

**Additional file 3:** Structure-based sequence alignment of CSA-binding DBL domains from A4 and 3D7 *var2CSA*. The disulfide linkages are colored in pairs. 'S' and 'H' denote sheet and helix region respectively for the A4 DBL 3X crystal structure (PDB code: 3BQK). The regions underlined in the N- and C- terminal regions could not be completely aligned. Residues underlined and in italics are disordered in A4 DBL 3X. Residues forming secondary structure are shown in bold. Surface identical/conserved residues constituting regions CR1, CR2 and CR3 are colored green, cyan and red respectively

