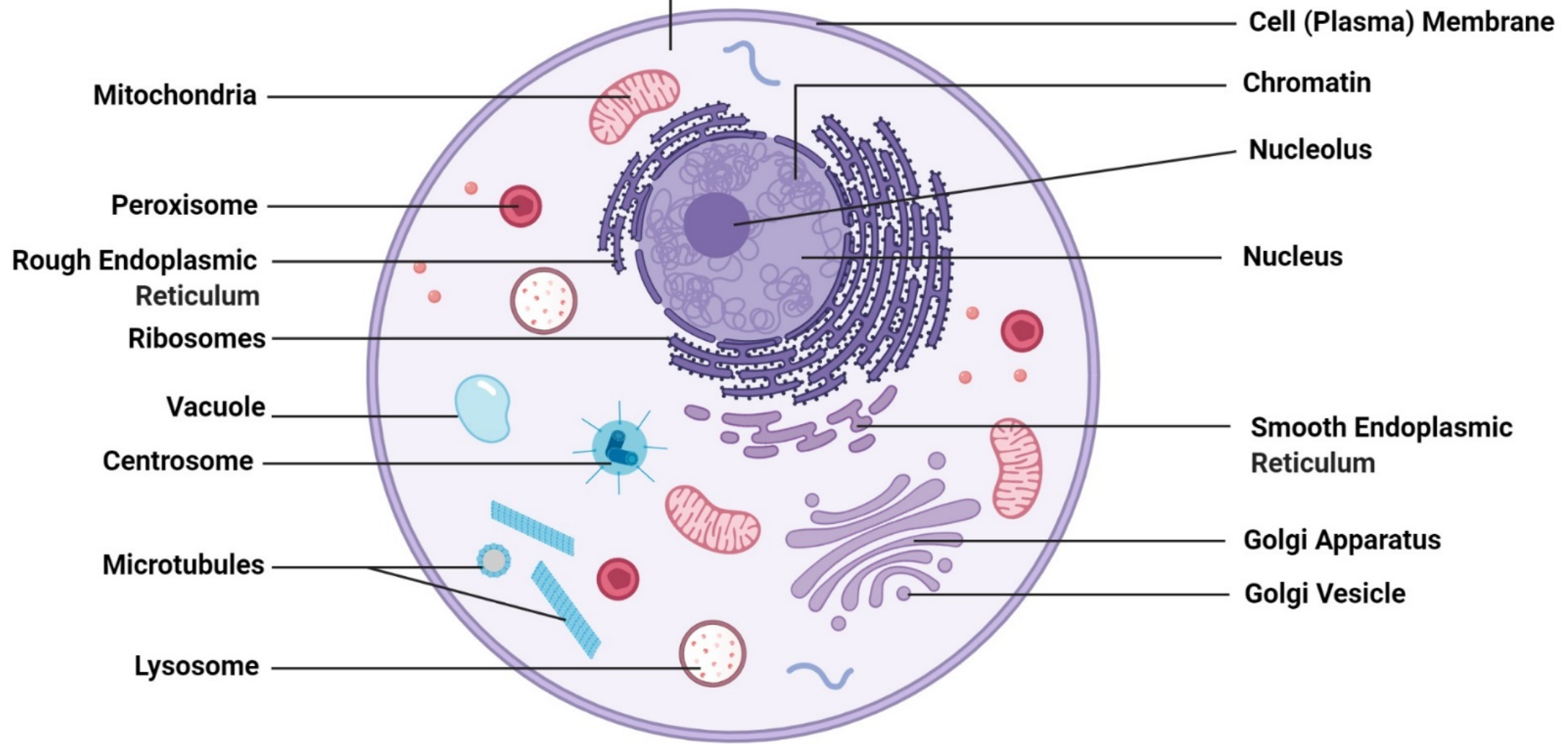


Figure: Animal Cell Structure with Cytoplasm, Image Copyright © Sagar Aryal, [www.microbenotes.com](http://www.microbenotes.com)

# Cytoplasm

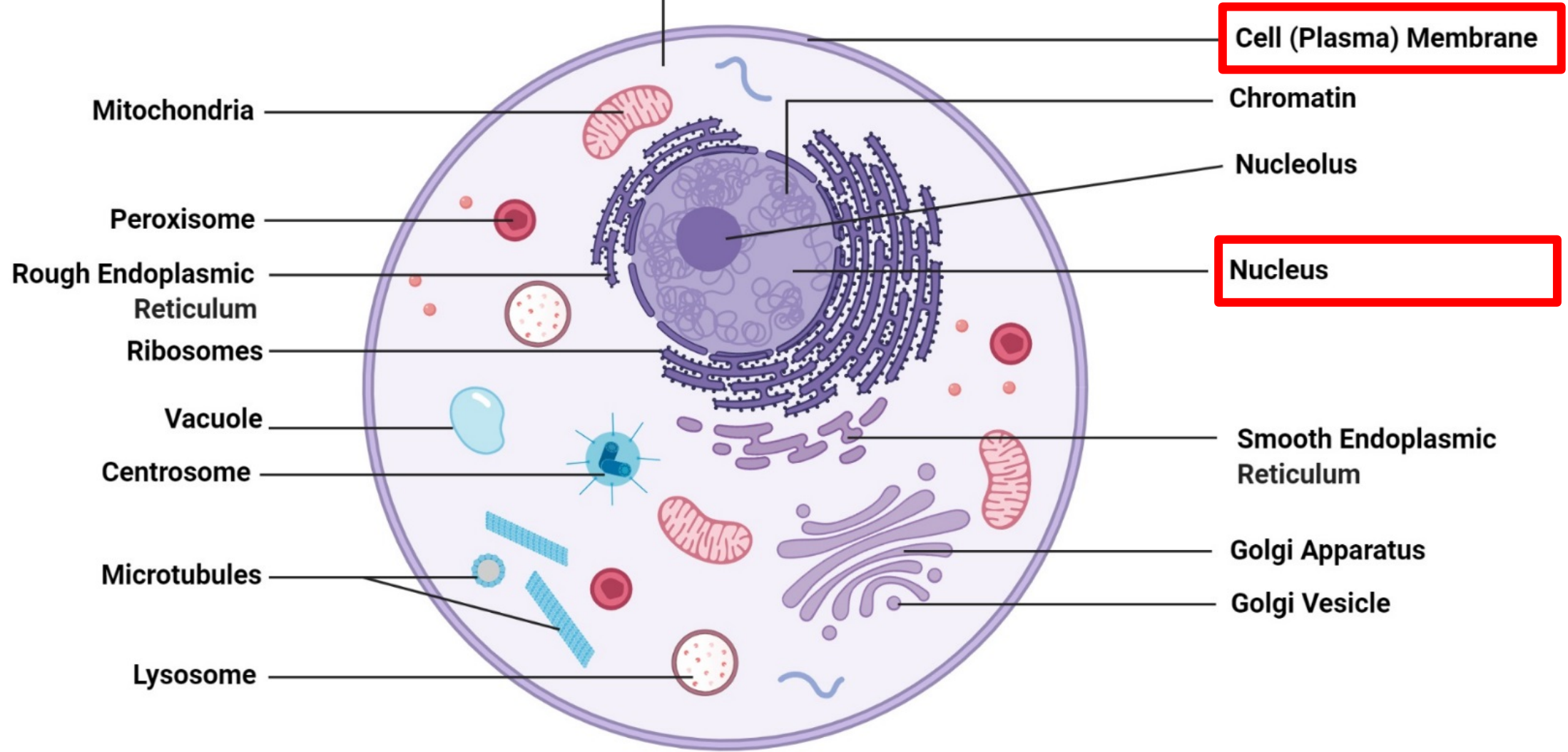


Figure: Animal Cell Structure with Cytoplasm, Image Copyright © Sagar Aryal, [www.microbenotes.com](http://www.microbenotes.com)

