



Vaccine and a panel of neutralizing antibodies effective for the treatment and prevention of Human Herpesvirus 6B (HHV-6B) infection

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Background

Human Herpesvirus 6B (HHV-6B)

A Ubiquitous Human Pathogen

Infects nearly all children and remains latent for life.

Significant Disease Burden

- ~60% of infected infants develop **roseola (exanthem subitum)**.
- ~100 cases of **encephalitis/encephalopathy** annually in Japan; ~50% with **neurological sequelae**.
- Reactivation after HSCT causes **encephalitis** in ~10% of patients.
- Drug-triggered reactivation can cause **severe hypersensitivity reactions** and **liver/kidney injury**.

Current Treatments and Challenges

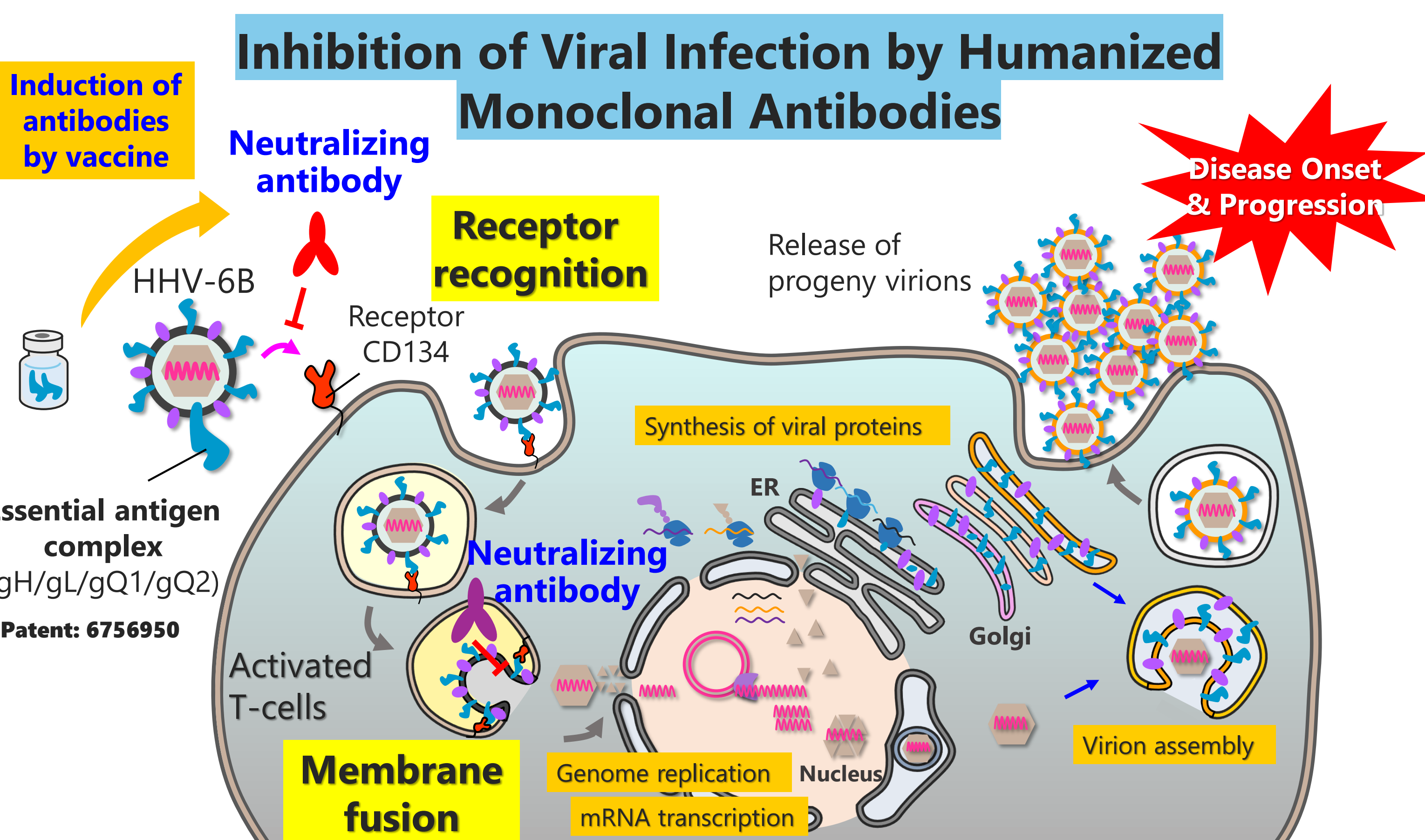
- Foscarnet is approved for HHV-6 encephalitis after HSCT.
- Limitations include insufficient efficacy and nephrotoxicity.
- For primary infection in infants and severe drug-induced hypersensitivity reactions, only supportive care is currently available.

