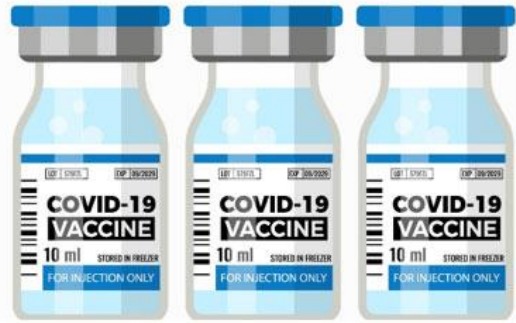




UNIVERSITY of MARYLAND
SCHOOL OF PHARMACY



Vaccine 101: A Needle Today Helps Keep COVID Away

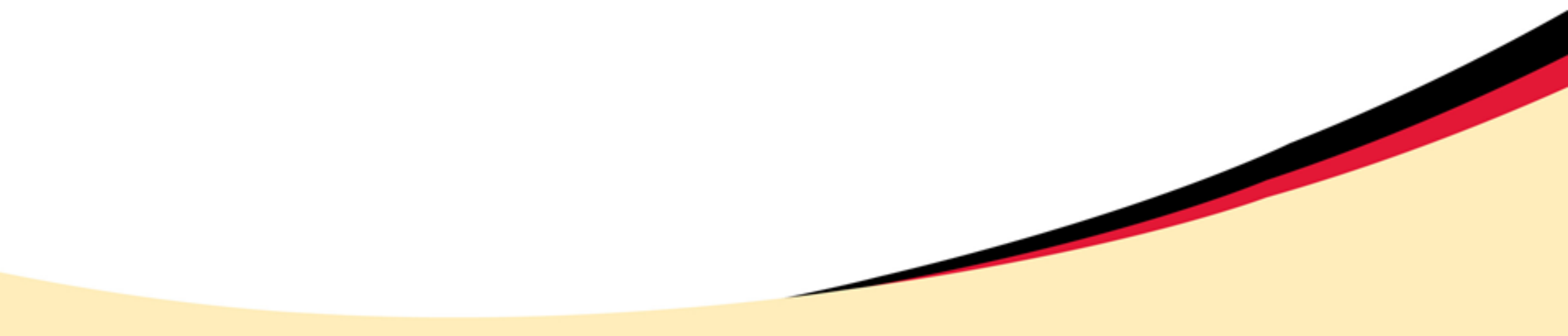
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Associate Professor

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Your Key Message

COVID-19 vaccines are safe and effective and will protect you, your loved ones, and those most vulnerable




1. Why was COVID vaccine created so quickly?

- 1 Science**
Decades of research to work with
- 3 Remove Red Tape**
Prioritizing treatment and vaccine
- 5 Volunteers**
Public interest in enrolling in clinical trial, and surges of COVID-19 cases



- 2 Work Together**
Sharing of information and working together across the world
- 4 Funding**
Remove financial risk for companies
- 6 Manufacturer**
Mass production occurred at the same time as clinical trials

Why was COVID vaccine created so quickly?

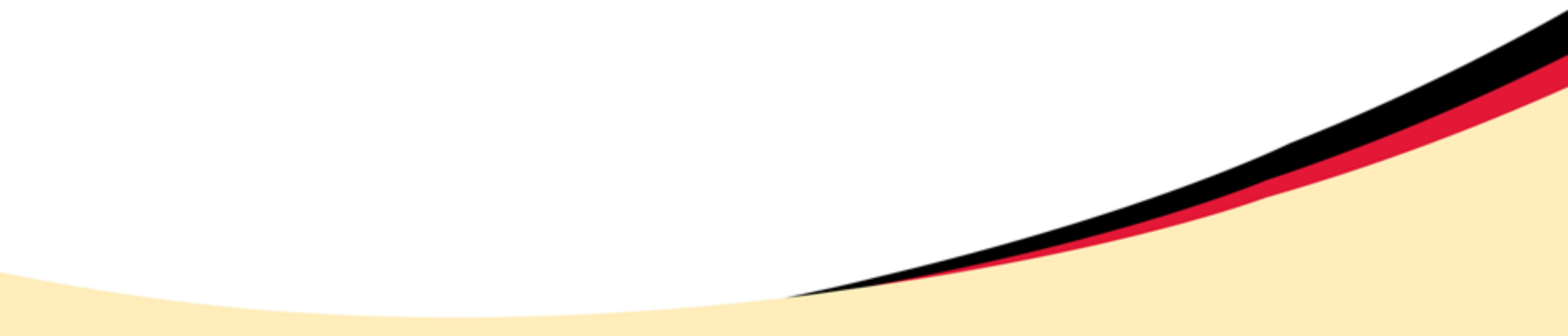
- Development of the vaccine was faster than usual for explainable reasons
 - In developing the COVID-19 vaccine
 - Safety was prioritized
 - Steps were not skipped
 - Shortened timeline ≠ Not safe
- 

