MERCK

Gene Editing with CRISPR

PURedit™ Synthetic sgRNAs; standard purity sgRNAs and Cas9 Proteins

RISK-FREE GUARANTEE

Sigma-Aldrich®

Lab & Production Materials

PURedit™ Synthetic sgRNAs and Cas9 Protein

Engineered for Impact

Superior Editing with PURedit™ RNPs

Translational experiments require the highest efficiency—activity and specificity—to ensure your therapeutic is a success. PURedit™ RNPs accelerate genome editing with industry-leading on-target activity while maintaining low off-target editing (**Figure 1**), especially at target sites that are difficult to edit. Additionally, RNPs are the best choice for translational research due to transient expression, lack of a genomic footprint, and compatibility with a variety of delivery methods.

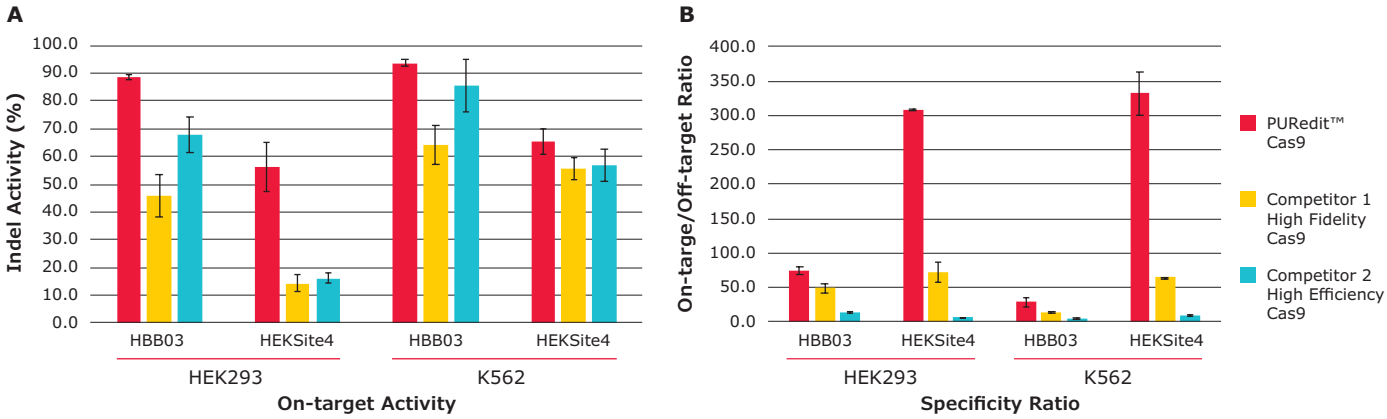


Figure 1. PURedit™ CRISPR RNPs display higher on-target gene editing efficiency and lower off-target cutting in multiple cell models compared to competitors. PURedit™ Cas9, competitor 1 high fidelity variant Cas9, and competitor 2 high efficiency Cas9 were each complexed with PURedit™ sgRNAs and electroporated into both HEK293 and K562 cells. Two PURedit™ sgRNAs targeting two different genes were used with each Cas9 variant. Each transfection contained 5µg of Cas9 protein and 100 pmol of PURedit™ sgRNA. **(A)** The average percentage of insertions and deletions for the two sgRNAs at their target sites (Indel Activity %) was determined by next generation sequencing (NGS). At both target sites in both cell lines, the PURedit™ RNP complexes showed greater cutting efficiency than competitors. **(B)** Transfected cells from (A) were analyzed for specificity by quantifying the insertions and deletions at the most active off-target sites, and the ratio of on-target to off-target activity was calculated. PURedit™ Cas9 shows the highest ratio at all targets, confirming high specificity and activity for the intended target sites.

Our translational-grade PURedit™ CRISPR reagents are engineered to meet superior manufacturing standards, enabling consistent and reliable performance. Your preclinical experiments require high quality so you can feel confident in the safety and reliability of your reagents as you move into the clinic. PURedit™ CRISPR reagents are manufactured with enhanced quality attributes (**Table 1**) compared to our standard CRISPR reagents.

