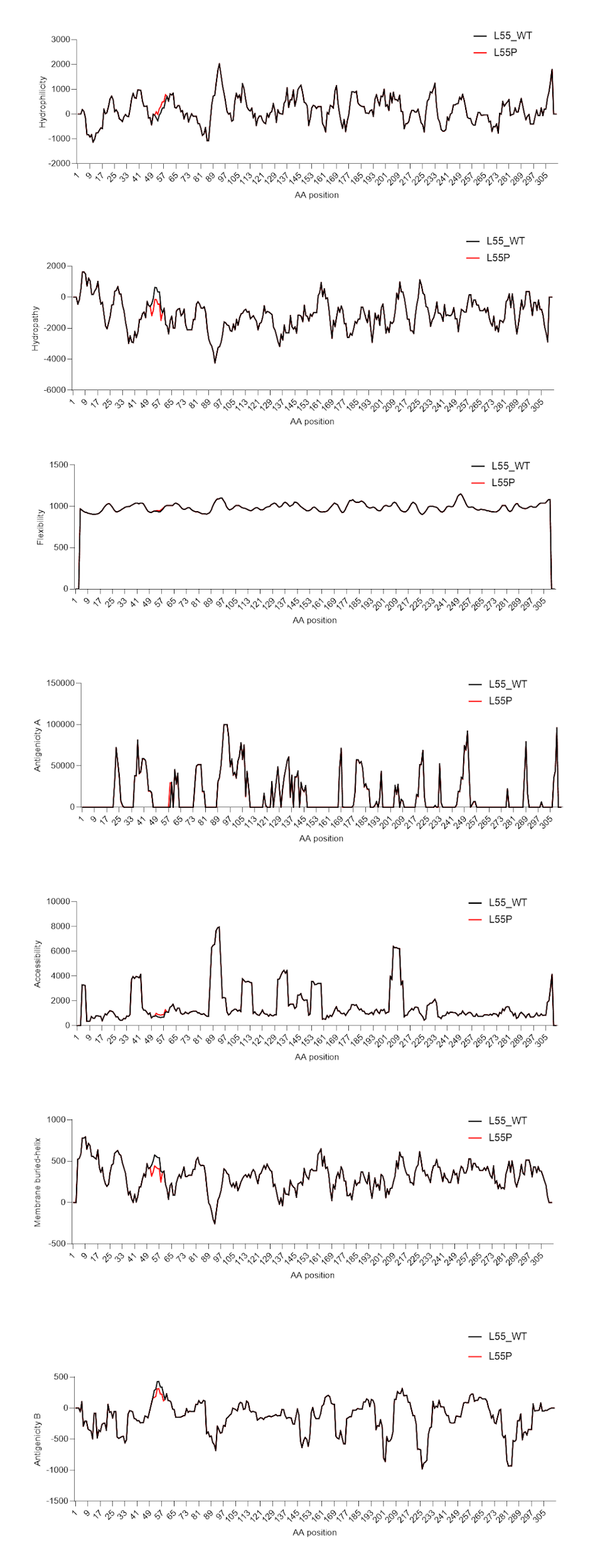
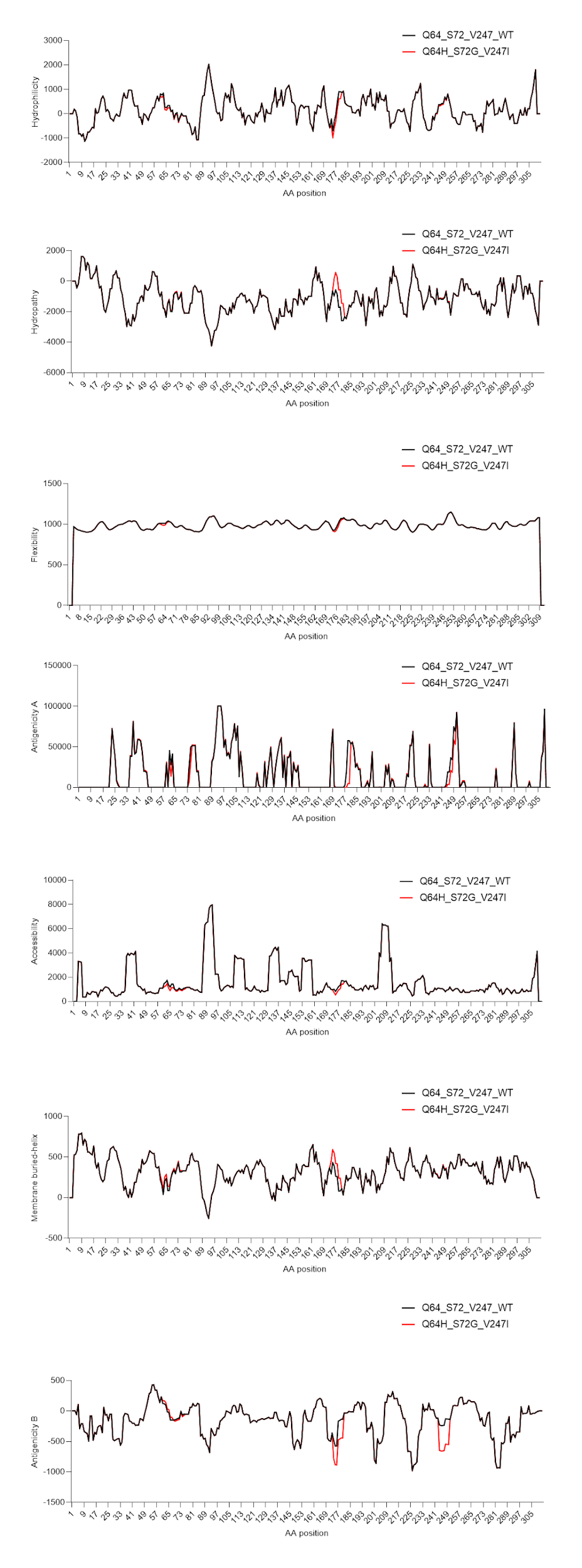
**Supplementary Materials:**

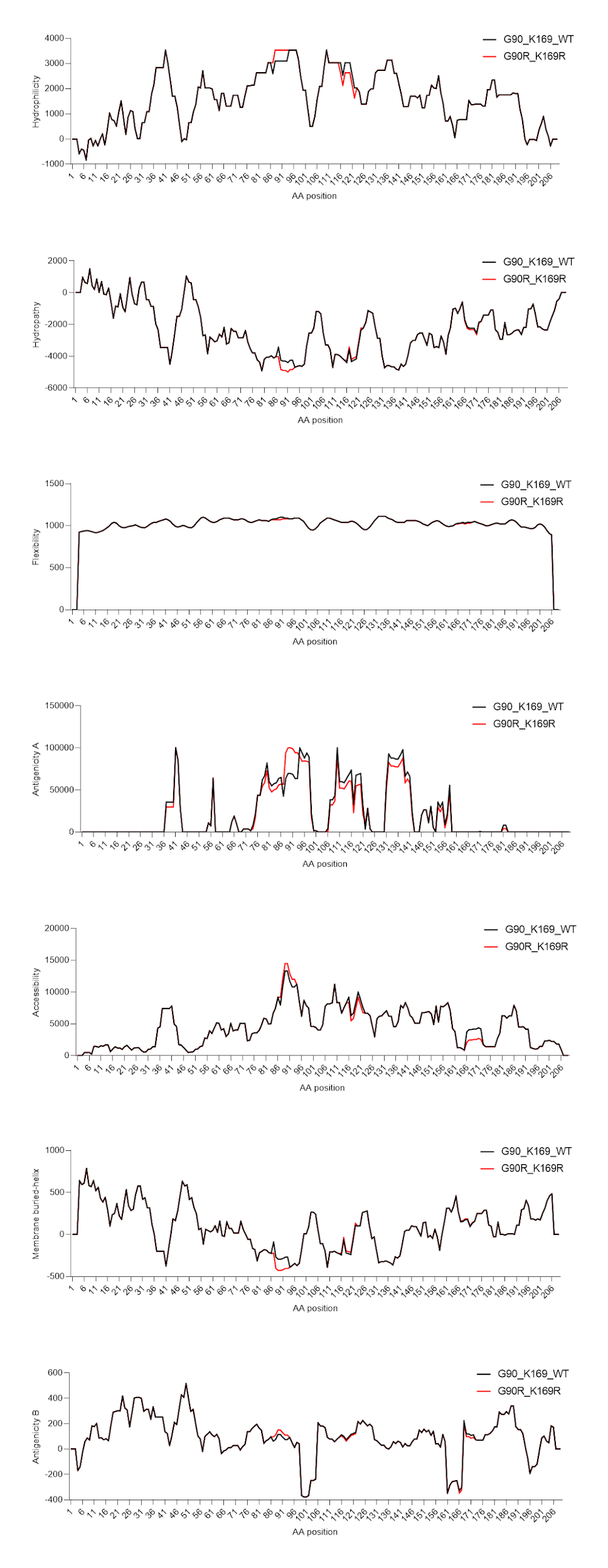
**Figure S1:** Analysis of the physicochemical profile of the gp46 protein. The analysis suggests