

Revolutionary Herpes Vaccine: Preventing Initial and Recurrent Infections of HSV-1 and HSV-2



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Herpes Simplex Virus Type 1 (HSV-1) and Type 2 (HSV-2)

BACKGROUND

- Herpes virus family: HSV-1 and HSV-2
- Establishes persistent, latent infection in neurons
- Common infect skin, eye, oral and genital tract: usually self-limiting, but may be severe and life threatening
- Sexually transmitted disease
- >500M infected worldwide with HSV-2
- >3.7 billion infected with HSV-1
- **No licensed vaccine**



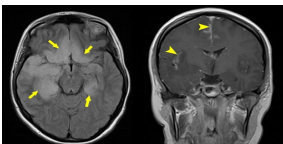
Cold sores



Facial infection



Newborn Herpes



Herpes simplex encephalitis

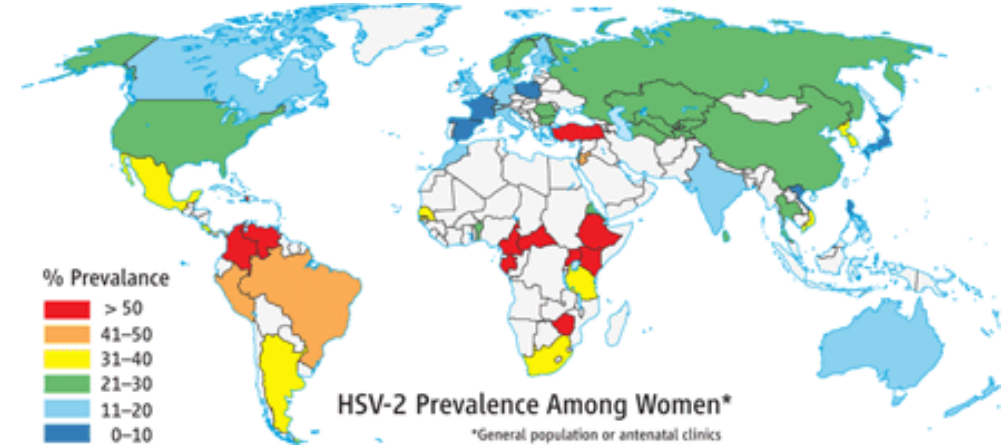


Herpes simplex keratitis

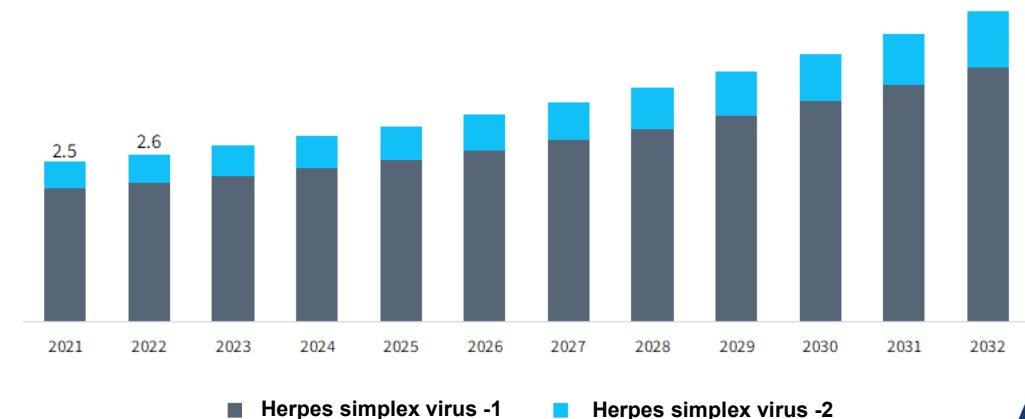


Genital Herpes

HSV-2 Prevalence worldwide: US 30%!

