

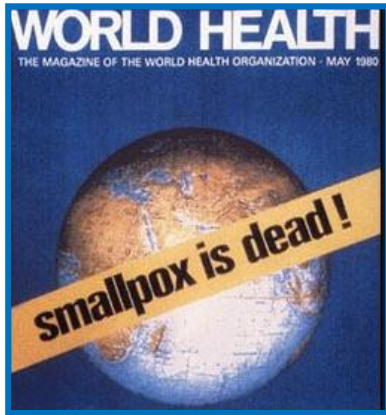
# Halal Vaccines: Bridging Science and Faith

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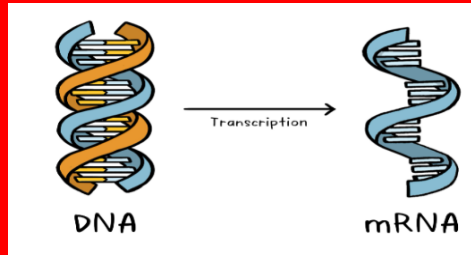
Vaccines are important for preventing and controlling infectious diseases



**Golden era of the vaccines**

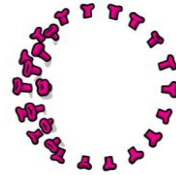
# Types of vaccines

Third generation:  
(1990s-2021)

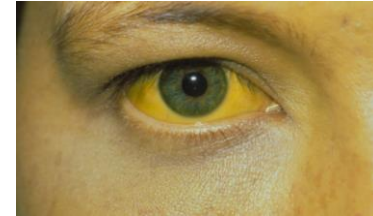


Covid-19

Second generation:  
(1980s-)

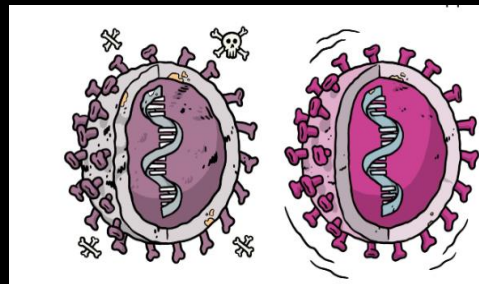


Recombinant Proteins



Hepatitis B Virus

First generation:  
(1796-1960)

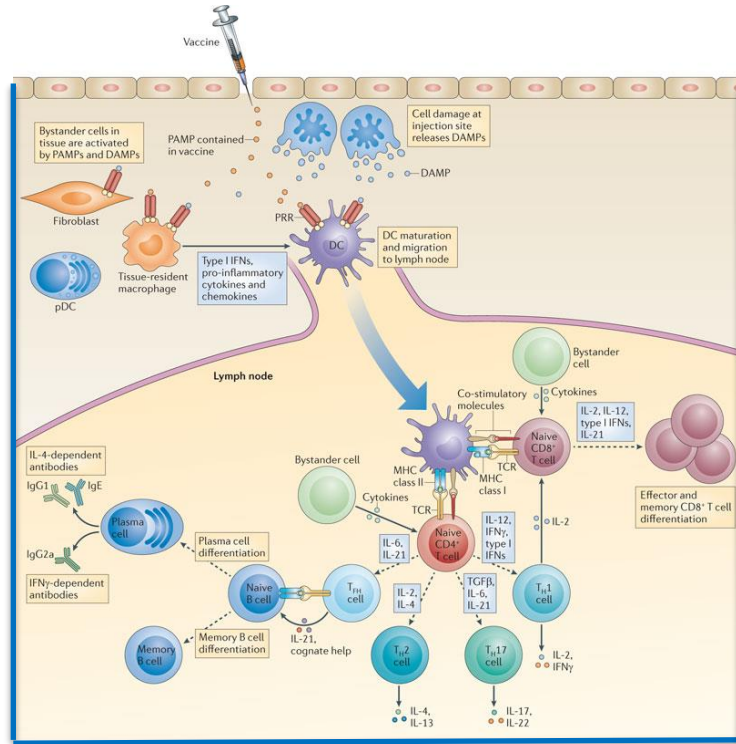


Killed/weaken pathogens



Smallpox virus

# How vaccines work



# Vaccine manufacturing Process

## Preclinical and Development

Vaccines are usually made by growing cultures of the target virus or bacterium these cultures may contain animal products:

- Animal cell lines
- Human cell lines
- Animal products; trypsin, serum

Final vaccine product may contain animal products, e.g.