that the L55P mutation may generate an important change in hydrophilicity, hydropathy, antigenicity, accessibility, and membrane buried-helix.



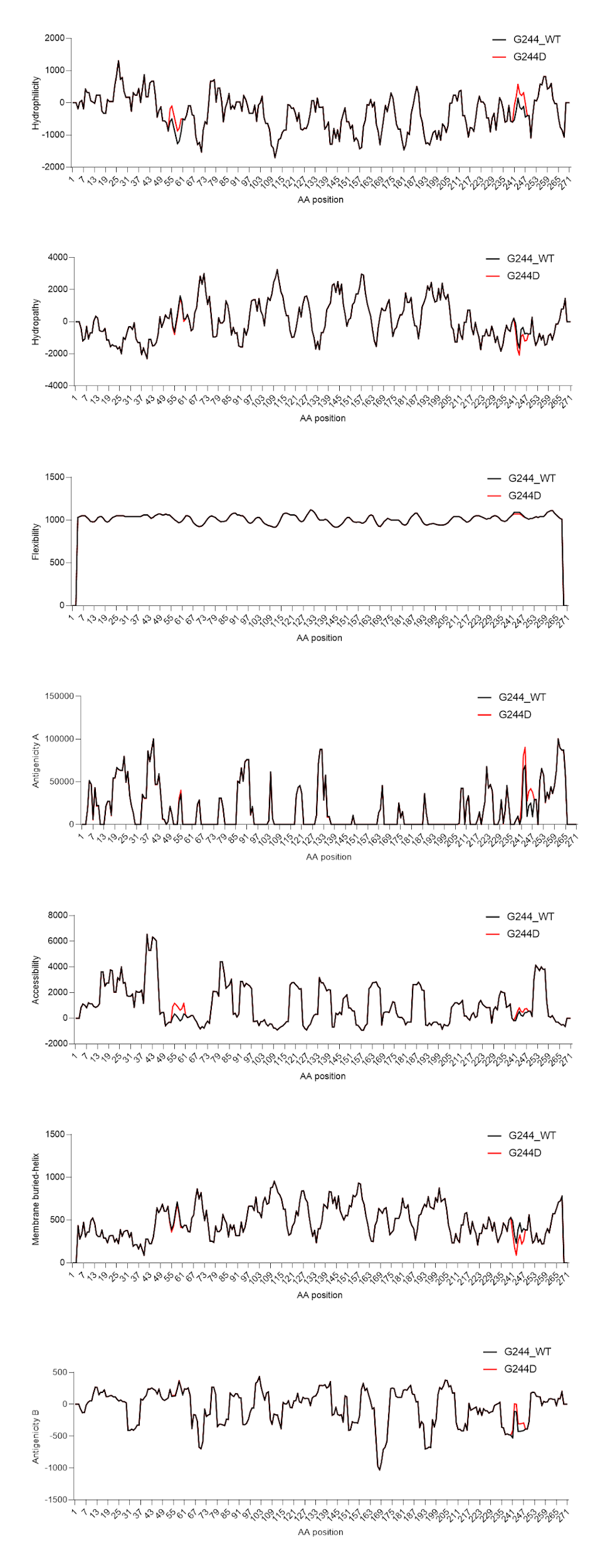
**Figure S2:** Analysis of the physicochemical profile of the gp46 protein. The analysis suggests that the Q64H and S72G mutations may generate an important change in antigenicity, accessibility, and membrane buried-helix. It also suggests that the V247I mutation may generate an important change in antigenicity.



