



Evaluation of the stability of reconstituted Lumpy Skin Disease vaccine at 2–8°C for field applications



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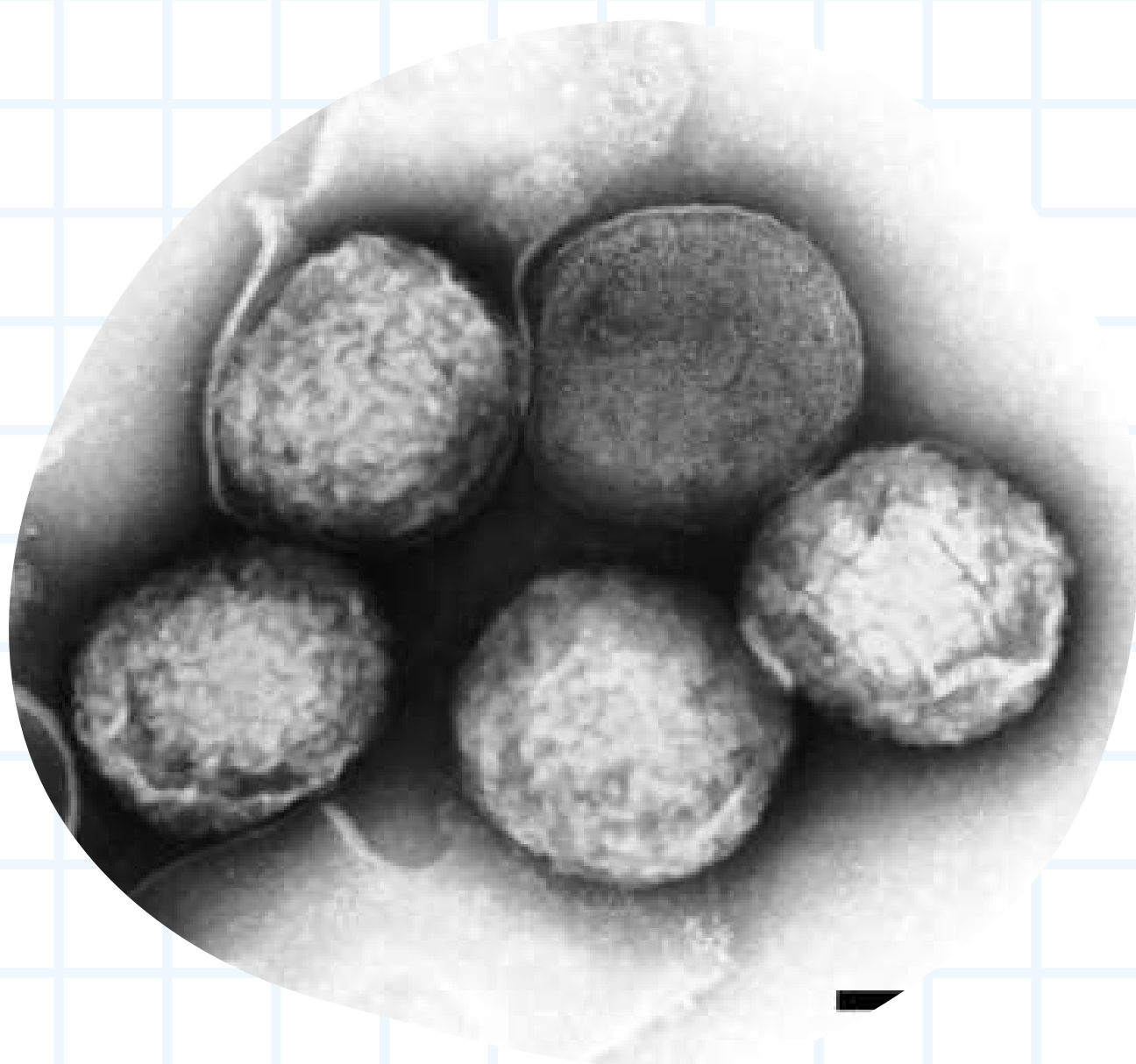
Vetererinary Senior Professional level

Veterinary Biologics Assay and research Center



Background





Lumpy Skin Disease virus (LSDV):