# Cytoplasm

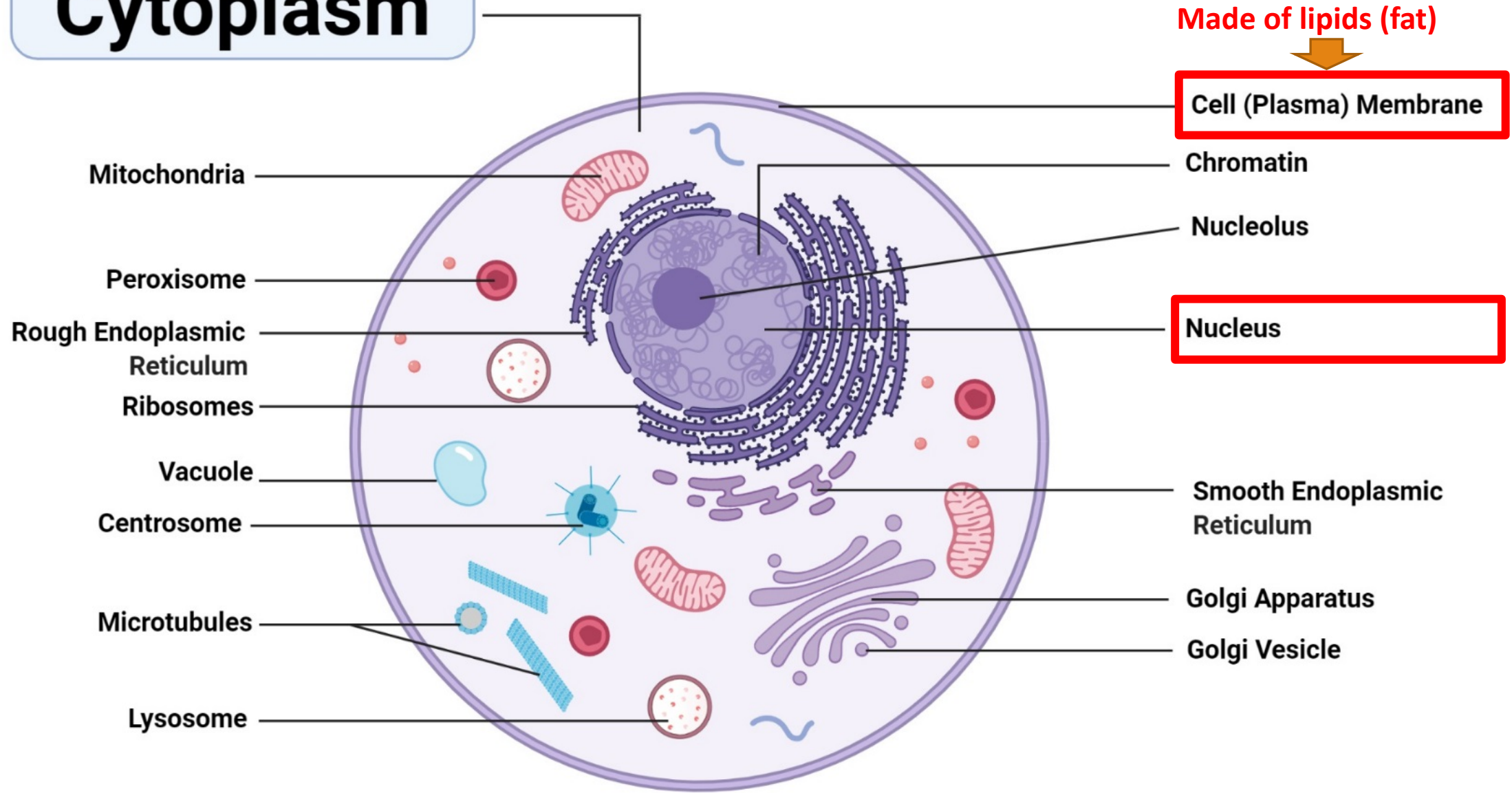
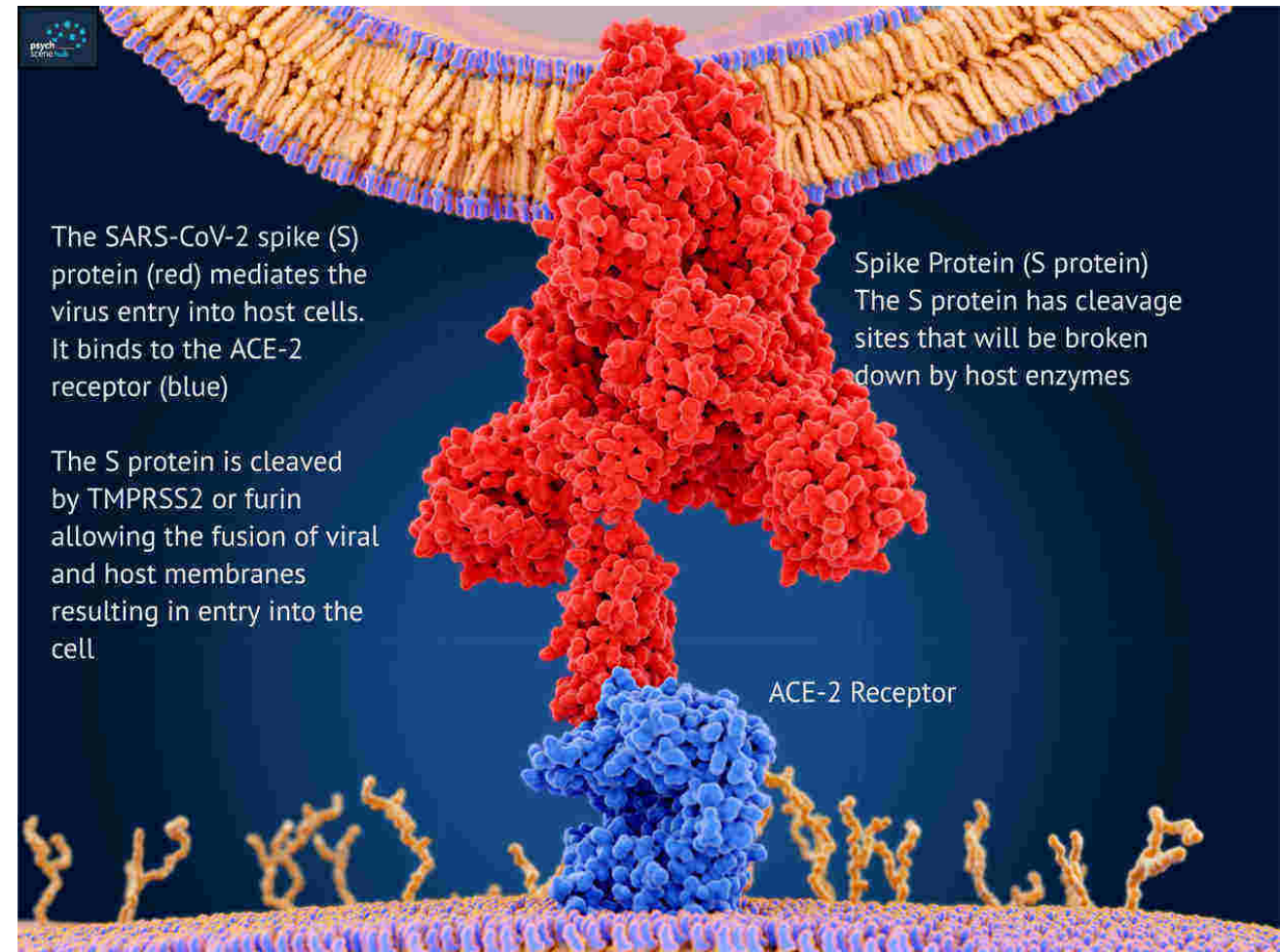


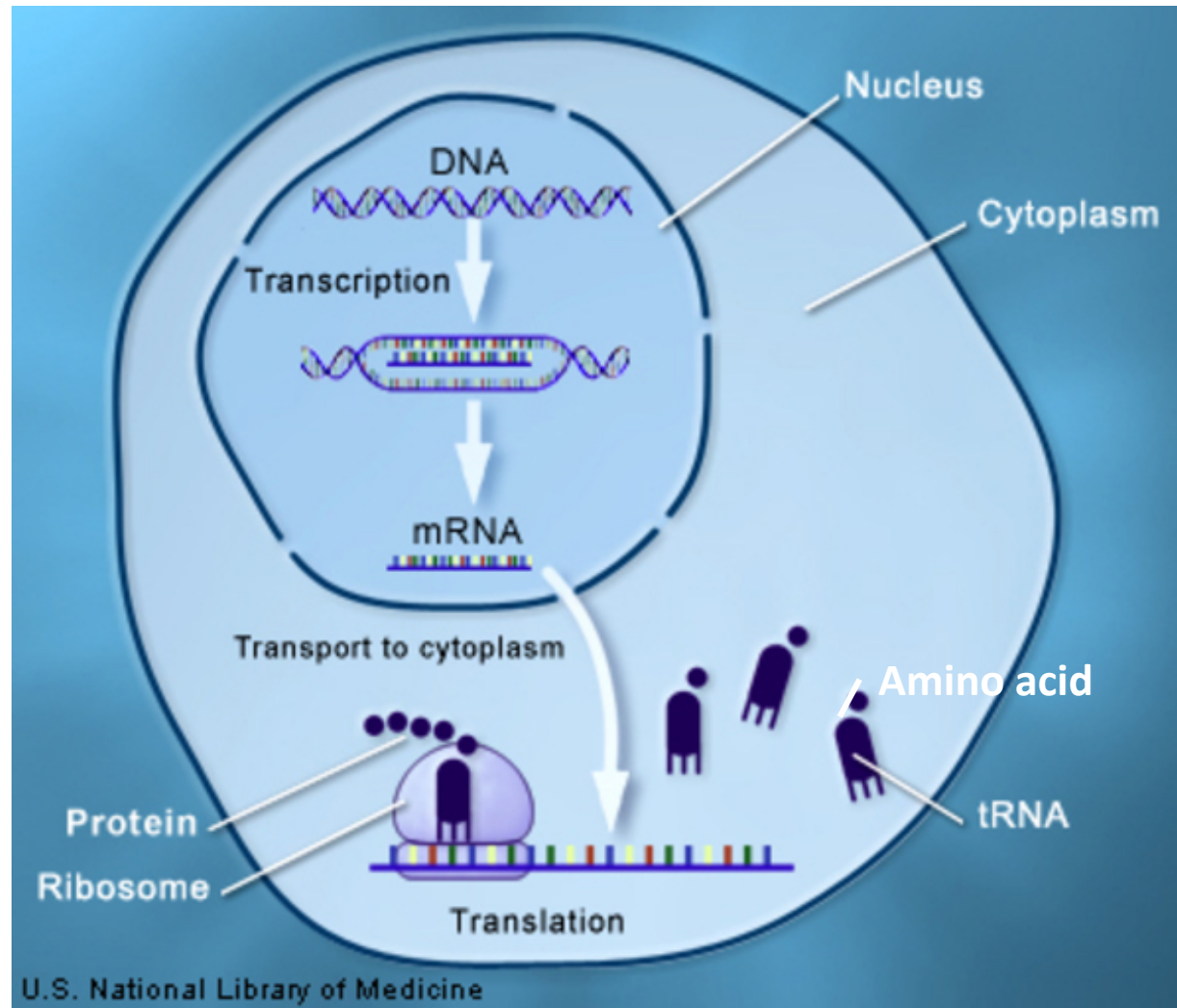
Figure: Animal Cell Structure with Cytoplasm, Image Copyright © Sagar Aryal, [www.microbenotes.com](http://www.microbenotes.com)

# What are proteins and what do they do?

- Proteins are large, complex molecules that play many critical roles in the body.
- They do most of the work in cells
  - required for the structure, function, and regulation of the body's tissues and organs.
- Proteins are made up of hundreds or thousands of smaller units called amino acids, which are attached to one another in long chains.
- There are 20 different types of amino acids that can be combined to make a protein.
- The sequence of amino acids determines each protein's unique 3-dimensional structure and its specific function.



# How does a cell make a protein?



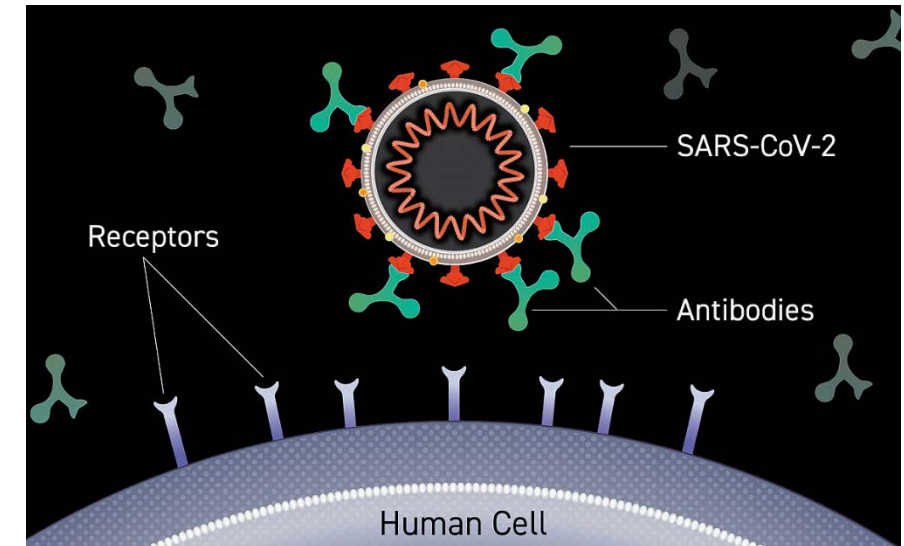
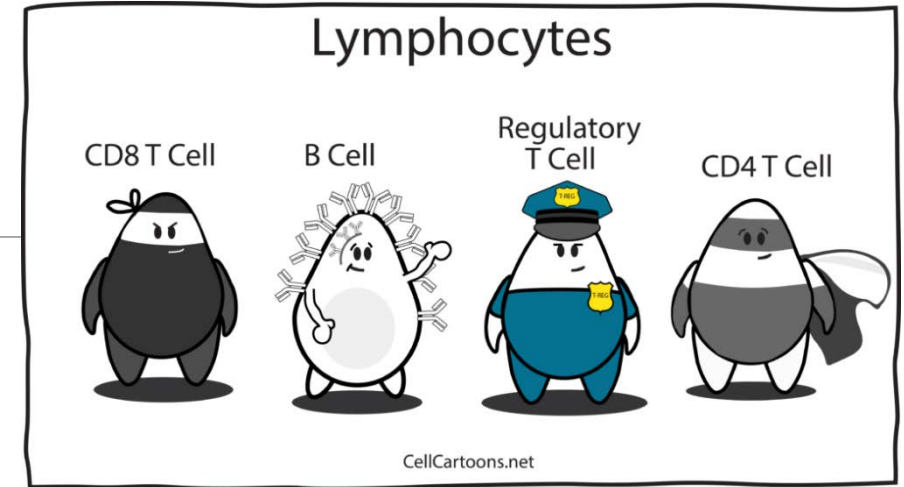
# Your Immune System