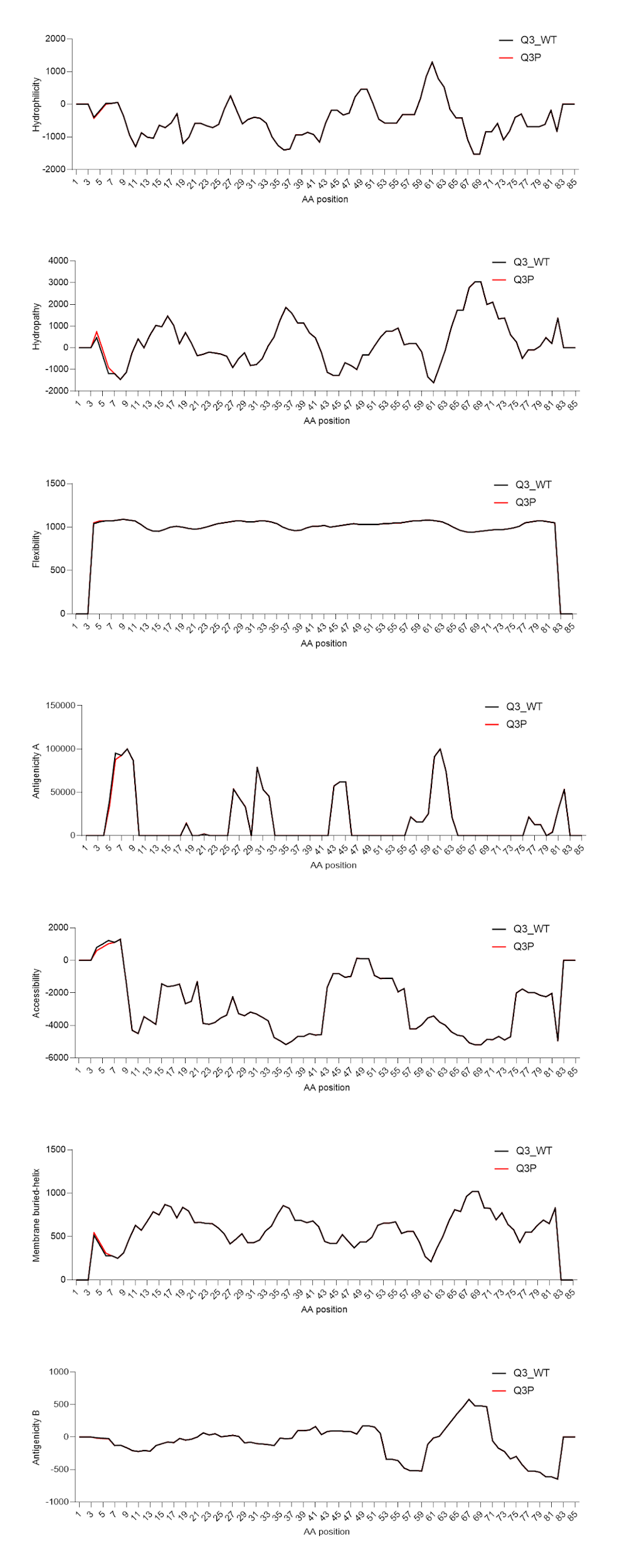
**Figure S3:** Analysis of the physicochemical profile of the HBZ protein. The analysis suggests that the G90R mutation may generate an important change in hydrophilicity, hydropathy, antigenicity, accessibility, and membrane buried-helix. It also suggests that the K169R mutation may alter accessibility.



