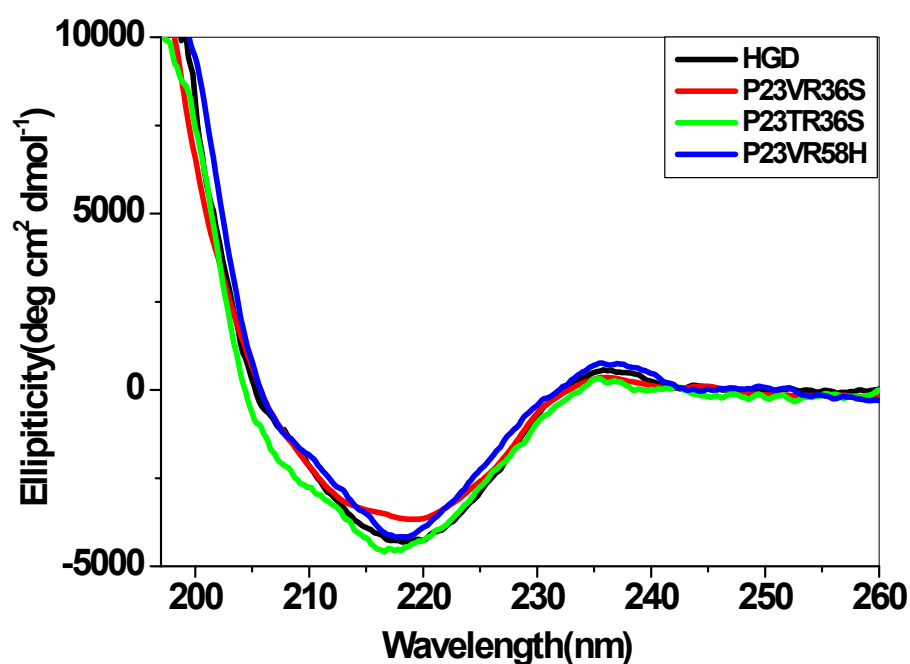
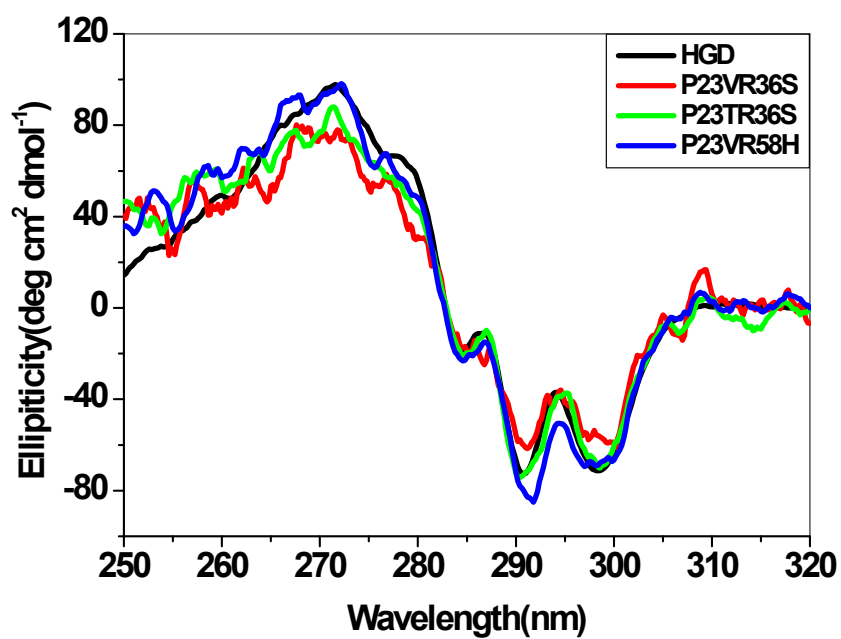


## Supporting Information

### Circular Dichroism Spectroscopy measurements



**Fig. S1.** Far UV-CD spectra for native HGD(black line), and its double mutants, P23VR36S(red), P23TR36S(green) and P23VR58H(blue). Comparisons of the far UV spectra associated with secondary structural changes show minimal differences between the native and double mutants of HGD.



**Fig. S2.** Near UV-CD spectral measurements for native HGD(black), and its double mutants, P23VR36S(red), P23TR36S(green) and P23VR58H(blue). Near UV spectra elucidating the tertiary structures of proteins, here indicate that the tertiary structures of the native and double mutants are very similar.