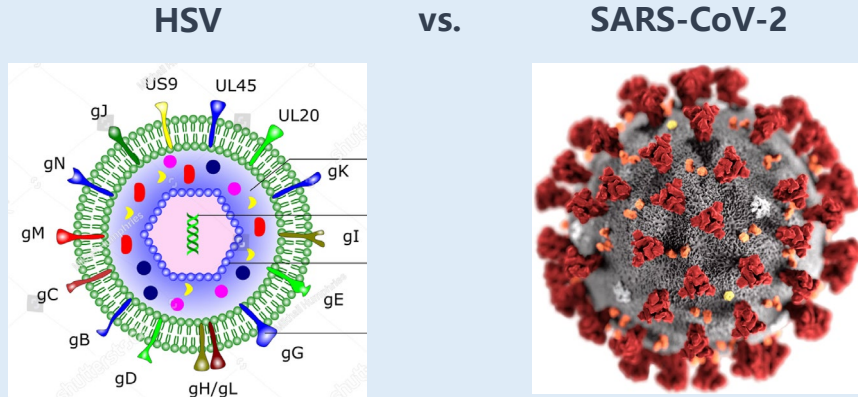


HSV Treatment Market, 2021-2032 (USD Billion)



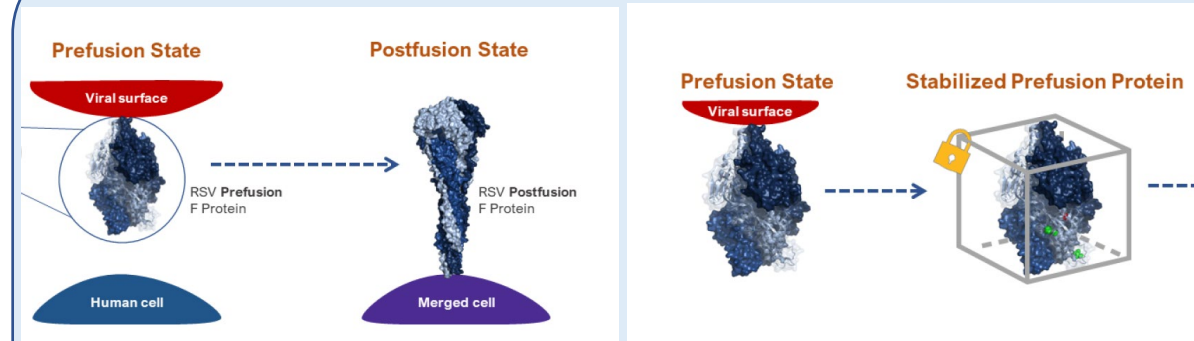
Why There Is No Approved HSV Vaccine?

Complexity of HSV virus (over 13 glycoproteins)



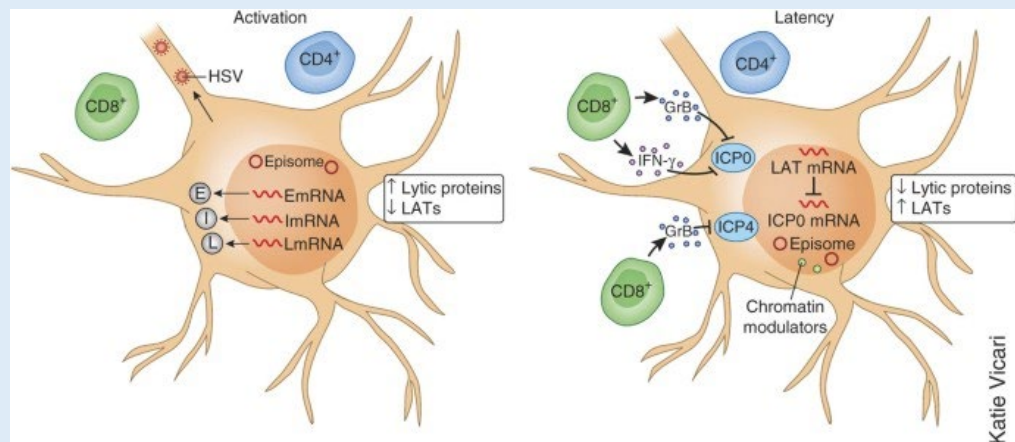
Most Vaccines express only 1 or 2 viral proteins