Study Objective

To develop **HHV-6B vaccine and antibody-based prophylactic/therapeutic strategies** for HHV-6B infection, based on the identified HHV-6B antigen and a panel of neutralizing antibodies.

HSCT: Hematopoietic Stem Cell Transplantation

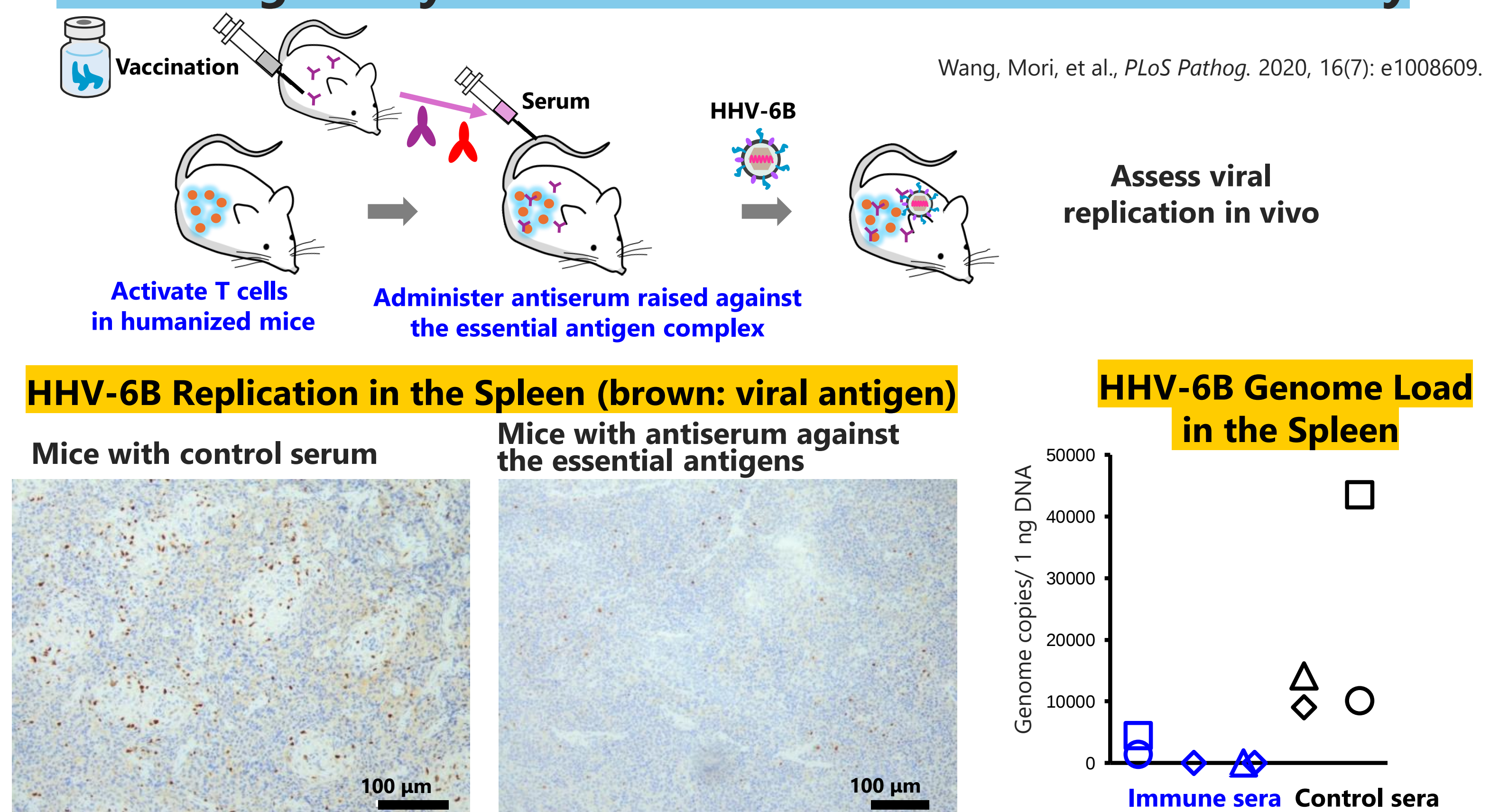
Technical Significance



Neutralizing antibodies against the essential antigen complex block receptor binding and membrane fusion

Kawabata, Mori et al. *J. Virol.* 2011;85(24):12962-71; Wang, Mori et al. *J. Virol.* 2019;93(10):e02270-18.

