

# Edit-R™ Gene Editing Workflows

Choose the right tools for your application

Whether your 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

### Gene knock-in

precise insertion or alteration of a gene

#### Single gene knockout

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

#### Choose a Cas9 reagent

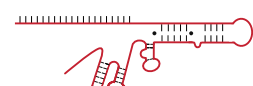


Transfect Edit-R Cas9 mRNA or protein NLS for transient expression with no risk of DNA integration and fewer off-targets.



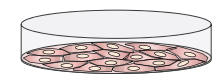
Use Edit-R Lentiviral Cas9 nuclease for stable or inducible cell line creation for optimal editing efficiency.

#### Choose guide RNA



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

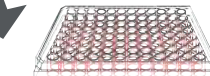
#### Optimize Cas9 delivery and expression AND guide RNA delivery



Cas9 + guide RNA transfected cells

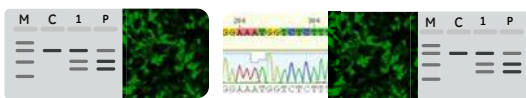
3 days  
Loss-of-function analysis in cell population.

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

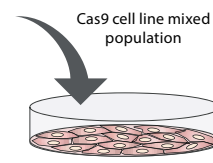
#### Transduce lentiviral sgRNA pools

#### Perform pooled screen experiment

#### Analyze enriched sgRNA constructs in Reference vs. Experimental sample



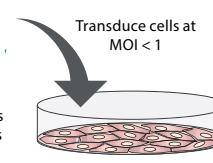
Choose lentiviral particles for the creation of stable or inducible Cas9 cell lines with choice of optimal promoter for your cell type.



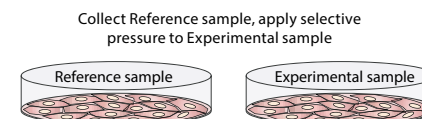
Cas9 cell line mixed population



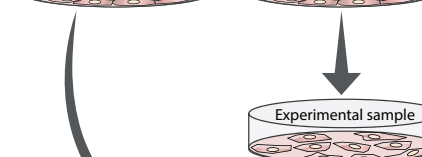
Edit-R lentiviral sgRNA pools are fully sequenced libraries of algorithm-designed sgRNA demonstrating efficient gene editing at single-copy integrations.



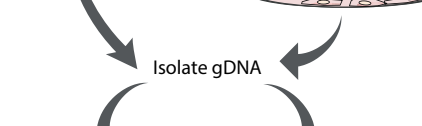
Transduce cells at MOI < 1



Collect Reference sample, apply selective pressure to Experimental sample



Reference sample Experimental sample



Reference gDNA Experimental gDNA

#### Arrayed screening for one-gene-per-well analysis

#### Choose a Cas9 reagent and create stable cell line

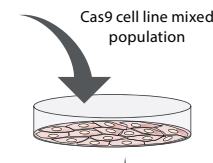
#### Choose guide RNA and deliver to cells

#### Perform arrayed screen experiment

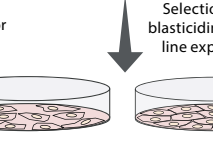
#### Assess loss-of-function phenotype



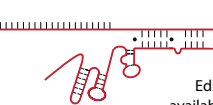
Use Edit-R Lentiviral Cas9 nuclease for stable or inducible cell line creation for optimal editing efficiency.



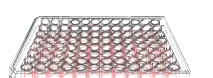
Cas9 cell line mixed population



Selection with blasticidin and cell line expansion



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



Delivery with appropriate DharmaFECT transfection reagent formulation

3 days



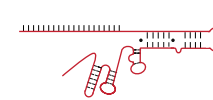
Assess loss-of-function with a phenotypic assay

#### Choose a Cas9 reagent

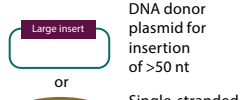


Transfect Edit-R Cas9 mRNA or protein NLS for transient expression with no risk of DNA integration and fewer off-targets.

#### Choose guide RNA and donor oligo source

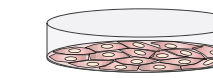


Synthetic guide RNAs work best for transient activity, and required no cloning or purification!



DNA donor plasmid for insertion of >50 nt  
or  
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)

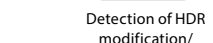
Expansion of selected cells

3 days



Detection of HDR modification/insertion RFLP or junctional PCR

2-3 weeks



Single colony expansion into 96-well plates

Characterize clonal cell line

Ready to learn more about these offerings?

Contact your local Horizon Discovery representative or email us at [ts.dharmacon@horizondiscovery.com](mailto:ts.dharmacon@horizondiscovery.com)