2. What is in the vaccine?

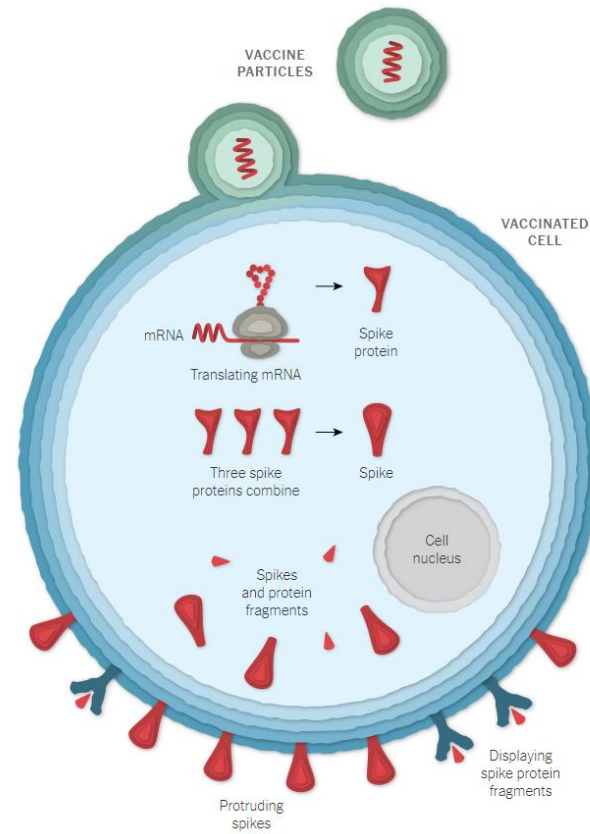
Comirnaty

Description	Pfizer-BioNTech (mRNA)	Moderna (mRNA)	Janssen (viral vector)
Active ingredient	Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2	Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2	Recombinant, replication-incompetent Ad26 vector, encoding a stabilized variant of the SARS-CoV-2 Spike (S) protein
Inactive ingredients	2[(polyethylene glycol)-2000]-N, N-ditetradecylacetamide	PEG2000-DMG: 1, 2-dimyristoyl-rac-glycerol, methoxypolyethylene glycol	Polysorbate-80
	1,2-distearoyl-sn-glycero-3-phosphocholine	1,2-distearoyl-sn-glycero-3-phosphocholine	2-hydroxypropyl- β -cyclodextrin
	Cholesterol	Cholesterol	Citric acid monohydrate
	(4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate)	SM-102: heptadecane-9-yl 8-((2-hydroxyethyl) (6-oxo-6-(undecyloxy) hexyl) amino) octanoate	Trisodium citrate dihydrate
	Sodium chloride	Tromethamine	Sodium chloride
	Monobasic potassium phosphate	Tromethamine hydrochloride	Ethanol
	Potassium chloride	Acetic acid	
	Dibasic sodium phosphate dihydrate	Sodium acetate	
	Sucrose	Sucrose	

What is NOT in the vaccine?

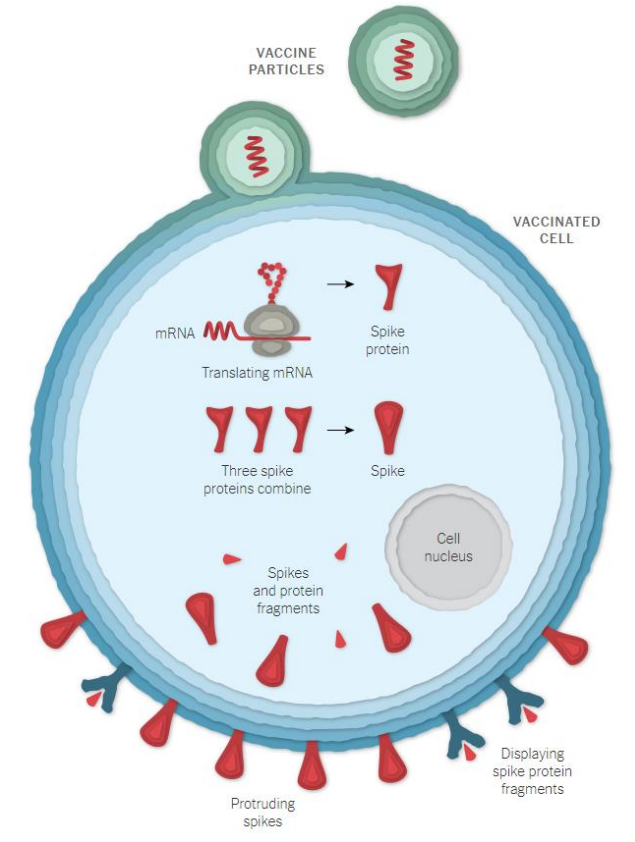
- No preservatives, eggs, latex
 - No metals
 - No microchips
- 

