

Corning Solutions for CRISPR Gene Editing



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Genome Engineering via the CRISPR-Cas System

The CRISPR-Cas System is used to genetically engineer cells by inducing alterations in genomic sequence information, as well as activation or repression of target genes. This system is extremely efficient due to the combined action of the Cas enzyme (the part of the system that induces the modification), and the guide RNA (gRNA), which guides the Cas enzyme to the DNA sequence designated for modification.

Our high quality laboratory consumables, biologics, and equipment can help you achieve success in your genomic research. See how Corning products fit into every step of your CRISPR workflow below.

gRNA Generation

The gRNA (~20 nucleotides) is specifically designed to match the DNA sequence of the target gene. The gRNA is inserted into plasmids, which are then transformed into bacteria for DNA production.



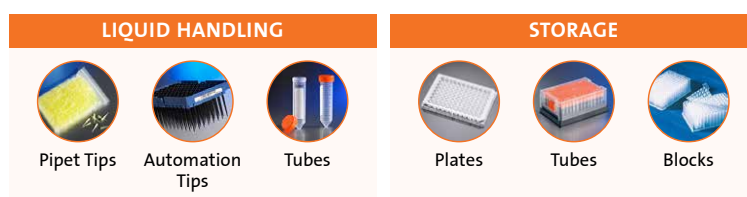
Virus production and Delivery of gRNA/Cas9 Complex

The gRNA and Cas enzyme plasmids are transfected into cells, where those components are incorporated into a functioning virus particle containing the gRNA and Cas DNA.



Alternative Delivery Methods

Apart from lentiviral transfection of the gRNA/Cas complex, alternative approaches are available to achieve gRNA and Cas delivery into cells. These alternative delivery methods include microinjection, electroporation, liposome transfection, and RNA transfection of the gRNA/Cas complex.





Transduction and Expansion

The viral particles are added to the designated cells, which causes integration of the gRNA and Cas DNA into the cellular genome, subsequently leading to the expression of the gRNA/Cas system. Transduced cells are expanded to produce an adequate amount of the modified cell type for further research

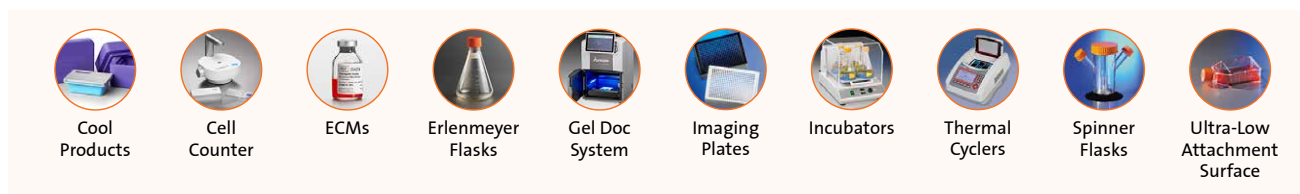


Cell Selection and Verification

Of the population of transduced cells, cells with the desired genomic modification are chosen based on phenotype, or cells are seeded as single cells for clonal expansion. Validation of the desired genomic modification is then performed, typically via extraction and sequencing of genomic DNA from these cells.



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