## Innate:

- Barriers: skin, mucosal surface (eyes, nose, mouth)
- Defense mechanisms: mucus, gastric acid
- Immediate: circulating proteins and cells in the body which directly attack invaders (complement system, macrophages)-no memory

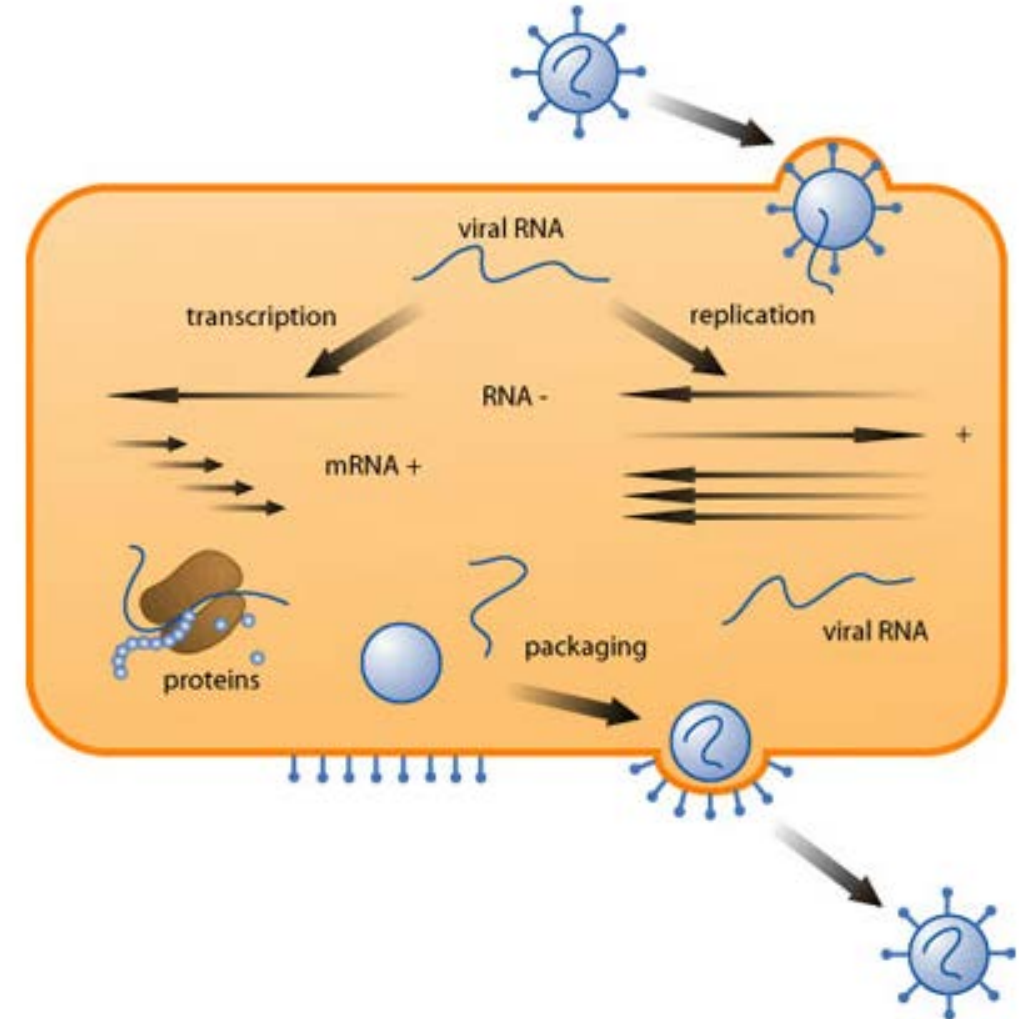
## Adaptive:

- Has memory, is able to learn
- T-cells: helper (CD4) and killer (CD8) T cells: sound the alarm and kill infected cells
- B-cells: make antibodies which circulate and bind to antigens, inactivating them and tagging them for destruction
- **Vaccines use your natural adaptive immune response**



# What happens during a viral infection?

- Virus enters your body and the viral particle attaches to a cell
- The virus opens up and its genetic information (usually RNA) enters your cell
- Your cell's machinery reads the RNA and makes the proteins
- These viral proteins assemble into new viruses
- Once enough viruses assemble, the cell dies and over 10,000 new viruses are released into the body to infect other cells
- The immune system recognizes the viral proteins on the cell surface and sounds the alarm, and tries to kill the virus infected cells before it releases all the viruses.
- SARS-CoV-2 also has other proteins it which help it to evade the immune system and cause many of the other symptoms



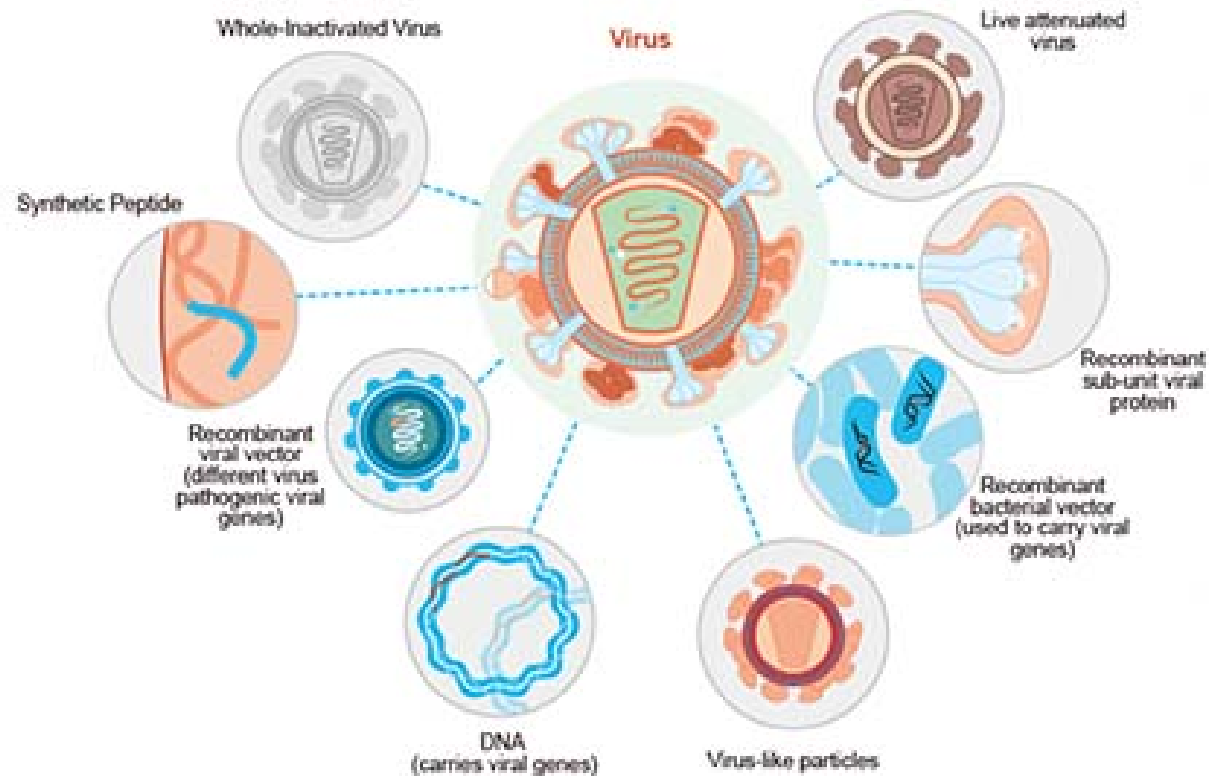
# What are Vaccines?

- Vaccines contain the same germs that cause disease
  - but killed or weakened to the point that they don't make you sick.
- Some vaccines contain only a *part* of the disease germ.
- A vaccine stimulates your immune system to produce antibodies, exactly like it would if you were exposed to the disease. After getting vaccinated, you develop immunity to that disease, without having to get the disease first.
- This is what makes vaccines such powerful medicine. Unlike most medicines, which treat or cure diseases, vaccines *prevent* them.

Edward Jenner: first vaccine 1796



# Types of Vaccines



## Live attenuated (LAV)

- Tuberculosis (BCG)
- Oral polio vaccine (OPV)
- Measles
- Rotavirus
- Yellow fever

## Inactivated (killed antigen)

- Whole-cell pertussis (wP)
- Inactivated polio virus (IPV)
- Influenza

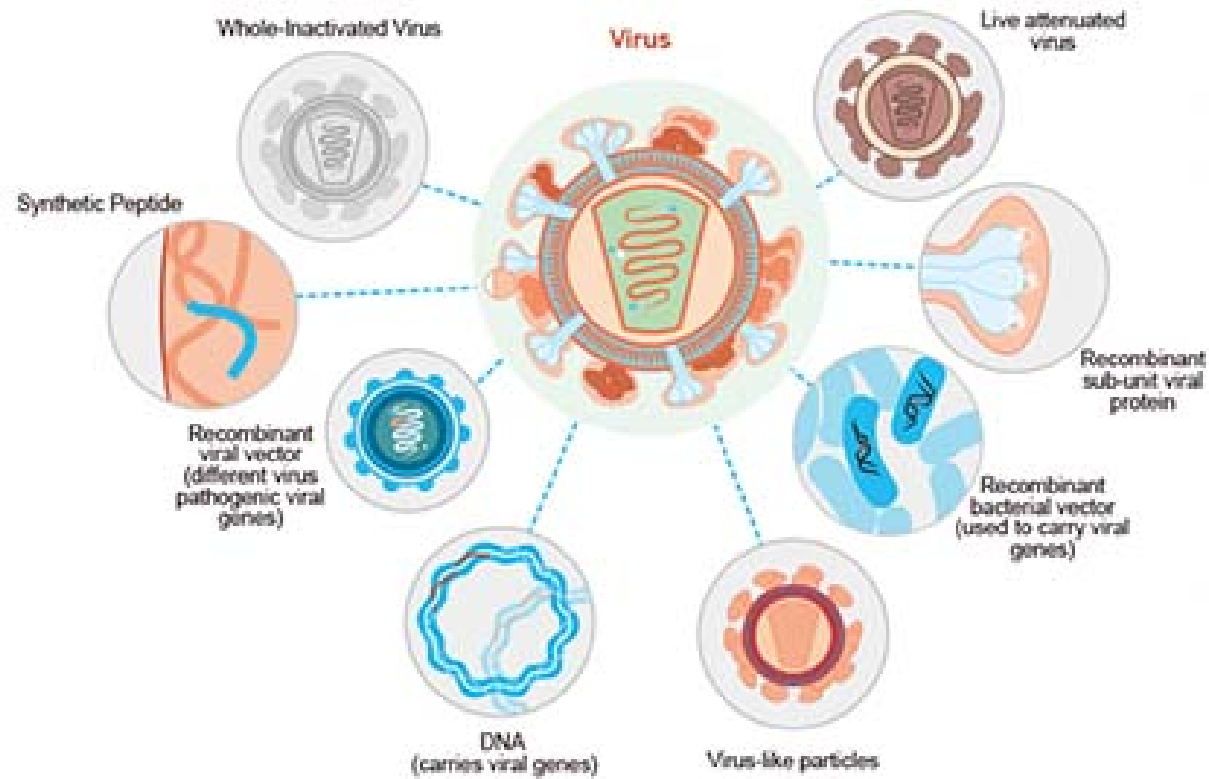
## Subunit (purified antigen)

- Acellular pertussis (aP).
- *Haemophilus influenzae* type B (Hib).
- Pneumococcal (PCV-7, PCV-10, PCV-13)
- Hepatitis B (HepB)