**Gelatin derived from Pigs**

# Animal Ingredients in Vaccines

Ingredient	What is it?	Used in...
<b>Squalene Oil</b>	An oil that occurs naturally in humans, plants and animals, for a particular flu vaccine the oil is obtained from purified fish oil	MF59 flu vaccine
<b>Gelatine</b>	Derived from the collagen from pigs and is used as a stabiliser for some vaccines	MMR vaccine; children's nasal flu vaccines; shingles vaccine
<b>Human Serum Albumin</b>	A protein obtained from (donated) human blood that is used as a stabiliser in some vaccines	Chickenpox vaccine
<b>Lactose</b>	Derived from milk whey, this sugar acts as a stabiliser in some vaccines	Various
<b>Egg Protein</b>	Flu virus can be grown on egg protein	Children's nasal flu vaccine; yellow fever vaccine
<b>Animal Cell Strains</b>	Cultures containing cells from animals that may include chick embryos, kidney cells from African green monkeys, various cells from cows or other animals	MMR vaccine; 4-in-1 pre-school booster vaccine; teenage booster vaccine; Rotavirus vaccine
<b>Human Cell Strains</b>	Cultures containing human cells are used to grow active ingredients for a number of vaccines	MMR vaccine; shingles vaccine; chickenpox vaccine

# Halal Vaccine from the Islam view point

**Animal source in the vaccine process and development:**

## **Source of animal products**

- Animal cell lines
- Human cell lines

## **Animal products:**

- Halal slaughter animals
- Animal that are halal to eat or haram e.g. pigs

# Why Halal vaccines are important?

## **Addressing the needs of diverse communities in health care globally;**

Global Muslim population 1.8 billion, which account of 24% of the world total population

55 countries considered to have a Muslim-majority

## **What is Halal?**

- Halal refers what is permissible or lawful according to Islamic law (Sharia)
- Halal are required for food, pharmaceuticals, and healthcare products
- Halal certification: absence of forbidden substances, processing in compliance with Islamic guidelines, and ethical sourcing
- Halal vaccines: vaccines that comply with Islamic dietary and ethical requirements



# Significance of Halal vaccines for Muslim communities

- **Religious obligation to seek halal products**

*“O mankind, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy”* Quran.

- **Overcoming hesitancy and increasing vaccine acceptance**
- **Respecting cultural and religious sensitivities**

# Halal certification process

- Thorough assessment of ingredients and manufacturing processes
- Compliance with strict quality control standards
- Certification by recognized Halal certification bodies
- Regular audits and inspections to maintain compliance

# Ensuring Halal Compliance in Vaccine Production

- Sourcing ingredients from Halal-certified suppliers
- Separation and traceability of Halal and non-Halal materials
- Use of Halal approved Halal processing aids
- Adherence to hygiene and ethics

# Addressing Controversial Ingredients in vaccines

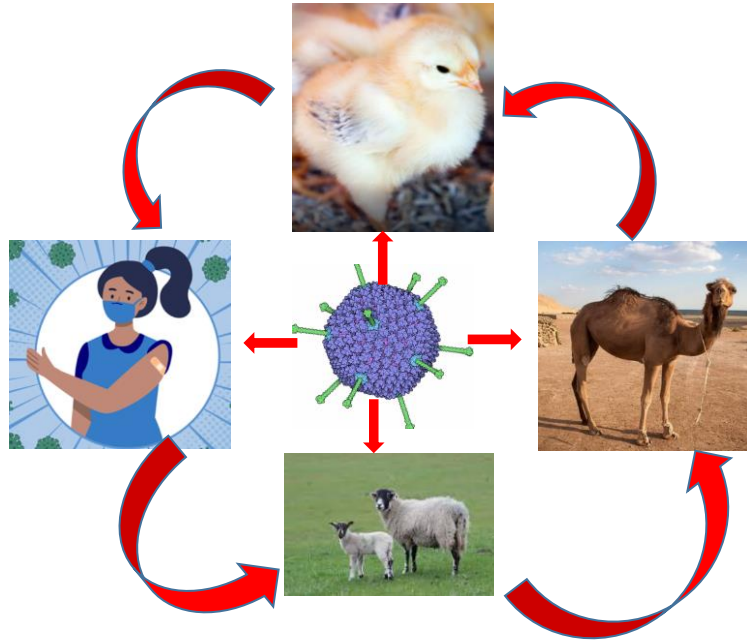
- Gelatin-derived from non-Halal
- Porcine-derived ingredients, e.g trypsin
- Alternative ingredients
- Development of synthetic substitutes