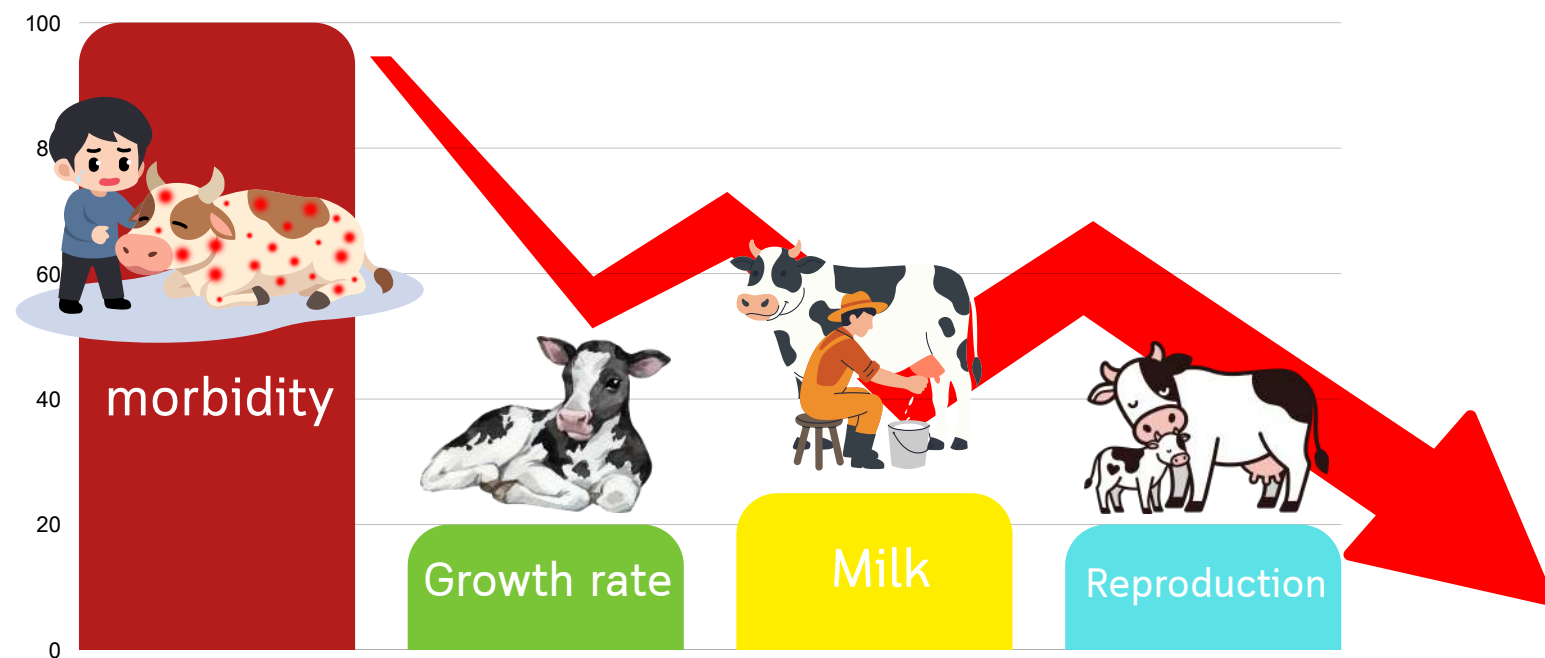
Viral disease affecting cattle and buffalo
caused by the *Capripoxvirus*
vector-borne transmission





Economic Impact

High morbidity reduced milk supply, weight reduction and reproductive impairment

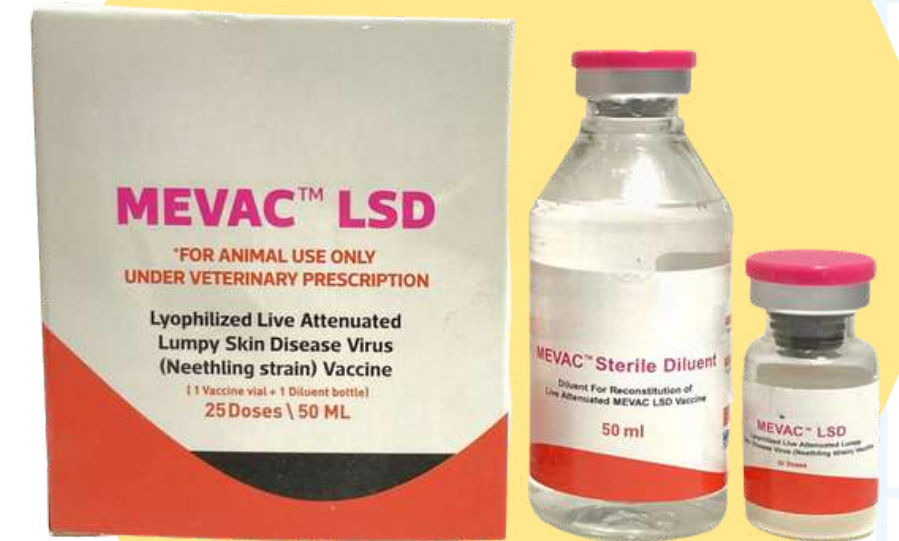


Control Measure

1. **Vaccination**
2. **Vector Control**
3. Farm Biosecurity
4. Movement controls
5. Herd Management

