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(54) **METHODS AND COMPOSITIONS FOR CHIMERIC CORONAVIRUS SPIKE PROTEINS**

(71) Applicant: **The University of North Carolina at Chapel Hill**, Chapel Hill, NC (US)

(72) Inventors: **Ralph Baric**, Haw River, NC (US); **Sudhakar Agnihothram**, Ellicott City, MD (US); **Boyd Yount**, Hillsborough, NC (US)

(73) Assignee: **The University of North Carolina at Chapel Hill**, Chapel Hill, NC (US)

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Primary Examiner — Barry A Chestnut

(74) Attorney, Agent, or Firm — Myers Bigel, P.A.

(57) **ABSTRACT**

The present invention provides compositions and methods comprising a chimeric coronavirus spike protein.

**23 Claims, 19 Drawing Sheets**

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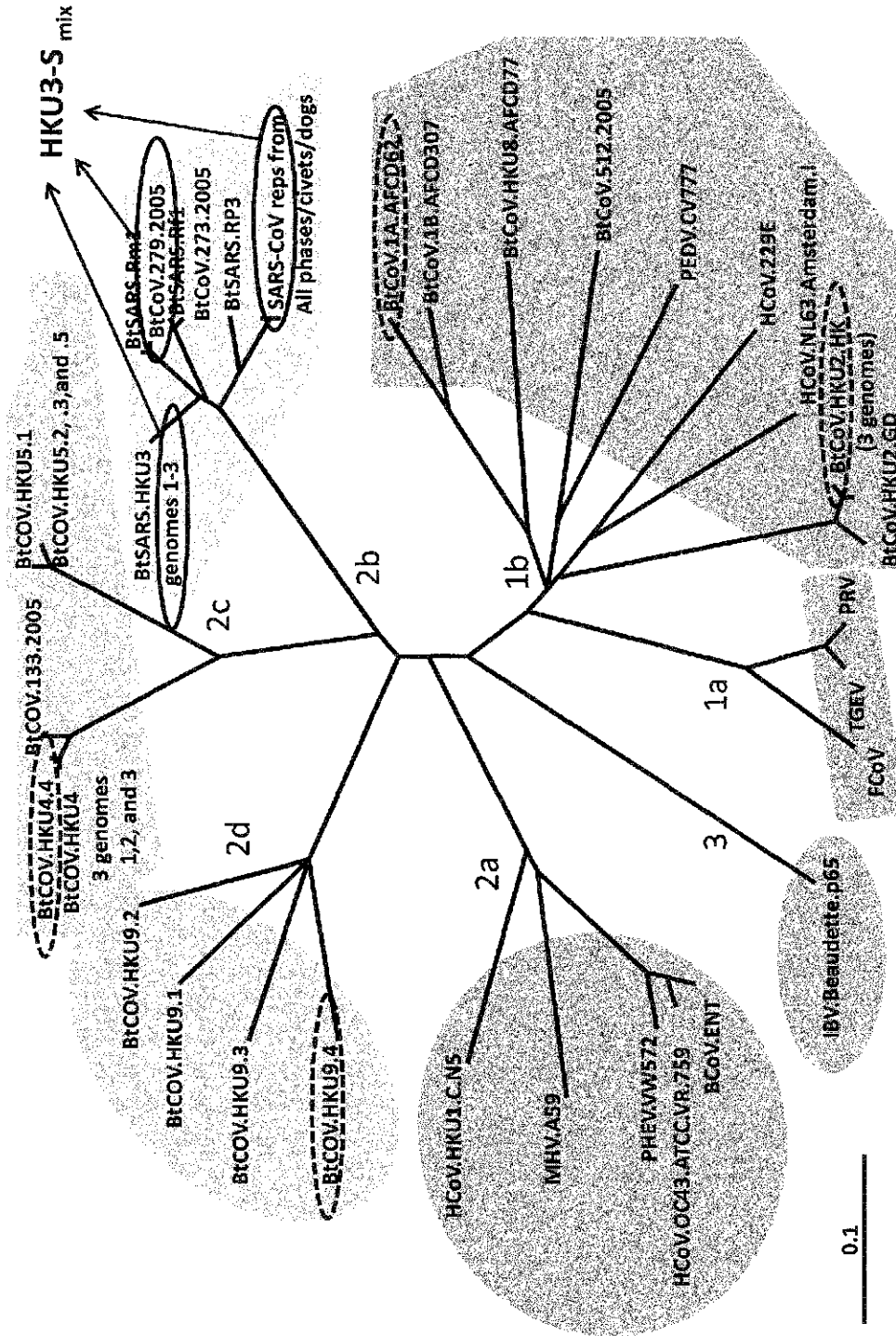