3. How do the vaccines work?




How do the vaccines work?

- Do not change or interact with your DNA in any way
- It does not contain a live virus (including COVID-19)
- It cannot make you sick with COVID-19



4. Do the vaccines really work?

Reduction in risk of hospitalization for elderly

	 Cominarty	Moderna	Janssen
For 65-74yo	96%	96%	84%
For ≥ 75yo	91%	96%	85%

If a vaccine has an efficacy of 80 percent:



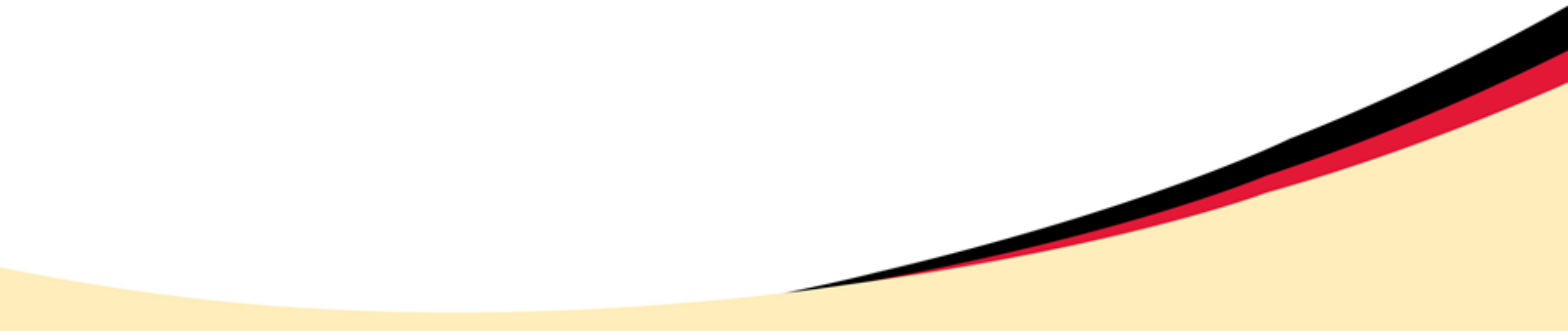
It does not mean that the vaccine will only work 80% of the time.

It does mean that in a vaccinated population, 80% fewer people will contract the disease when they come in contact with the virus.



Do the vaccines really work?

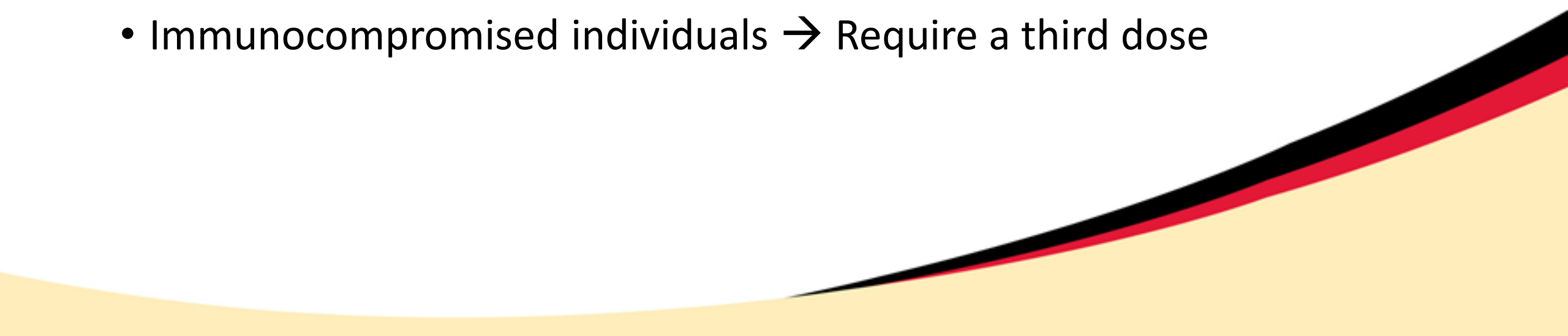
- Vaccines are effective in reducing your risk of getting COVID-19, reduces the severity, and your risk of severe complications from COVID-19
- Effective ≠ 100% prevention against COVID-19



Do the vaccines really work?

