Alt-R *A.s.* Cas12a (Cpf1) *Ultra* nuclease

Enhanced performance and high editing efficiency even at low temperatures

Alt-R *A.s.* Cas12a (Cpf1) *Ultra* enzyme is a high purity, recombinant *Acidaminococcus* sp. Cas12a protein that is the result of protein engineering and directed evolution. The improvements to the Alt-R *A.s.* Cas12a *Ultra* enzyme now make it as reliable as Cas9 nuclease.

The new Alt-R *A.s.* Cas12a *Ultra* nuclease can recognize many TTTT PAM sites in addition to TTTV motifs, expanding target range for genome editing studies (Figures 1 and 2). Alt-R *A.s.* Cas12a *Ultra* is also active at room temperature, making it a powerful tool for applications requiring delivery at lower temperatures.

The Alt-R *A.s.* Cas12a *Ultra* enzyme easily replaces existing *A.s.* Cas12a (Cpf1) nuclease in related applications, with no need for protocol changes (Figure 3). The enzyme is compatible with other components of the Alt-R-CRISPR-Cas12a system to enable precise genome editing through the same advantageous ribonucleoprotein (RNP)-based workflow.

benefits

Achieve higher on target-potency with editing as efficient as Cas9

Simplify your workflow with Cas12a guided by a short, single RNA

Target organisms with AT-rich genomes

High activity at temperatures optimal for ectothermic organisms

Maximize precision edits with vastly improved rates of HDR using Cas12a *Ultra*

Discover more at
www.idtdna.com/CRISPR-Cpf1

Alt-R *A.s.* Cas12a *Ultra* protein demonstrates superior performance with TTTV target site selection

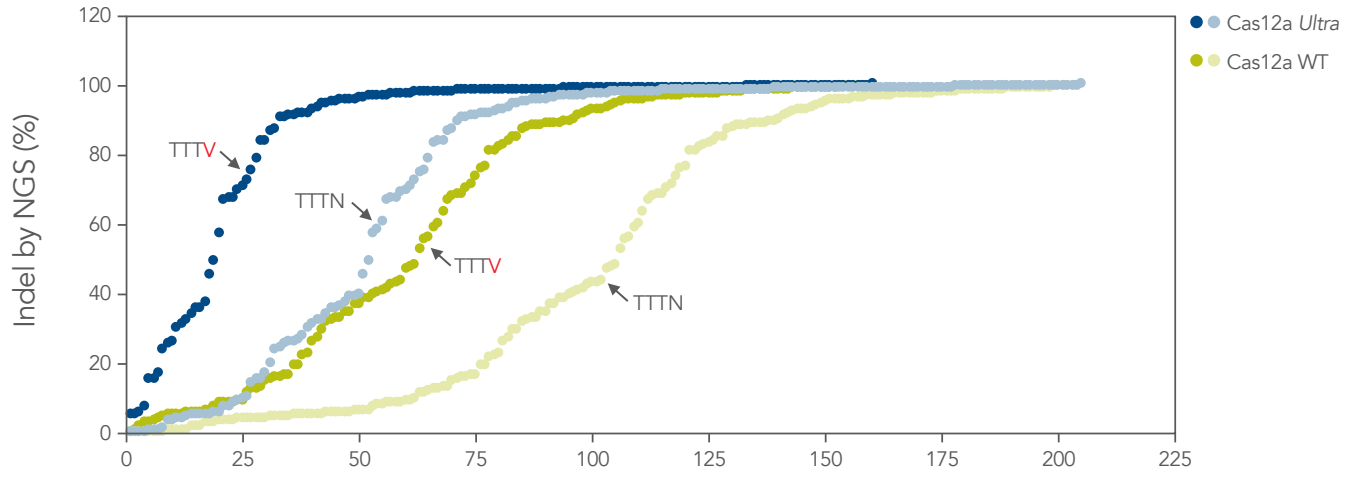

Figure 1. Alt-R *A.s.* Cas12a *Ultra* protein demonstrates superior performance with TTTV target site selection. Dots represent rank-ordered editing efficiency of 216 guides that target TTTV (dark shading) or TTTN (light shading) PAM sites and that were complexed to wild-type Cas12a V3 (green) or Cas12a *Ultra* (blue) before delivery into HEK-293 cells (96 sites) and Jurkat cells (120 sites). Human cells were transfected with RNP as instructed in the user guide for Alt-R CRISPR-Cas12a—RNP electroporation with a 4D-Nucleofector™ System (Lonza). Editing efficiency was determined 48 hr after electroporation using NGS (rhAmpSeq amplicon sequencing).

