# *AAVCOVID: A single-dose, thermostable COVID-19 vaccine with durable immunogenicity*

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## BACKGROUND

- SARS-CoV-2 pandemic: ~400 million cases, 5.7 deaths. Need of vaccines that provide durable immunogenicity at low and scalable doses
- Published: AC1, an adeno-associated viral (AAV) vector-based vaccine candidate:
  - Single injection
  - Durable immunogenicity in mouse and NHP (Fig 1)
  - Near-sterilizing immunity against SARS-CoV-2 in NHP at a $10^{12}$gc dose
  - 1-month room temperature stability

## METHODS

- Optimization of expression cassette: **miniCMV promoter** and **Beta or Delta Spike** antigens
- Analysis of antigen expression and immunogenicity in mice
- Immunogenicity and protection in a NHP challenge model

AAV-based COVID19 vaccine:
1. 18-month durability of peak antibody responses (Fig 1)
2. Optimization leads to 10-fold potency in mouse and NHP (Fig 2 and 3)
3. Adaptable to VOC Spike (Fig 3)
4. Protection against Beta VOC in NHPs at low doses (Fig 3)

## CONCLUSIONS

Here, we describe have design and optimized an AAV-based vaccine that

- Confers durable antibody responses: at least 18-month peak antibody levels
- The platform was optimized to increase potency 10-fold in mice and NHPs
- Increased potency provided protective immunity at $10^{11}$gc dose on week 7 after a single dose vaccination
- The platform can be adapted to different VOC Spikes without affecting potency

Single dose, durable immunity and RT stability combined with potency at low dose and protection against VOCs make AAVCOVID a promising COVID19 vaccine candidate

## CONTACT INFORMATION

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## RESULTS

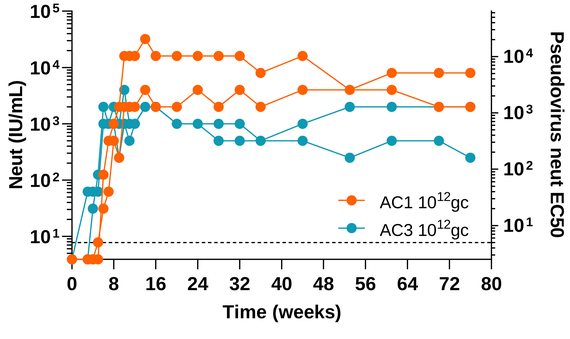



**Fig 1.** 18-month durability of antibody responses in NHP

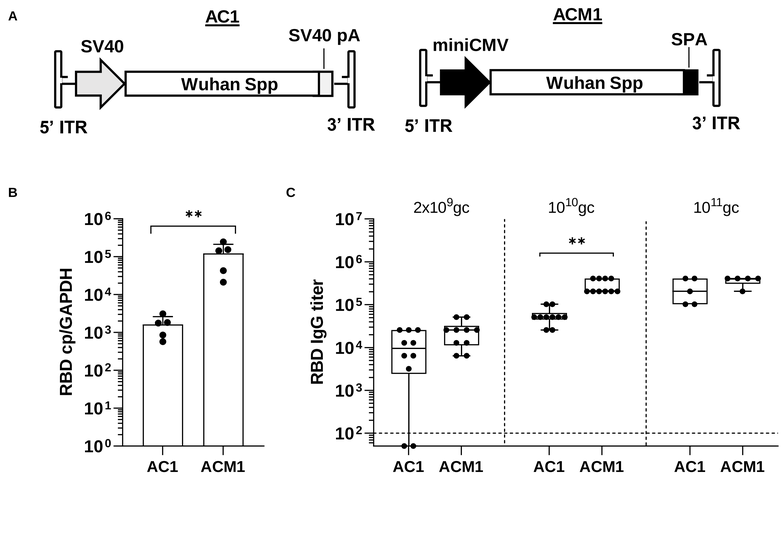



**Fig 2. A)** AC1 and ACM1 vector schemes. **B)** Antigen expression in injection site on day 7 in mice. **C)** Anti-Spike antibody responses at 3 doses on day 56 in mice.

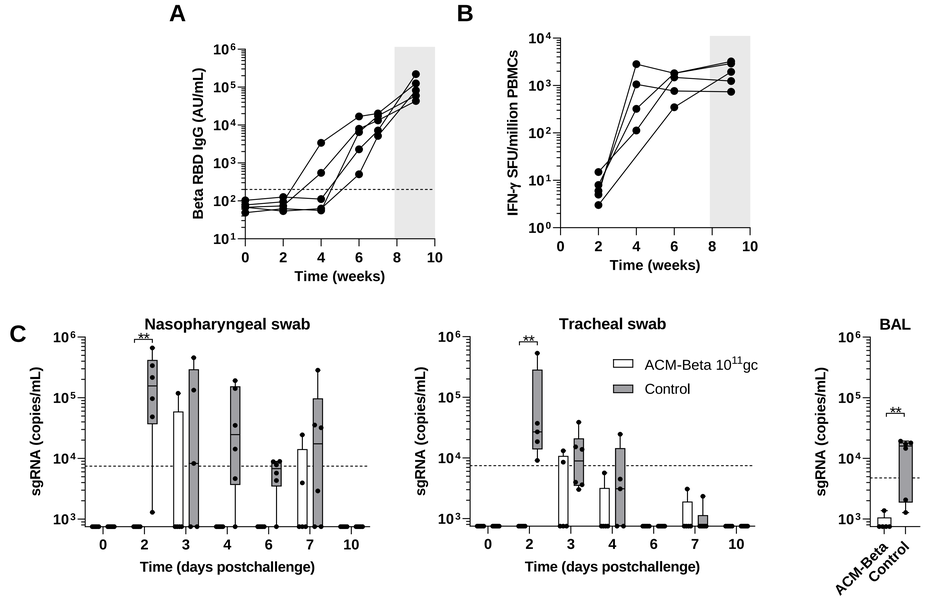



**Fig 3. NHPs vaccinated with $10^{11}$gc of ACM- Beta A)** Anti-Spike antibodies. **B)** Cellular immune response (IFN-γ ELISPOT). **C)** SARS-CoV-2 Beta subgenomic RNA quantification after challenge with 105 pfu on week 7 after vaccination.