

# 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



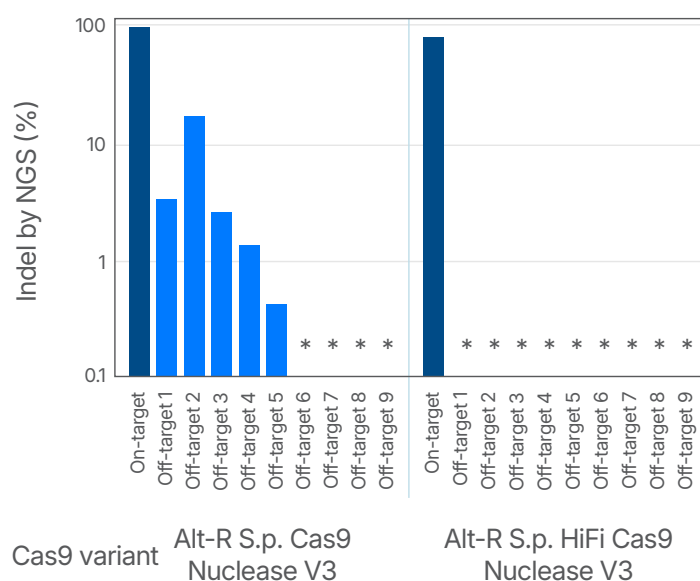
Deliver the ribonucleoprotein efficiently by lipofection, electroporation, or microinjection



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  $\mu$ M) 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),  $n = 1$ .

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

## 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 [idtdna.com/Cas9](http://idtdna.com/Cas9)



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