EDITGENE

Expediting the progress of Genome Editing

https://www.editxor.com/

CRISPR-Cas Your One-Stop Solution for Gene Editing

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EDITGENE CO.,LTD

About EDITGENE

Precision Genome Engineering for Drug Discovery and Biomedical Research

EDITGENE is a biotechnology company specializing in CRISPR genome engineering and research model development for academic institutions and pharmaceutical R&D teams worldwide.

Founded by scientists with extensive expertise in genome editing, EDITGENE has established an integrated CRISPR technology platform spanning innovation, CRO services, and scalable research model generation.

The company has developed multiple proprietary genome engineering platforms designed to enable efficient, precise, and scalable cell engineering, including:

- Editx™ – a high-efficiency CRISPR knockout platform
- Bingo™ – precision base and prime editing technologies
- Flash-KI – an advanced targeted knock-in platform designed to improve HDR efficiency in challenging cell types

EDITGENE also develops advanced CRISPR enzymes and genome editing reagents, including the FLASH rapid genome editing toolkit, which improves editing efficiency while reducing project timelines.

Through these technologies, EDITGENE provides custom genome engineering services, in-stock engineered cell models, and genome editing reagents supporting applications in drug discovery, disease modeling, and functional genomics research.EDITGENE works with researchers across North America, Europe, Japan, and South Korea, and has collaborated with global pharmaceutical companies including Bayer, Roche, and AstraZeneca.

By combining advanced genome editing technologies with scalable CRO capabilities, EDITGENE aims to accelerate biomedical discovery and enable the next generation of gene and cell therapy research.

EDITGENE Company Overview

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- Genome Editing Services -

Advanced CRISPR Genome Engineering Platforms for Research and Drug Discovery

EDITGENE provides a comprehensive portfolio of genome engineering solutions to support academic research and pharmaceutical R&D, enabling the rapid generation of engineered cell models for disease research, drug discovery, and gene therapy development.

Our proprietary platforms enable efficient and precise genome editing across a wide range of cell types.

Knockout Cell Line Generation — Editx™ Platform

High-efficiency CRISPR knockout technology for generating gene knockout cell models.

■ **Key features**

- High editing efficiency across multiple cell types
- Rapid generation of knockout clones
- Reliable genotype validation and quality control

■ **Applications**

- Functional genomics studies
- Drug target validation
- Disease model development

Point Mutation Cell Line Generation — Bingo™ Prime Editing Platform

Precision genome editing using Prime Editing technology to generate accurate point mutations without double-strand DNA breaks.

■ **Key features**

- Precise single-nucleotide variant (SNV) generation
- Precise insertions and deletions
- Optimized pegRNA design and Flash delivery technology

■ **Applications**

- Disease-associated mutationmodels
- Functional variant analysis
- Precision medicine research

Knock-in Cell Line Generation — Flash-KI Platform

Advanced targeted gene knock-in technology designed to improve HDR efficiency and delivery performance.

■ **Key features**

- Efficient delivery of Cas9 RNP and donor templates
- Enhanced knock-in efficiency using KI Enhancer technology
- Compatible with immortalized, primary, and stem cells

■ **Applications**

- Reporter gene knock-ins (EGFP, mCherry, luciferase)
- Protein tagging and localization studies
- Cell therapy engineering (CAR-T, iPSC, immune cells)

Why Researchers Choose EDITGENE

- Advanced genome editing platforms
- Extensive experience across diverse cell types
- Standardized workflows and reliable QC
- Scalable CRO services for global research and pharmaceutical partners

- Precision Genome Editing CRO Services -

Point Mutation Cell Lines

Prime Editing for Precision Genome Engineering

Scan for In-Stock PM Cells

More than 7,700 human diseases have been linked to genetic mutations, and approximately 58% are caused by single-nucleotide variants (SNVs). These mutations contribute to a wide range of disorders, including neurodegenerative diseases, inherited metabolic disorders, and cancer.

Reproducible and scalable precise mutation cell models are essential tools for studying disease mechanisms, drug screening, and gene therapy development.

