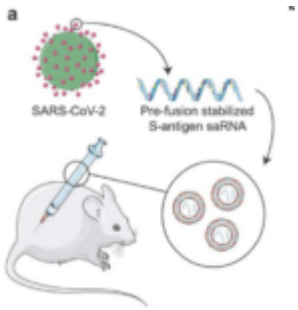
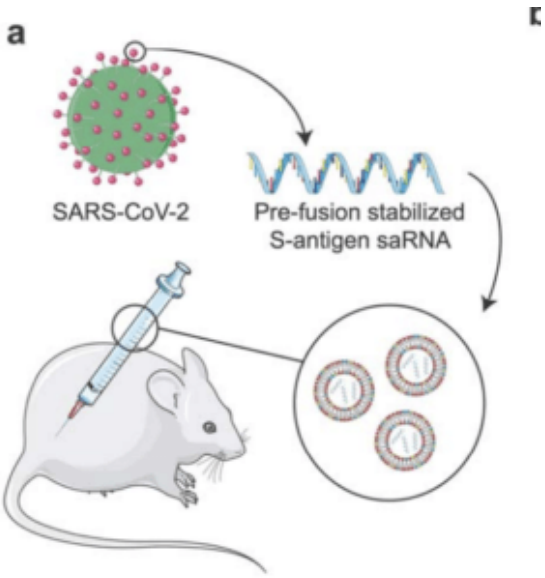
Is a self-amplifying RNA SARS-CoV-2 lipid nanoparticle a good vaccine candidate?





Schematic of vaccination of BALB/c mice with saRNA encoding pre-fusion stabilized spike protein in LNP (Source: McKay, et al., BioRxiv)

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This pre-peer reviewed article compares the humoral and cellular immune response of a self-amplifying (sa)RNA encoding a pre-fusion stabilised SARS-CoV-2 spike protein encapsulated

in a lipid nanoparticle (LNP) in a preclinical murine model, with the immune profile of natural infection in recovered COVID-19 patients. The saRNA-encoded pre-fusion stabilised spike protein of SARS-CoV-2 was highly immunogenic in the mouse model eliciting robust binding and neutralising antibodies. When the authors determined the correlation between murine vaccine-induced binding and neutralising IgG with samples from patients recovered from COVID-19, there was a highly significant association for both. The authors propose that the vaccine candidate would be ideally suited for translating to human studies as it also promoted a Th1-biased cytokine response and elicited functional antibody titres that could neutralise a SARS-CoV-2 pseudotyped virus and be comparable in magnitude and function with antibodies found in COVID-19 recovered patients.

Journal Article: McKay et al., Self-amplifying RNA SARS-CoV-2 lipid nanoparticle vaccine induces equivalent preclinical antibody titers and viral neutralization to recovered COVID-19 patients. Pre-Print

Article by Clive Gray