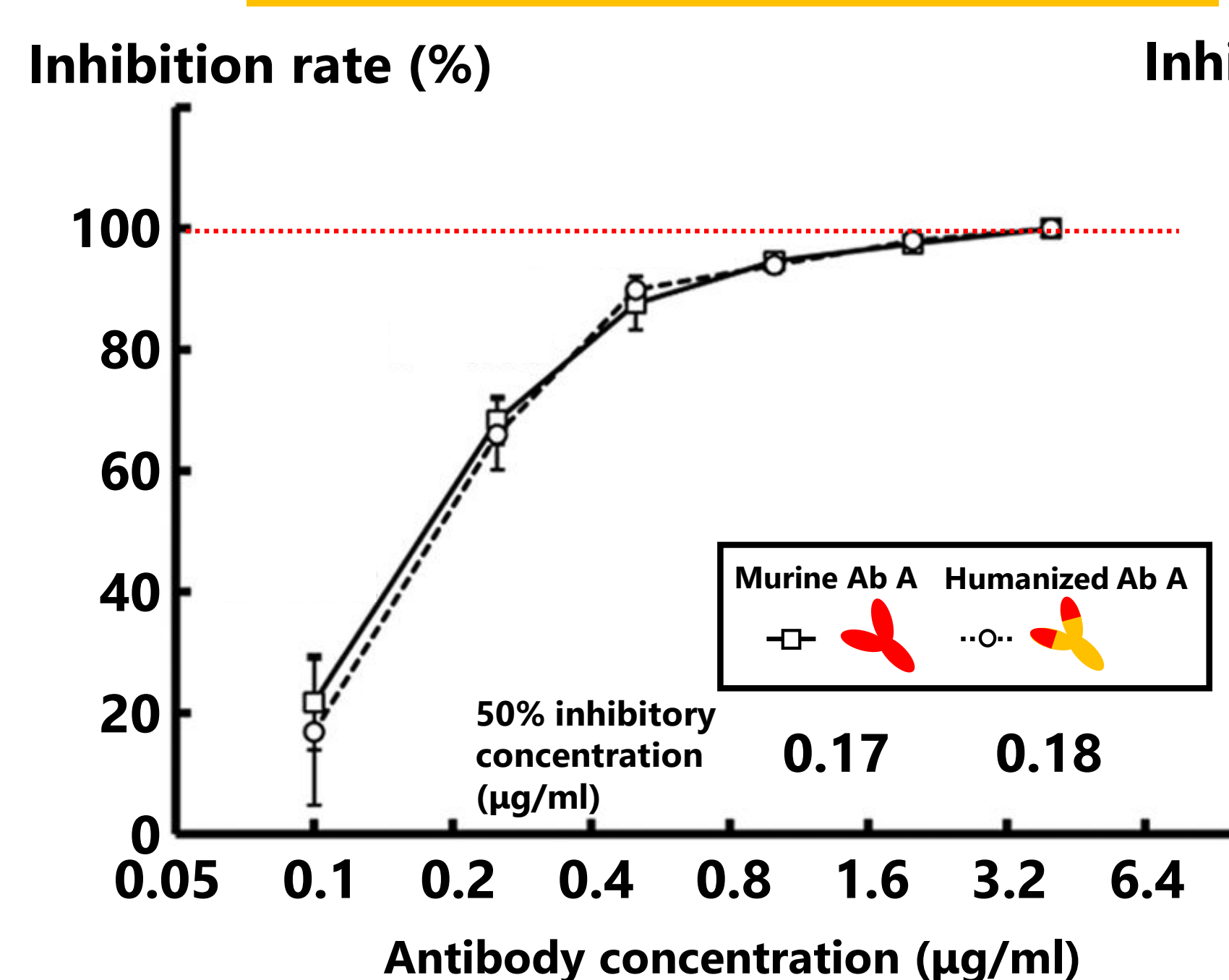
Immunogenicity of a subunit vaccine and *in vivo* efficacy