# Development of Halal alternative vaccines avoiding animal product

*MOTECK LTD*

- Rapid responses to emerging and re-emerging diseases
- Rapid identification of the disease causing pathogens
- Genome sequencing of the pathogen
- Development of cost effective vaccine

# Zoonotic diseases circle: One health approach



# The concept and the mission

Generation of affordable halal vaccine, effective and thermostable vaccine for zoonotic diseases

Approach:

## Using of antigen display system

- Immunogenic antigens accessible to the immune system
- Easy to generate
- Cost effective
- Thermos resistance, lyophilised and room temperature storage and transportation

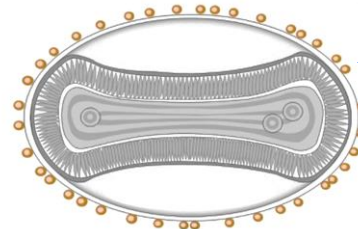
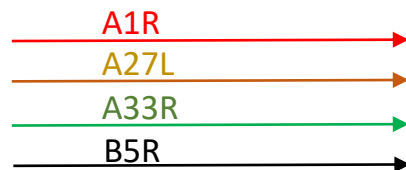
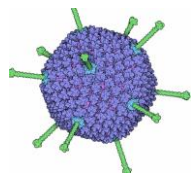
## Oral vaccination

## Zoonotic Viruses

## Genes

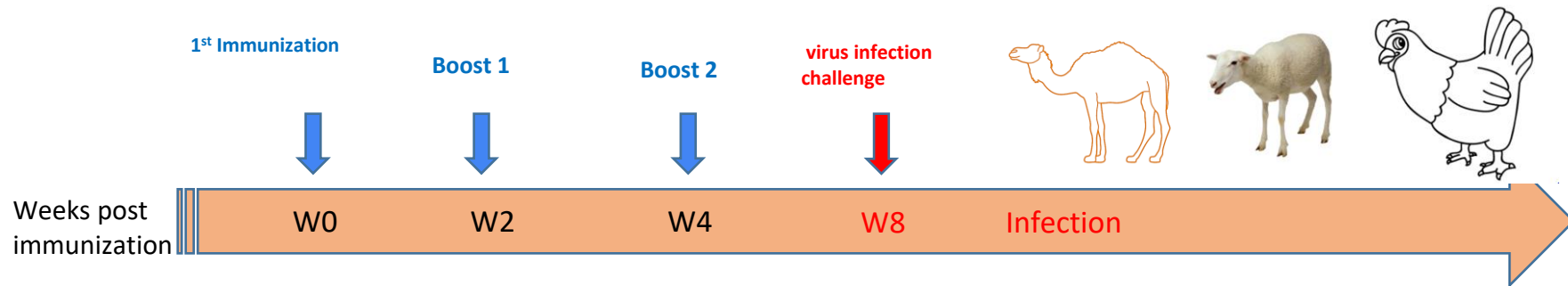
## Display system

A)

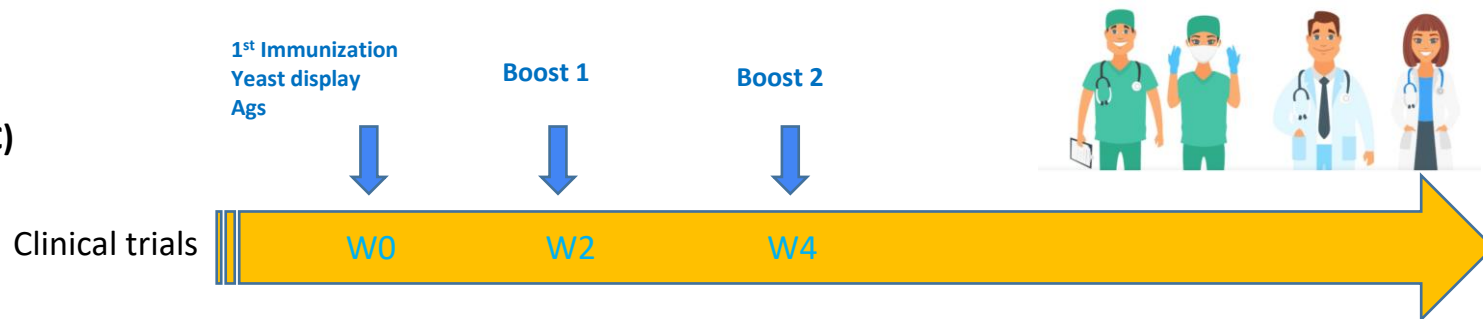


Antigens display  
on the surface

B)

