



**Fig. S6 The interfaces of REC1-REC2 (HFH1) and REC3-RNA/DNA heteroduplex (HFH2) of SpCas9 (PDB: 4UN3)**

- a. The overall structure of REC1 (blue), REC2 (slate) and REC3 (purple) domains. The secondary structural elements in the structure are numbered.
- b. The interfaces of REC1-REC2 and REC3-RNA/DNA heteroduplex of SpCas9 (PDB: 4UN3) with the location of rationally designed mutations shown.