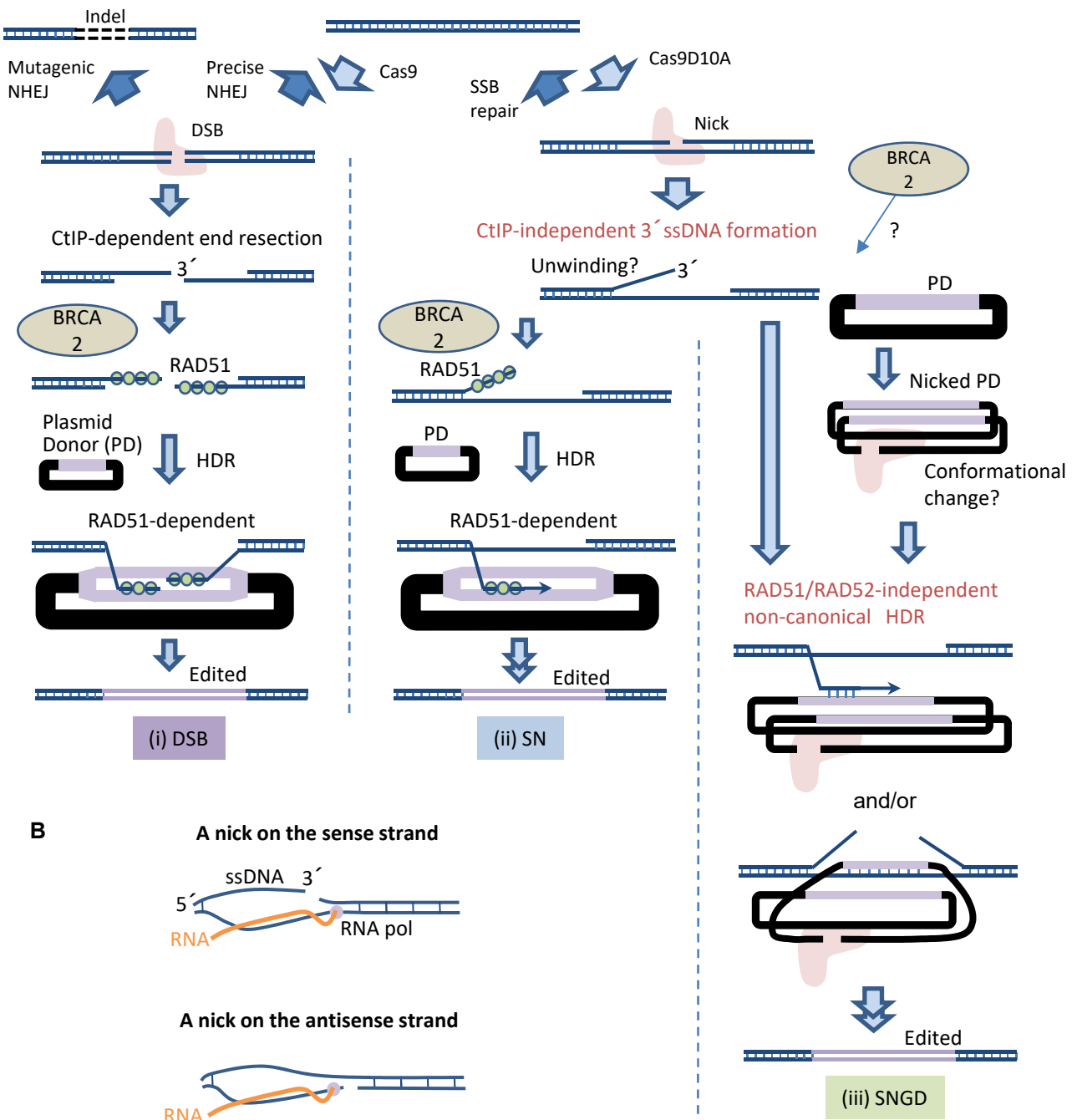


A

Supplemental Figure S9. A molecular model for a DSB, a single nick, or SNGD-mediated gene editing. (A) **i.** DSB-mediated gene editing utilizes the canonical HR pathway, which depends on CtIP-initiated DNA end resection, BRCA2-mediated RAD51 loading of ssDNA, and RAD51-mediated strand invasion of the donor plasmid. **ii.** A Cas9D10A-induced nick is unwound. The resulting 3'-ended ssDNA is coated with RAD51, and the RAD51-DNA filament promotes HR between the genome and plasmid donor. **iii.** The Cas9D10A-induced nick in the plasmid donor may induce conformational change of the donor plasmid. This facilitates marked accessibility between the nicked genome and donor plasmid, and enables recombination without RAD51-RAD52-dependent strand invasion. (B) R-loop formation can generate 3'-ended ssDNA tails without DNA end resection when the sense strand, but not the antisense strand, is nicked by Cas9D10A.