Prime editing, a CRISPR-Cas–based genome editing technology, enables precise "search-and-replace" genome editing without introducing double-strand DNA breaks or requiring donor DNA templates. This technology allows researchers to accurately generate:

- Single-nucleotide variants (SNVs)
- Precise insertions
- Precise deletions

EDITGENE has developed the Bingo™ Prime Editing platform, which integrates Prime Editing technology with our proprietary Flash delivery system. This system enables efficient and low-cytotoxic delivery of editing components into a wide range of cell types, including immortalized cell lines, stem cells, and primary cells.

By balancing editing efficiency and cell viability, the Bingo™ platform enables reliable generation of precise mutation cell models across diverse cellular systems.

To date, EDITGENE has successfully delivered over 300 point mutation cell models, achieving a project success rate of 85% and polyclonal editing efficiencies of up to 95% in optimized systems.

Service Advantages

Optimized pegRNA design strategy

Our proprietary PBS and RTT design framework improves editing efficiency and enables targeting of challenging genomic loci.

Broad mutation capabilities

Supporting base substitutions, precise insertions and deletions. No double-strand breaks: eliminating translocations and unwanted indels at the source.

Improved cell viability

Proprietary Flash delivery technology enables efficient editing with low cytotoxicity in sensitive and hard-to-transfect cells (iPSCs, SH-SY5Y and immune cells).

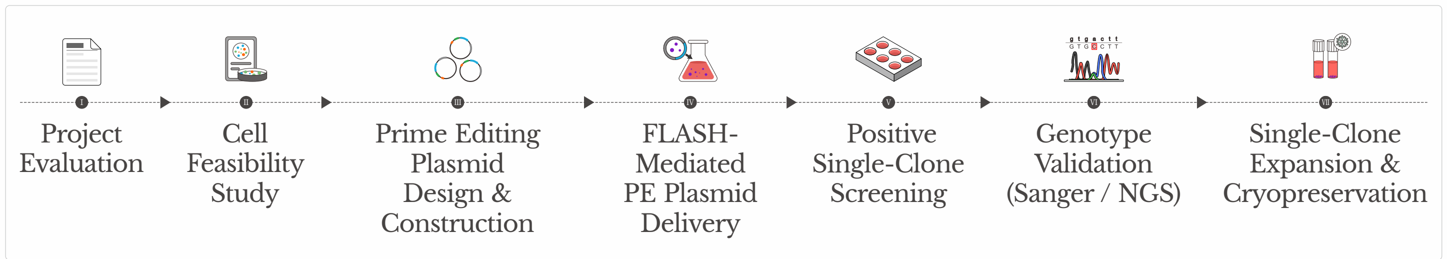
Standardized workflow and rapid delivery

From plasmid construction to single-cell cloning, our standardized workflow enables project completion in as fast as approximately 10 weeks.

Key Applications

- **Generation of disease-associated point mutation models**
- **Correction of pathogenic mutations in cellular models**
- **Introduction of premature stop codons for precise gene knockout**

Workflow



Deliverables

1. Sanger sequencing or NGS validation data

2. Certificate of Analysis (COA) including:

- Mycoplasma testing
- Sterility (bacterial contamination) testing
- Cell viability assessment

3.Cell Lines Delivered

- 1 homozygous mutant clonal cell line
- 1 parental control cell line

Each cell line is provided as:

2 cryovials per clone, 1 × 10^6 cells per vial

Case Studies

Generation of Single-Base Mutation Cell Lines in A549, K562, and iPSC Cells

Cell type	cell pool editing efficiency	Sequencing peak profile	Number of single clones selected	Number of homozygous single clones
A549	98%	WT:GAGTTGCGCATTAACAGTGGTGGGA MT:GAGTTGCGCATTAACGGTGGTGGGA TGGAGTTGCGCATTAACGGTGGTGGGAAATTACCCAA 70 60 50 40	7	6
K562	82%	WT:GTGGAGAAGCCCTTCGGGAGGGACC MT:GTGGAGAAGCCCCTCGGGAGGGACC GTGGAGAAGCCCCTCGGGAGGGACCT	6	4

Cell type	cell pool editing efficiency	Sequencing peak profile	Number of single clones selected	Number of homozygous single clones
IPSC	60%	WT:AGGGAACCCCAAGTTGAACTTGGCTT MT:AGGGAACCCCAAGTTCAACTTGGCTT	8	2

Generation of Small Insertion Hela Cells

Cell type	cell pool editing efficiency	Sequencing peak profile	Number of single clones selected	Number of homozygous single clones
Hela	64%	WT:TCCGCTACCACCAATGCCTAATGCATTTGG MT:TCCGCTACCACCAATGCTAATAACTAATGCATTTGG	11	1

Selected Collaborators

Knock-in Cell Line Generation

Flash-KI: A Next-Generation Platform for Precise Gene Knock-in

Traditional gene knock-in approaches typically rely on plasmid or RNP delivery combined with AAV vectors. However, these methods often suffer from low delivery efficiency, high cellular toxicity, and limited HDR efficiency.