Selected Applications

- Translational and pre-clinical research
- Difficult-to-edit target sites
- Sensitive applications requiring high purity reagents

Advantages

- High quality, available now
- Guaranteed – assured cleavage efficacy with any gRNA, including your own designs
- Industry-leading activity without compromising on specificity
- Easy-to-use – compatible with your delivery protocols, including microinjection, electroporation, and lipofection

For more information and ordering, visit
SigmaAldrich.com/PURedit

For other CRISPR products, visit
SigmaAldrich.com/CRISPR

Table 1: Comparison Chart of Standard vs. PURedit™ Reagents

Discriminating Attribute	Standard	PURedit™
Quality Standard – ISO 9001	✓	✓
Specifications available	✓	✓
Certificate of Analysis available	✓	✓
Release testing performed using established protocol	✓	✓
Written SOP for process control	✓	✓
Supplier approval process	✓	✓
Site quality self-assessment available	✓	✓
Quality declaration available		✓
Manufacturing process is verified		✓
Analytical method is verified		✓
Analytical method can be shared upon request		✓
Real time stability study for shelf life		✓
Customer access to quality documentation		✓
Quality audits by customer request		✓
Products can be included on quality agreements		✓
Enhanced change notifications including:		
• Change in test methods		✓
• Change in primary packaging materials		✓
• Change in manufacturing process		✓
Highest Performance		✓

TRY IT AT 30% DISCOUNT  **RISK-FREE**

Product Name	Cat. No.
PURedit™ Cas9 Protein	**PECAS9**
PURedit™ Synthetic sgRNA	**VC40007**

Buy PURedit™ Cas9 Protein and PURedit™ Synthetic sgRNA and get 30% off.

Contact your local representative to take advantage of this unique offer!

Standard Purity Synthetic Single Guide RNA

Best Market Price for Every Day Use

SygRNA® synthetic single guide RNAs are the highest quality materials currently available on the market, and are backed by the most comprehensive guarantee in the industry. Each SygRNA® guide is custom synthesized to your specifications, including chemical modifications. They are purified by HPLC to remove small molecule contaminants and isomers that could negatively impact your cells or embryos and reduce the efficiency or specificity of your gene editing experiment. SygRNA® guides are shipped directly to your lab, anywhere in the world, within 7-10 business days and can be complemented by a wide range of Cas9 proteins and delivery reagents from our comprehensive portfolio of CRISPR products.

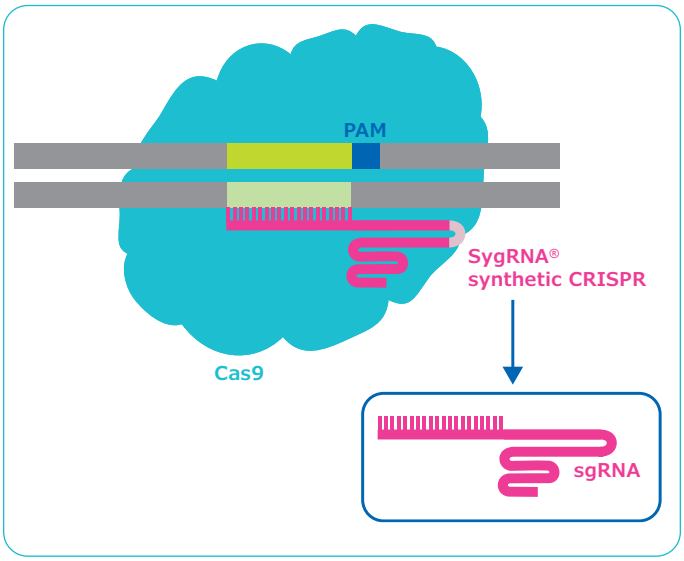
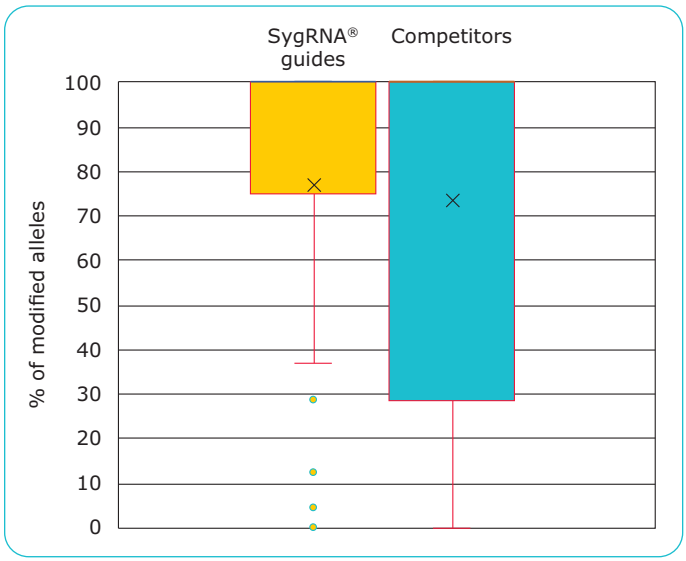


Figure 1. Structure of Synthetic Single guide RNA.

