



**Supplementary information, Fig. S14| The interactions between CATC and penton in EBV and KSHV.**

**a** Density map and atomic model of a selected region from the KSHV CATC-binding penton vertex, showing that the CATC of KSHV (green) interacts with only one penton MCP at its apex.

**b** Density map and atomic model of a selected region from the EBV portal-proximal penton vertex, showing that the CATC of EBV (red) interacts with two neighboring penton MCPs at the middle of their tower regions.

**Supplementary information, Table. S1| Cryo-EM data collection, image processing, and refinement statistics**

**Supplementary information, Table. S2| Information of the EBV proteins involved in the formation of the capsid**

**Supplementary information, Movie. S1| Structures of the EBV tegumented capsid, portal vertex and dodecameric portal.**