Fig. 1



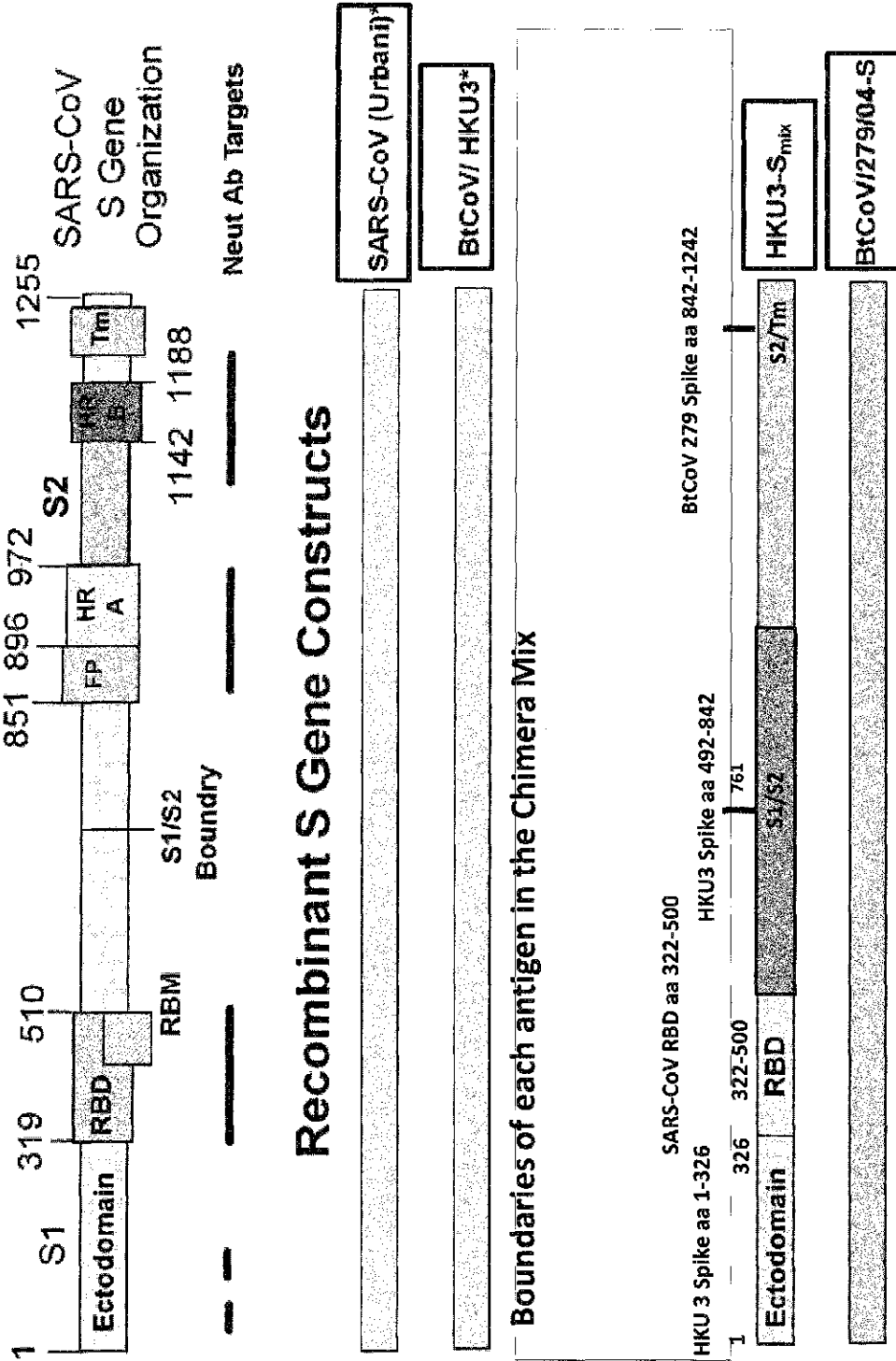
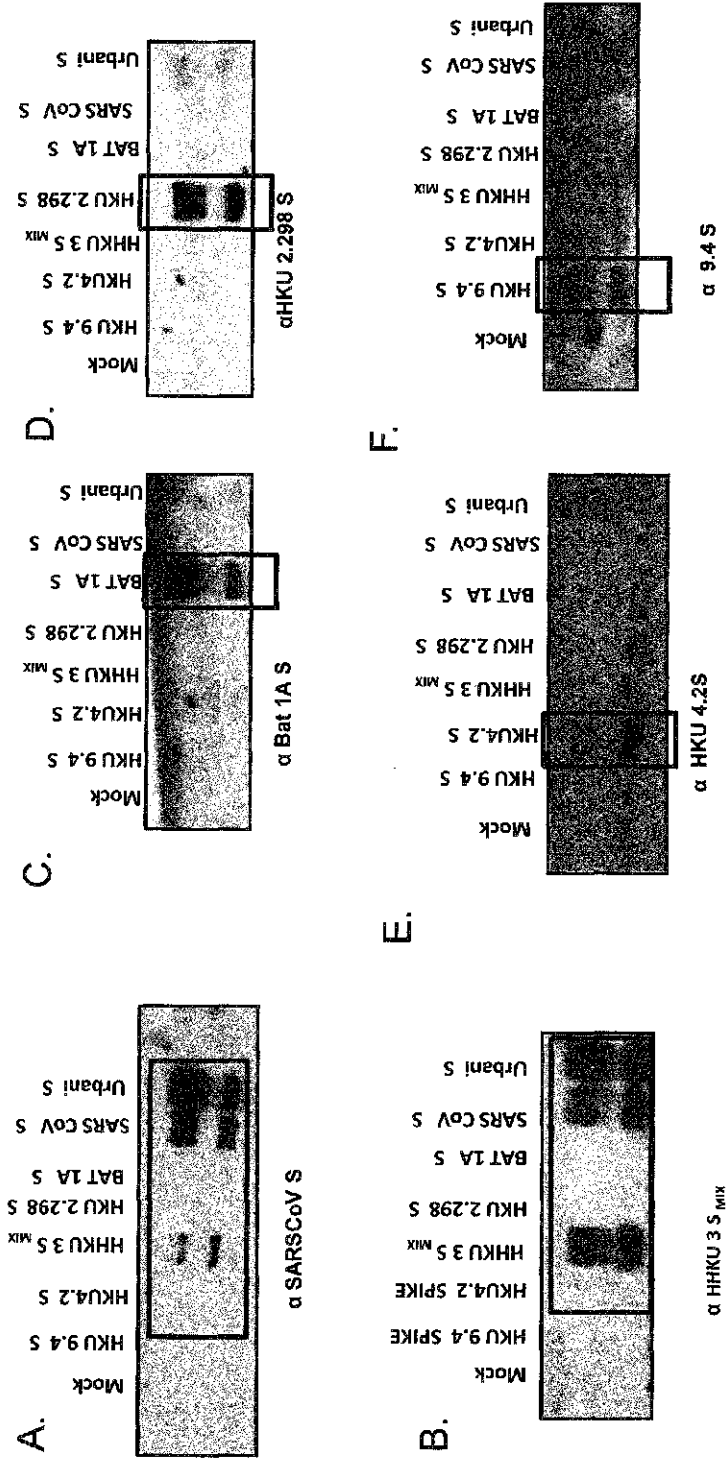


