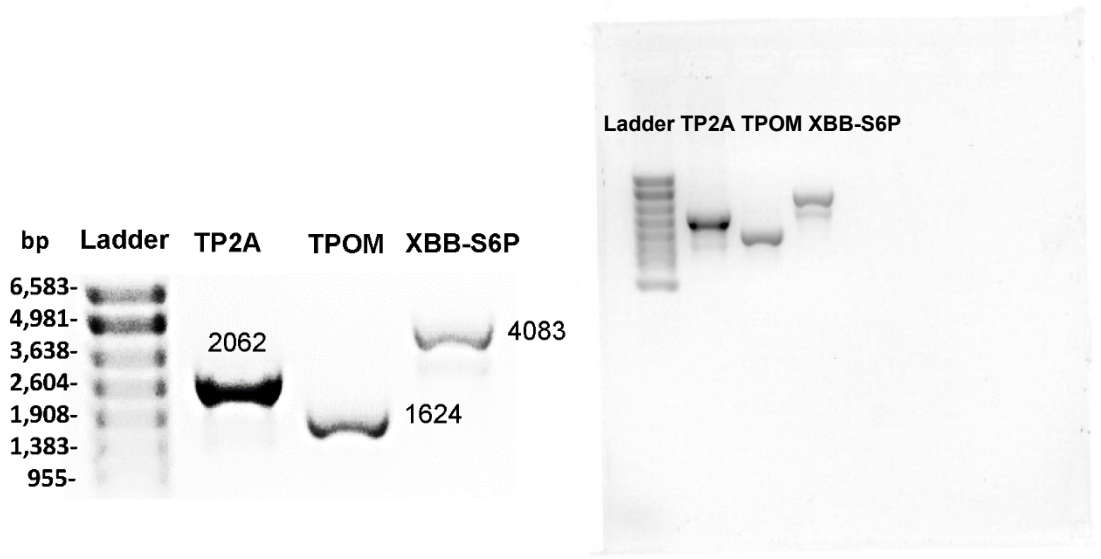
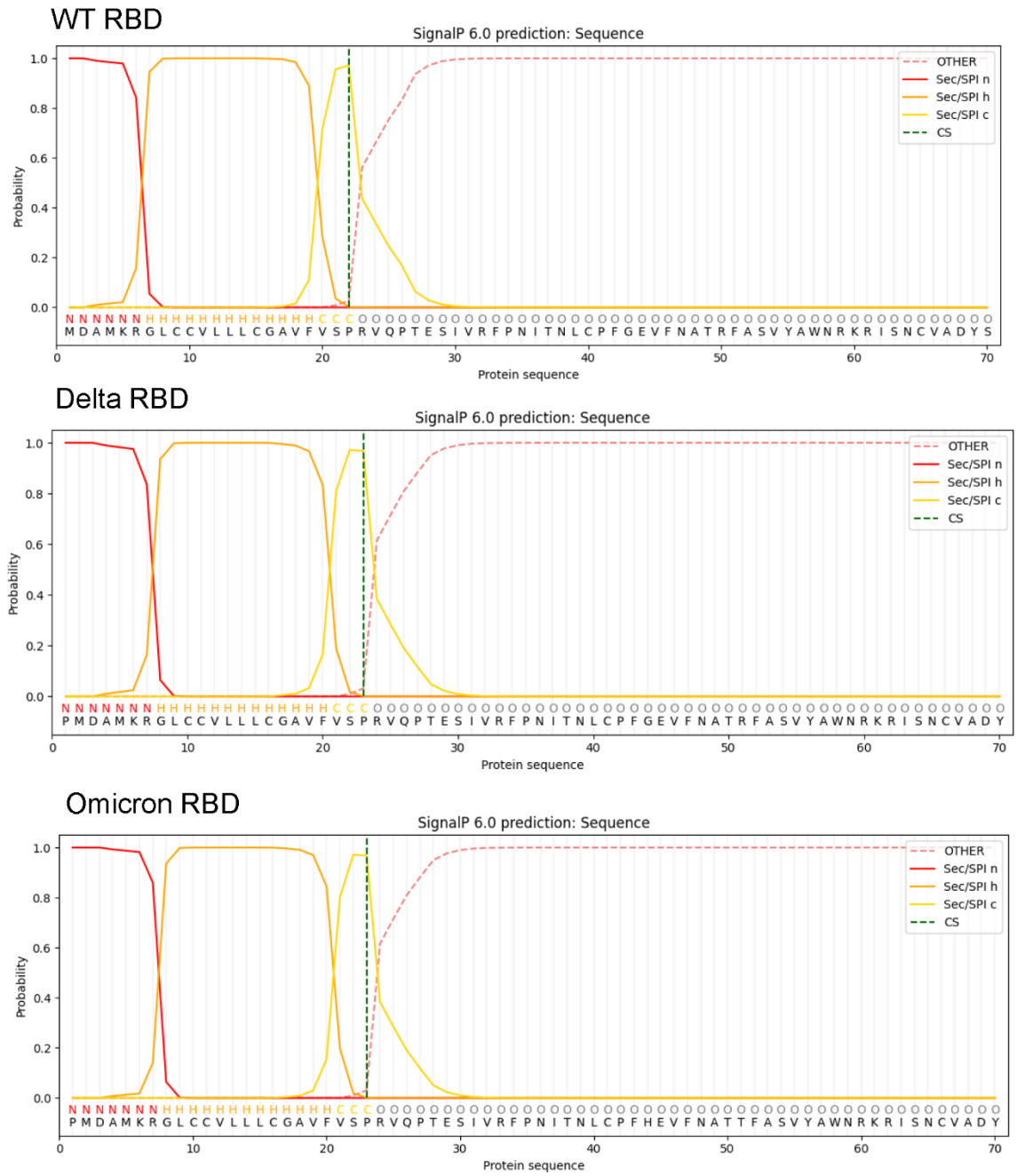
Supplementary information