SygRNA® Guides Deliver Superior Performance



SygRNA® guides consistently produce high editing efficiencies.

Figure 2. A comparison of 115 total experiments, including several replicates at 8 different target sites using Merck sgRNAs (yellow) against several leading competitor sgRNAs (blue). On the y axis is the % of modified alleles in mouse embryos, determined by NGS, using identical sgRNAs from different sources.

TRY IT AT 20% DISCOUNT RISK-FREE

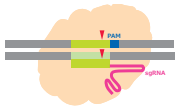
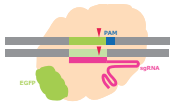
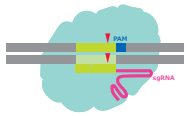
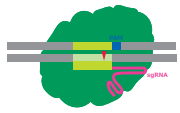
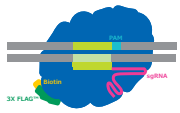
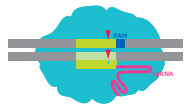
Product Name	Cat. No.
Standard Purity Synthetic single guide RNA (sgRNA)	**VC40003**
Cas9 Plus Protein	**CAS9PL**
PUREdit™ Cas9 Protein	**PECAS9**

Buy PUREdit™ Cas9 or Cas9 Plus protein and Standard Purity synthetic sgRNA and get 20% off on the protein.

Contact your local representative to take advantage of this unique offer!

Cas9 Proteins

Our synthetic gRNAs are both compatible with, and complemented by, the most extensive Cas9 protein portfolio available. Whether you require the perfect balance of efficiency and specificity of Cas9 Plus, or need dead Cas9 for inhibition or activation experiments, or to track and sort your transfected cells using EGFP, we have the perfect protein for every genome engineering application.

Protein	WT Cas9	Cas9-GFP	Cas9 Plus	Cas9 D10A (Nickase)	Cas9 D10A H840A (Dead)	PURedit™ Cas9
						
Description	Wild-type SpCas9 protein with high gene editing activity	Wild-type SpCas9 protein fused to EGFP with high gene editing activity	SpCas9 protein engineered to have both high gene editing activity and on-target specificity	Cas9 with mutation to limit cleavage to a single strand, creating a nick in DNA; requires 2 target sites for modification	Cas9 with mutations to inhibit nuclease activity but allow binding to DNA	SpCas9 protein engineered to have both highest gene editing activity and on-target specificity
Recommended Usage	Go-to for early evaluation when gRNA targets are screened for efficacy	Beneficial for optimizing experimental conditions Evaluate new delivery mechanisms	Ideal for gene editing experiments that require low off-target effects without compromising on-target activity	Most helpful for homology-directed repair (HDR) applications	Gene modification experiments that do not require cutting the DNA – Inhibition or Activation of gene target	Preclinical research where high efficiency and high quality are required
Features	1× NLS Lyophilized	3× NLS Enhanced GFP Lyophilized	Activity & Specificity Enhancing mutations 1× NLS Lyophilized	D10A mutation 1× NLS Lyophilized	D10A & H840A mutations 1× NLS 3× FLAG™-Biotin Tag Lyophilized	Activity & Specificity Enhancing mutations Higher MQ Rating 1× NLS Lyophilized
Gene Editing Activity	+++	+++	+++	++	N/A	++++
On-Target Specificity	++	++	++++	+++	N/A	++++
Price	+	++	++	+	+	+++
Quality Standard	ISO 9001	ISO 9001	ISO 9001	ISO 9001	ISO 9001	ISO 9001 w/ enhanced quality control required for preclinical & early clinical research
Product Number	**CAS9PROT**	**CAS9GFPPRO**	**CAS9PL**	**CAS9D10APR**	**DCAS9PROT**	**PECAS9**

Are your CRISPR experiments focused on therapeutic research towards the clinic?
If so, learn more about the PURedit™ portfolio by visiting **SigmaAldrich.com/PURedit**

For more information, please visit
SigmaAldrich.com/Cas9

For other CRISPR products and protocols visit:
SigmaAldrich.com/CRISPR

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