## Toxoid (inactivated toxins)

- Tetanus toxoid (TT).
- Diphtheria toxoid

# Types of Vaccines



## Live attenuated (LAV)

- Tuberculosis (BCG)
- Oral polio vaccine (OPV)
- Measles
- Rotavirus
- Yellow fever

## Inactivated (killed antigen)

- Whole-cell pertussis (wP)
- Inactivated polio virus (IPV)
- Influenza

## Subunit (purified antigen)

- Acellular pertussis (aP).
- *Haemophilus influenzae* type B (Hib).
- Pneumococcal (PCV-7, PCV-10, PCV-13)
- Hepatitis B (HepB)

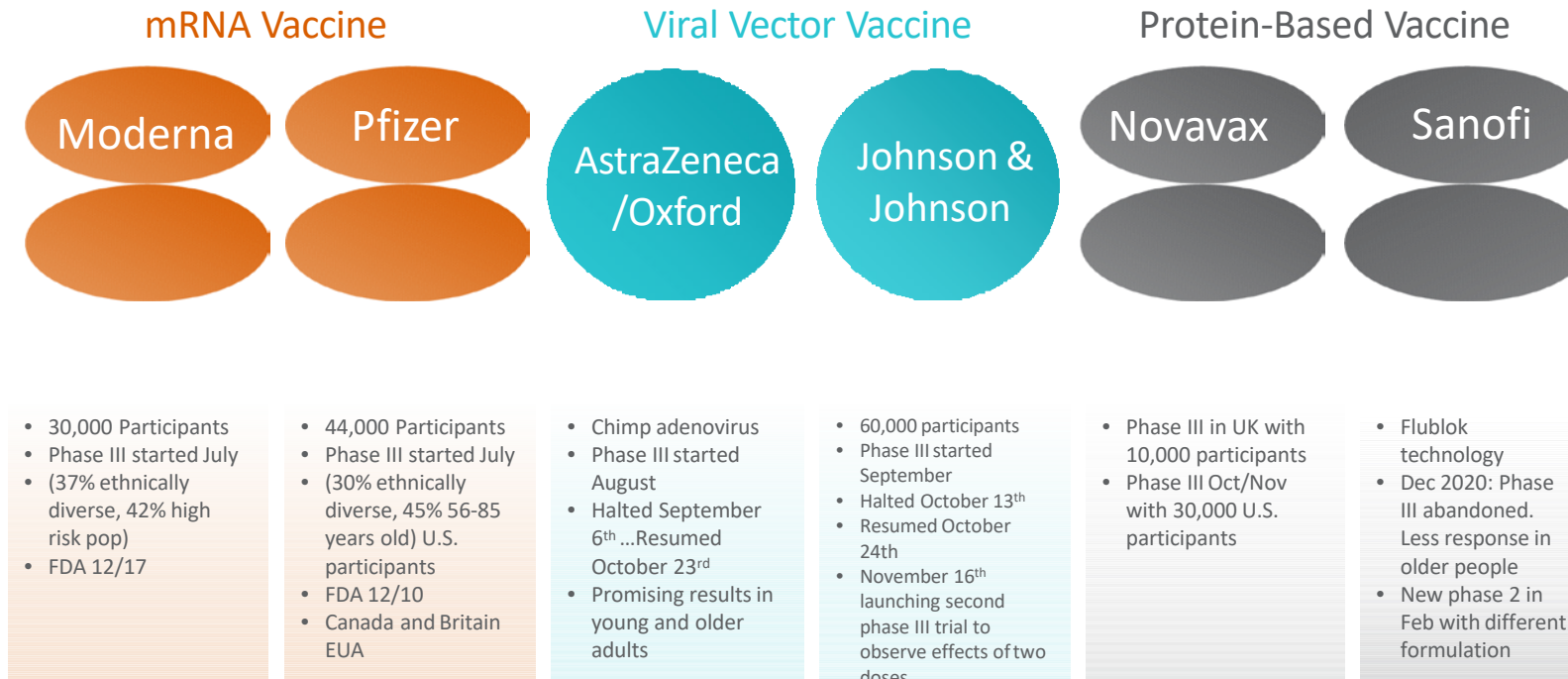
## Toxoid (inactivated toxins)

- Tetanus toxoid (TT).
- Diphtheria toxoid

mRNA

# Six COVID-19 Vaccines

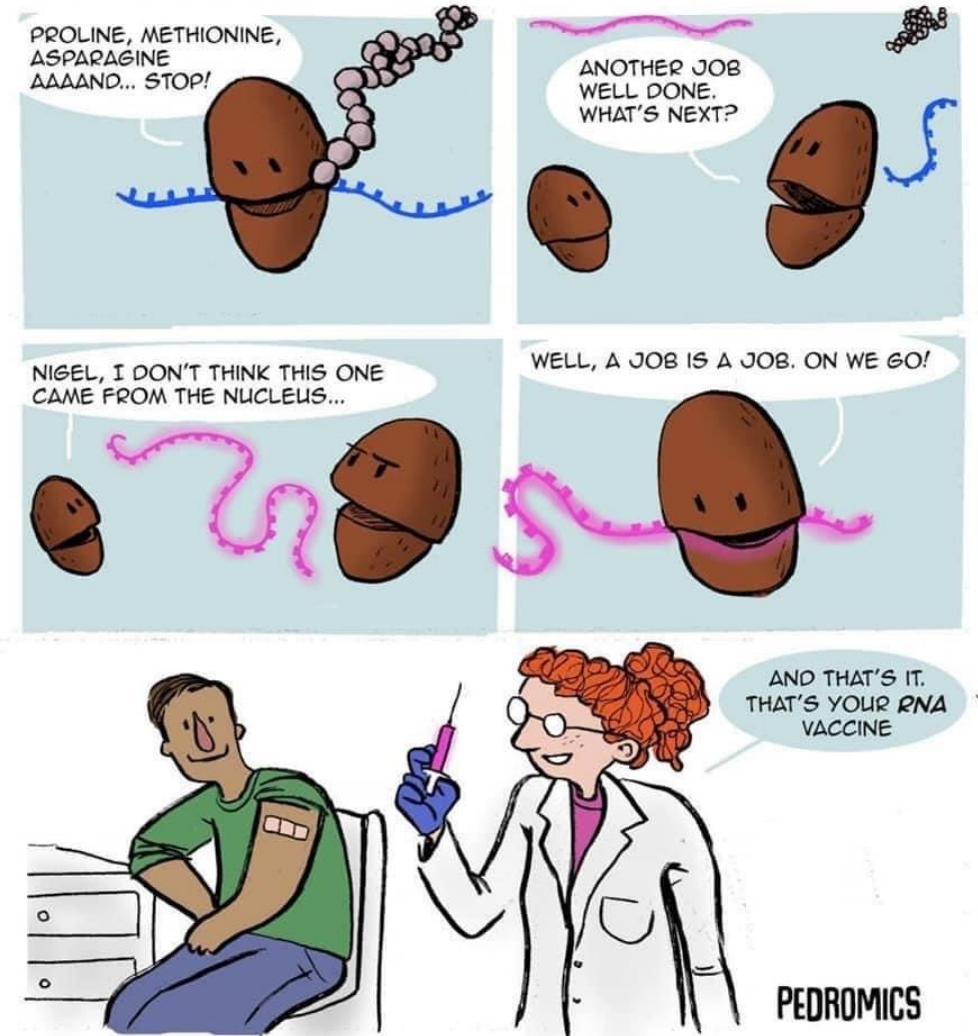
<http://www.dhmf.org/vaccintrial>



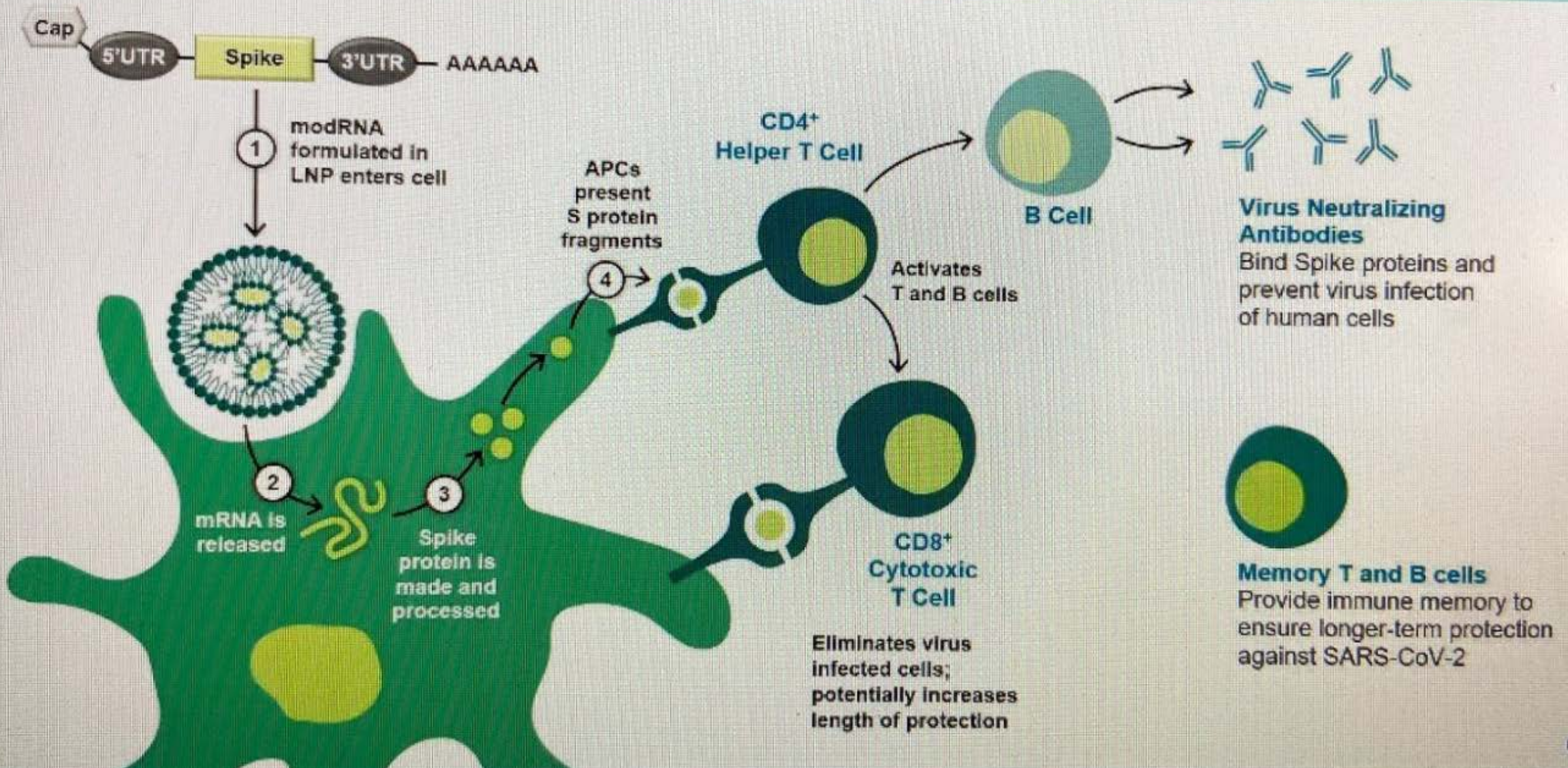
- Carry the **genetic instructions** for the host's cells to make the antigen, which more closely mimics a natural infection
- Subunit vaccine, more traditional approach