Importance of Prefusion Conformation for nAbs



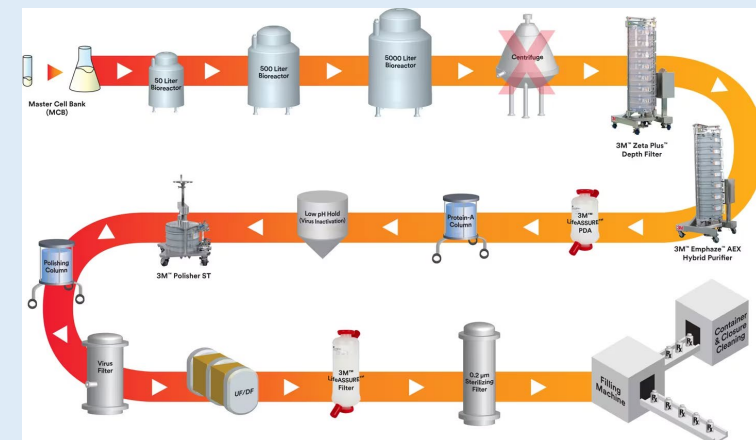
Most Vaccines use Post-fusion viral proteins

T Cells Critical to Preventing HSV Virus Recurrence



Insufficient T Cell Responses with Current Platforms

Process complexity of expressing viral proteins



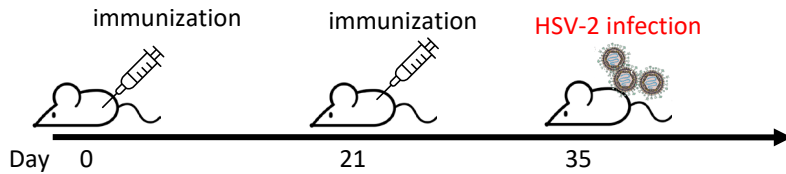
Difficulty in producing vaccines against multiple viral proteins

ARV-2001, a HSV vaccine for preventing HSV-1 and HSV-2 infection and recurrence

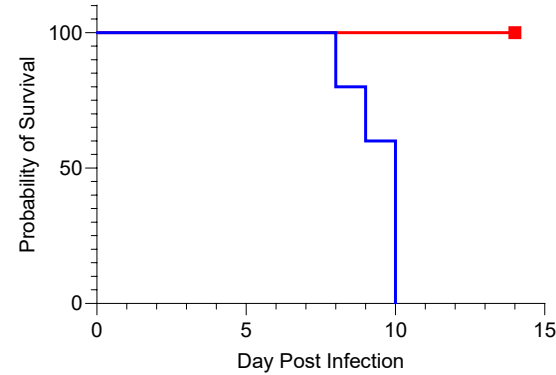
Why ARV-2001 will prevent both virus infection and recurrence?

- **Elicits robust neutralizing antibodies**
 - Targeting multiple viral glycoproteins for maximum protection
 - AI designed prefusion conformation of glycoproteins for inducing nAbs
- **Induces broad T cell responses**
 - Strong induction of T cells
 - Multiple T cell epitopes design for protection both HSV-1 and -2 infections
- **LNP Technology: Efficient with minimal side effects**
- **Indications:**
 - Protects HSV-1 and HSV-2 infections
 - Prevents initial HSV-1/-2 infection and recurrence

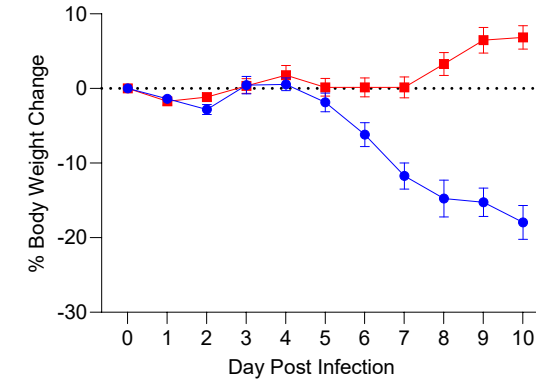
The ARV-1002 HSV vaccine provides complete protection against lethal HSV-2 infection