Fig. 2



\* No cross reactivity across groups

Fig. 3

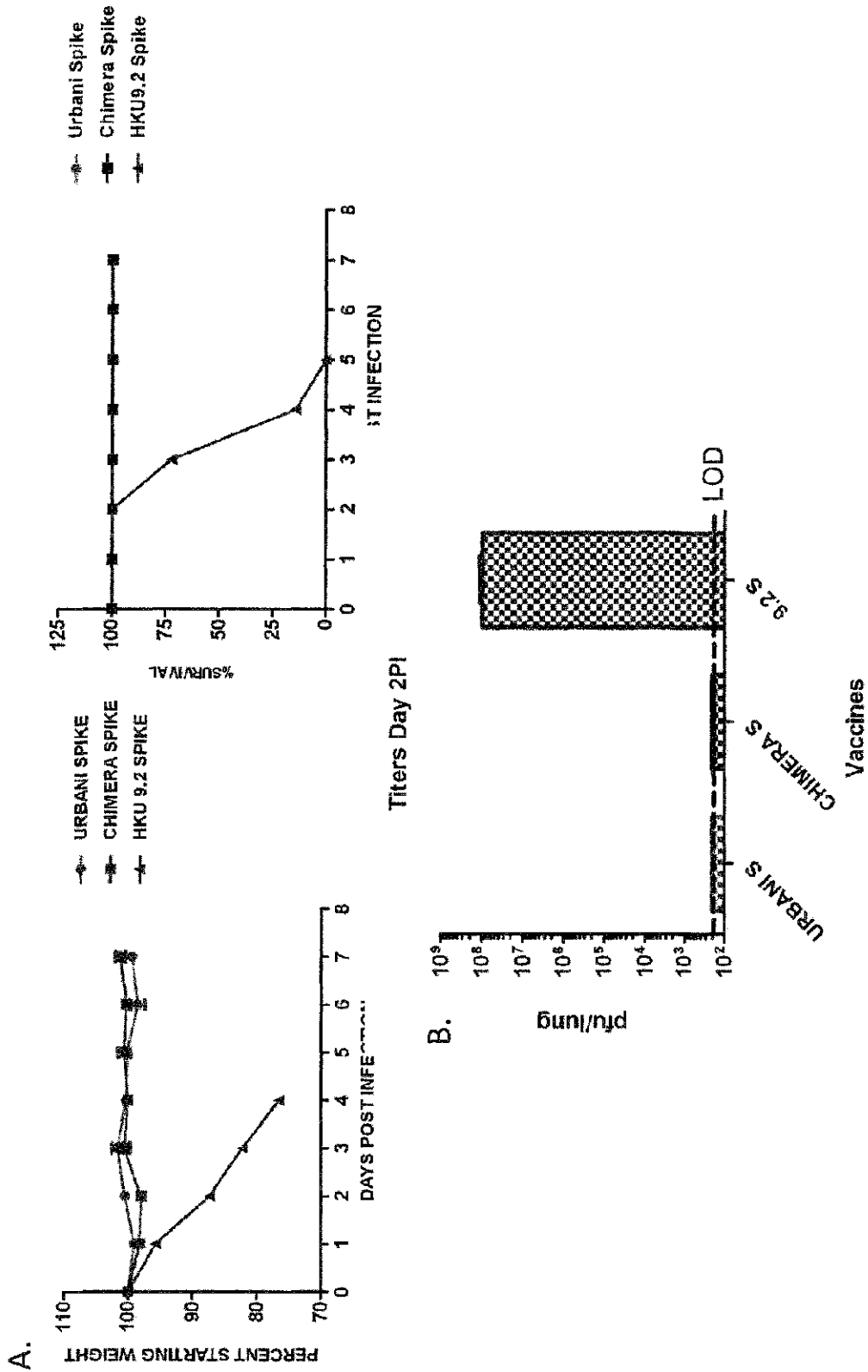


Fig. 4

