



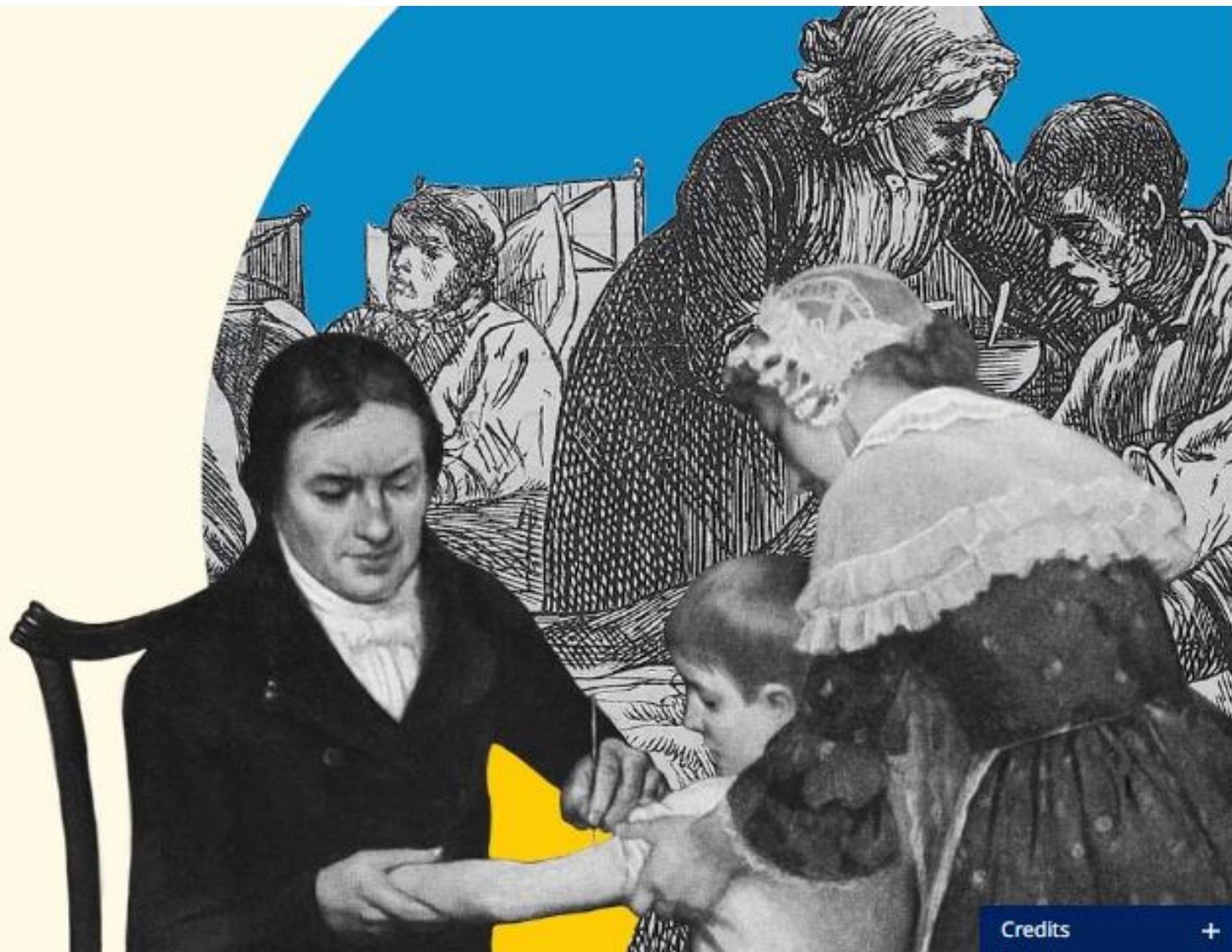
Skin vaccination Challenges & Opportunities

Vanessa Vankerckhoven, PhD
Founder and CEO

September 17, 2024
Flanders Vaccine Symposium on Vaccine Delivery &
Immune Response