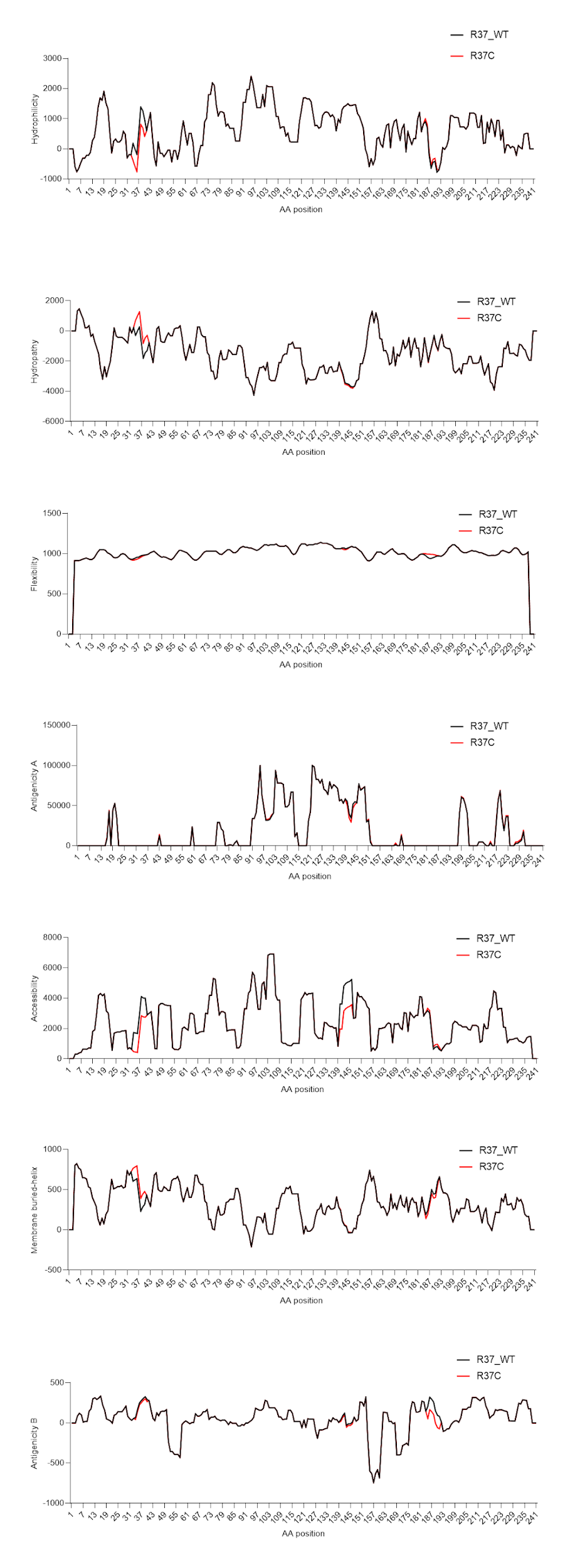
**Figure S4:** Analysis of the physicochemical profile of the p14 protein. The analysis suggests that the G244D mutation may generate an important change in hydrophilicity, hydropathy, antigenicity, accessibility, and membrane buried-helix.



