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(54) Title: NOVEL HIGH FIDELITY RNA-PROGRAMMABLE ENDONUCLEASE SYSTEMS AND USES THEREOF

(57) Abstract: Described herein are novel systems for targeting, editing or manipulating DNA in a cell, using novel M- SmallCas9 nucleases and variants thereof. The M-SmallCas9 nucleases are derived from wildtype or parental small type II CRISPR Cas9 endonucleases, and display improved fidelity compared to parental type II CRISPR Cas9 enzymes in combination with a simple PAM sequences and are small endonuclease size.