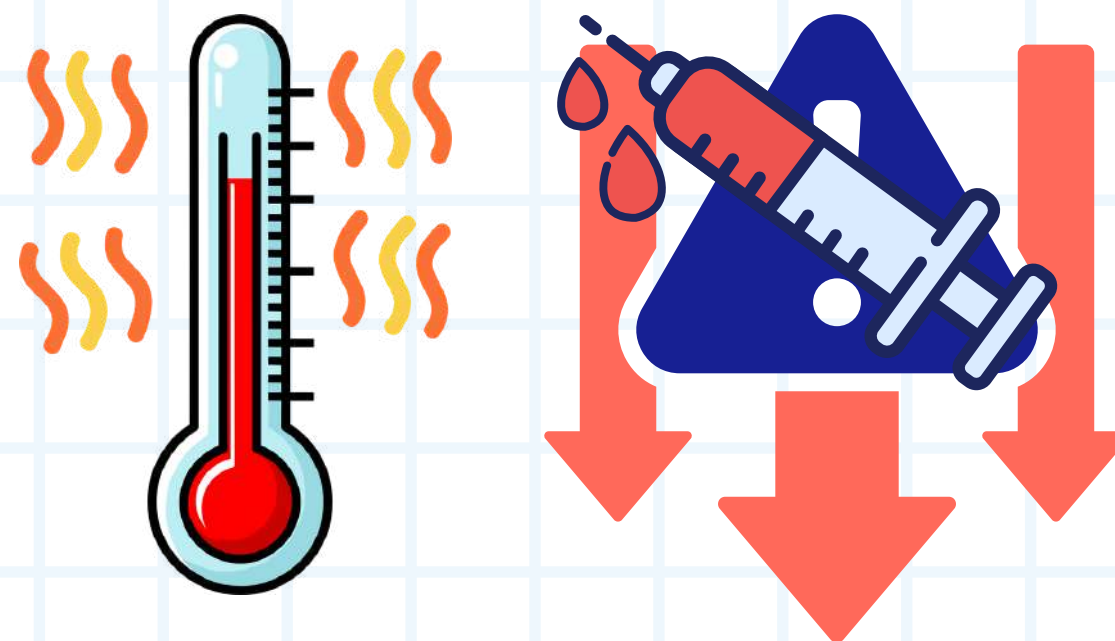


Vaccination is the most effective measure to control and prevent Lumpy Skin Disease (LSD)





Vaccine sharing is limited; vial sizes often exceed herd sizes.



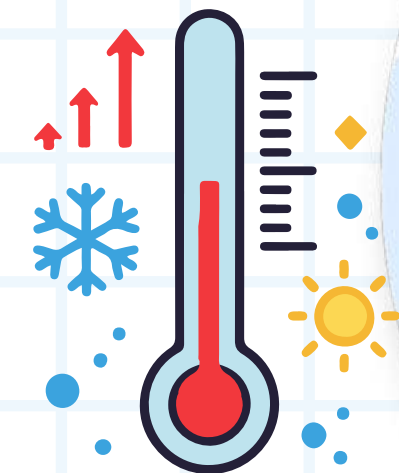
Reconstituted vaccines
degradation
UV/light exposure
Temperature stress



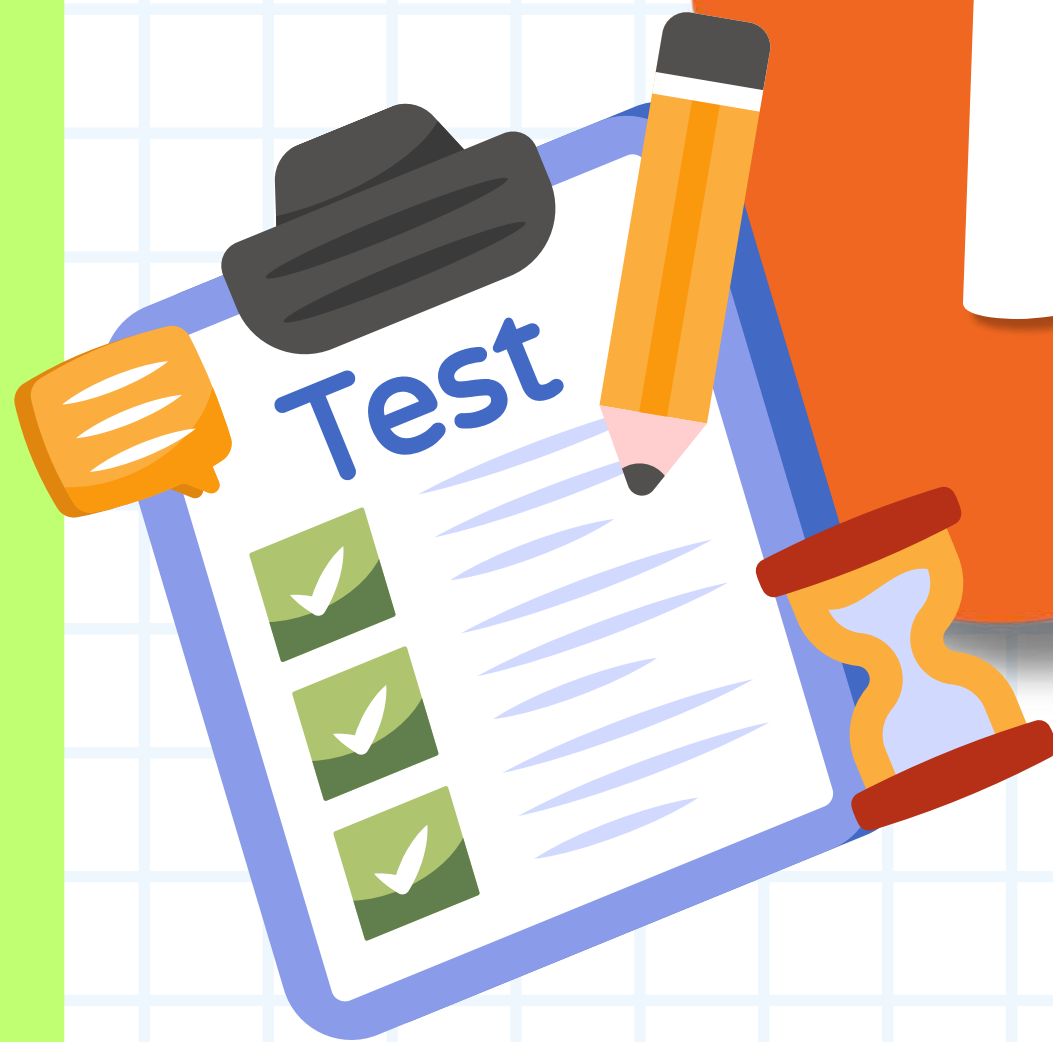
Leads to high field
wastage and elevated
operational costs.