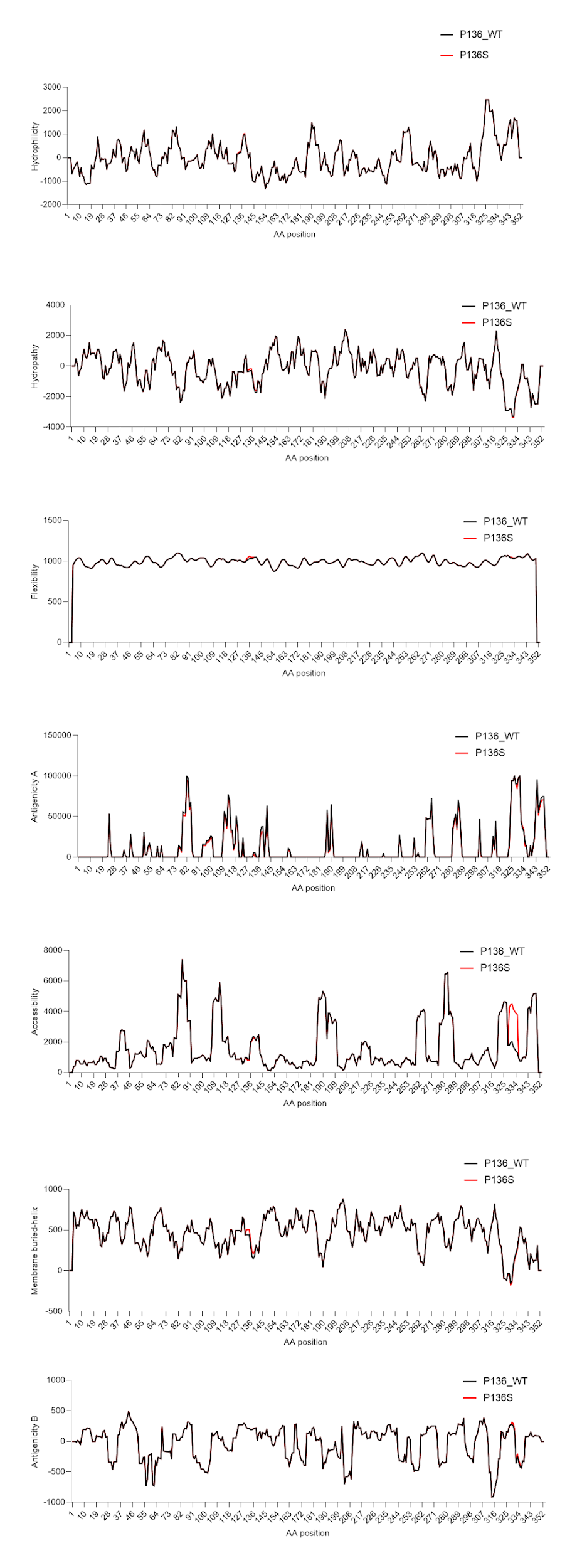
**Figure S5:** Analysis of the physicochemical profile of the p15 protein. The analysis suggests that the Q3P mutation may generate an important change in hydropathy, antigenicity, and accessibility.



**Figure S6:** Analysis of the physicochemical profile of the p30 protein. The analysis suggests that the R37C mutation may generate an important change in hydrophilicity, hydropathy, accessibility, and membrane buried-helix.



**Figure S7:** Analysis of the physicochemical profile of the p40 protein. The analysis suggests that the P136S mutation may generate an important change in membrane buried-helix.



**Figure S8:** Analysis of the physicochemical profile of the p12 protein. The analysis suggests that the P34L mutation may generate an important change in hydrophilicity, hydropathy, antigenicity, flexibility, accessibility, and membrane buried-helix.

