Therapeutic vaccination with auto-antigen mRNA loaded TolI-cLNP cures murine model of multiple sclerosis

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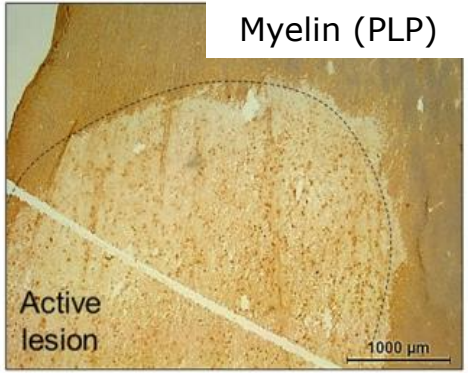
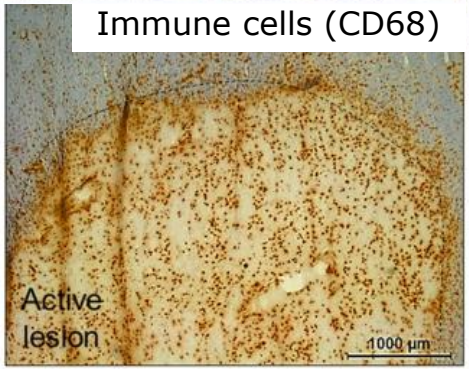
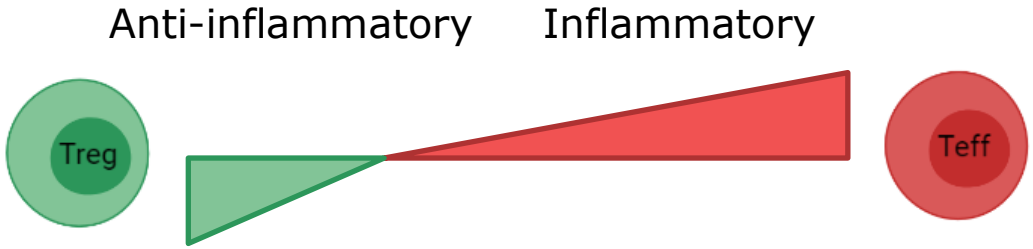
Multiple sclerosis – Goal – Results – Conclusion







Need for a new therapy

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Hermans *et al.* 2022; PLP: myelin proteolipid protein; Teff: effector T cell; Treg: regulatory T cell

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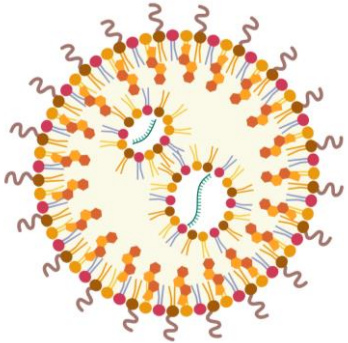
Re-establish tolerance in an antigen-specific manner

1. Antigen-specific, immune-silent mRNA

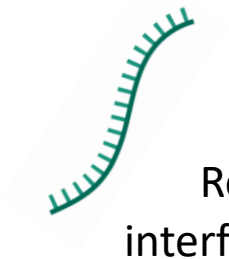
2. Tolerizing customized lipid nanoparticles (Tol-cLNP)



Teff: effector T cell; Treg: regulatory T cell

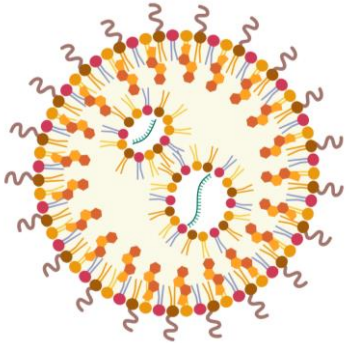
Re-establish tolerance in an antigen-specific manner