1796

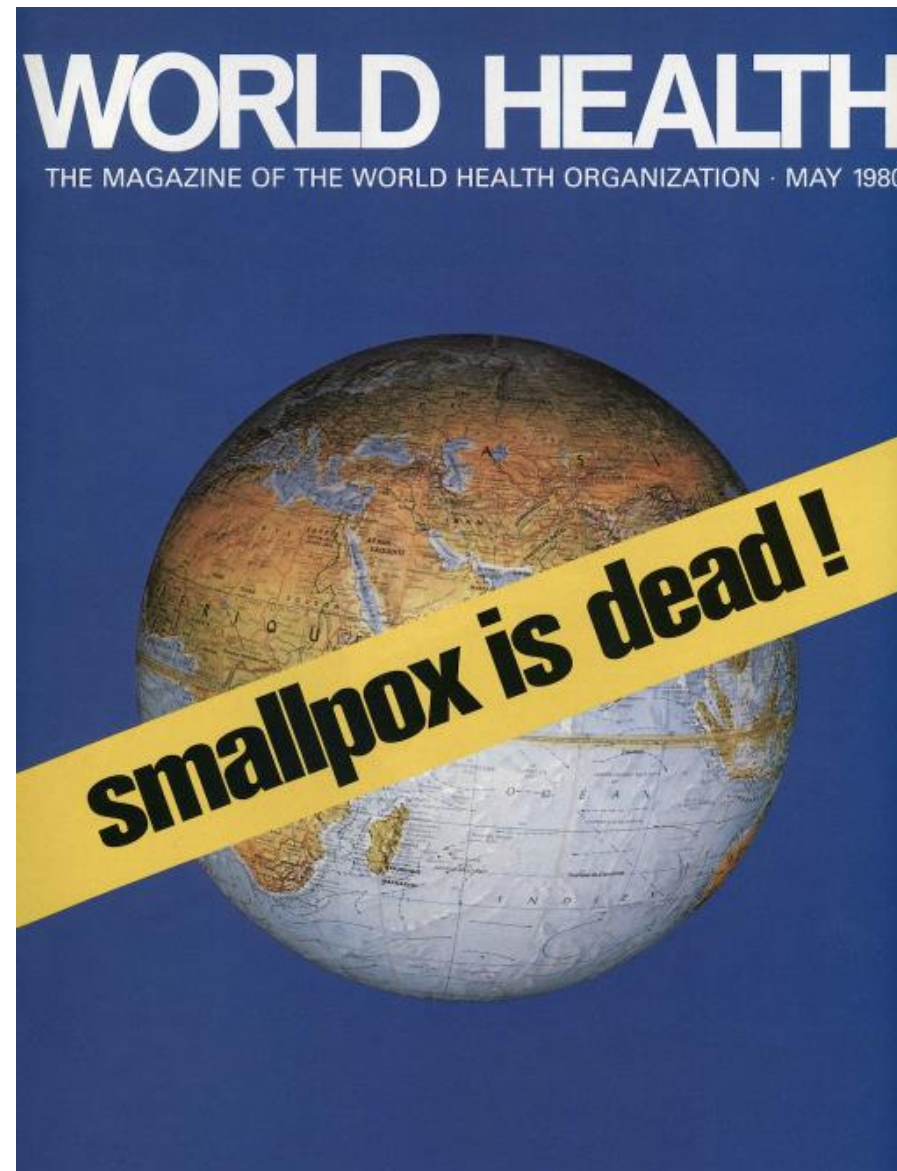
Dr Edward Jenner created the world's first successful vaccine. He found out that people infected with cowpox were immune to smallpox.



Credits







Why skin?

Skin is an overlooked optimal injection site

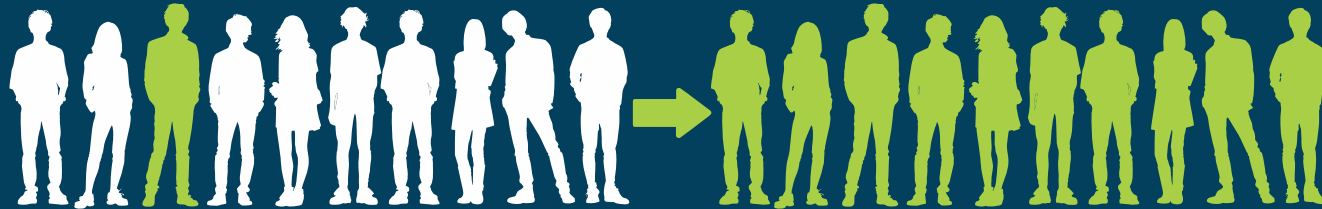
Skin is rich in immune cells

Men have a thicker dermis than women. Newborns have a thicker dermis than toddler, but thinner than adolescents.



Dose sparing opportunities | resolving shortages

Fractional vaccine dosage of only 1/5th to 1/10th of the IM/SC dose necessary for immunogenicity



Own data available for HepB^[1] and Rabies^[2] & literature for Polio^[3], Rabies^[4], HepA^[5], Flu^[6], Yellow Fever^[7], SARS-CoV-2^[8], MPX^[9]



World Health
Organization

As part of the response to the IPV shortage, PAHO/WHO recommended to implement the intradermal administration of one fraction of the complete IPV vaccine, specifically one fifth of the complete dose administered intramuscularly.