# How does an mRNA vaccine work?

- Delivery of mRNA-coded genetic information as blueprint for vaccine into cells
- mRNA uptake into muscle and local immune cells results in protein synthesis
- mRNA stimulates immune system of vaccinated individual, generating immune response to the viral protein
- mRNA is then degraded quickly by the cell (minutes to hours). It is gone by 24 hours
- The spike protein peaks at 48 hours and is gone by 72 hours in the body
- “Snapchat” for the immune system



# Mode of Action of the BNT162 Vaccine Candidates



# How effective are these vaccines?

Every vaccine trial has 2 groups- one who gets the vaccine and one who doesn't (they get a placebo). Then they count up who gets sick

## **Pfizer:**

18,000 people RECEIVED the vaccine: **8** got Covid

18,000 people DIDN'T GET the vaccine: **162** got Covid

## **Moderna:**

14,000 people RECEIVED the vaccine: **11** got Covid

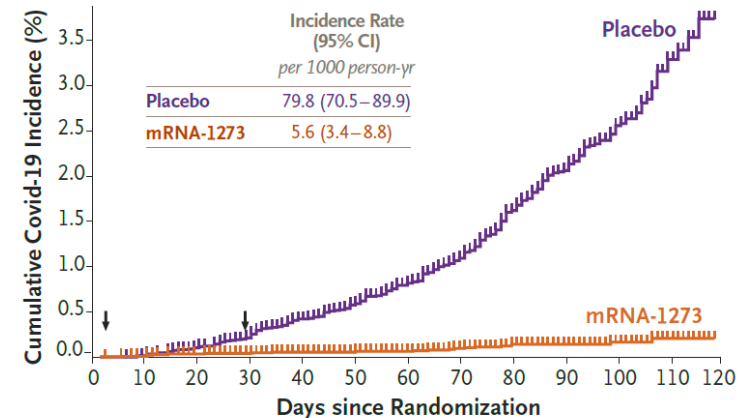
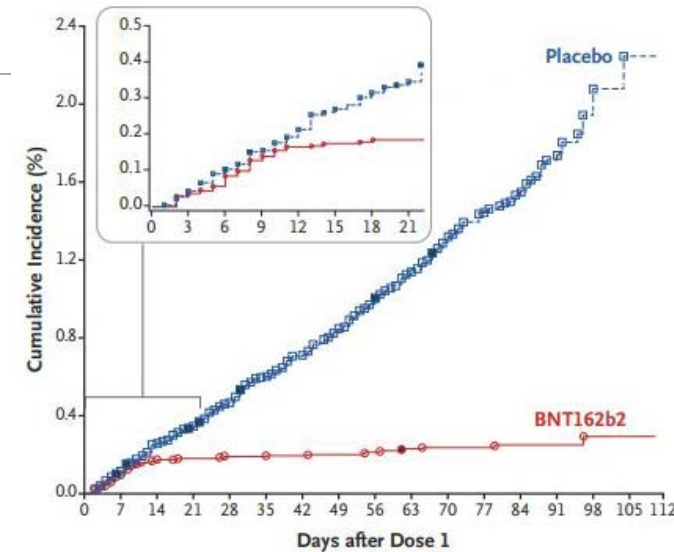
14,000 people DIDN'T GET the vaccine: **185** got Covid

## **So in total:**

32,000 people RECEIVED the vaccine: **19** got Covid

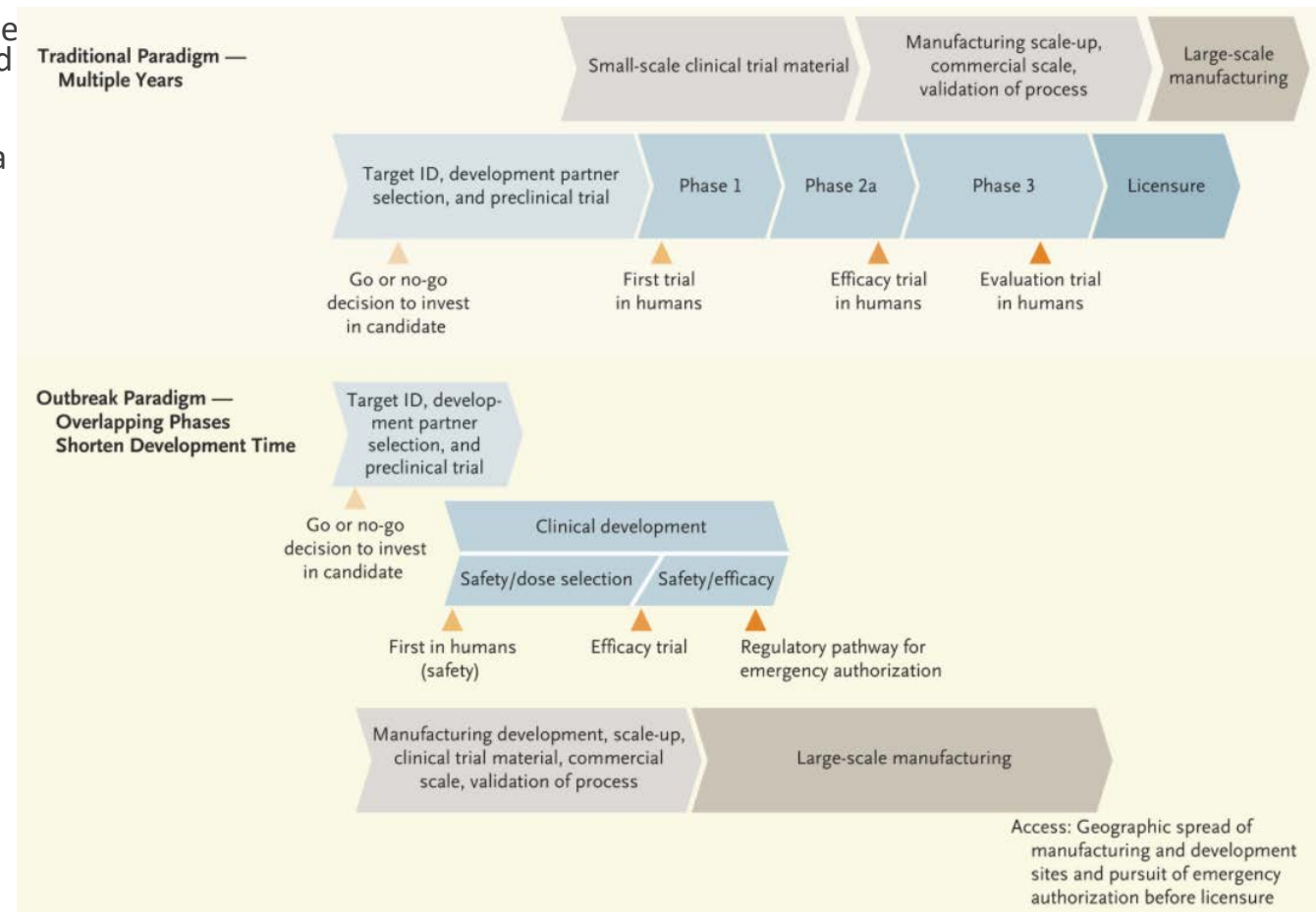
32,000 people DIDN'T GET the vaccine: **347** got Covid

— adds up to **>94% effectiveness** — it's unbelievably fantastic, SPECTACULARLY good.



# Was it rushed?

- This is the fastest vaccine development in the history of the world because a bunch of science went on for years before this and then a bunch of good stuff happened all at once.
- Our knowledge about genetic sequencing is way better than it was even a few years ago
- They figured out SARS-CoV-2's whole genetic code within days
- Scientists have been studying other coronaviruses behind the scenes for years
- Scientists have been studying mRNA vaccines behind the scenes for years
- Researchers have figured out how to do really good vaccine trials
- There was so much coronavirus around and it's so contagious that trials could finish up quickly
- The government, industry, and a bunch of charities poured buckets of money into this research
- The government paid for vaccines to be manufactured before the studies were done and sped all their processes up
- They've been working on vaccine distribution for months
- **Because if you spend a ton of money miracles can happen.**



# How long will it take to work?

---

- You won't get the full protection from the mRNA vaccines until about
  - a week after the second dose for Pfizer
  - 2 weeks after second dose for Moderna
- The vaccine's protection starts about ten days after the first dose, but only about 50% percent efficacy
- 1-2 weeks after the second dose, the efficacy rose to 95 percent
- = Get both doses
- Try to get both doses from same manufacturer, no data on mixing, though it's probably fine (and CDC says ok if **no other option**)

# Will it hurt? What are the side effects?

---

- >35,000 people have already received the vaccines in clinical trials, and none of them have reported any serious health problems.
  - Started in July
  - Side effects if related should be apparent within 2 months from vaccine
- The side effects, which can resemble the symptoms of Covid-19, last about 1-2 days and appear more likely after the second dose.
  - fatigue, headaches, fever, chills and muscle pain
  - Delayed rash at vaccine site and lymphadenopathy also reported
  - Not nasal congestion, cough (if you have these, test for COVID)
- While these experiences aren't pleasant, they are a **good sign** that your own immune system is mounting a potent response to the vaccine that will provide long-lasting immunity.

# Vaccine Side Effects Compared

(<55 yr, after Dose 2 – highest side effect group found)

|                  |  <b>SHINGRIX</b><br><small>(ZOSTER VACCINE RECOMBINANT, ADJUVANTED)</small><br><b>Shingrix</b> |  <b>moderna</b><br><small>messenger therapeutics</small><br><b>COVID-19 mRNA-1273</b> |  <b>Pfizer</b><br><b>COVID-19 BNT162b2</b> |  <small>Influenza Vaccine</small><br><b>FLUCELVAX</b><br><small>QUADRIVALENT</small><br><b>Flu</b> |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local Pain       | 88.4%                                                                                                                                                                           | 90.1%                                                                                                                                                                    | 77.8%                                                                                                                         | 45.4%                                                                                                                                                                                 |
| Redness          | 38.7%                                                                                                                                                                           | 9.0%                                                                                                                                                                     | 5.9%                                                                                                                          | 13.4%                                                                                                                                                                                 |
| Swelling         | 30.5%                                                                                                                                                                           | 12.6%                                                                                                                                                                    | 6.3%                                                                                                                          | 11.6%                                                                                                                                                                                 |
| Myalgia          | 56.9%                                                                                                                                                                           | 61.3%                                                                                                                                                                    | 37.3%                                                                                                                         | 15.4%                                                                                                                                                                                 |
| Fatigue          | 57%                                                                                                                                                                             | 67.6%                                                                                                                                                                    | 59.4%                                                                                                                         | 17.8%                                                                                                                                                                                 |
| Headache         | 50.6%                                                                                                                                                                           | 62.8%                                                                                                                                                                    | 51.7%                                                                                                                         | 18.7%                                                                                                                                                                                 |
| Chills           | 35.8%                                                                                                                                                                           | 48.3%                                                                                                                                                                    | 35.1%                                                                                                                         | 6.2%                                                                                                                                                                                  |
| Fever            | 27.8%                                                                                                                                                                           | 17.4%                                                                                                                                                                    | 15.8%                                                                                                                         | 0.8%                                                                                                                                                                                  |
| Overall Grade 3% | 5.2%                                                                                                                                                                            | 4.1%                                                                                                                                                                     | 1.5%                                                                                                                          | 0.5%                                                                                                                                                                                  |
| Overall SE %     | 48%                                                                                                                                                                             | 46%                                                                                                                                                                      | 36%                                                                                                                           | 15%                                                                                                                                                                                   |
|                  | 1                                                                                                                                                                               | 2                                                                                                                                                                        | 3                                                                                                                             | 4                                                                                                                                                                                     |

# Has this technology been used before?

## YES

- ▶ **Has been in development for over 30 years, using the past 50 years of immunology and cell biology research**
- ▶ **Personalized cancer immunotherapy research**
  - Some cancers express specific proteins that the body can recognize as foreign
  - Decoding the mRNA of those proteins to produce tumor vaccines
  - mRNA tumor vaccines either alone or in conjunction with immunotherapy or adjuvant chemotherapy
  - Dozens of clinical trials are underway or completed
  - Metastatic prostate, ovarian, malignant melanoma, small cell lung, brain and breast cancers
- ▶ **Preventing other infectious diseases**
  - A vaccine against rabies is currently in clinical trials
  - Vaccines against influenza, HIV and tuberculosis are at the research stage.