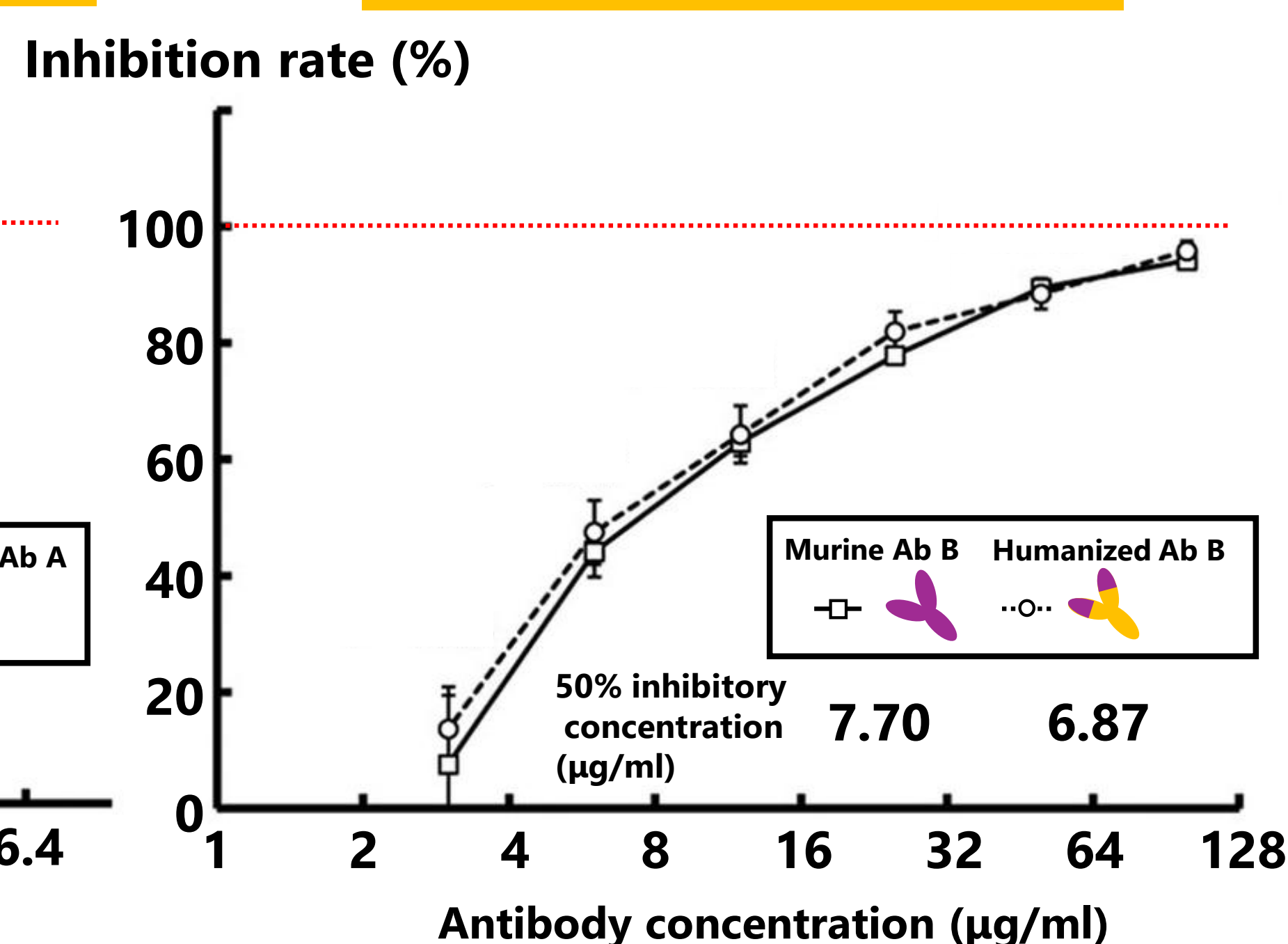
Neutralizing antibodies targeting the essential antigen complex prevent infection *in vivo*

Infection-inhibitory activity of neutralizing antibodies

Receptor-binding Inhibitory Neutralizing Antibody



Fusion-Blocking Neutralizing Antibody



Neutralizing antibodies with distinct mechanisms completely block HHV-6B Infection

Future Prospective

- Patent secured; pursuing pediatric vaccine development.
- Potential for prevention and treatment of HHV-6B encephalitis following HSCT and primary infection in infants
- **Superior efficacy, safety, and durability** compared with the current antiviral.
- Compatible with combination therapy due to a distinct mechanism of action.

- More than six monoclonal neutralizing antibodies with defined epitopes are available for development.
- Antibody combinations targeting different epitopes and mechanisms of action can be employed.
- Further optimization via antibody engineering.

Contact

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