Arbo et al, 2019

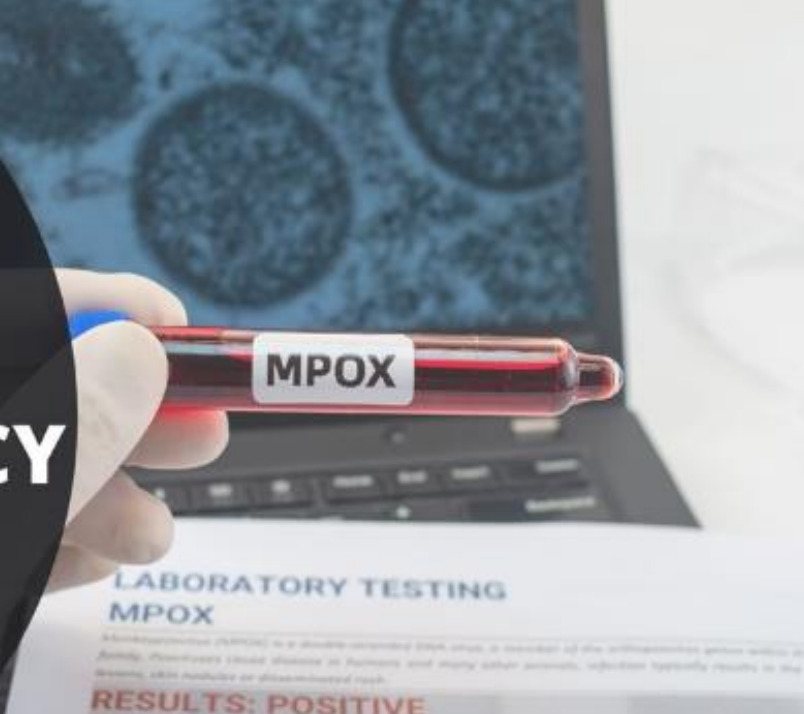


EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

As part of the response to the MPX health emergency, EMA/FDA implemented the intradermal administration of one fifth of the complete MPX vaccine, normally administered subcutaneously, to avoid a pandemic.

MPOX IS A PUBLIC HEALTH EMERGENCY

WHAT YOU NEED TO KNOW ABOUT MPOX AND ADVICE FROM THE EXPERTS.



swollen lymph nodes



rash on face



low energy



headache



muscle aches



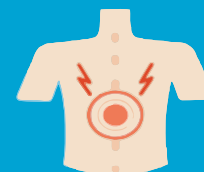
fever



rash on hands



rash on legs



back aches



Global Health
EDCTP3



Global Health EDCTP3 mobilises emergency funding to tackle the ongoing Mpx outbreak | Global Health - EDCTP3

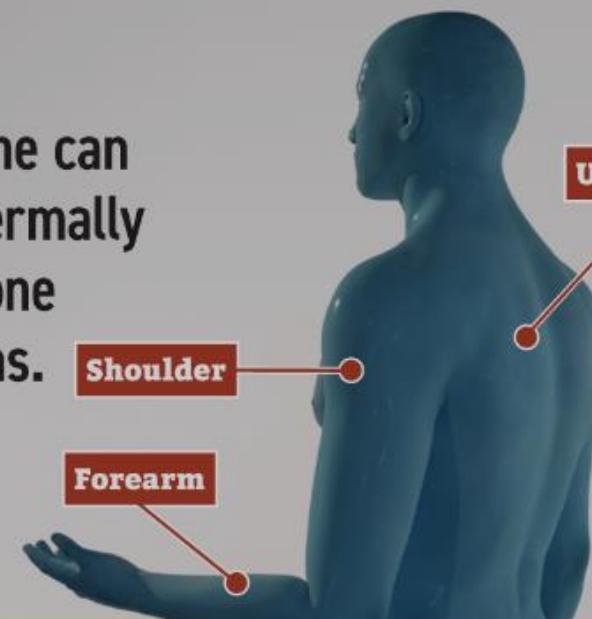
MPOX

The mpox vaccine can be given intradermally (in the skin) in one of three locations.