Dr. Katalin Karikó, -BioNTech



Dr. Kizzmekia S. Corbett- NIH

Scientific lead for the Coronavirus Vaccines & Immunopathogenesis Team at the National Institutes of Health

# How do I know it's safe?

---

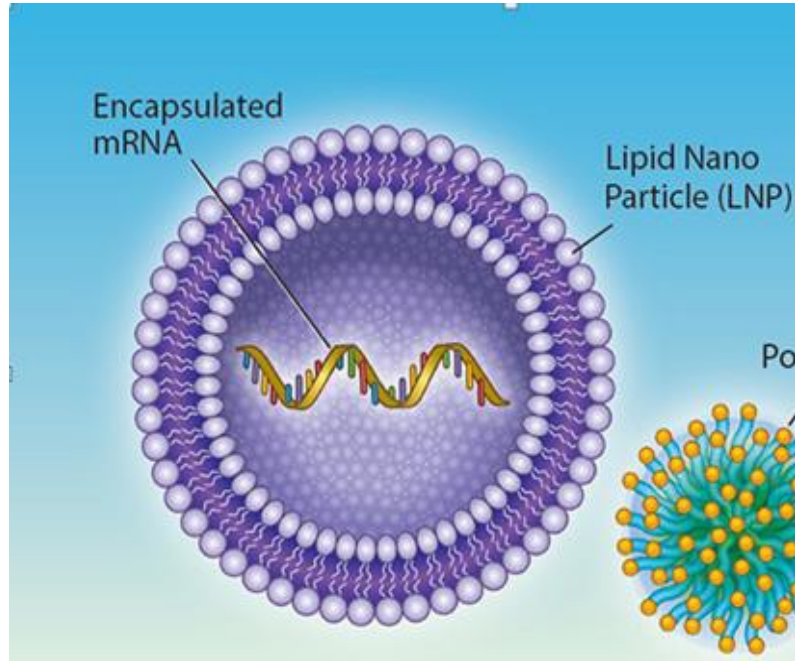
- Each company's application to the F.D.A. includes two months of follow-up safety data from Phase 3 of clinical trials conducted by universities and other independent research groups.
  - Some people got their shots in July and they have been followed ever since (7 months) with no new side effects during that time.
- In Phase 3, tens of thousands of volunteers got a vaccine and waited to see if they became infected, compared with others who received a placebo.
- By September, Pfizer's trial had 44,000 participants; no serious safety concerns have been reported.
- Similarly, Moderna had 30,000 participants
- They kept close track of the short-term reactions (sore arm, fatigue, etc) and saw they didn't change over time and didn't last.
- As a rule with vaccines you just don't see side effects or reactions more than few weeks after getting a vaccine
- 19,252,279 people have gotten at least 1 dose in the past 6 weeks in the US (as of 1/25/21)
- Continued monitoring through V-safe and VARES

# If I have allergies, should I be concerned?

---

- People with severe allergies who have experienced anaphylaxis in the past should talk to their doctor
  - it should be fine
- Fewer than one in a million recipients of other vaccines a year in the U.S. have an anaphylactic reaction (1 in 1.31 million)
- In the initial clinical trials, only one person had anaphylaxis with Pfizer, none with Moderna.
- Since EUA
  - Pfizer **11.1 cases per million doses**
  - Moderna **2.5 cases per million doses (1/4 less)**
- Wait under observation 15 minutes after vaccination for all patients
- 30 minutes for those who have history of anaphylaxis, bring epi pens

# Reaction to the vaccine



- “Reactogenic” side effects:
  - mRNA is packaged in lipid particles in order to help it cross the cell membrane
  - Lipid nanoparticles can cause fever and other short-term reactions (<12 hrs) without the mRNA

## Anaphylactic:

- May be related to polyethylene glycol
- Check tryptase in blood to determine if allergic reaction or not (within 4 hours of reaction)
- Treatable!
- Report!



**Get vaccinated.  
Get your smartphone.  
Get started with v-safe.**

**V-safe** is a smartphone-based tool that checks in on you after your COVID-19 vaccination. Your participation helps keep COVID-19 vaccines safe — for you and for everyone.

**If you got vaccinated in the last 6 weeks, you can participate in v-safe!**

**It takes just a few minutes to register and get started.** All you need is your smartphone and information about the COVID-19 vaccine you received. This information can be found on your vaccination record card. If you cannot find your card, please contact your healthcare provider.

[https://vsafe.cdc.gov/?fbclid=IwAR2lsXTU1hqxrT\\_BhVU8Oh22oUYh5MImJtA3eiFsSCxl9amqA5\\_TIR7k3Ak](https://vsafe.cdc.gov/?fbclid=IwAR2lsXTU1hqxrT_BhVU8Oh22oUYh5MImJtA3eiFsSCxl9amqA5_TIR7k3Ak)

# What will happen if serious side effects crop up after the vaccine is rolled out?

---

- Once a vaccine starts to reach large numbers of people, it's possible (and not uncommon) for a small number of severe "adverse events" to occur.
- Many existing vaccines, including the flu shot, also can cause rare complications, including Guillain-Barré syndrome or seizures
- While this sounds frightening, the risk is minuscule when considered over the millions of people who are safely vaccinated each year, and most of these complications are more often triggered by the virus itself.
- Health officials will investigate each event to see if it's simply coincidence — or if it could have been caused by the vaccine. While everyone should be prepared to hear about these reports, they should not be a cause for worry or prompt you to delay getting the vaccine.
- **Your risk of severe complications from Covid-19 is far higher than your risk of complications from the vaccine.**

# I had Covid-19 already. Do I need the vaccine?

## Yes.

---

- It's safe, and probably even beneficial, for anyone who has had Covid to get the vaccine at some point
- Although people who have contracted the virus do have immunity, it seems to vary in how long it lasts. So, for now, it makes sense for them to get the shot. The question is when.
- Some members of the C.D.C. advisory committee have suggested people who have had Covid in the past 90 days should be toward the back of the line.
- Current recommendation is to get it once you've recovered/out of isolation/feeling better
  - If you get COVID after 1<sup>st</sup> dose/before 2<sup>nd</sup> dose, same recommendation
- Don't need to check antibodies before vaccination
- Vaccination won't cause positive COVID viral tests
  - Should cause positive spike protein IgG, while natural infection will also have positive nucleocapsid IgG

# Will it work on older people?

## Yes.

---

- All the evidence we have so far suggests that the answer is yes.
- The clinical trials for the two mRNA vaccines have shown that they work about the same in older people as younger people.

# Will it work on the “new variants”?

## Yes, for now.

---

- SARS-CoV-2 is mutating slowly over time
- Variants have small amino acid changes, some of which do nothing and some which can affect its function (UK has 8 in spike protein, SA has 10)
- UK/SA variants are not a new “strain”
  - Appear to be more contagious based on increased amount of virus RNA detected along with significant increase in cases
  - Timing of increased spread is likely more related to holiday gatherings/winter
  - More spread=> more cases=> more deaths
- Your body is making many different types of anti-spike protein antibody with the vaccine, so one small amino acid change in the virus spike protein will not be a problem
- Moderna confirmed 1/25/21 efficacy against the UK variant is same as the original.
  - Some decrease in effectiveness against South African variant, but should still be protective
  - With mRNA technology, a new vaccine could be available to test in as little as 6 weeks.
  - Working on “booster” with S.A. variant spike mRNA just in case, just started phase 1 clinical trial.
- Should I be worried about these variants?
  - YES! Just as much as you have been worried about COVID in the past year
  - More important to protect everyone with vaccination ASAP to stop spread and stop mutations

# I'm young and at low risk. Why not take my chances with Covid-19 rather than get a vaccine?

## Get a vaccine.

---

- Covid-19 is by far the more dangerous option.
- Although people who are older, obese or have other health problems are at highest risk for complications from Covid-19, younger people can become severely ill, too.
  - In a study of more than 3,000 people ages 18 to 34 who were hospitalized for Covid, 20 percent required intensive care and 3 percent died.
  - During the first 5 months of the pandemic, researchers found 11,899 more Americans ages 25 through 44 have died than expected in years past (18% increase), with 4,535 (38%) of the deaths documented to be caused by COVID-19.
- As many as one in three people who recover from Covid have chronic complaints, including exhaustion, difficulty breathing, a racing heart and worse for months afterward.
- Covid vaccines, in contrast, carry little known risk.
- Will likely decrease transmission to family/friends/essential workers

# What about Children?

---

- Typically, childhood vaccines are approved after being tested and showing promise in adults
- Most of the trials were on non-pregnant adults
  - Pfizer/Moderna now studying children 12 years and above
  - AstraZeneca vaccine has been tested on children down to age 5
- Children will need to be vaccinated
  - Children can still suffer and be hospitalized from this virus – though less frequently than adults
  - Children can asymptotically or symptomatically transmit this virus to other people
- There could be a vaccine available for children by mid-to-late 2021.
- No reason these vaccines would not work in children

# What about women who are pregnant or breastfeeding?

---

- The mRNA vaccines have not been tested in pregnant/lactating women.
- The American College of Obstetricians and Gynecologists issued practice guidelines to help women and their doctors talk about vaccination.
- Recommend offering when available and considering
  - level of activity of the virus in the community
  - potential efficacy of the vaccine
  - risk and potential severity of maternal COVID, including the effects of COVID on the fetus and newborn
  - the safety of the vaccine for the pregnant patient and the fetus
  - While safety data on the use of COVID-19 vaccines in pregnancy are not currently available, there are also no data to indicate that the vaccines should be contraindicated, and no safety signals were generated from animal developmental and reproductive toxicity studies for both vaccines
- The virus itself poses greater risks to pregnant women than the vaccines.
  - increased risk of ICU admission, need for mechanical ventilation and ventilatory support (ECMO), and death reported in pregnant women with symptomatic COVID-19 infection, when compared with symptomatic non-pregnant women
- Since the 1960s, pregnant women have been urged to receive vaccines against influenza and other diseases. These women are generally cautioned against live vaccines, which contain weakened pathogens — but the Pfizer or Moderna vaccines do not contain live virus.

# What if I'm Immunocompromised?

---

- It is safe and recommended.
- Both Phase 3 trials excluded people who were on long term immunosuppression.
- No reason to think there would be any increase in adverse events but might not work as well.
- Further study ongoing regarding efficacy.