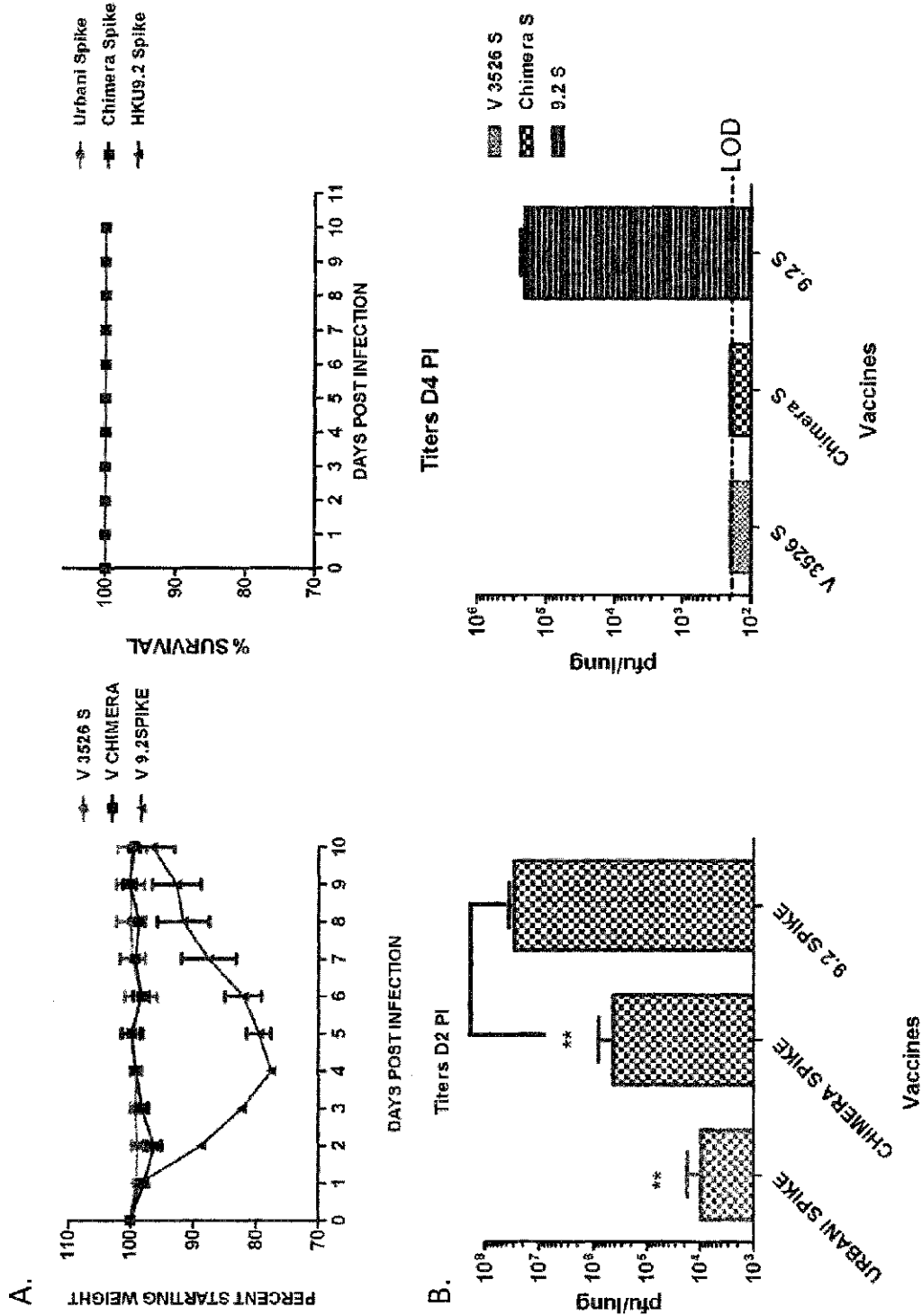


Fig. 5

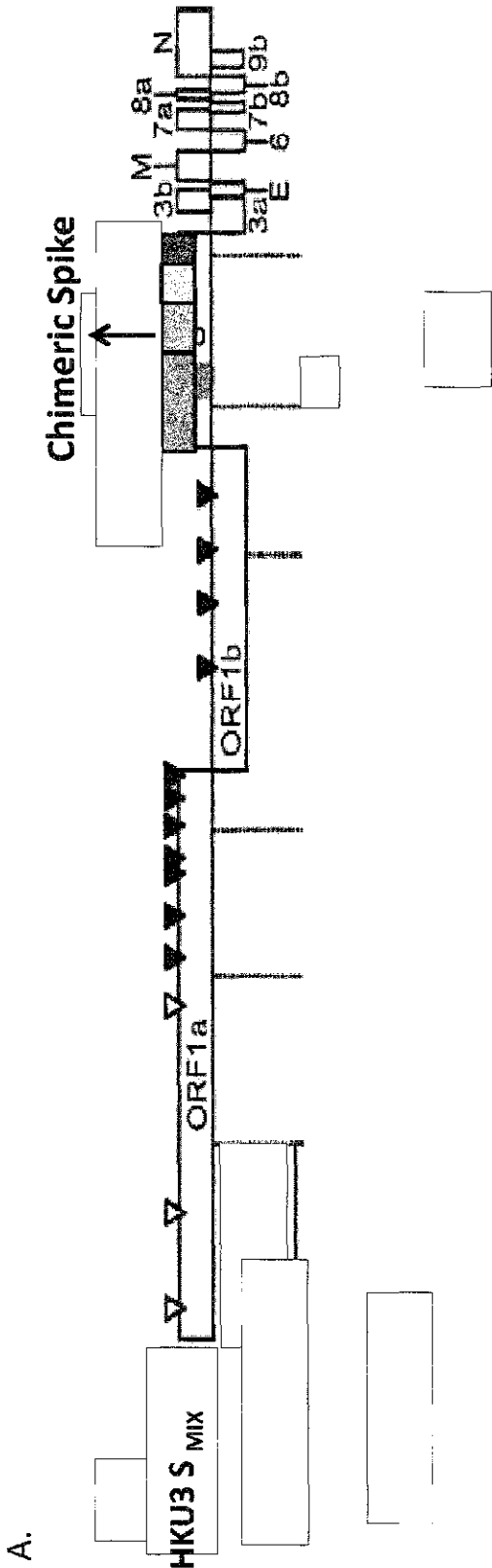


Fig. 6

B.