Shoulder

Forearm

Upper back

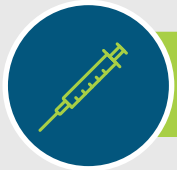


Learn more: www.cdc.gov/mpox



Technical complexity of injection in superficial skin

Up to 70% of injections performed incorrectly



Needle-stick injuries

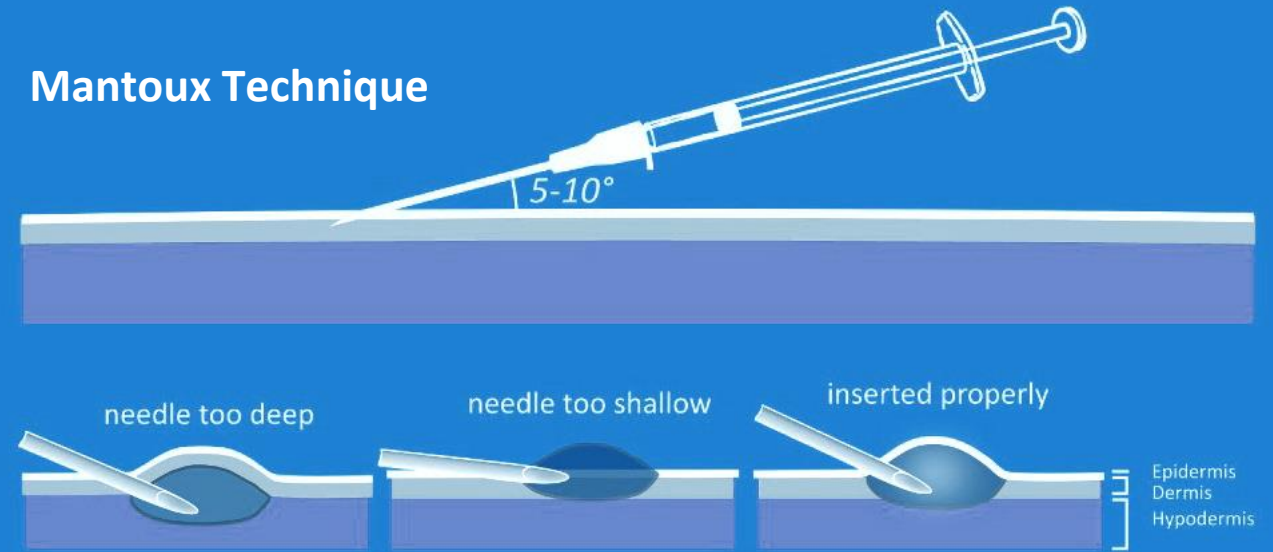


Requires extensive training

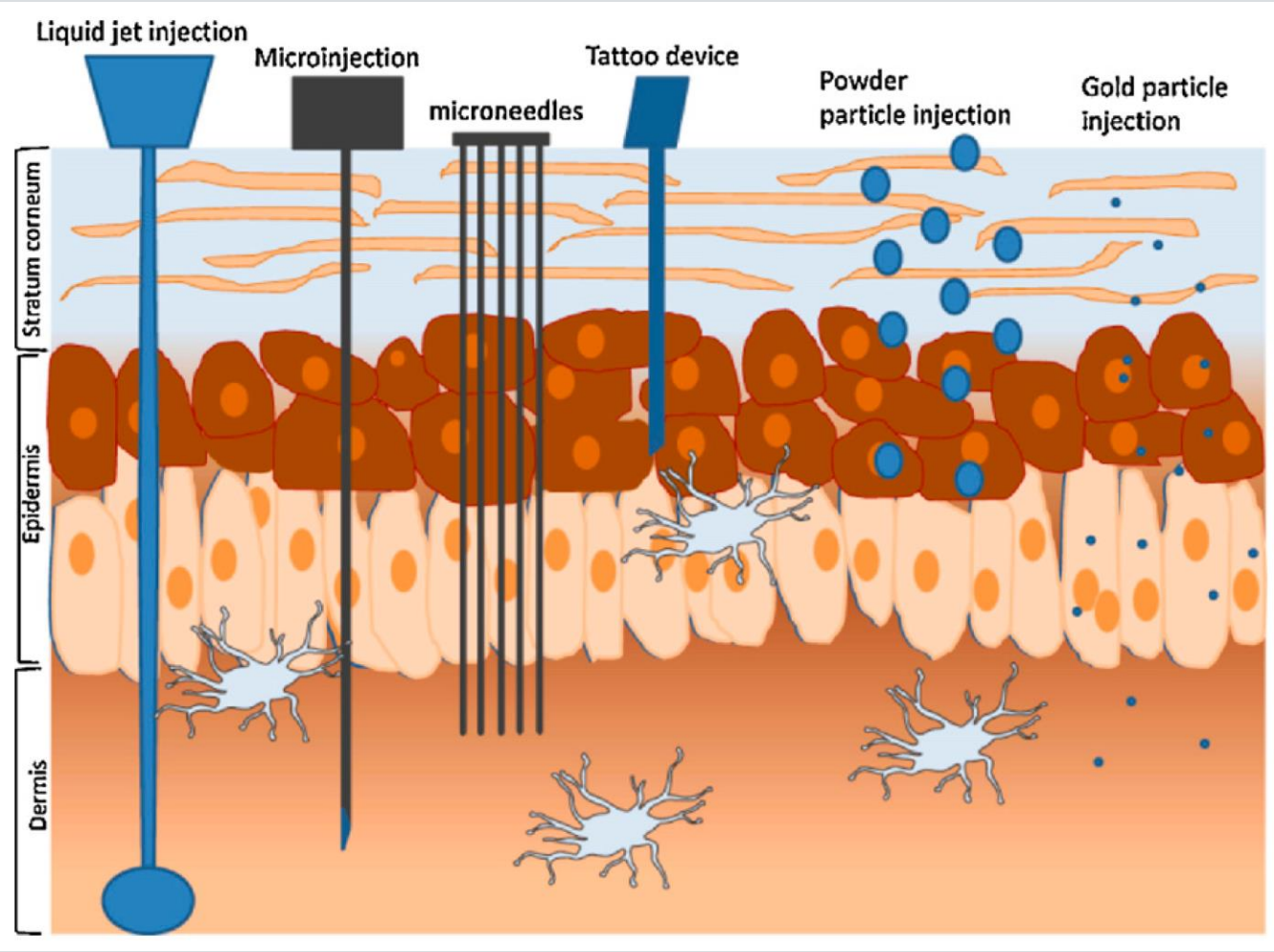


Painful

Mantoux Technique



Skin drug delivery devices



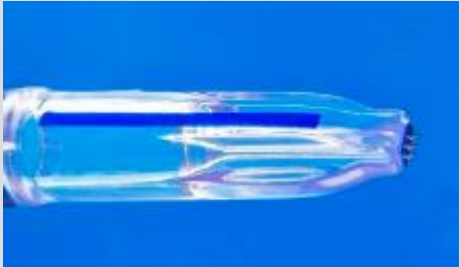
Alkilani et al. Pharmaceutics 2015