# Myth: mRNA alone causes the side effects.

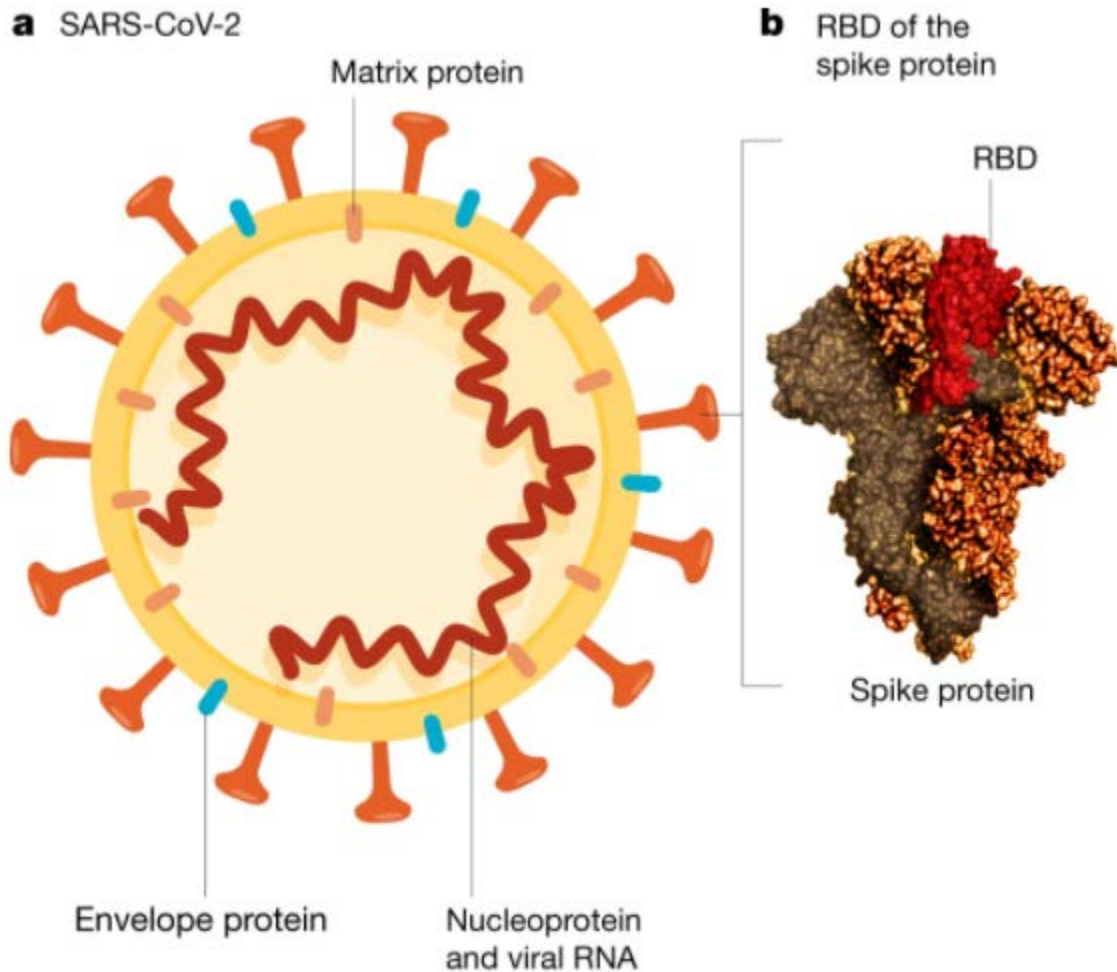
## Not true.

- mRNA molecules are highly unstable
- That is part of the reason why it needs very cold refrigeration
- Human blood contains nucleases (enzymes) that rapidly degrade free-floating/unprotected RNA in minutes
- Only possible concern is that the mRNA might not be doing the job in the cell as expected

# Myth: mRNA changes your DNA. Not true.

- mRNA does not affect recipients' DNA
  - This is because in order to do so, the mRNA must convert into DNA, enter the nucleus, and integrate into the cell's DNA. (A reversal of normal function)
- RNA vaccines do NOT change your DNA, as it does not enter the nucleus.
  - This is a complex multiple-step process requiring action of several enzymes that the cell doesn't have.
- It's like you have a book that represents the genetic code. You then scan that book in a copy machine, and now you have a bunch of papers that are an image of the original book. The copy does not change the original book. It can't.
- On the other hand, the cells have plenty of enzymes that can readily destroy the mRNA, so the mRNA is usually degraded after the protein is made.
- “Snapchat” for your cell

# Myth: mRNA vaccine will give me COVID. Not true.



- The mRNA fragment causes just one part of the virus to be produced and shown to the immune system from your cells – the Spike-protein.
- That protein induces an immune response, but it is a tiny part of the virus.
  - It cannot reproduce.
  - It cannot cause disease.
  - It cannot be spread.
- The Spike-protein is useless without the rest of the virus, except to induce an immune response. That's it.
- There are no live, attenuated, or dead viruses in the mRNA vaccines.
- **You cannot contract COVID-19 from this vaccine.**

# Myth: mRNA vaccine will harm the fetus during pregnancy. Not true.

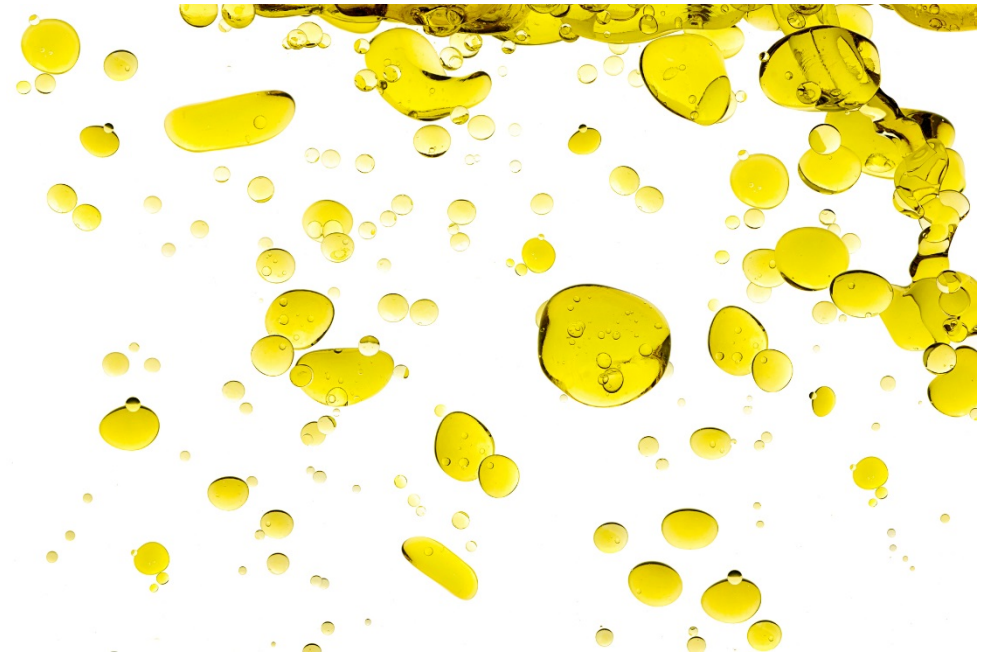
- ▶ The cell biology of the fetus is similar to the ones in fully grown adults – the mRNA fragment is probably not going to cross the blood-placenta barrier.
- ▶ If it does, it's still not going to enter the nucleus of the cell and change the fetal DNA.
- ▶ The mRNA functions exactly the same in the fetus and adult.

# Myth: mRNA vaccine will cause infertility. Not true.

- Basically, the claim is that there is a protein subunit on the spike protein that is "homologous" or similar to the syncytin-1 protein that facilitates the development of the placenta.
- This claim was started by two people who decided to put their unsubstantiated thoughts on social media
- Facts:
  - 5 amino acids are similar between the 2 proteins (out of 1,273 in the spike protein)
  - There is simply no evidence that there is some immune cross-reactivity between the spike protein and syncytin-1.
  - The sequence is too short for the immune system to meaningfully confuse it with placental proteins
  - Not plausible that one small part of those two proteins would induce some sort of cross-reactivity
    - hemoglobin — the protein in red blood cells that carries oxygen — shares six amino acids with the spike protein
- 23 women who were vaccinated in the Pfizer trial became pregnant after their vaccinations.
- No increased reports of miscarriages in women diagnosed with COVID-19 early in pregnancy

# Myth: mRNA vaccines are using hydrogel nanotechnology to introduce microchips into the human body. Not true.

- ▶ No microchips are present in vaccines.
- ▶ Hydrogel nanotechnology refers to the “lipid nanoparticles” which encase the mRNA.
  - ▶ Lipid=fat
  - ▶ Nano=very very small
  - ▶ Particle=small sphere
- ▶ The microchips would have to be so small they wouldn't work. It is impossible.

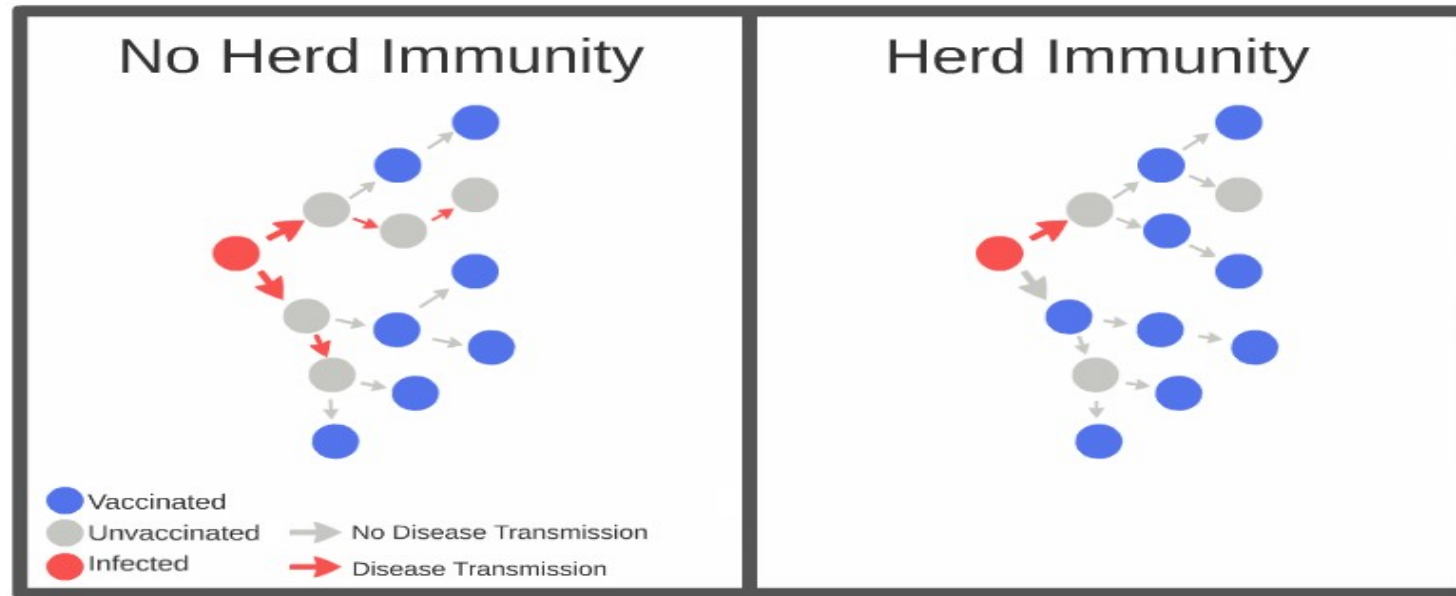


# If I've been vaccinated, will I still need to wear a mask?

---

- **Yes, but not forever.**
- The vaccine appears to be enough protection to keep the vaccinated person from getting ill. But what's not clear is whether it's possible for the virus to bloom in the nose — and be sneezed or breathed out to infect others — even as antibodies elsewhere in the body have mobilized to prevent the vaccinated person from getting sick.
- The vaccine clinical trials were designed to determine whether vaccinated people are protected from illness — not to find out whether they could still spread the coronavirus.
- Based on studies of flu vaccine and even patients infected with Covid-19, researchers have reason to be hopeful that vaccinated people won't spread the virus, but more research is needed.
  - Moderna data looks encouraging, but very preliminary
- In the meantime, everyone — even vaccinated people — will need to think of themselves as possible silent spreaders and keep wearing a mask.