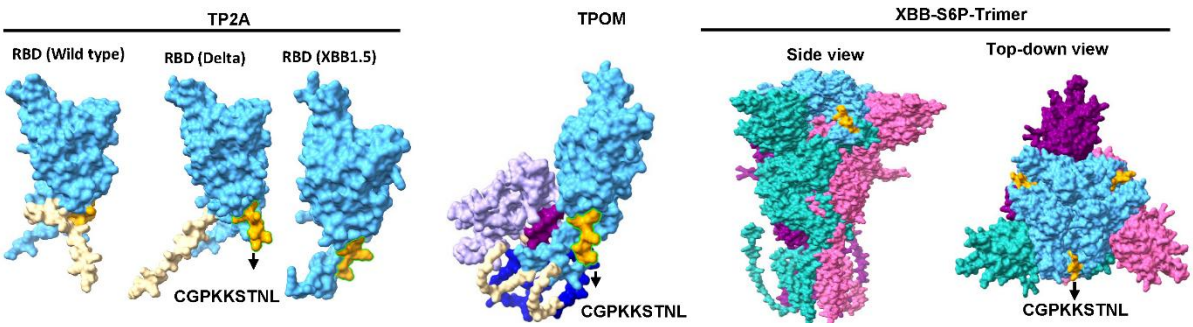
A **B**



Supplementary Figure 1: **(A)** Agarose gel electrophoresis of *in vitro* transcribed RNA. RNA samples were transcribed *in vitro* and purified using lithium chloride precipitation. Lane 1: RNA ladder; Lane 2 – 4: *in vitro* transcribed RNA samples. The RNA was separated on a 1 % denaturing agarose gel. **(B)** The original uncropped gel.



Supplementary Figure 2: The additional proline residue (P) that left at the N-terminus due to P2A has no effect on signal peptide activity predicted by SignalP-6.0.



Supplementary Figure 3: The predicted position of the H-2D^{d}-restricted peptide epitope CGPKKSTNL (yellow) within RBD region (light blue) of the protein structure in mRNA vaccine candidates.