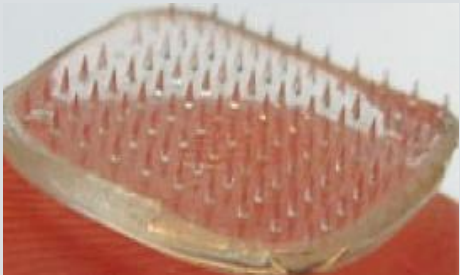
PharmaJet Tropis® ID



Becton Dickinson Intanza®



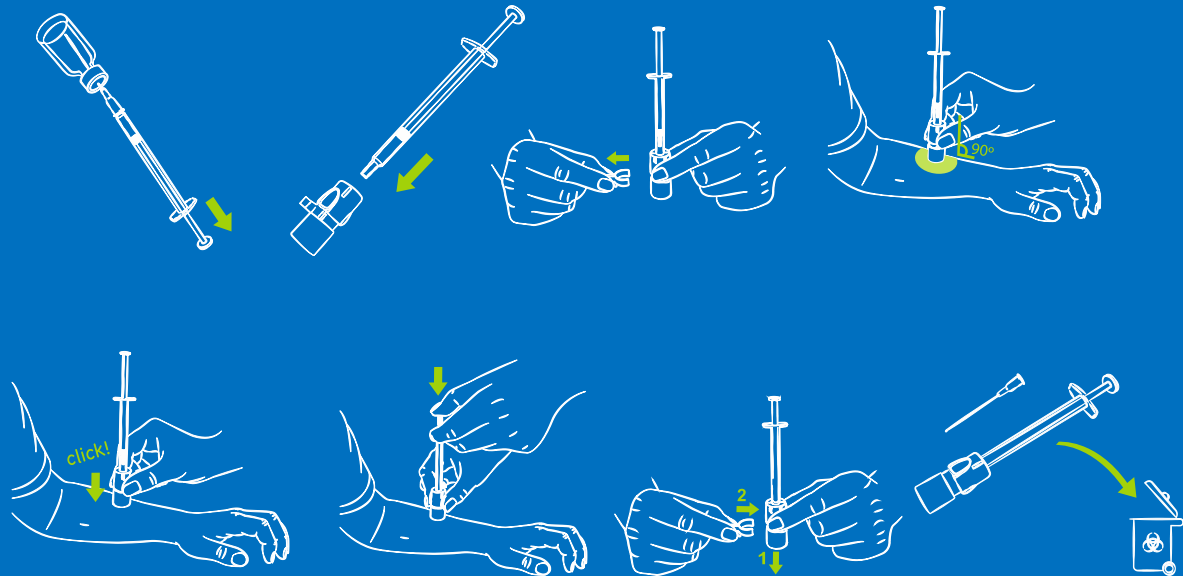
Nanopass MicronJet®



Microneedle patch



VAX-ID®



Our patented award-winning disruptive answer



Protected by 3 patent families



Controlled depth



Easy and safe



Low in pain



ZELSIF
Excellence
Award 2023

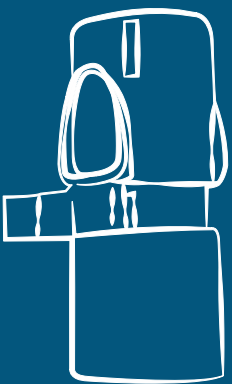
THE
JAMES
DYSON
AWARD

PHARMAPACK AWARD 2023
By CPPE Patient Centric Design



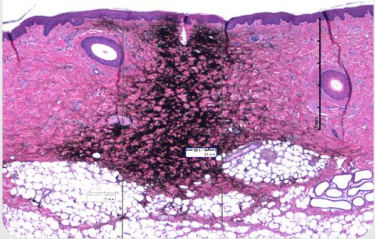