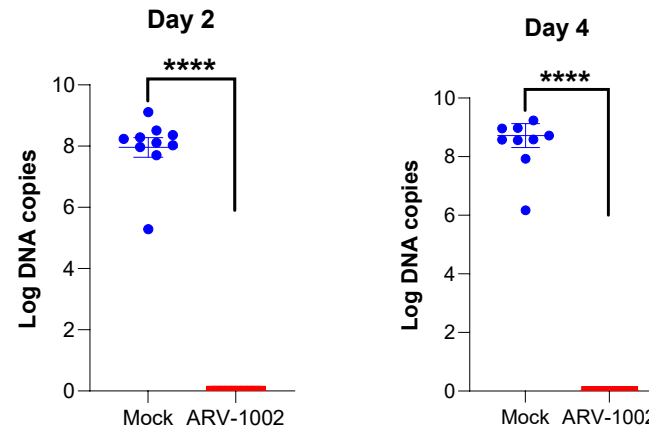
Survival



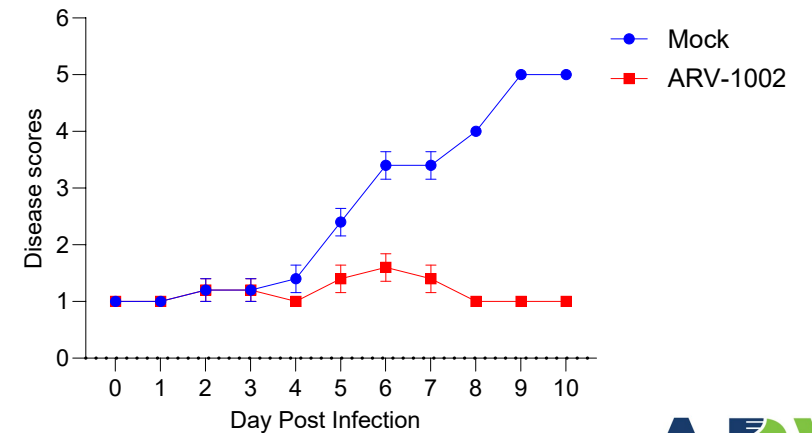
Body weight



Vaginal Viral Titers



Disease Scores



Advantages of ARV-1002 Herpes Vaccine

- ✓ mRNA expressing viral proteins in Prefusion Conformation for potent neutralizing antibodies;
- ✓ Targeting multiple viral proteins for maximal protection
- ✓ Leverages L002 LNP for effective delivery with minimal side effects;
- ✓ Multiple T-cell Epitopes (MTE) design ensures protection for both HSV-1 and HSV-2;
- ✓ Protects against initial and recurrent HSV infections
- ✓ Achieves full protection with just two vaccinations, surpassing 3-dose alternatives.*
- ✓ Global intellectual property protection

minimizing side effects

Protects initial and recurrent infections

Targeting multiple viral proteins

Multiple T-Cell Epitopes design



2 immunizations fully protection,

Global IP-Protected

Protect HSV-1 and HSV-2

*Sci Immunol. 2019 Sep 20;4(39):eaaw7083

3 Years Roadmap to Clinical Studies

ACTIVITIES	2024	2025	2026
IND-Enabling Studies	Animal studies for HSV-1 and HSV-2 (1.0 M)		
Manufacturing	Vaccine Development & Manufacturing (2 M)		
Regulatory & Clinical Trial Set-up	 INTERACT Submission: early FDA guidance  Pre-IND submission	IND Prep & Early Clinical trial set-up (0.5 M)	IND submission
Phase I/II			Phase I (6 MM)

* Red values indicate approximate funds needed to complete each phase

We are actively seeking collaborators and licensing opportunities for HSV vaccines, **ARV-1002**.

If you are interested in learning more, please reach out to:

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