Edit-R™ Gene Editing Workflows

Choose the right tools for your application

Whether you're goal is a functional protein knockout for your gene of interest, running a loss-of-function screen, or creating an insertion or other knock-in, this workflow guide will assist you in selecting the right Edit-R™ gene editing reagents for your application.

Choose your application

Gene knockout

Single gene knockout

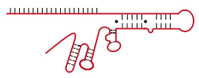
Knockout cell line creation or loss-of-function analysis in cell population

Choose a Cas9 reagent

Transfect Edit-R Cas9 mRNA or protein NLS for transient expression with no risk of DNA integration and fewer off-targets.

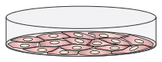
Use Edit-R Lentiviral Cas9 nuclease for stable or inducible cell line creation for optimal editing efficiency.

Choose guide RNA



Synthetic guide RNAs work best for transient activity, and required no cloning or purification!

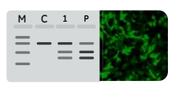
Optimize Cas9 delivery and expression AND guide RNA delivery



Cas9 + guide RNA transfected cells

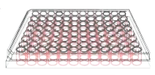
3 days

Loss-of-function analysis in cell population.

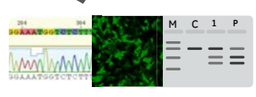


3 days

Creating a knockout cell line? Single colony expansion in 96-well plates.



2-3 weeks



Assess gene editing efficiency and functional knockout phenotype

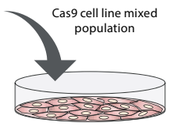
Loss-of-function screening of multiple genes at once

Pooled screening with no need for automation

Choose a Cas9 reagent and create stable cell line

Choose lentiviral particles for the creation of stable or inducible Cas9 cell lines with choice of optimal promoter for your cell type.

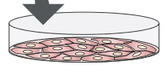
Cas9 cell line mixed population



Transduce lentiviral sgRNA pools

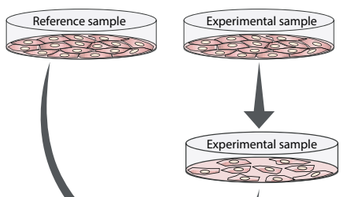
Edit-R lentiviral sgRNA pools are fully sequenced libraries of algorithm-designed sgRNA demonstrating efficient gene editing at single-copy integrations.

Transduce cells at MOI < 1

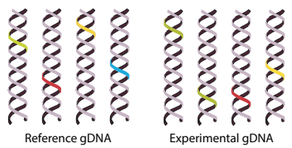


Perform pooled screen experiment

Collect Reference sample, apply selective pressure to Experimental sample



Analyze enriched sgRNA constructs in Reference vs. Experimental sample



Reference gDNA

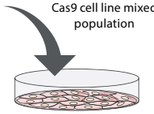
Experimental gDNA

Arrayed screening for one-gene-per-well analysis

Choose a Cas9 reagent and create stabe cell line

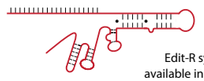
Use Edit-R Lentiviral Cas9 nuclease for stable or inducible cell line creation for optimal editing efficiency.

Cas9 cell line mixed population



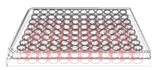
Selection with blasticidin and cell line expansion

Choose guide RNA and deliver to cells



Edit-R synthetic guide RNA is available in arrayed predefined gene collections or custom libraries

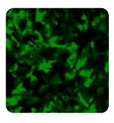
Perform arrayed screen experiment



Delivery with appropriate DharmaFECT transfection reagent formulation

3 days

Assess loss-of-function phenotype



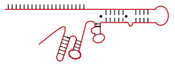
Assess loss-of-function with a phenotypic assay

Gene knock-in
precise insertion or alteration of a gene

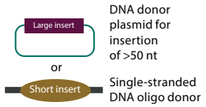
Choose a Cas9 reagent

Transfect Edit-R Cas9 mRNA or protein NLS for transient expression with no risk of DNA integration and fewer off-targets.

Choose guide RNA and donor oligo source



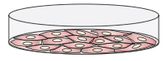
Synthetic guide RNAs work best for transient activity, and required no cloning or purification!



DNA donor plasmid for insertion of >50 nt

Single-stranded DNA oligo donor for insertions of <50 nt

Optimize Cas9 delivery and expression AND guide RNA as well as donor oligo delivery



Cas9 + custom guide RNA + donor DNA mixed population

Enrichment using FACS or antibiotic resistance (when applicable)

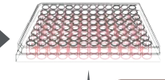
Expansion of selected cells

3 days

Assess HDR efficiency

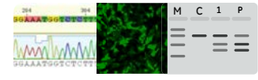
Detection of HDR modification/ insertion RFLP or junctional PCR

Single colony expansion into 96-well plates



2-3 weeks

Characterize clonal cell line



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