PRIX GALIEN
2024

Our key achievements and assets today

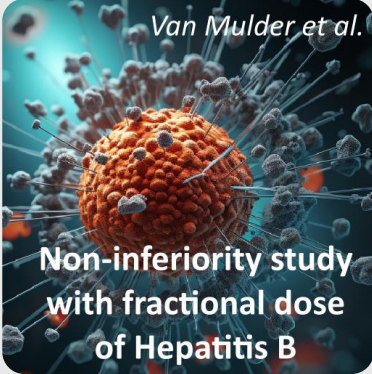


VAX-ID®

**Histology results in
Piglets, Ferrets, Horses**
Beyers, Rbeihat et al.



**Successful usability &
Acceptability Studies**
Beyers, Rbeihat et al.



Van Mulder et al.
**Non-inferiority study
with fractional dose
of Hepatitis B**

**Rabies non-inferiority
study**



Soentjens et al.

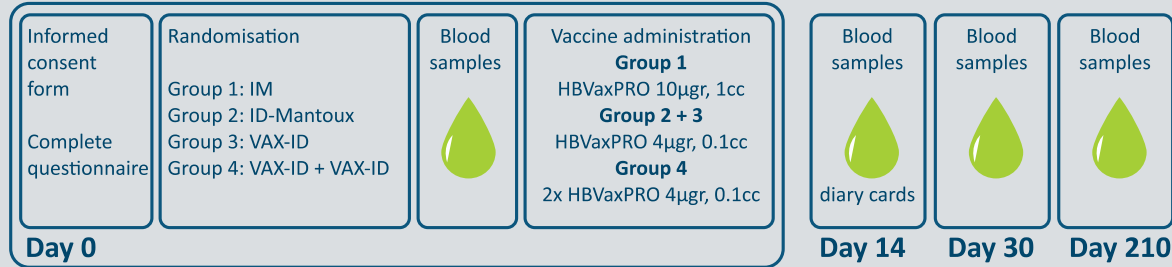
In-house small-scale manufacturing: 10-1000units/day



