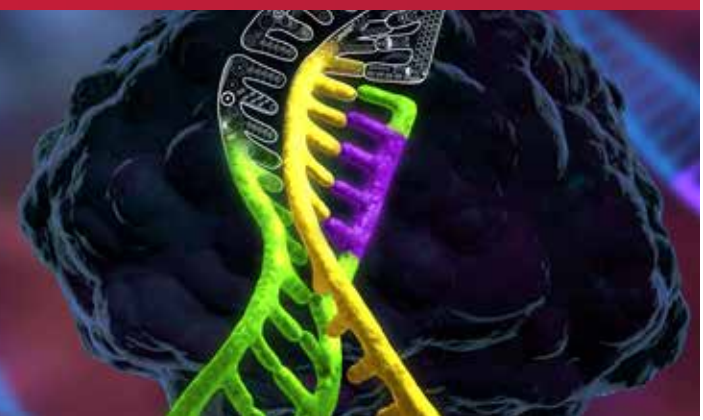
Invitrogen™

GeneArt® CRISPR Nuclease Vector Kits

Efficient cloning, streamlined workflow, faster results



All-in-one vector system for CRISPR-based genome editing

Transfect, enrich, screen, and publish—all using our GeneArt® CRISPR Nuclease Vector Kits. The GeneArt® **c**lustered **r**egularly **i**nterspaced **s**hort **p**alindromic **r**epeat (CRISPR) nuclease system offers a simple, ready-to-use, all-in-one expression vector system consisting of both a Cas9 nuclease expression cassette and a guide RNA (gRNA) cloning cassette for rapid and efficient cloning of DNA that encodes target-specific CRISPR RNA (crRNA). This system allows you to edit and engineer a genomic locus of choice in a sequence-specific manner from a single plasmid. After relevant targets have been identified with fast and easy-to-use GeneArt® CRISPR vectors, the biologically relevant mutations can be precisely created with GeneArt® Precision TALs with high specificity and low off-target effects.

How does it work?

Genome editing uses engineered nucleases in conjunction with endogenous repair mechanisms to alter the DNA in a cell. The CRISPR/Cas system takes advantage of a short gRNA to target the bacterial Cas9 endonuclease to specific genomic loci. Because the gRNA supplies the specificity, changing the target only requires a change in the design of the sequence encoding the gRNA.

The CRISPR/Cas system used in gene editing consists of three components: the Cas nuclease Cas9 (a double-stranded DNA endonuclease), a target complementary crRNA, and an auxiliary transactivating crRNA (tracrRNA) (Figure 1). The crRNA and tracrRNA of the GeneArt® CRISPR nuclease vector are expressed together as a gRNA that mimics the natural crRNA-tracrRNA chimera in bacterial systems. All that's needed is to introduce a double-stranded oligonucleotide encoding the desired sequence to express the crRNA portion of the chimera.

For detailed design strategy and target specificity guidelines, refer to our technical product bulletin at lifetechnologies.com/crispr

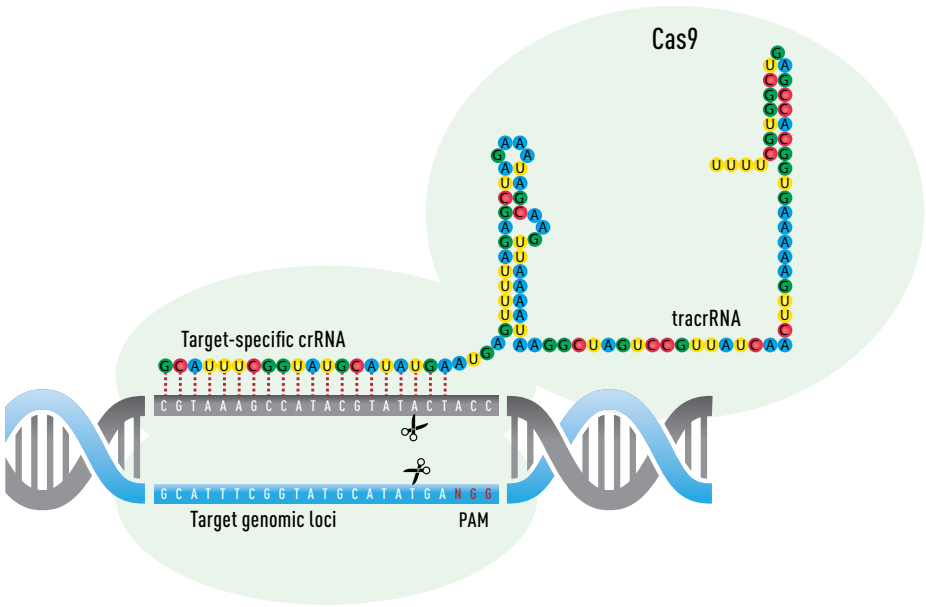


Figure 1. CRISPR/Cas9 targeted double-strand break. Cleavage occurs on both strands, 3 base pairs upstream of the NGG protospacer adjacent motif (PAM) sequence on the 3′ end of the target sequence.

