



invitrogen

Build your own CRISPR solution

Optimized solutions for your CRISPR-Cas9 workflow

ThermoFisher
SCIENTIFIC

Ways to optimize your CRISPR workflow

We aim to bring you top-performing tools to help you achieve your research goals faster and with fewer challenges.

Here's how:

- New to genome editing? Access our 24/7 learning center at thermofisher.com/genomeedit101
- Join our new hands-on CRISPR workshop—learn more at thermofisher.com/crisprworkshop
- Interested in custom volumes of TrueCut Cas9 Protein v2, stable Cas9 iPSCs, or stable Cas9 cell lines? Contact GEMservices@thermofisher.com for more information

1

Use a negative control, such as empty lipid transfection, as well as a positive control for a well-characterized “safe harbor” gene, such as *HPRT* or *AAVS1*, to validate that your overall protocol is set up correctly. If any unexpected results occur with either the positive or negative controls, optimization of other workflow steps such as plasmid preparation or transfection is likely needed.

2

Research your cell type—is it easy or hard to transfect? Choose a transfection method that seems best for your cells and specific application, or start with the simplest (lipid) and progress to other methods as needed.

3

Be sure to start your experiment with optimal cell density and cell health, including cell passage number and cell viability percent.

4

When delivering multiple plasmid molecules to your cells, the ratio of their quantities is important. Be sure to validate that you are using the optimum ratio of plasmids during delivery.

5

Consider shifting to a workflow based on a purified Cas9 protein and synthetic gRNA. Learn more at thermofisher.com/geneedit

Build your own CRISPR solution: a five-step approach

Powerful CRISPR gene editing technology is transforming research at an astonishing rate. The success of CRISPR-Cas9 experiments depends on many factors, such as gRNA design, Cas9 efficiency, and delivery conditions. Success is also influenced by the reagents and instruments chosen throughout the workflow. Through years of experience, we've refined and optimized our products and services to maximize your success. We're here to help you with the reagents and technical support that span the entire CRISPR workflow.

Have questions? We're here to help. Learn more at thermofisher.com/yourcrispr



Design

Design your experiment and assemble the optimal set of editing tools

Invitrogen™ GeneArt™ CRISPR Nuclease Vector with OFP Reporter Kit

An all-in-one CRISPR-Cas9 vector system for simplified expression of the CRISPR components needed for mammalian cell editing. Includes an orange fluorescent protein (OFP) reporter to track transfection efficiency.

Invitrogen™ Anza™ restriction and cloning enzymes

Optimized Type IIs restriction enzymes and associated modifying enzymes for use in guide RNA (gRNA) cloning to many commercially and academically available vectors.

Invitrogen™ Oligos

Premium oligos for generating RNA constructs. Annealed oligos are then cloned into their own vector, or into a CRISPR nuclease vector for all-in-one expression.

Looking to further increase your editing efficiency?
Check out **Invitrogen™ TrueCut™ Cas9 Protein v2**



Transform

Transform into competent cells and screen for correct clones

Invitrogen™ One Shot™ MAX Efficiency™ DH5α-T1^R Competent Cells

For high-efficiency propagation of your CRISPR nuclease and gRNA vectors prior to purification and transfection into your desired cell type.

Invitrogen™ Platinum™ II Hot-Start Green PCR Master Mix (2X)

For rapid colony PCR screening.

Invitrogen™ PureLink™ Expi Endotoxin-Free Maxi Plasmid Purification Kit

For maximum yield of CRISPR plasmids from your transformed *E. coli* stocks.



Deliver

Help ensure highly efficient delivery of editing tools to the cells

Invitrogen™ Lipofectamine™ 3000 Transfection Reagent

Our highest-performing lipid transfection reagent for plasmid delivery of genome editing tools, including Cas9 and gRNA vectors.

Invitrogen™ Neon™ Transfection System

High-efficiency electroporation for delivery to sensitive and difficult-to-transfect cells such as stem cells and primary T cells.