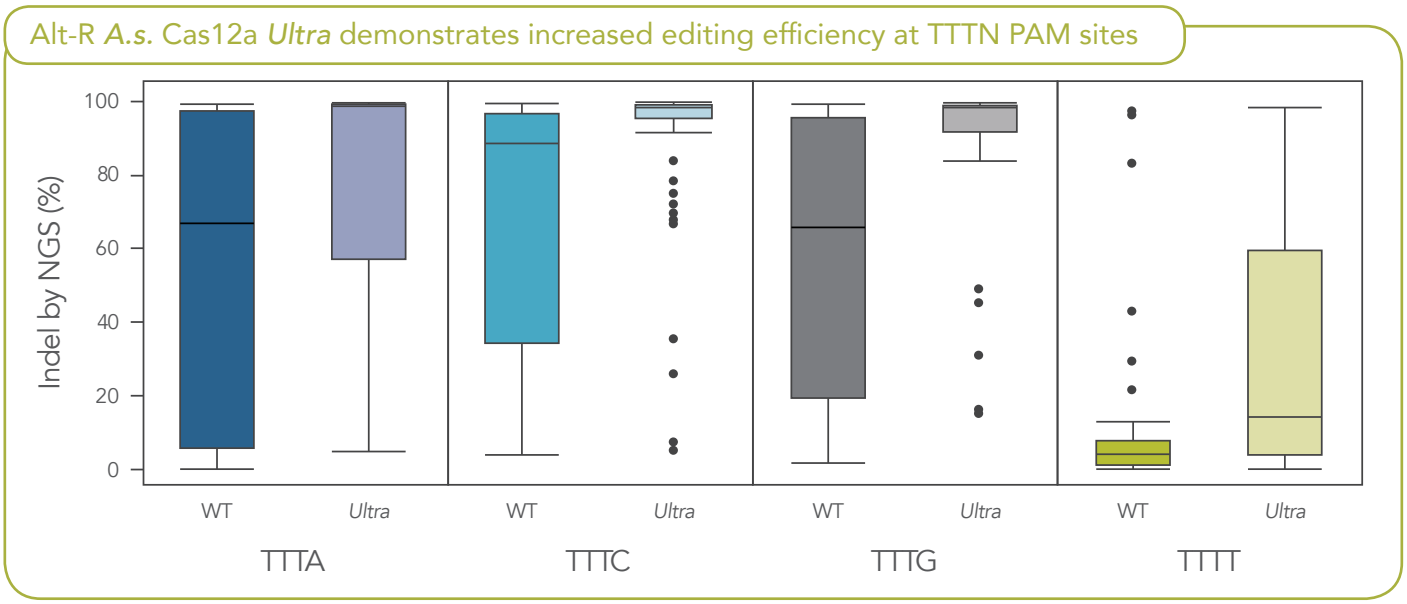

Figure 2. Alt-R *A.s.* Cas12a *Ultra* demonstrates increased editing efficiency at TTTA, TTTC, TTTG, and TTTT PAM sites. RNPs were formed with wild-type *A.s.* Cas12a V3 or *A.s.* Cas12a *Ultra*, complexed to 216 individual crRNAs targeting distinct loci on the human genome. RNP complexes (4 µM) were delivered into Jurkat cells (120 sites) or HEK-293 cells (96 sites) using a 4D Nucleofector System (Lonza) in the presence of Alt-R Cas12a (Cpf1) Electroporation Enhancer. Editing efficiency was determined 48 hr after electroporation using NGS (rhAmpSeq amplicon sequencing).

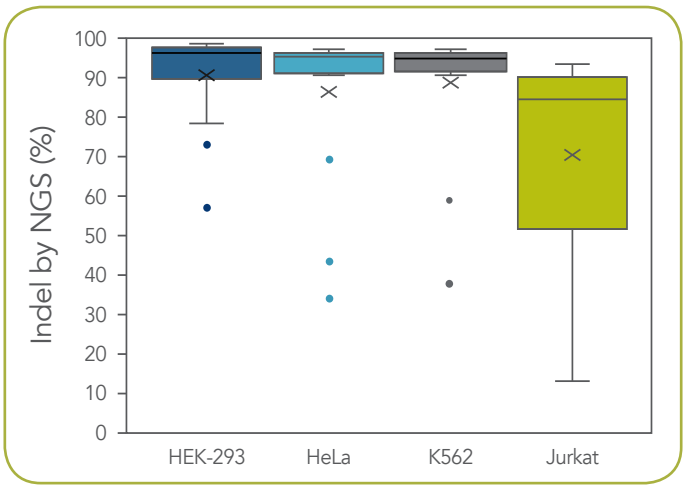

Figure 3. Alt-R *A.s.* Cas12a *Ultra* demonstrates high performance in multiple human cell types. RNPs were formed with *A.s.* Cas12a *Ultra*, complexed to 16 individual crRNAs that target distinct loci on the human genome. RNP complexes (4 µM) were delivered into the indicated cell types using a 4D Nucleofector System (Lonza) in the presence of Alt-R Cas12a (Cpf1) Electroporation Enhancer. Editing efficiency was determined 48 hr after electroporation using NGS (rhAmpSeq amplicon sequencing).

Ordering information

CRISPR guide RNAs

Product	Size	Catalog#
Alt-R CRISPR-Cpf1 crRNA	2, 10 nmol tubes or plates	Order at **www.idtdna.com/CRISPR-Cpf1**

Cas12a (Cpf1) nuclease

Product	Size	Catalog#
Alt-R *A.s.* Cas12a (Cpf1) *Ultra*	100 µg 500 µg	10001272 10001273

For more information and to order, visit **www.idtdna.com/CRISPR-Cpf1**.

For Research Use Only. Not for use in diagnostic procedures.

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