

1 **Supplementary Appendix**

Li_Supplementary Table 1. Nomenclature for the Pfizer and Novartis variants

| Pfizer variant | PubMLST FHbp peptide allele ID | Novartis variant family | Novartis variant |
|-----------------------|---|--------------------------------|-------------------------|
| A05 | 45 | 3 | 3.45 |
| A06 | 47 | 3 | 3.47 |
| A07 | 21 | 2 | 2.21 (PKA 2.6) |
| A12 | 24 | 2 | 2.24 (PKA 2.9) |
| A15 | 25 | 2 | 2.25 (PKA 2.10) |
| A19 | 16 | 2 | 2.16 (PKA 2.1) |
| A22 | 19 | 2 | 2.19 (PKA 2.4) |
| A106 | 27 | 2 | 2.27 (PKA 2.12) |
| B03 | 14 | 1 | 1.14 |
| B09 | 13 | 1 | 1.13 |
| B15 | 252 | 1 | 1.252 |
| B16 | 4 | 1 | 1.4 |
| B22 | 5 | 1 | 1.5 |
| B24 | 1 | 1 | 1.1 |
| B44 | 15 | 1 | 1.15 |
| B45 | 9 | 1 | 1.9 |
| B49 | 74 | 1 | 1.74 |
| B130 | 321 | 1 | 1.321 |

FHbp=factor H binding protein; PKA=previously known as.