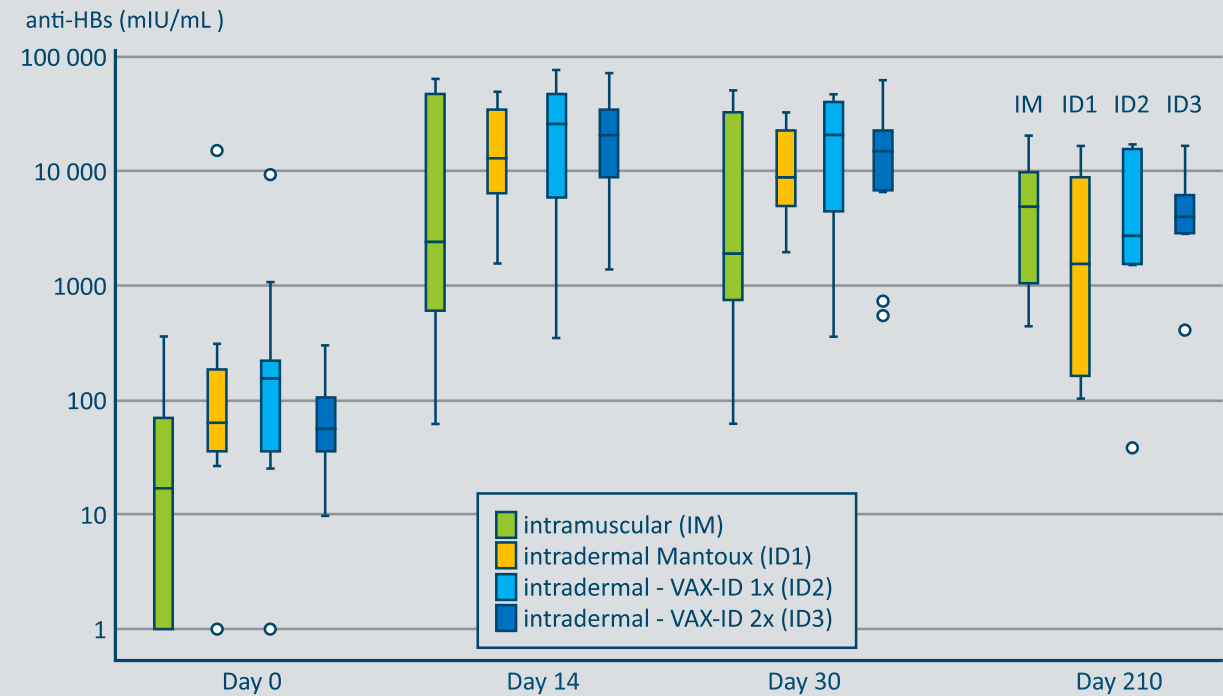
Molds, assembly equipment, and finished products



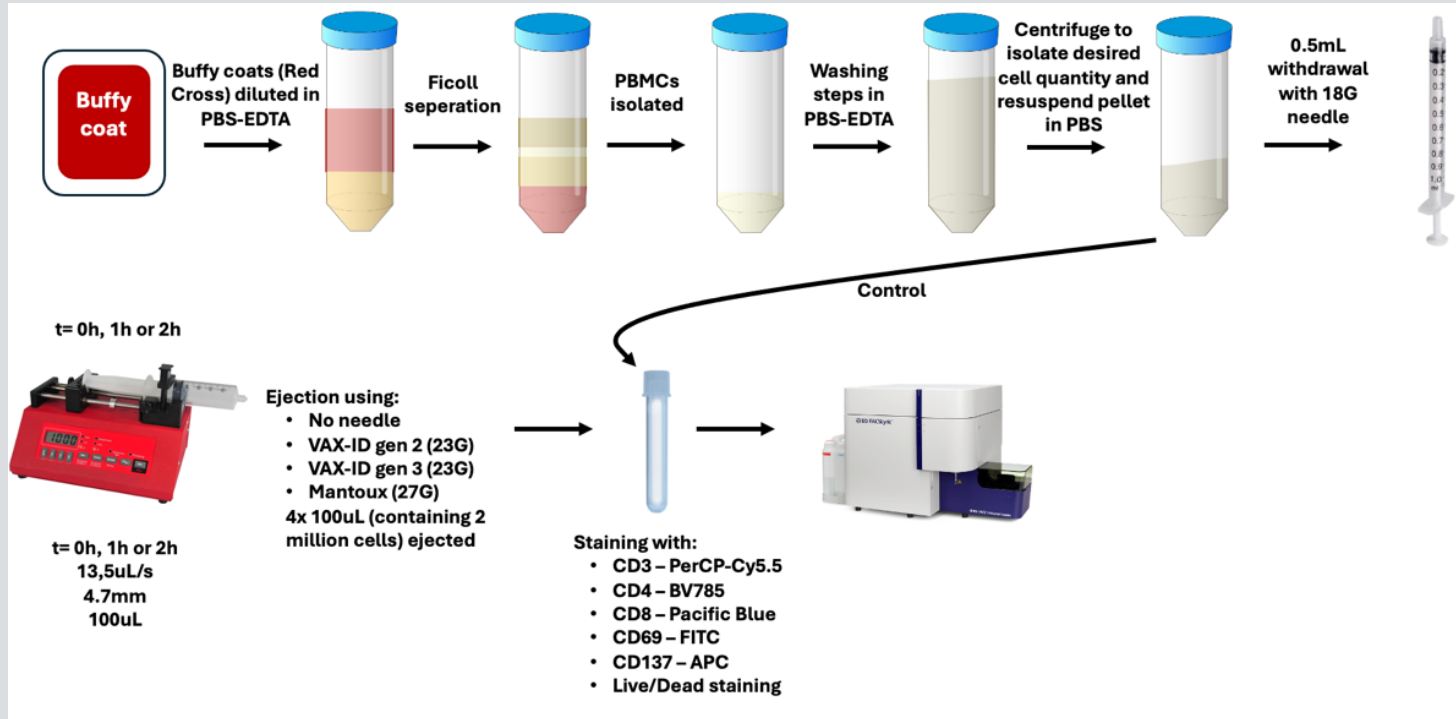
VAX-ID® | Clinical Trial Hepatitis B vaccine fractional dose



- Fractional dose ID administration of a recombinant HepB vaccine showed a **non-inferior immune responses** as full dose IM administration.
- Local side effects were mild, only local redness at the injection site.