# Community Immunity



- When enough people in a community are vaccinated, the whole community, including the individuals that were not vaccinated, is protected against the disease. This is herd immunity.
- Community immunity is important because not everyone can be vaccinated.
- However, the number of vaccinated individuals must be great enough for community protection to occur.
- We don't yet know this number for Covid-19 with certainty.

# A Successful Example of Community Immunity



- Polio was once one of the most feared diseases in the U.S.
- In the early 1950s, before polio vaccines were available, polio outbreaks caused more than 15,000 cases of paralysis each year.
- Following introduction of vaccines—specifically, trivalent inactivated poliovirus vaccine (IPV) in 1955 and trivalent oral poliovirus vaccine (OPV) in 1963—the number of polio cases fell rapidly to less than 100 in the 1960s and fewer than 10 in the 1970s.
- **Thanks to a successful vaccination program, the United States has been polio-free since 1979.**



# mRNA Vaccines: the choice is up to you

- mRNA COVID vaccines appear to be incredibly safe and effective
- Developed using a transparent, rigorous process
- Intermediate data shows no significant major side effects
- The two vaccine trials consisted of about 74,000 participants, and now an additional 19 million Americans have gotten vaccinated
- FDA/CDC medical experts will continue to monitor safety



# mRNA Vaccines: the choice is up to you

mRNA COVID vaccines appear to be incredibly safe and effective

- Developed using a transparent, rigorous process
- Intermediate data shows no significant major side effects
- The two vaccine trials consisted of about 74,000 participants, and now an additional 19 million Americans have gotten vaccinated
- FDA/CDC medical experts will continue to monitor safety

## REMEMBER

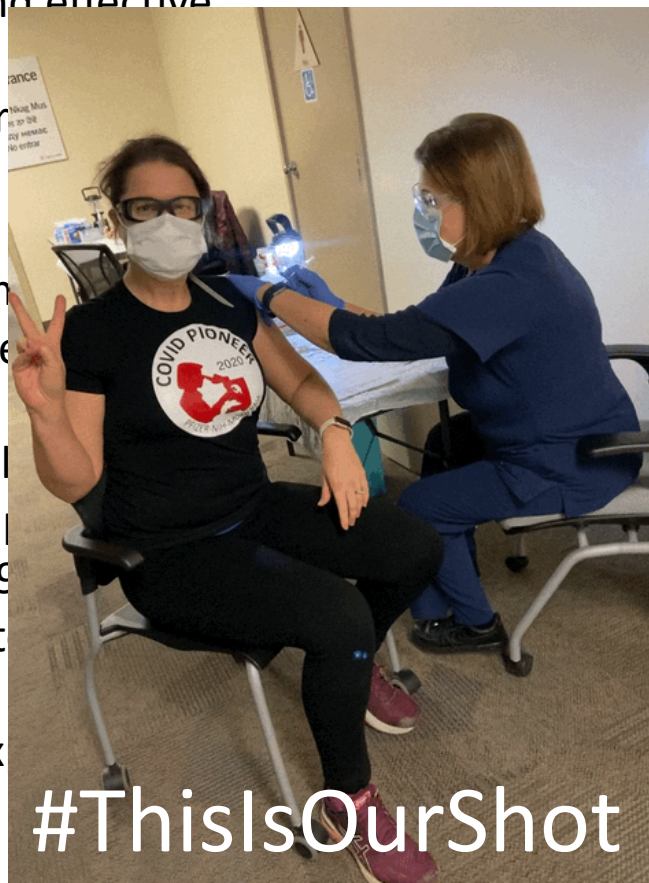
- 1 in 900 Americans has died in the past year due to COVID-19
  - 417,936 deaths (1/25/21)
  - More than in all of WWII
- Global Covid cases 99.7million, 2.14 million deaths
- Economic, social and mental health loss of historic proportions
- A successful and widely adopted vaccine is our best chance for a return to normal life

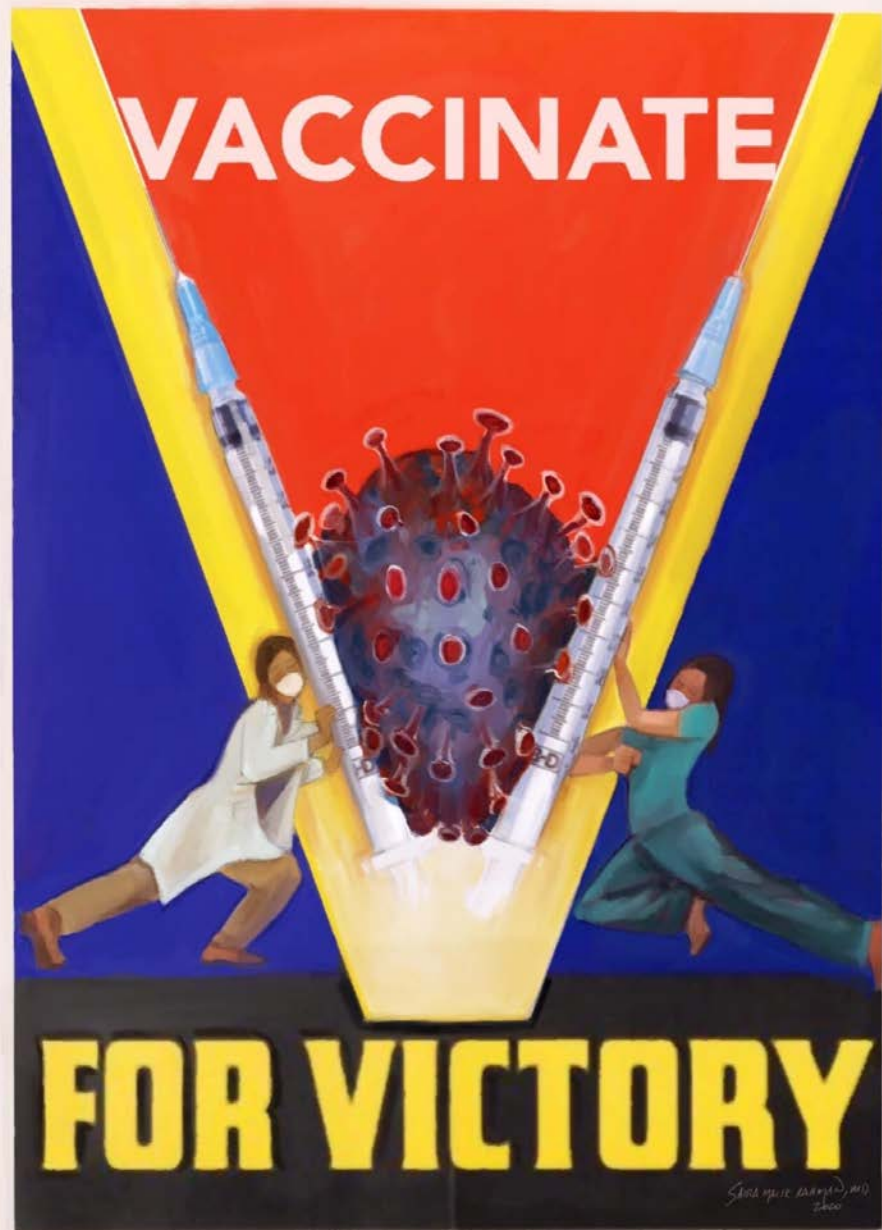


# mRNA Vaccines: the choice is up to you

## REMEMBER

- mRNA COVID vaccines appear to be incredibly safe and effective
  - Developed using a truly rigorous process
  - Intermediate data show no significant major side effects
  - The two vaccine trials involved about 74,000 participants; now an additional 19 million Americans have gotten the shot
  - FDA/CDC medical experts continue to monitor safety
- 1 in 900 Americans has died in the year due to COVID-19
  - 17,936 deaths (1/25/21)
  - More than in all of WWII
  - 100 million Covid cases 99.7million, 2.14 million deaths
  - Economic, social and mental health impacts at historic proportions
  - Vaccines are successful and widely adopted
  - Getting vaccinated is our best chance for a return to normal life





# Resources

Stay Up To Date  
on COVID-19



- General Info: [Dept of Public Health COVID-19 \(ca.gov\)](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Drafting-Guidelines-Workgroup.aspx/)
- Info on Covid Vaccines: [COVID-19 Vaccines \(ca.gov\)](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Vaccines.aspx/)
- Drafting Guidelines Work Group
  - <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Drafting-Guidelines-Workgroup.aspx/>
- State Council on Developmental Disabilities Plain Language Resource
  - [scdd.ca.gov/wp-content/uploads/sites/33/2020/12/COVID-Vaccine.docx](https://scdd.ca.gov/wp-content/uploads/sites/33/2020/12/COVID-Vaccine.docx)
- "Avoiding COVID Scams"
  - [scdd.ca.gov/wp-content/uploads/sites/33/2020/12/avoidingscams.docx](https://scdd.ca.gov/wp-content/uploads/sites/33/2020/12/avoidingscams.docx)
- Partner Toolkit (multiple languages): [Resources for Partners | Covid19Toolkit \(ca.gov\)](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Partner-Toolkit.aspx/)
- CDC Post Vaccine Considerations for Health Care Workers
  - [Post Vaccine Considerations for Healthcare Personnel | CDC](https://www.cdc.gov/media/releases/2020/s1119-covid-vaccine-healthcare.html)
- Administration for Community Living
  - [Coronavirus Disease 2019 \(COVID-19\) | ACL Administration for Community Living](https://www.acl.gov/coronavirus)
- National Center on Advancing Person- Centered Practices and Systems (NCAPPS)
  - [COVID-19 Resources \(acl.gov\)](https://www.nccapss.org/covid-19)

# Upcoming ALE webtalks

All webinars are held Wednesday at 10:30 am to Noon, unless otherwise noted

Beginning Feb 17, 2021 Webtalk moves to every other Wednesday schedule

## Save these dates:

- |              |                                                                       |
|--------------|-----------------------------------------------------------------------|
| Feb 03, 2021 | Vaccination Roll-out in Adult Day Programs, Residential Care and IHSS |
| Feb 10, 2021 | Tentative: Vaccinations and Cultural Empathy                          |
| Feb 17, 2021 | Tentative: 2021 CBAS TAS Changes: Preparing for Congregate Services   |

# Inspiration for the Week

<https://www.telegraph.co.uk/global-health/science-and-disease/redemption-one-scientists-unwavering-belief-mrna-gave-world/>

Katalin Karikó, a Hungarian immigrant to the U.S.A. is credited with laying the foundation for COVID mRNA-based vaccines due to doggedly pursuing research on mRNA technology for four decades



<https://abcnews.go.com/Health/kizzmekia-corbett-african-american-woman-praised-key-scientist/story?id=74679965>

Kizzmekia Corbett, a research fellow and scientific lead at the National Institute of Health, raised in South Carolina, is praised as a key scientist behind the COVID-19 mRNA Moderna vaccine.



# Thought for the Week



Science is the search for truth - it is  
not a game in which one tries to  
beat his opponent, to do harm to  
others.

— *Linus Pauling* —

1901 – 1954