Invitrogen™ CRISPRMAX™ Cas9 Transfection Reagent

Delivering purified Cas9 protein? Consider utilizing the Lipofectamine CRISPRMAX reagent for optimized protein transfection with TrueCut Cas9 Protein v2 and Invitrogen™ TrueGuide™ Synthetic gRNA.

Support resources

New to CRISPR genome editing?

Learn more at thermofisher.com/crispr101





Detect

Screen, isolate, and expand clones to identify those with modifications

Invitrogen™ Zero Blunt™ TOPO™ PCR Cloning Kit for Sequencing

Simplified cloning vector for downstream sequencing and quantification of edited genes.

Invitrogen™ GeneArt™ Genomic Cleavage Detection Kit

A rapid and semiquantitative method for measuring CRISPR-Cas9 cleavage efficiency at your gene of interest.

Invitrogen™ E-Gel™ Power Snap Electrophoresis System Starter Kit, EX 2%

Precast agarose gels for confirmation of PCR amplification, and Invitrogen™ GeneArt™ genomic cleavage detection products.

Invitrogen™ Platinum™ SuperFi™ PCR Master Mix

High-fidelity amplification of edited genes for subsequent sequencing and quantification.

Applied Biosystems™ ProFlex™ PCR System

This thermal cycler combines flexible configuration and control features to maximize your throughput or run independent experiments concurrently.



Characterize

Confirm gene editing by sequencing, protein knockout, and functional assays

Invitrogen™ SuperScript™ IV VILO™ Master Mix

The best Invitrogen™ reverse transcriptase for RNA conversion and subsequent quantification of knockout via nonsense-mediated decay.

Invitrogen™ UltraPure™ DNase/RNase-Free Distilled Water

Ultrafiltered DNase- and RNase-free molecular-grade water helps ensure success.

Invitrogen™ Attune™ NxT Flow Cytometer

Quantify the knock-in of fluorescent reporters or deletion of cell surface markers with this acoustic focusing cytometer.

Invitrogen™ PureLink™ RNA Mini Kit

Provides rapid purification of total RNA from a wide range of cells and tissue types.

Ordering information

Product	Quantity	Cat. No.
Design		
GeneArt CRISPR Nuclease Vector with GFP Reporter Kit	10 reactions	A21174
GeneArt CRISPR Nuclease Vector with CD4 Enrichment Kit	10 reactions	A21175
Anza 10-Pack Starter Kit	1 kit	IVGN3006
Oligos (contact your sales representative)	Varies	
TrueCut Cas9 Protein v2	25 µg	A36497
	100 µg	A36498
Transform		
One Shot MAX Efficiency DH5α-T1 ^R Competent Cells	20 reactions	12297016
Platinum II Hot-Start Green PCR Master Mix (2X)	200 reactions	14001013
PureLink Expi Endotoxin-Free Maxi Plasmid Purification Kit	25 preps	A31231
Deliver		
Neon Transfection System	1 system	MPK5000
Neon Transfection System Starter Pack	1 pack	MPK5000S
Lipofectamine 3000 Transfection Reagent	1.5 mL	L3000015
Lipofectamine CRISPRMAX Cas9 Transfection Reagent	0.1 mL	CMA000001
	0.75 mL	CMA000008
Detect		
Zero Blunt TOPO PCR Cloning Kit for Sequencing	25 reactions	450031
E-Gel Power Snap Electrophoresis System Starter Kit, EX 2%	1 kit	G8342ST
Platinum SuperFi PCR Master Mix	100 reactions	12358010
GeneArt Genomic Cleavage Detection Kit	20 reactions	A24372
Characterize		
SuperScript IV VILO Master Mix	50 reactions	11756050
UltraPure DNase/RNase-Free Distilled Water	10 x 500 mL	10977023
Attune NxT Flow Cytometer	1 system	A24858
PureLink RNA Mini Kit	50 preps	12183018A

Ordering information

Product	Quantity	Cat. No.
Applied Biosystems ProFlex PCR System	1 system	4484075

Share your personal CRISPR story using #yourCRISPRstory on social media to inspire others with your achievements. We want to hear about your CRISPR success.

Get true results at thermofisher.com/yourcrispr

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