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.

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INSPIRED **CELL** SOLUTIONS

Cultek

Choose your application

Gene knockout

Single gene knockout

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

- Choose a Cas9 reagent

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

  Cas9
  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

  M C 1 P

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

  Cas9
  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

  sgRNA
  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

  Reference sample   Experimental sample

  Experimental sample

  Isolate gDNA

- 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

  Cas9
  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

  Cas9 ——AAAA
  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!

  Large insert — DNA donor plasmid for insertion of >50 nt
  or
  Short insert — 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

  M C 1
  Detection of HDR modification/ insertion RFLP or junctional PCR

  Single colony expansion into 96-well plates

  2-3 weeks

- Assess HDR efficiency

- Characterize clonal cell line

  M C 1 P

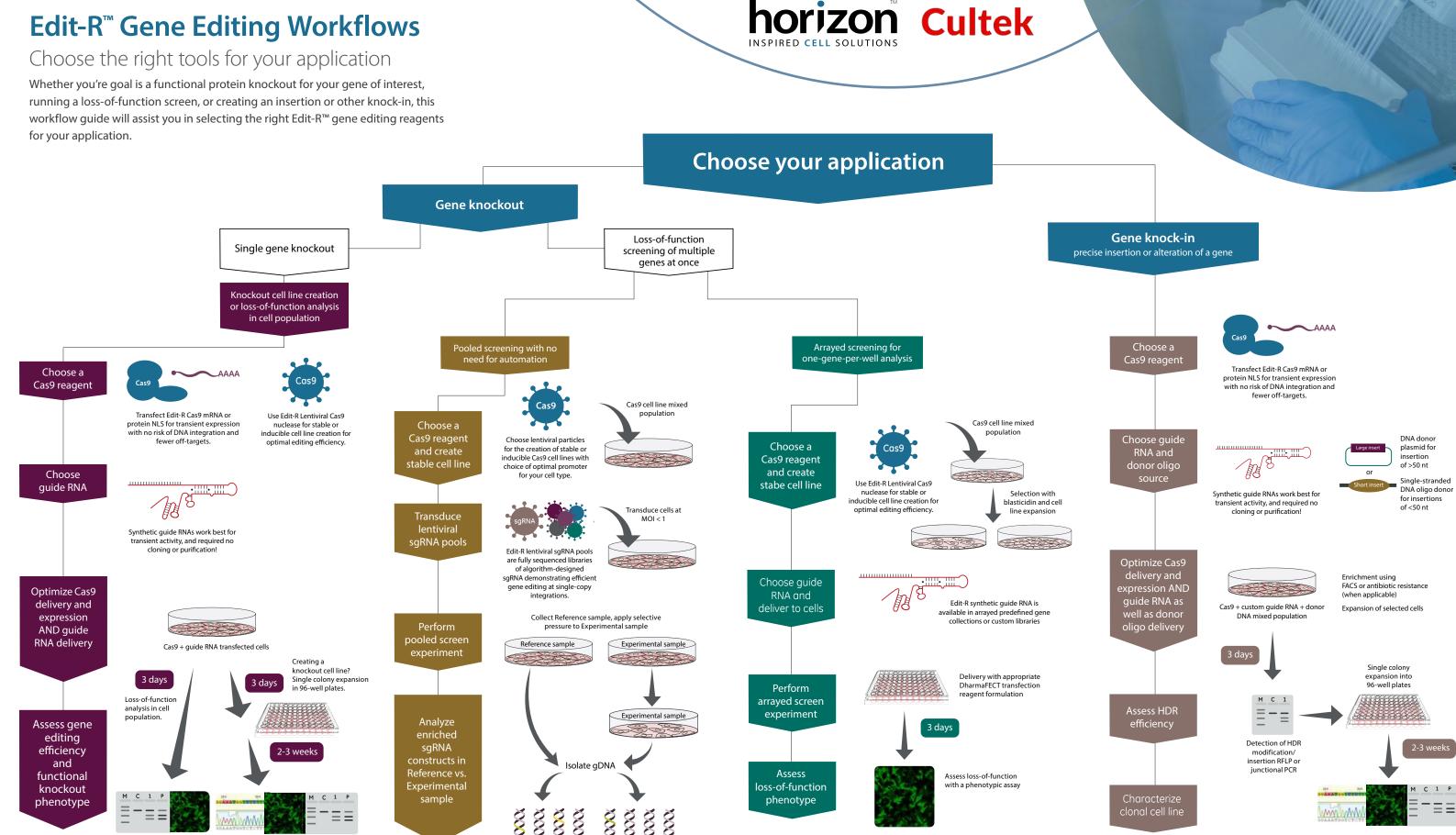## Ready to learn more about these offerings?
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