

mRNA vaccine inducing anti-HTLV-1 neutralizing antibodies



■ Researchers

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■ Concept

- mRNA vaccine to induce anti-HTLV-1 neutralizing antibodies (NAbs)
- Immunogen optimization for efficient anti-HTLV-1 NAb induction
- Collaboration with Prof Damian Purcell, Doherty Inst, Univ Melbourne to develop a global consortium for international clinical trials

■ Backgrounds

- ✓ In HTLV-1 transmission, latently infected cells transmitted from HTLV-1 carriers to uninfected recipients begin to express HTLV-1 in recipients, resulting in "cell-to-cell" HTLV-1 transmission to recipient cells.
- ✓ It was a great challenge to determine whether vaccine-induced Abs can prevent "cell-to-cell" HTLV-1 transmission.
- We have recently shown that NAb induction by vaccination can result in functionally sterile HTLV-1 protection in macaques, highlighting the rationale for strategies aimed at NAb induction in prophylactic HTLV-1 vaccine development.
- ✓ Varieties of attempts failed to induce anti-HTLV-1 NAb efficiently.
- We have developed a Sendai virus vector expressing a chimeric Env to induce NAbs resulting in HTLV-1 protection.
- We are now developing a HTLV-1 mRNA vaccine to induce higher & more durable NAb responses by immunogen optimization.

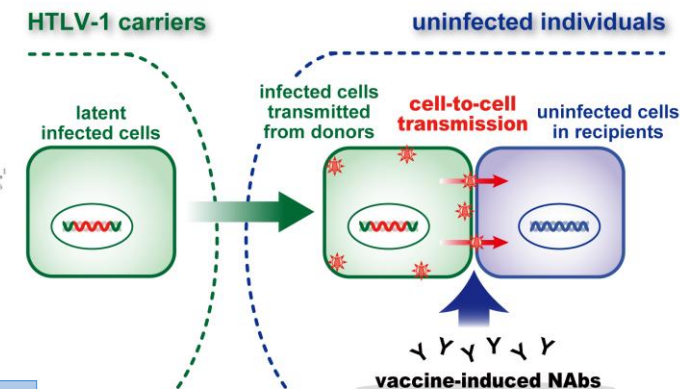
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Molecular Therapy
Original Article

Prophylactic vaccination inducing anti-Env antibodies can result in protection against HTLV-1 challenge in macaques

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Vaccine-induced anti-Env antibodies can prevent cell-to-cell HTLV-1 transmission.



■ Research Summary

- Design & Construction of optimized immunogens for mRNA vaccine
- Efficient anti-NAb induction in mice
- Ongoing: Evaluation of immunogenicity in macaques
- Next: Evaluation of protective efficacy against HTLV-1 challenge in macaques
- Collaboration with Doherty Inst to seek for immunogen to induce NAbs cross-reactive to HTLV-1c as well as HTLV-a.

■ Future

- Non-clinical ongoing in macaques ⇒ Clinical trial
- Looking for an Industry
- Collaboration with Doherty Inst to develop a global consortium towards an efficacy clinical trial