VAX-ID® | A promising solution for Personalised Medicine

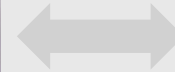


- Viability and activation status of T cells was not affected upon injection (similar results for DCs).
- No differences were observed between a 27G needle, VAX-ID generation 2 (27G), VAX-ID generation 3 (27G) or ejection without needle.
- Promising results in light of cell-based therapies

VAX-ID and ROB-ID: a match made in heaven for pandemic readiness



ROB-ID By  voxdale



VAX-ID®

VAX-ID and ROB-ID: a match made in heaven for pandemic readiness



Technical Verification studies



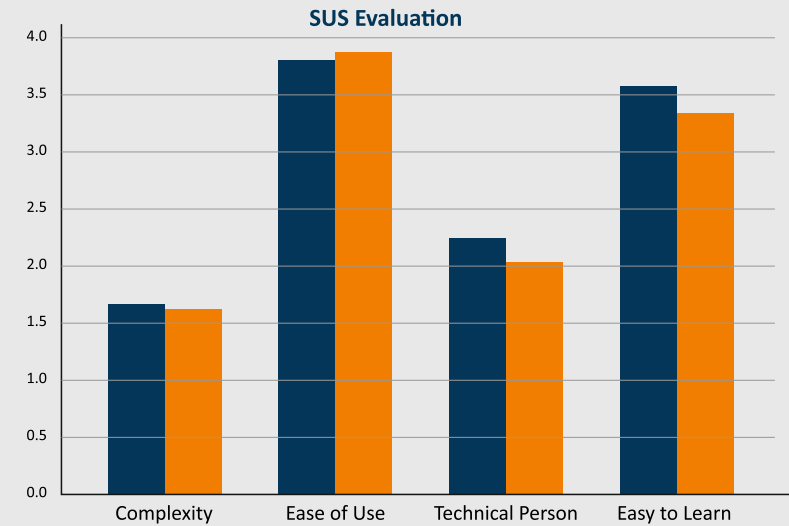
Pre-clinical evaluation in artificial skin



Digital twin study to assess acceptability

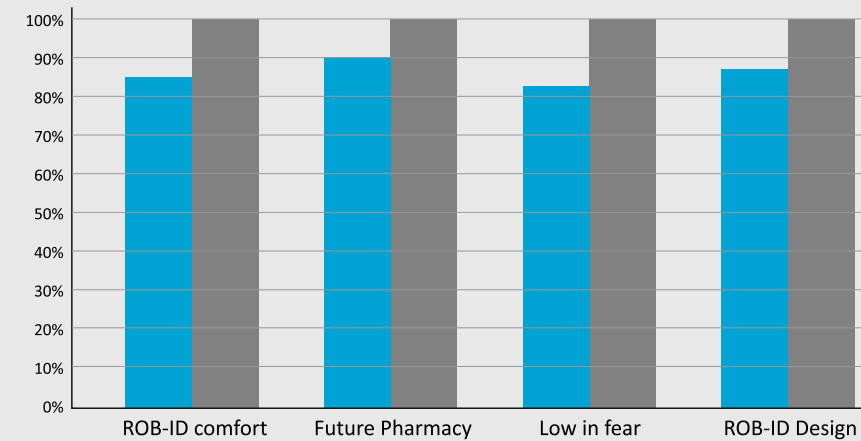


Acceptability study in 211 people



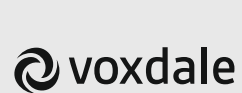
Average Score Digital Twin

Average Score Real ROB-ID



Average

Median



A group of seven people, four men and three women, are captured in mid-air, jumping joyfully on a cobblestone street. They are all smiling and have their arms raised in celebration. The scene is set outdoors on a paved surface with long shadows cast across it. The overall tone is positive and energetic.

Thank you!

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AGENTSCHAP
INNOVEREN &
ONDERNEMEN



Flanders
State of the Art

Interreg HORIZON **2020**