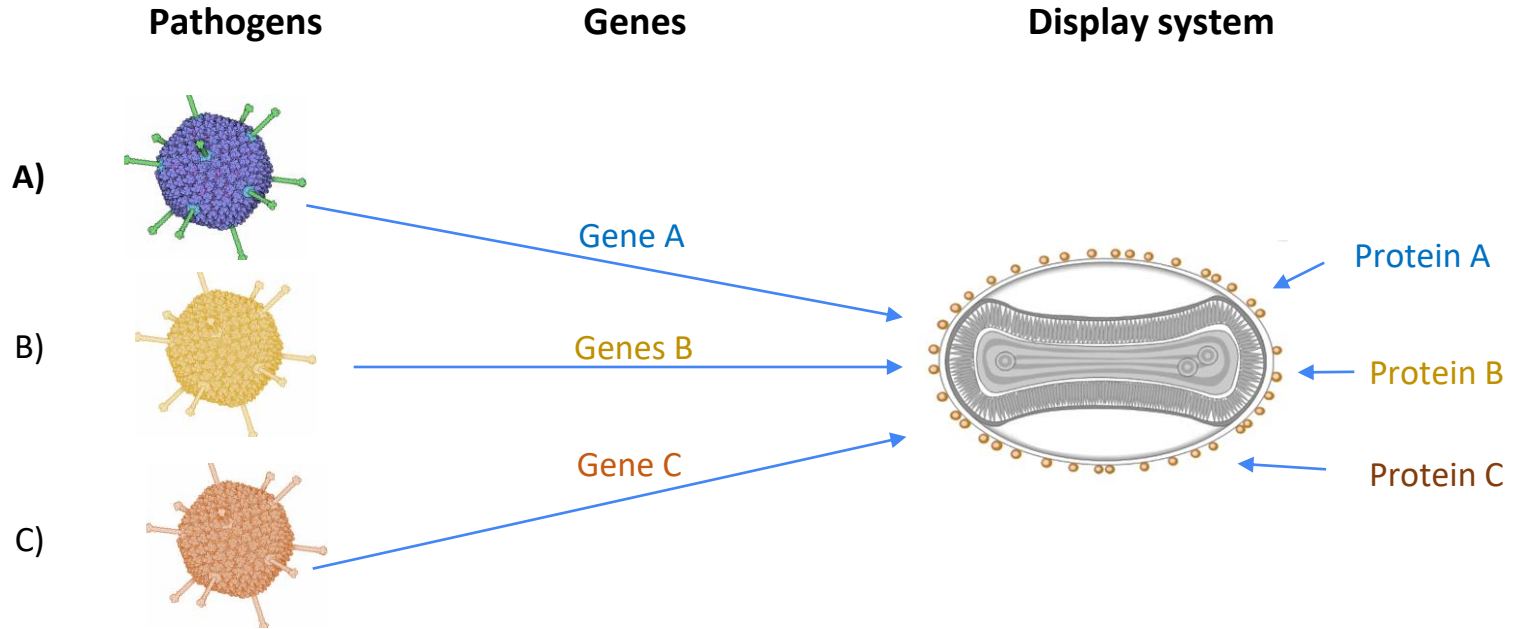


C)





# Vaccine multiplex



Proteins from different pathogens will be displayed and used as vaccines that target multiple diseases

# Collaborations and Certification Bodies

- Collaborations between pharmaceutical companies, Halal certification bodies, and Islamic scholars
- Renowned Halal bodies; JAKIM (Malaysia), MUI (Indonesia), and HCE (Europe)
- Recognize the importance of third-party certification to build trust among consumers

# Vaccine Awareness and Education

- Emphasis the need for awareness campaigns about Halal vaccines
- Address the misconception and concern
- Educate healthcare professionals and community leaders
- Foster transparency in the vaccine manufacturing process

# Benefits of Halal Vaccines

- Enhance vaccine acceptance among Muslim community
- Increase trust and confidence in the healthcare system
- Improve inclusivity and accessibility of healthcare services

# Conclusion

- Vaccine production is a complex process
- It is important to develop and provide Halal vaccines to meet the needs of diverse populations
- Halal vaccine will have positive impact on public health and community well-being
- Develop of vaccines that avoid animal products e.g MOTECK LTD.

Thank You