To overcome these limitations, EDITGENE has developed the Flash-KI platform, an advanced gene knock-in technology designed to improve delivery efficiency and editing outcomes.

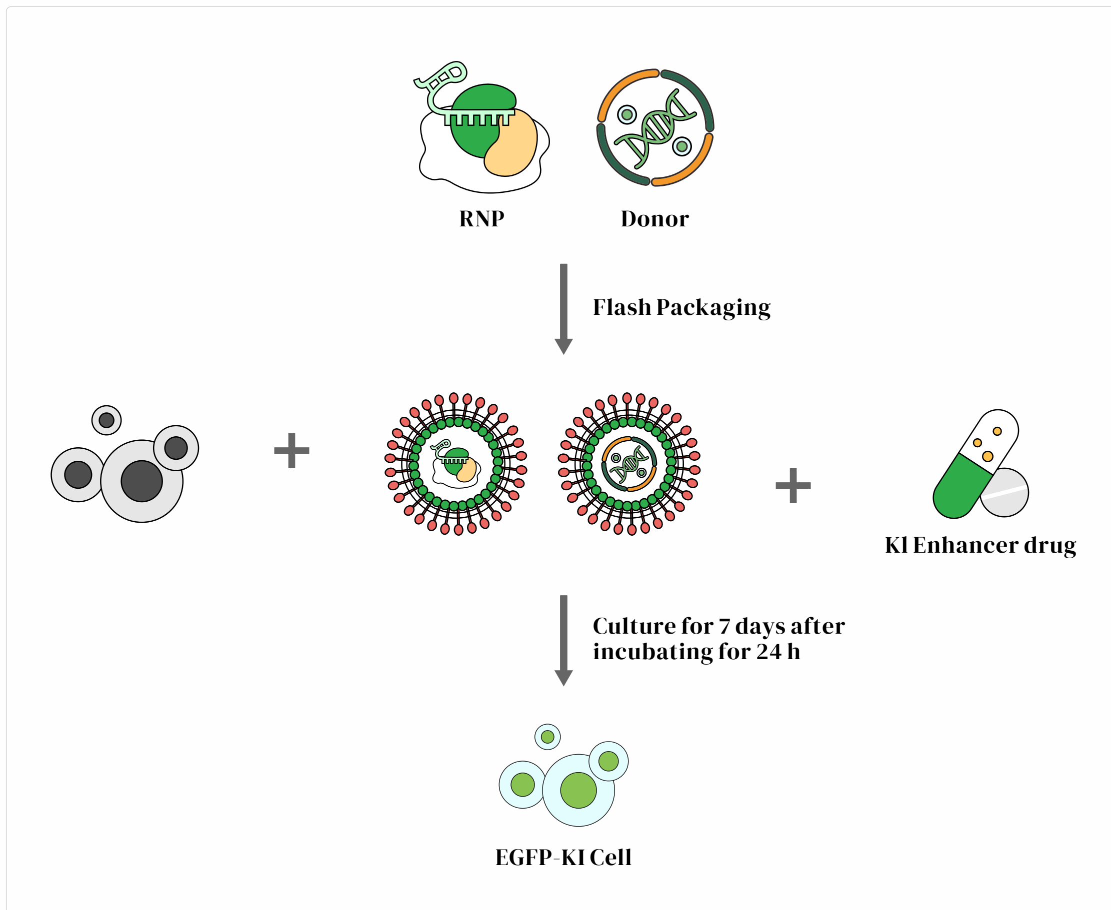
Flash-KI utilizes a proprietary Flash Packaging system to simultaneously deliver Cas9 RNP and donor templates into cells in an efficient and gentle manner. When combined with EDITGENE's KI Enhancer, this system significantly improves knock-in efficiency.