Objectives

This study evaluated of the stability of the reconstituted Lumpy Skin Disease (LSD) vaccine at 2 - 8°C under practical field-use conditions over various time periods



Methods



Samples :

Three batches of commercial lyophilized LSD vaccine. reconstitute according to manufacture manual



Field Simulation Setup :



0 -10 Hours:

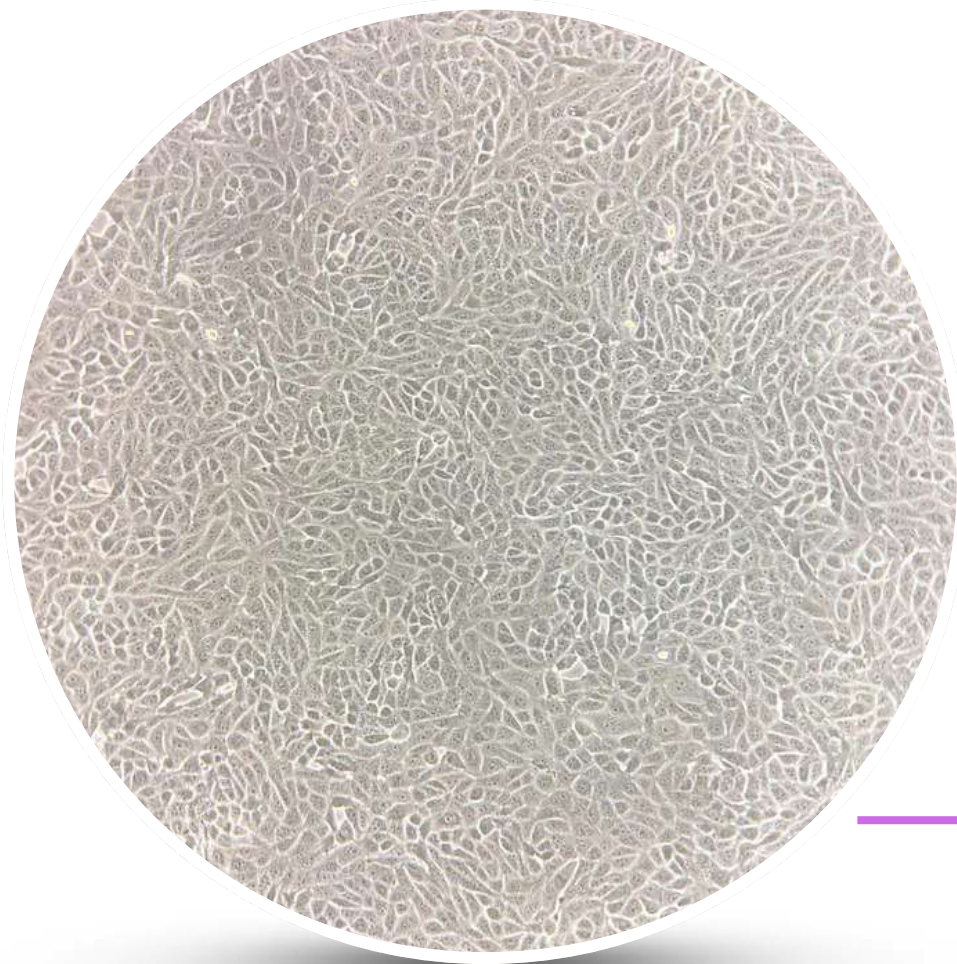
Maintained continuously in an **icebox** at 2-8 °C



Up to 24 Hours:

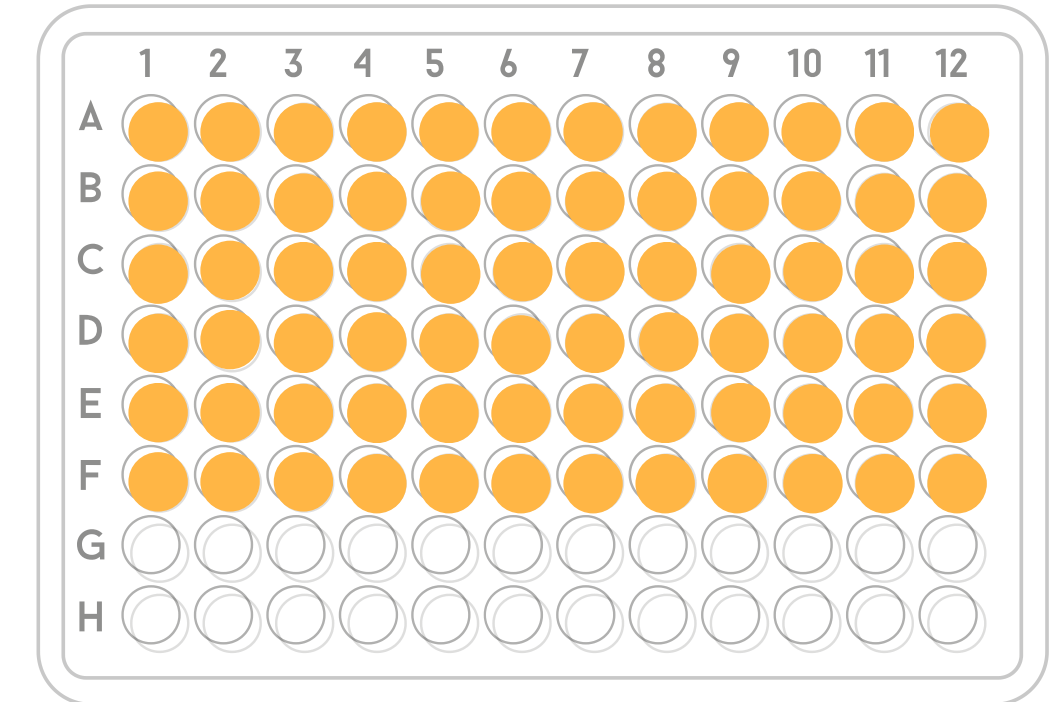
stored in a 2-8 °C **refrigerator**

Cell line



MDBK
(Madin-Darby bovine kidney)

MDBK cell culture flask and preparing a cell suspension with DMEM medium with 10% serum having a concentration of 200,000 cells/ml



MDBK cells seeded in 96-well plates to achieve uniform monolayers.



