



**Fig. S5 Structures of sgRNA/DNA heteroduplex bound by xCas9 3.7 and SpCas9**

**a.** Structural comparison of xCas9 3.7- and SpCas9-bound sgRNA/DNA heteroduplex. Top panel: Shown in mesh (gray) is the electron density " $2Fo - Fc$ " of xCas9 3.7-bound sgRNA/DNA heteroduplex contoured at  $1.2 \sigma$ . Bottom panel: structure of sgRNA/DNA heteroduplex bound by WT SpCas9 (PDB: 4UN3).

**b.** Superimposition of the interfaces of REC3-RNA/DNA heteroduplex of xCas9 3.7 (purple) and SpCas9 (gray) in two orientations. The xCas9 3.7- and SpCas9 (gray)-bound sgRNA/DNA are colored hot pink and orange, respectively.