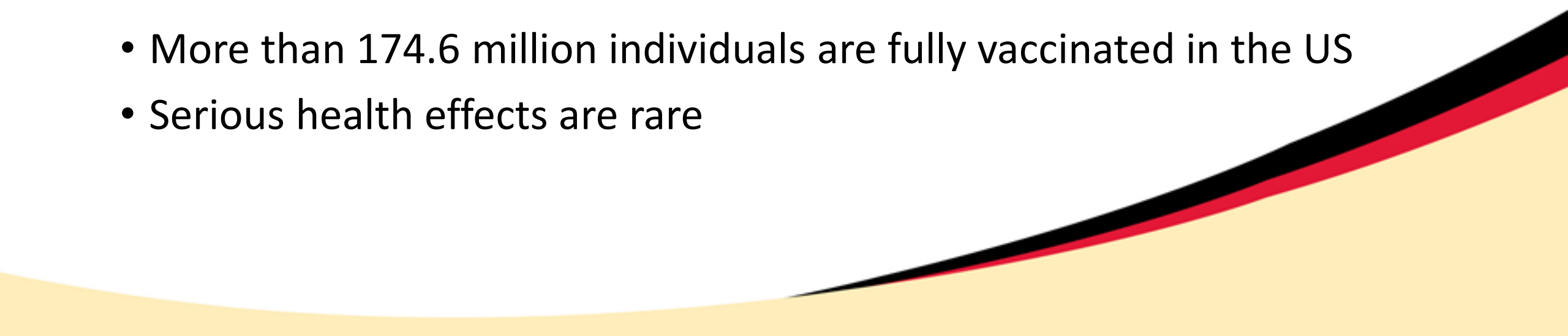
- It is effective and protects against current variants including Delta variant
 - 65-96% for Comirnaty (Pfizer/BioNTech)
 - 72-93% for Moderna
 - More studies are needed for Janssen

If it's effective, why do we need additional doses?

- We may need COVID-19 vaccine boosters in the future
 - Potentially in the Fall
 - Pending approval from FDA and CDC
 - Overtime, the body loses its protective antibodies → Boosters
 - Immunocompromised individuals → Require a third dose
- 

5. Are the vaccines really safe?

Yes!

- Comirnaty (Pfizer) vaccine is FDA approved 16 years old and older
 - Common side effects include sore muscles (arm), feeling tired, mild fever
 - More than 174.6 million individuals are fully vaccinated in the US
 - Serious health effects are rare
- 

Are the vaccines really safe?



Inflammation of Heart

For mRNA vaccine
Vaccine: 0.0014%
COVID-19: 2.3%



GBS

For J&J Vaccine
7.8 cases/million doses



Clots

For J&J Vaccine
3 cases/million
7 cases/million for women
18-49yo

Anaphylaxis

2-5 cases/million
No deaths







Death

0.0018% rate of death from
COVID-19 vaccine



Are the vaccines really safe?

The benefits
outweigh the risk!

Chance in a million of...	25-year-old	55-year-old
dying with coronavirus 	23 in a million	800 in a million
dying due to an accident or injury 	110 in a million	180 in a million
dying in a road accident 	38 in a million	23 in a million
being hit by lightning this year 	1 in a million	1 in a million

Figures show the chance of dying with coronavirus since the start of the pandemic. Figures for accidents and car crash fatalities are for 2018

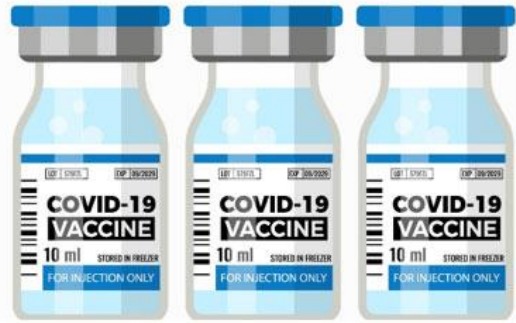
Is it safe if I want to get pregnant one day?

- There is no evidence that any vaccine, including COVID-19, that causes fertility problems
- Multiple organizations recommends the vaccine for pregnant women
 - Centers for Disease Control and Prevention (CDC)
 - American College of Obstetrics and Gynecology (ACOG)
 - Society for Fetal Medicine (SMFM)





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