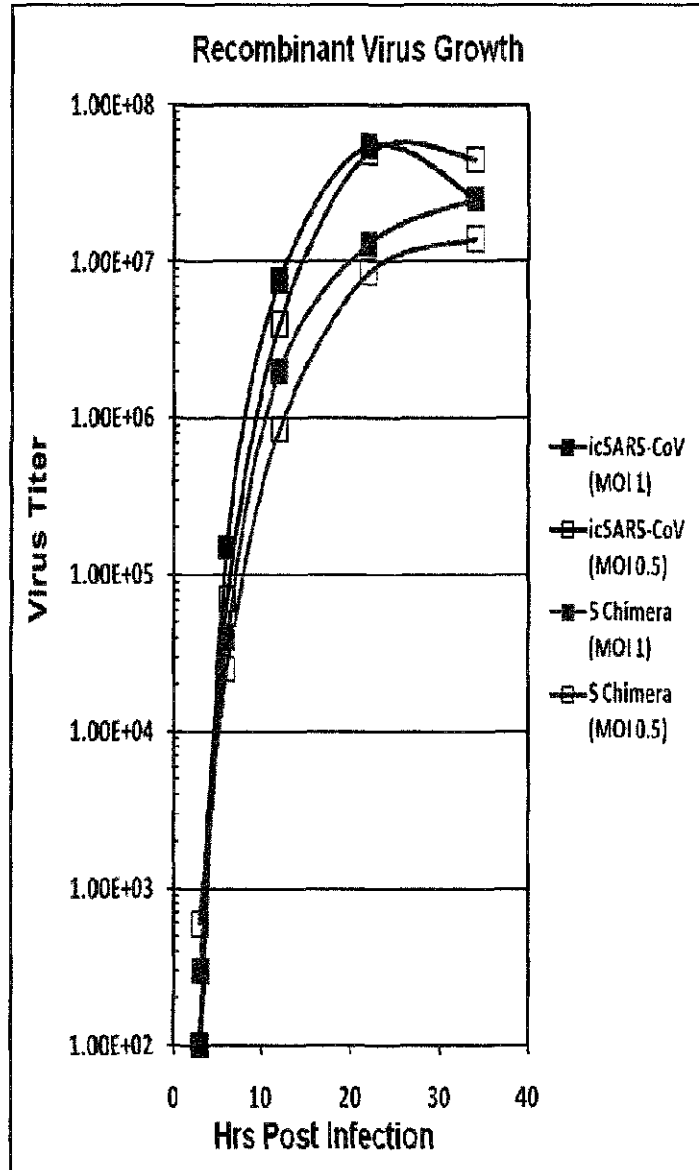
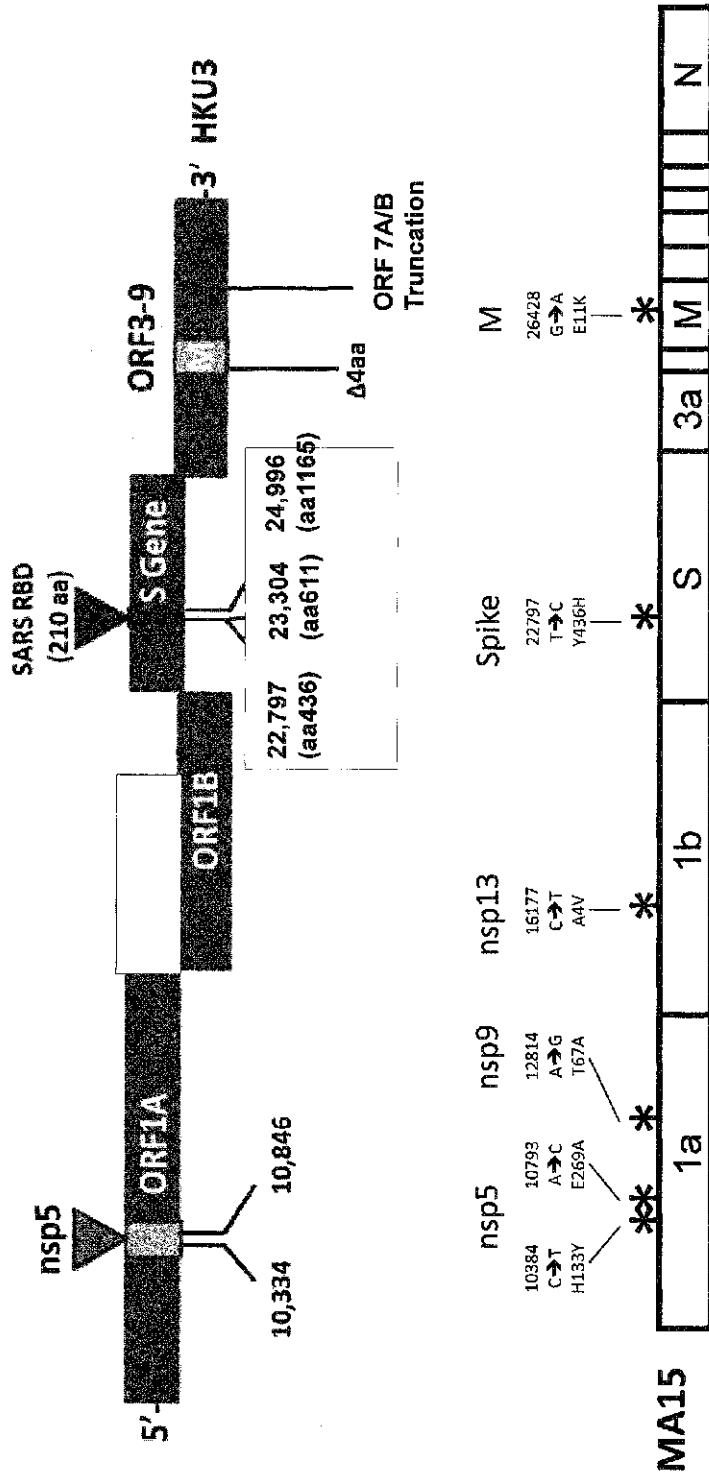