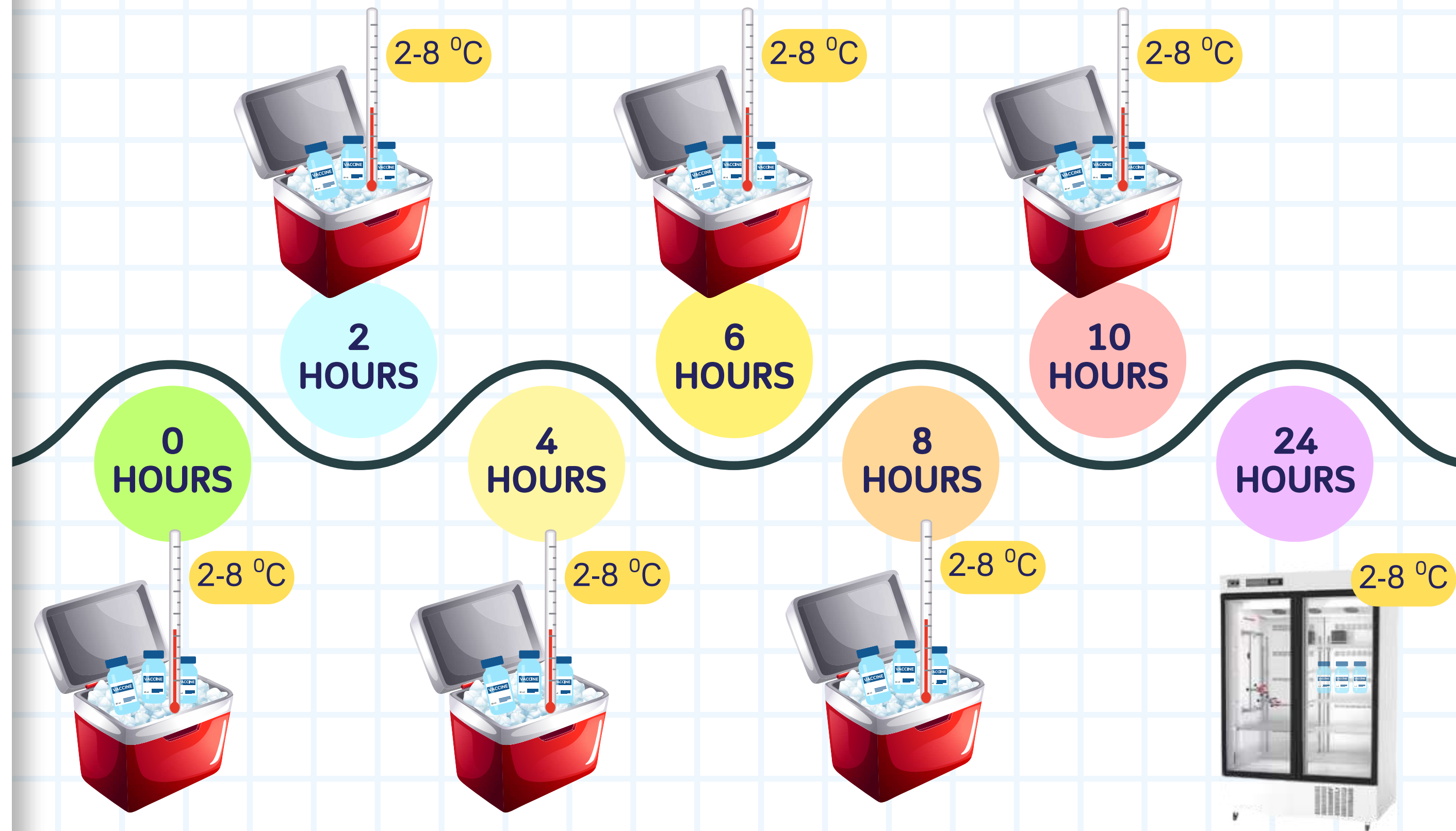
Primary Receptacle



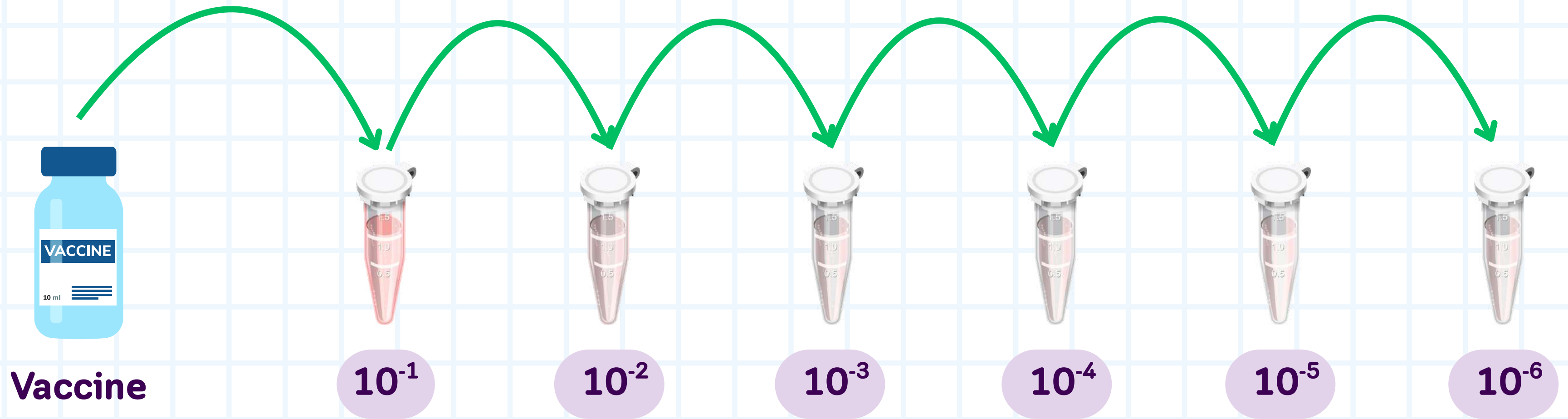
Secondary Packaging



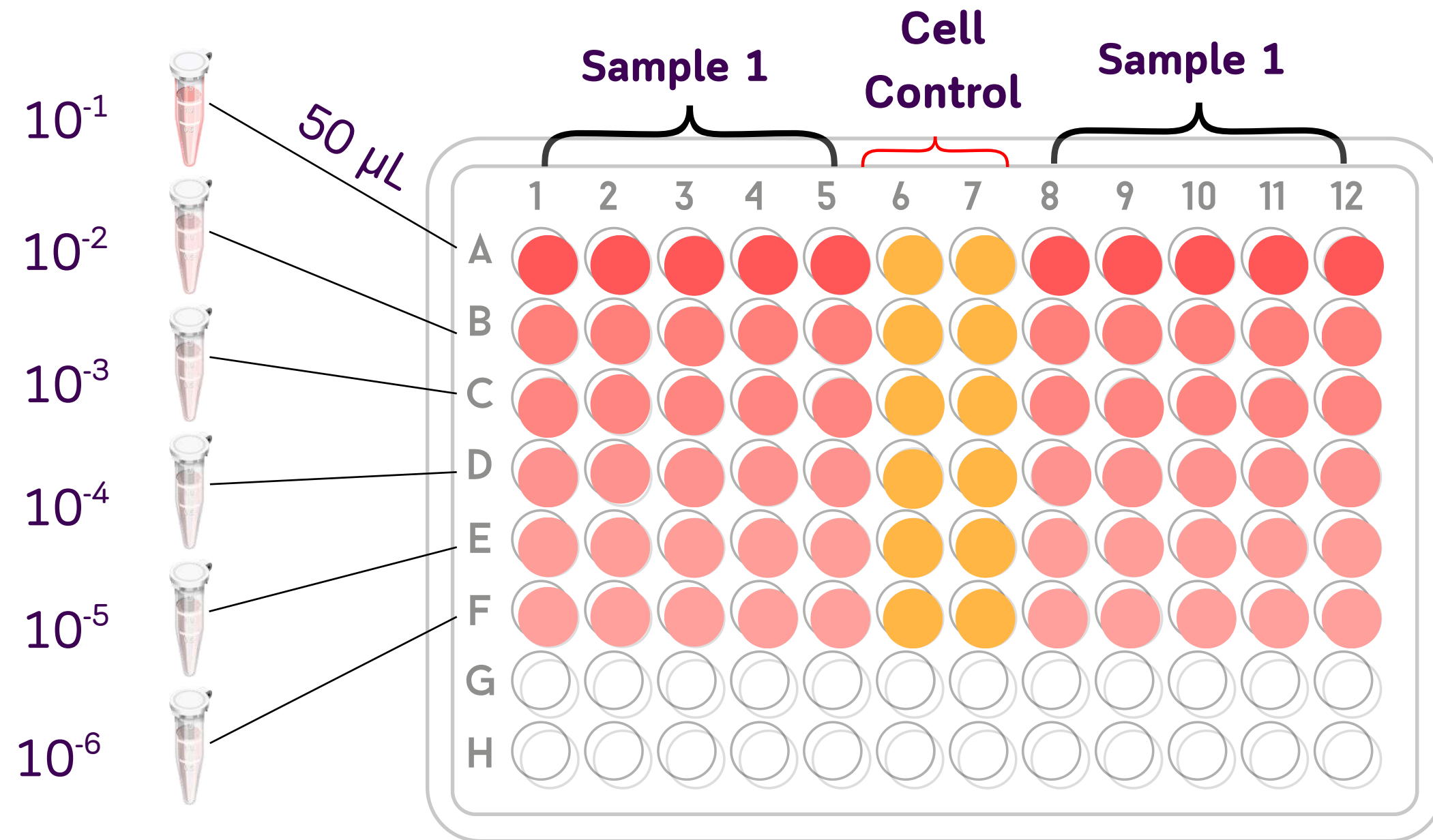
Outer Packaging



10-Fold Dilution



The vaccines were serially diluted from 10^{-1} to 10^{-6}



50 μ L of each dilution was inoculated into five wells (Duplicate)

Incubation Parameters

at 37 $^{\circ}$ C 5% CO₂ , 7 days



examined daily for 7 days
for evidence of
cytopathic effects (CPE)



Cytopathic effects (CPE)

Calculation

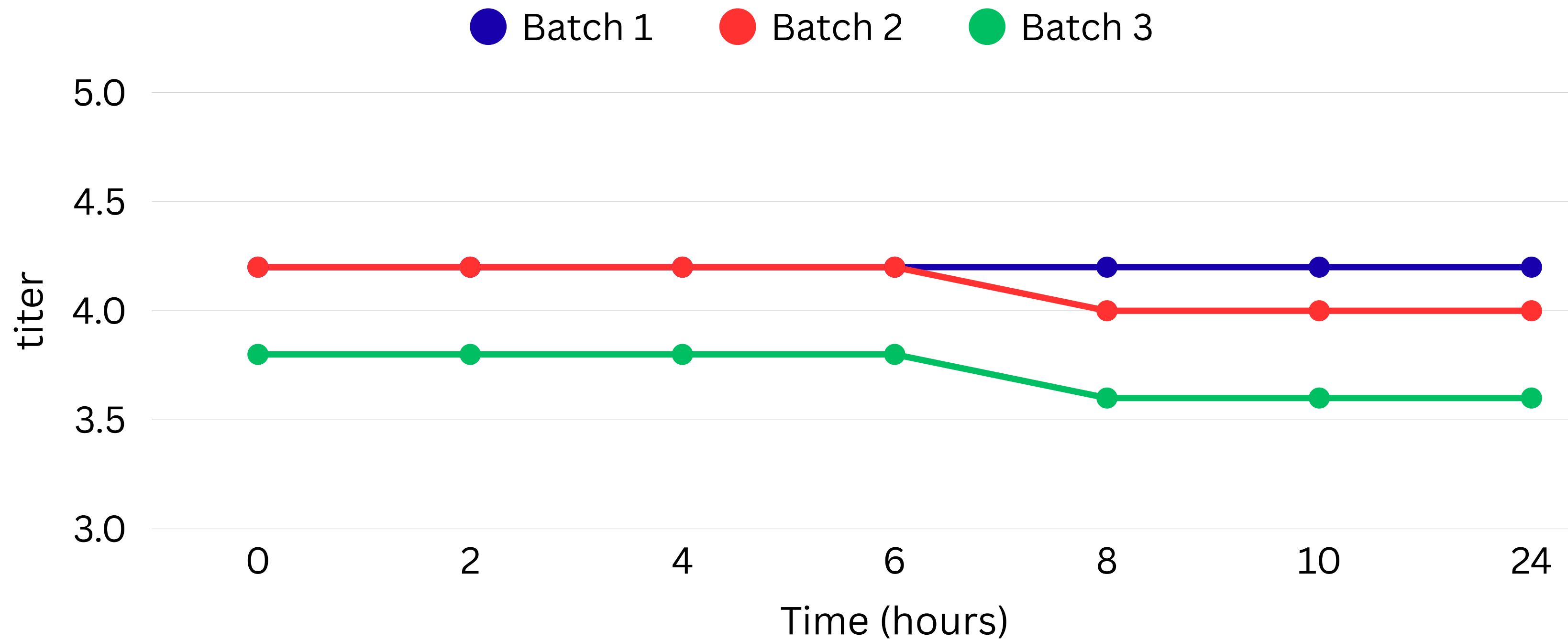
Virus titers
calculated
using
Spearman-Kärber
method



Results



Time (hours)	Virus titer (log ₁₀ TCID ₅₀ /dose)		
	Batch 1	Batch 2	Batch 3
0	4.2	4.2	3.8
2	4.2	4.2	3.8
4	4.2	4.2	3.8
6	4.2	4.2	3.8
8	4.2	4.0	3.6
10	4.2	4.0	3.6
24	4.2	4.0	3.6



The titres of currently available commercial homologous LSD vaccines range between 10^3 and 10^4 infectious units/dose (WOA, 2024)

Conclusion



Reconstituted live attenuated LSD vaccine maintains stable potency for up to **6 hours** when properly handled in an icebox **2-8 °C**