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GeneArt® CRISPR Nuclease Vector Kits

GeneArt® CRISPR Nuclease Vector Kits are reporter vector systems for expression of the functional components needed for CRISPR/Cas9 genome editing in mammalian cells. These kits are available with two different reporters: GeneArt® CRISPR nuclease vectors with orange fluorescent protein (OFP) allow flow cytometry–based sorting (fluorescence-activated cell sorting (FACS)) of cell populations expressing Cas9 and CRISPR RNA, whereas GeneArt® CRISPR nuclease vectors with CD4 enable bead-based enrichment of cells expressing Cas9 and CRISPR RNA (Figure 2).

The linearized GeneArt® CRISPR nuclease vectors provide a rapid and efficient way to clone double-stranded oligonucleotides encoding a crRNA representing a desired target into an expression cassette that allows sequence-specific targeting of the Cas9 nuclease.

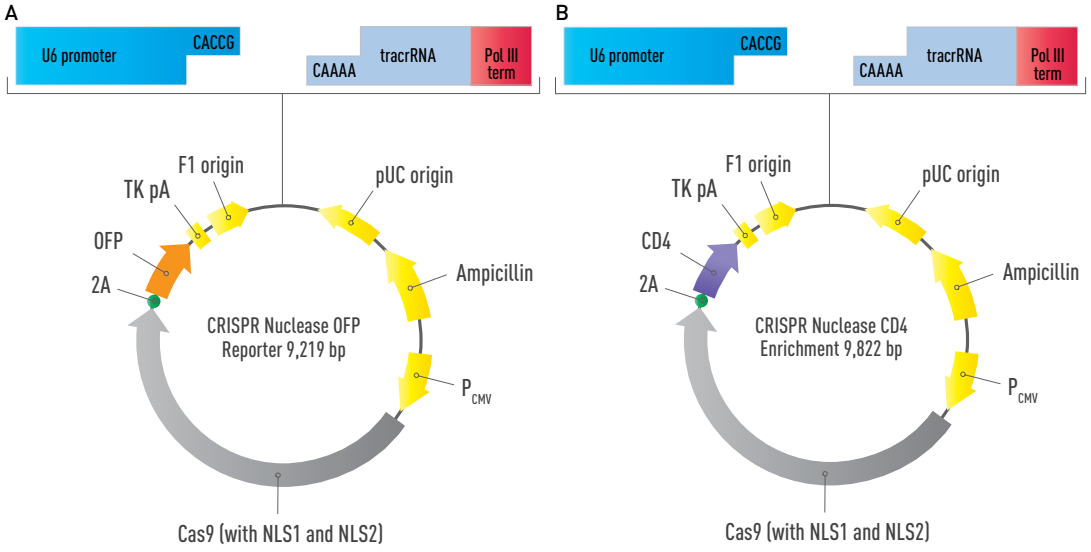

Figure 2. GeneArt® CRISPR nuclease vector maps. The vector is prelinearized with 5 base pair overhangs for easy cloning of your double-stranded DNA oligo that encodes a target-specific crRNA. Maps are shown of the vectors with **(A)** OFP reporter and **(B)** CD4 reporter. The gRNA, Cas9, and reporter are expressed from the same vector. Cas9 is directed to the nucleus by nuclear localization signals (NLS1 and NLS2).

Ordering information

Product	Size	Cat. No.
GeneArt® CRISPR Nuclease: OFP Reporter Kit	10 reactions	A21174
GeneArt® CRISPR Nuclease: OFP Reporter with Competent Cells (Combo) Kit	10 reactions	A21178
GeneArt® CRISPR Nuclease: CD4 Enrichment Kit	10 reactions	A21175
GeneArt® CRISPR Nuclease: CD4 Enrichment with Competent Cells (Combo) Kit	10 reactions	A11277

Want us to design your target oligonucleotide and clone it for you?
Let us know at CRISPR@lifetech.com, and we'll design and provide you with 100 µg of transfection-quality DNA.

Find out more or place an order at
lifetechnologies.com/crispr

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