

**Supplement Table S2.** Nucleotides polymorphism identified between representative LSDVs for vaccine strains (AF409138 and KX683219), field strains (KY829023 and NC\_003027), recombinant viruses (MH646674 and MT134042), and vaccine-related field viruses (MN636841). The polymorphic nucleotides in four targeted genes and their position in LSDV NI-2490 (NC\_003027) are shown. Nucleotide changes in LSDV Embu/B338/2011 compared to recombinant viruses (MH646674 and MT134042) are highlighted in yellow. The differences to the South African vaccine-related field virus are highlighted in green.

| Position in LSDV NI_2490 | NI_2490 (NC_003027) | Embu/B338/2011 | Russia/Saratov/2017 (MH646674) | Russia/Udm/2019 (MT134042) | Evros/GR/15 (KY829023) | KSGP 0240 (KX683219) | Neethling vaccine LW 1959 (AF409138) | 220-1-NW-RSA-1993 (MN636841) | Gene  |
|--------------------------|---------------------|----------------|--------------------------------|----------------------------|------------------------|----------------------|--------------------------------------|------------------------------|---|
| 44018                    | T                   | C              | T                              | T                          | T                      | T                    | C                                    | C                            | RNA-Helicase gene (LSDV049)                                 |
| 44168                    | G                   | A              | G                              | G                          | G                      | G                    | A                                    | A                            |   |
| 44202                    | G                   | A              | G                              | G                          | G                      | G                    | A                                    | A                            |   |
| 75080                    | A                   | G              | G                              | A                          | A                      | A                    | G                                    | G                            | NTPase gene (LSDV083)                                       |
| 75218                    | T                   | A              | T                              | T                          | T                      | T                    | A                                    | A                            |   |
| 75253                    | A                   | A              | G                              | A                          | A                      | A                    | G                                    | G                            |   |
| 75325                    | G                   | C              | G                              | G                          | A                      | G                    | A                                    | A                            |   |
| 88924                    | C                   | T              | T                              | T                          | C                      | C                    | T                                    | T                            | virion core protein p4b gene (LSDV094)                      |
| 88938                    | C                   | T              | T                              | T                          | C                      | C                    | T                                    | T                            |   |
| 88969                    | C                   | A              | A                              | A                          | C                      | C                    | A                                    | A                            |   |
| 88970                    | G                   | G              | G                              | G                          | A                      | G                    | G                                    | G                            |   |
| 88975                    | C                   | T              | T                              | T                          | T                      | C                    | T                                    | T                            |   |
| 133019                   | C                   | C              | C                              | C                          | T                      | C                    | C                                    | C                            | E3 ubiquitin-protein ligase p28-like protein gene (LSDV140) |
| 133035                   | A                   | A              | A                              | A                          | A                      | A                    | G                                    | G                            |   |
| 133056                   | G                   | C              | G                              | G                          | G                      | G                    | A                                    | A                            |   |
| 133108                   | G                   | C              | G                              | G                          | G                      | G                    | T                                    | T                            |   |
| 133126                   | A                   | A              | A                              | A                          | A                      | A                    | T                                    | T                            |   |
| 133137                   | G                   | C              | G                              | G                          | G                      | G                    | A                                    | A                            |   |