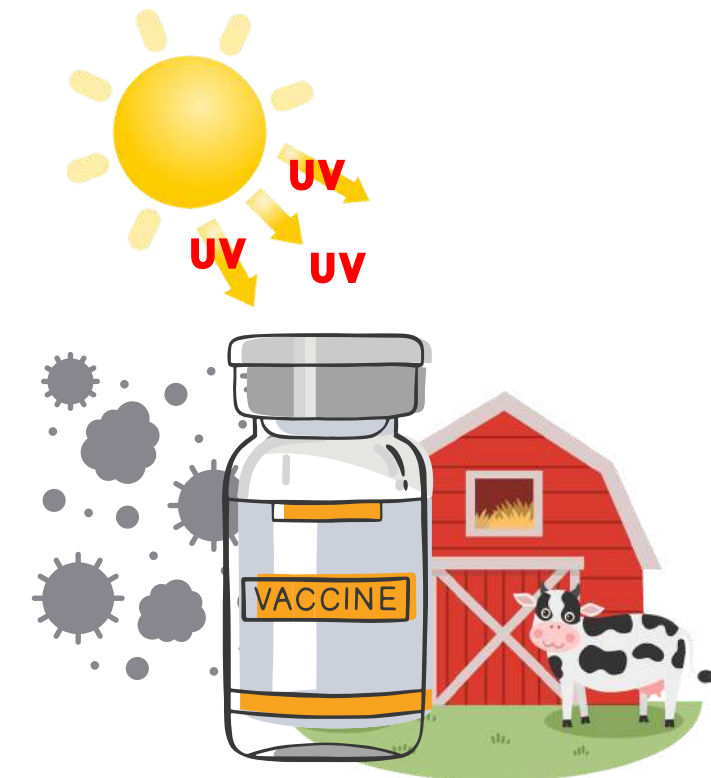


Recommendation



Stability Validation

Regulations require the reconstituted vaccine to be administered within a six-hour window



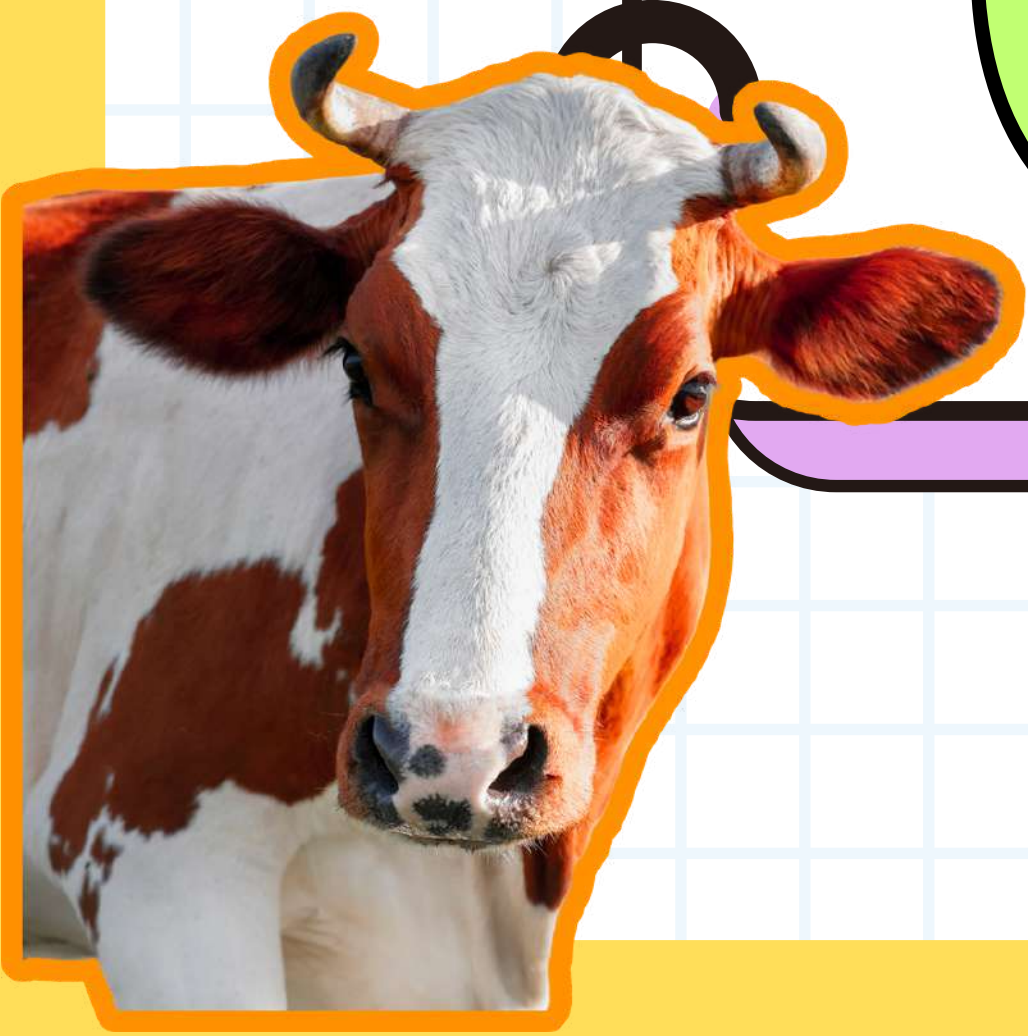
Compounding Field Risks

While vaccine titers are stable for 24 hours in the lab, field conditions risk bacterial contamination and rapid viral degradation from UV light exposure

THANK

YOU





Q & A