Within 7 days after transfection, a high proportion of healthy knock-in cells can be obtained.

To date, EDITGENE has completed 100+ knock-in projects, achieving a project success rate of 83% and polyclonal editing efficiencies up to 88%.

EDITGENE-generated knock-in cell models have been widely used by global pharmaceutical companies and research instiutions.

Flash-KI Technology Overview



Service Advantages

High efficiency and reliability

With 100+ successful knock-in projects, Flash-KI achieves a success rate of 83% and polyclonal editing efficiency of up to 88%, significantly outperforming conventional knock-in approaches.

Improved cell viability

The Flash delivery system enables efficient and low-toxicity delivery of the CRISPR editing system and donor templates across a wide range of cell types, including immortalized cells, primary cells, and stem cells, ensuring healthier cell states and easier clone selection.

Standardized workflow with rapid turnaround

From plasmid construction to single-cell clone screening, our standardized workflow enables delivery in as fast as approximately 12 weeks.

Key Applications

Basic research

- Generation of disease-related knock-in or knockout cell models
- Gene function studies using reporter knock-ins (Luc, EGFP, mCherry)
- Protein localization and interaction studies using tags such as HiBiT

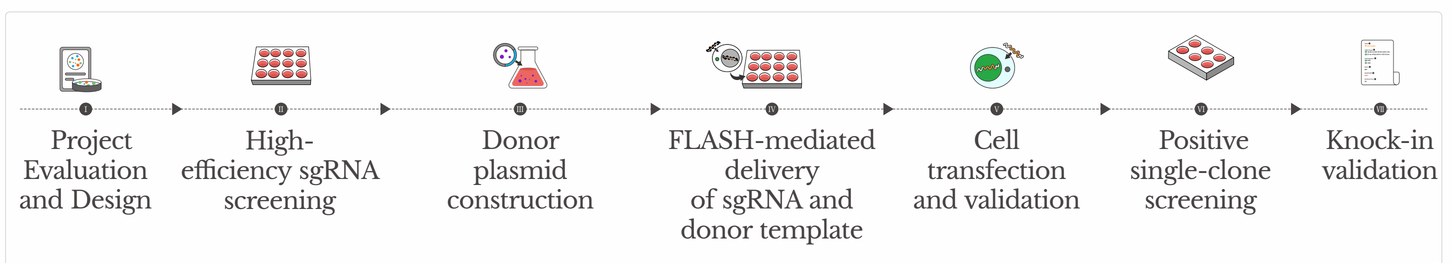
Cell therapy

- Targeted knock-in for CAR-T cells
- Therapeutic gene knock-in in iPSC-based therapies
- Engineering of T cells and NK cells

Drug discovery

- Target validation cell models
- Drug resistance mechanism studies
- High-throughput screening cell line development

Workflow



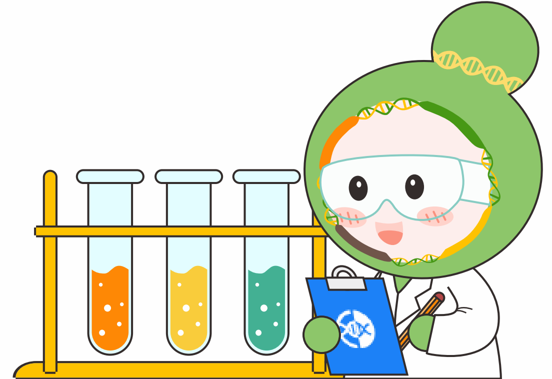
Deliverables

1.Sanger sequencing or NGS validation data

2.Certificate of Analysis (COA) including:
- Mycoplasma testing
- Sterility (bacterial contamination) testing
- Cell viability assessment

3.Cell Lines Delivered
- 1 homozygous knock-in clonal cell line
- 1 parental control cell line