1. Antigen-specific, immune-silent mRNA



Reduced activation of interferon regulatory pathway

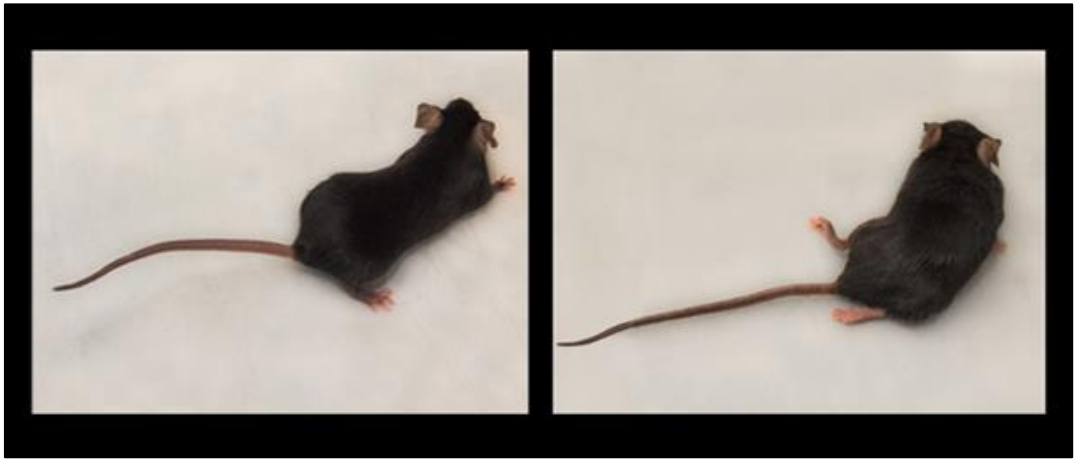
2. Tolerizing customized lipid nanoparticles (Tol-cLNP)