Fig.6 (cont'd.)



- nsp5, S and M common to MA 15
  - Identifies mutation spectra for cross-species transmission
- \*Sequencing in progress

Fig. 7

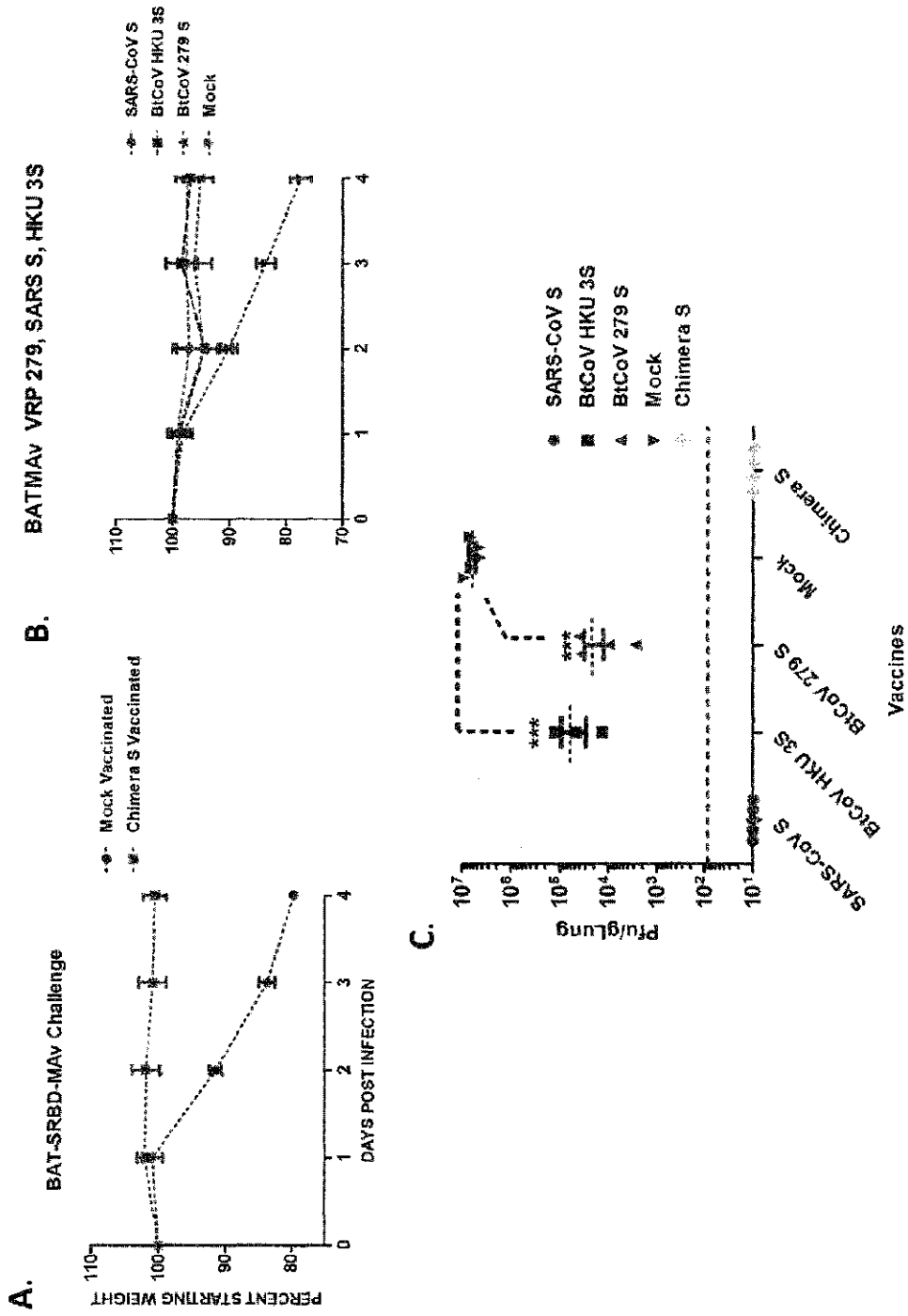


Fig. 8



# Recombinant S Gene Constructs

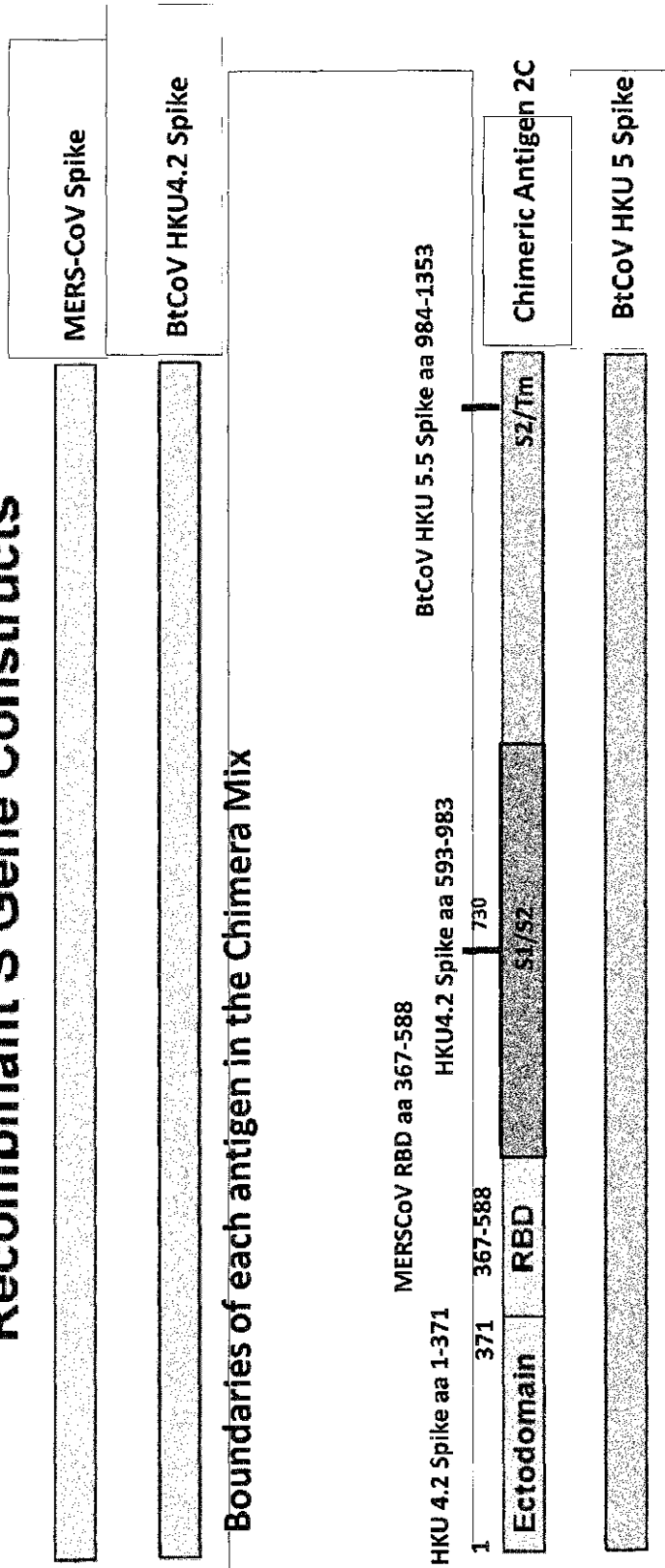


Fig. 9

