

# Alt-R™ S.p. HiFi Cas9 NUCLEASE V3

Accurate genome editing, even under challenging conditions



**Achieve increased on-target editing** with strongly reduced off-target activity



**Obtain similar on-target efficiency** to the market-leading Alt-R S.p. Cas9 Nuclease V3



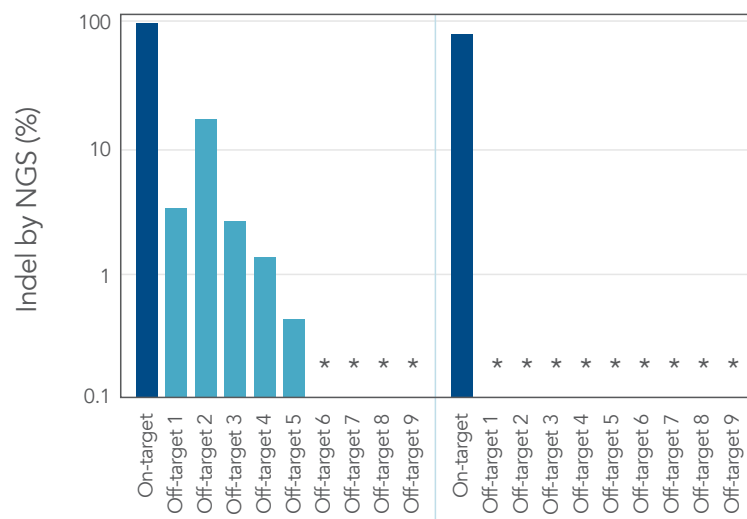
**Deliver the ribonucleoprotein efficiently** by lipofection, electroporation, or microinjection



**Avoid the toxicity and innate immune response activation** commonly observed with *in vitro* transcribed Cas9 mRNA and sgRNAs

Alt-R S.p. HiFi Cas9 Nuclease V3 is a high-fidelity *S. pyogenes* Cas9 protein that reduces off-target effects without compromising activity—suitable for both routine experiments and challenging genome editing applications.

The Alt-R S.p. HiFi Cas9 enzyme easily replaces wild-type Cas9 in existing applications, with no need for protocol changes. The enzyme is compatible with other components of the Alt-R CRISPR-Cas9 system to enable precise genome editing through the same advantageous ribonucleoprotein (RNP)-based workflow.



**Figure 1. Alt-R S.p. HiFi Cas9 Nuclease V3 facilitates near-wildtype on-target editing potency and significantly reduces off-target site editing.** RNP complexes were formed with either Alt-R S.p. Cas9 Nuclease V3 or Alt-R S.p. HiFi Cas9 Nuclease V3, combined with an Alt-R crRNA:tracrRNA complex targeting the *EMX1* gene. RNP complexes (4 μM) were delivered into HEK-293 cells via the Nucleofection™ method (Lonza). Indel formation (indicated on the y-axis in log scale) at the on-target locus and 9 known off-target sites were measured by next generation sequencing (rhAmpSeq™ amplicon sequencing, IDT), *n* = 1.

Cas9 variant

Alt-R S.p. Cas9  
Nuclease V3

Alt-R S.p. HiFi Cas9  
Nuclease V3

\* Indel formation <0.1% as measured by multiplexed amplicon sequencing using the rhAmpSeq™ system (IDT).

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 IDT  
INTEGRATED DNA TECHNOLOGIES

## ORDERING INFORMATION CRISPR GUIDE RNAs

Product	Size	Catalog #
Alt-R CRISPR-Cas9 crRNA	2, 10 nmol tubes or plates	Order at <a href="http://www.idtdna.com/CRISPR-Cas9">www.idtdna.com/CRISPR-Cas9</a>
	50, 100 nmol tubes	
Alt-R CRISPR-Cas9 tracrRNA	5 nmol	1072532
	20 nmol	1072533
	100 nmol	1072534

## HiFi Cas9 NUCLEASE

Product	Size	Catalog #
Alt-R S.p. HiFi Cas9 Nuclease V3	100 µg	1081060
	500 µg	1081061
	5 mg	10007803

## CONTROL KITS\*

Product	Catalog #
Alt-R CRISPR-Cas9 Control Kit, Human (2 nmol)	1072554
Alt-R CRISPR-Cas9 Control Kit, Mouse (2 nmol)	1072555

\* Control kit components are also available individually.

## CONTROL KIT COMPONENTS

- Alt-R CRISPR HPRT Positive Control crRNA
- Alt-R CRISPR Negative Control crRNA #1
- Alt-R CRISPR-Cas9 tracrRNA
- Alt-R HPRT PCR Primer Mix

## FEATURED CITATIONS:

1. Vakulskas CA, Dever DP, *et al.* **A high-fidelity Cas9 mutant delivered as a ribonucleoprotein complex enables efficient gene editing in human hematopoietic stem and progenitor cells.** *Nat Med.* 2018; 24:1216–1224. doi: 10.1038/s41591-018-0137-0.
2. Park SH, Lee CM, *et al.* **Highly efficient editing of the  $\beta$ -globin gene in patient derived hematopoietic stem and progenitor cells to treat sickle cell disease.** *Nucleic Acids Res.* 2019;47(15):7955-7972. doi: 10.1093/nar/gkz475.

> FOR MORE INFORMATION, VISIT [WWW.IDTDNA.COM/Cas9](http://WWW.IDTDNA.COM/Cas9)

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