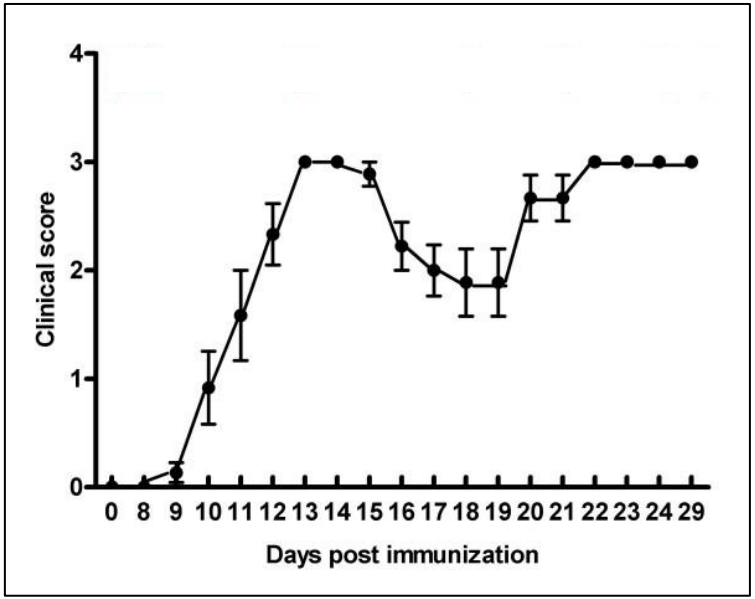


Targets APCs in liver and spleen

APC: antigen-presenting cells; Teff: effector T cell; Treg: regulatory T cell

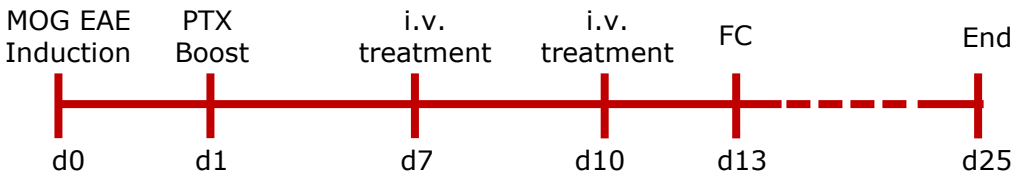
EAE

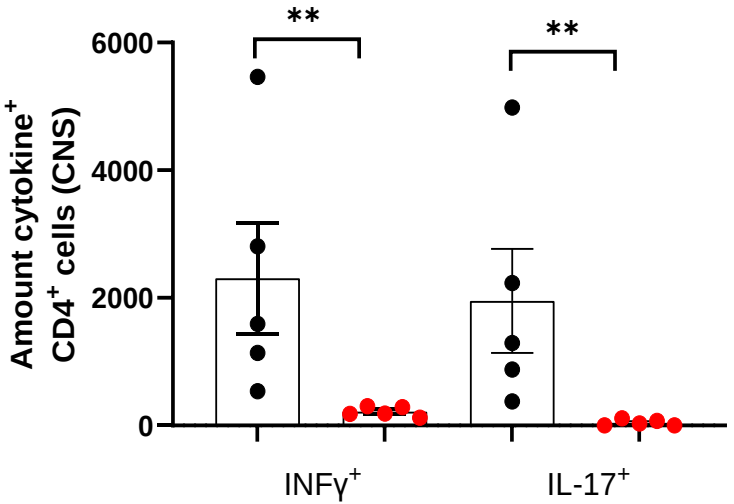


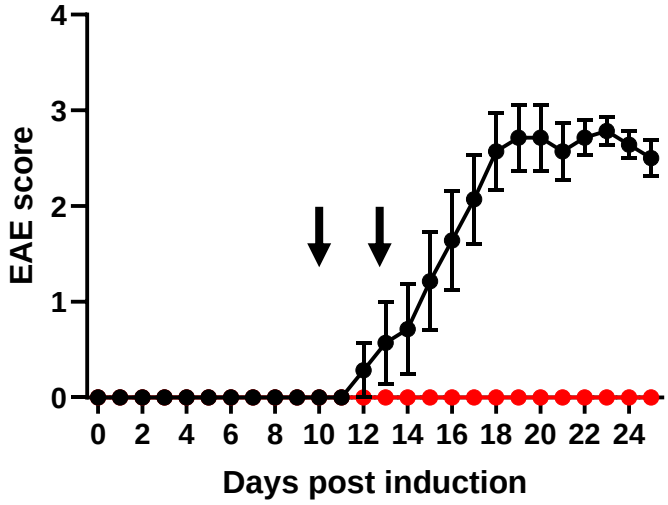


EAE: experimental autoimmune encephalomyelitis

Prophylactic potential







Buffer control

Tol-cLNP MOG mRNA

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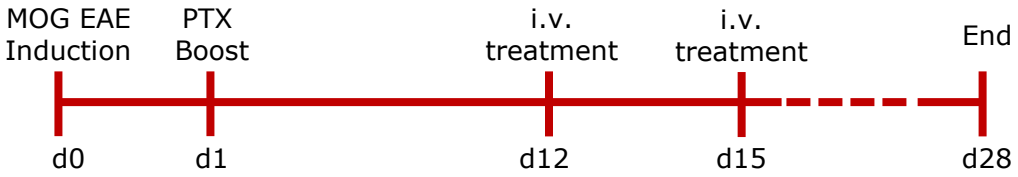
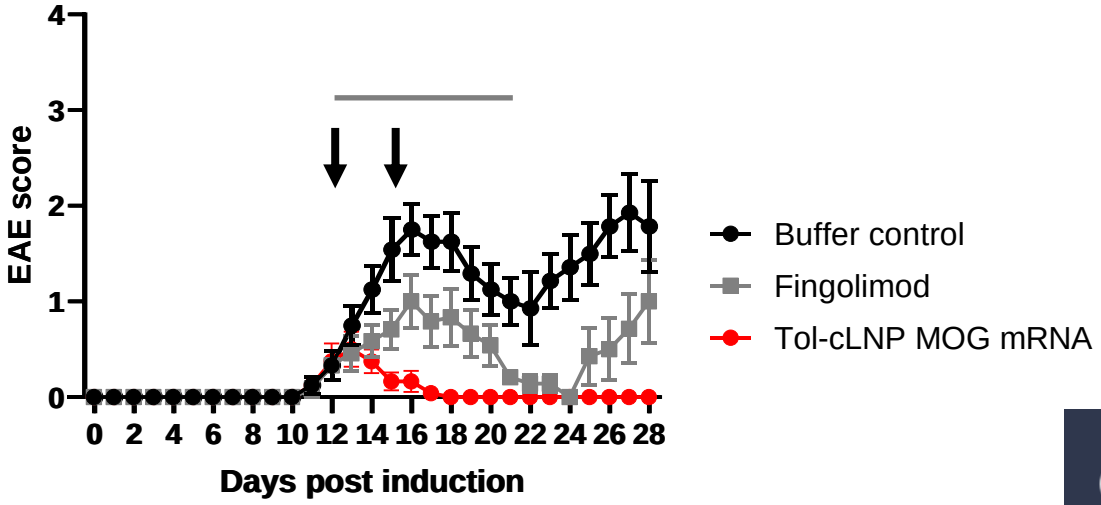
Therapeutic potential





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- Tolerizing capacity of mRNA and Tol-cLNP
- Therapeutic efficacy *in vivo*
  - Prevents disease development
    - Prevent infiltration inflammatory CD4 T cells
  - Cures disease
    - Outperformes MS approved drug

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