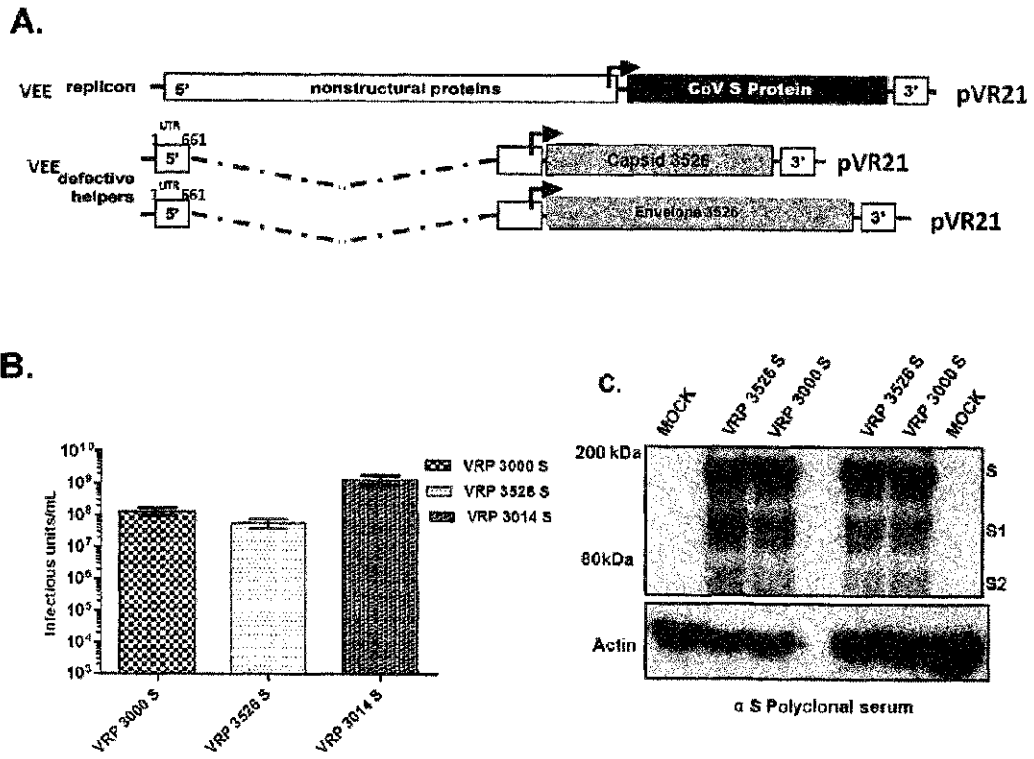


Fig. 10

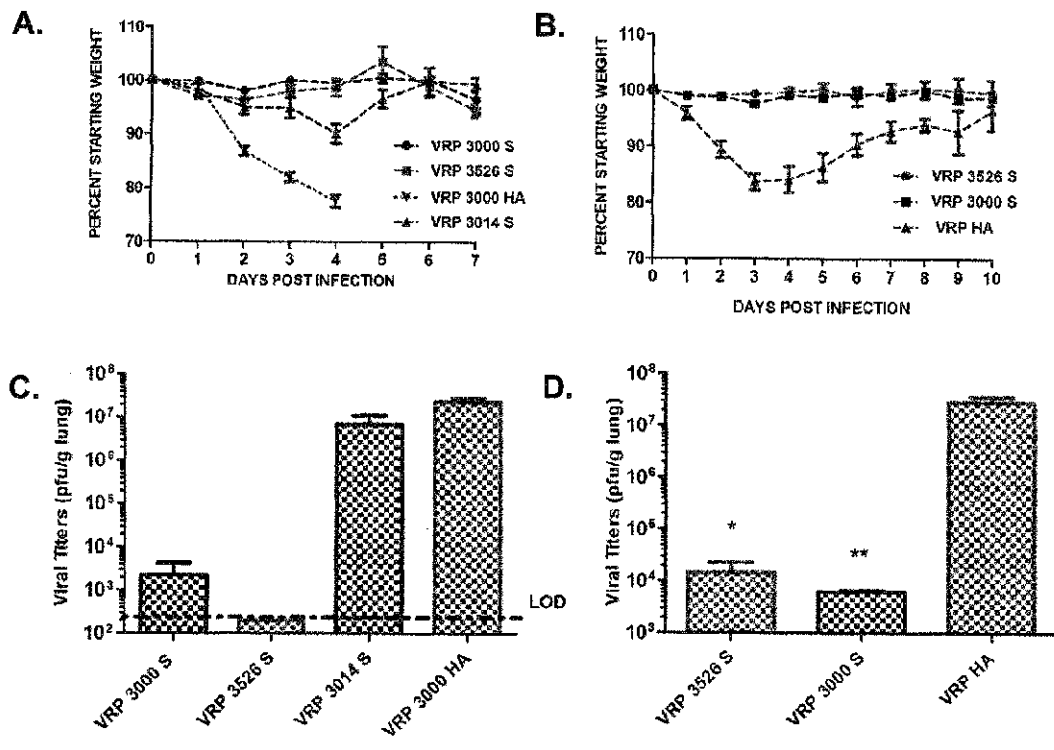


Fig. 11

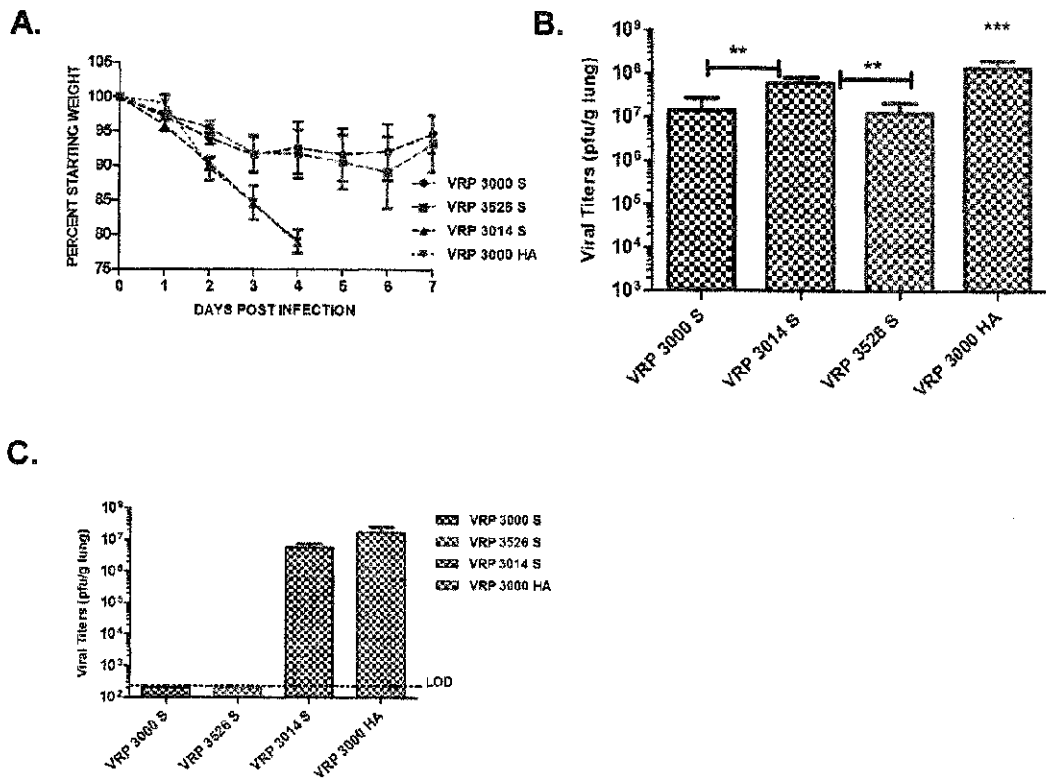


Fig. 12