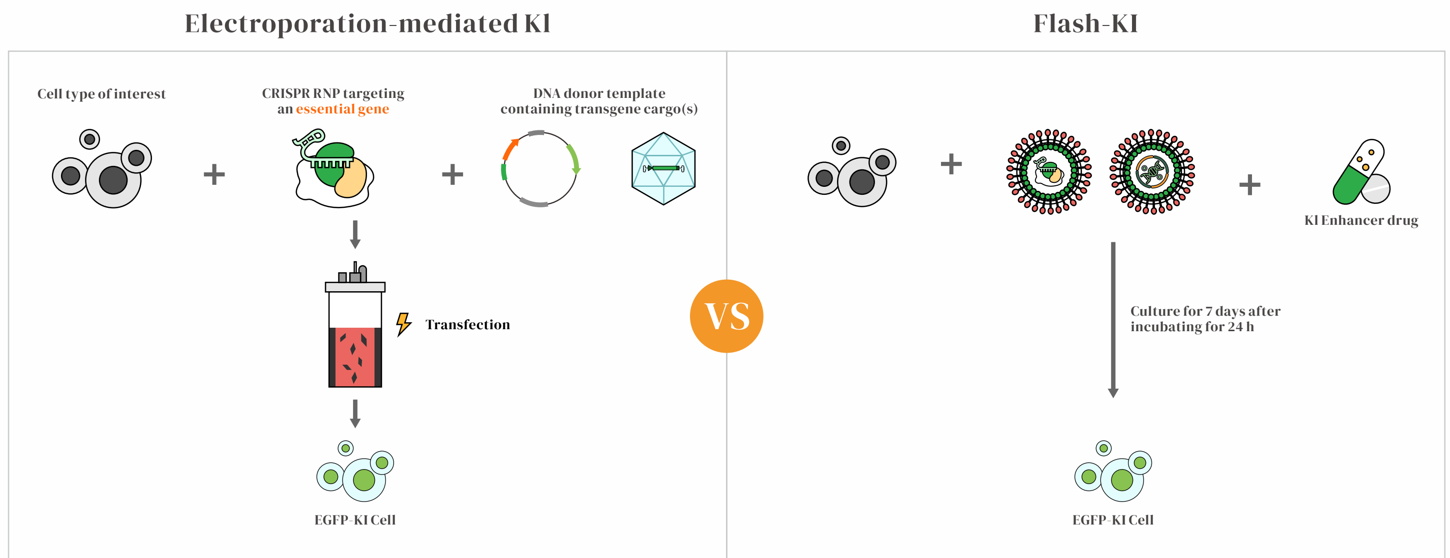
Each cell line is provided as:
2 cryovials per clone, 1 × 10^6 cells per vial



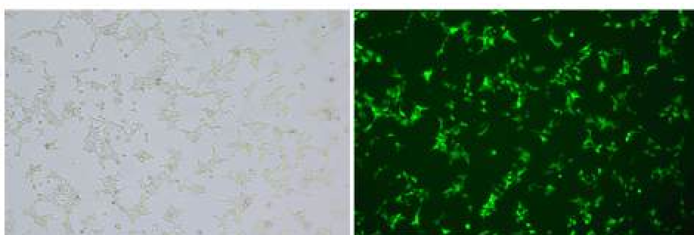
Case Studies

C-terminal EGFP knock-in of GAPDH in HEK293T cells

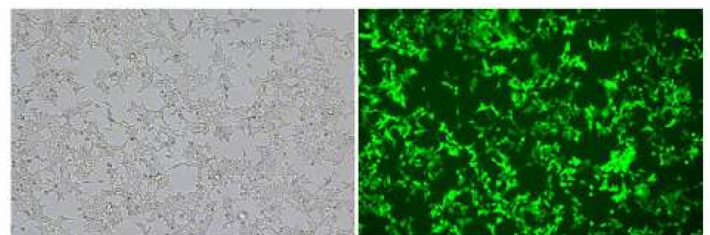
Flash delivery and electroporation methods were compared for EGFP knock-in efficiency. Flash-KI achieved 88% knock-in efficiency, approximately 20% higher than electroporation, while maintaining improved cell health.



Flash delivery vs Electroporation



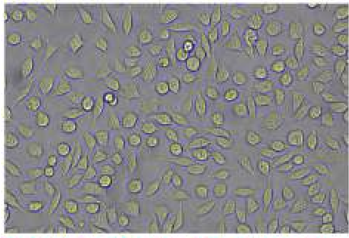
68% EGFP-KI in HEK293T cell pool by electroporation



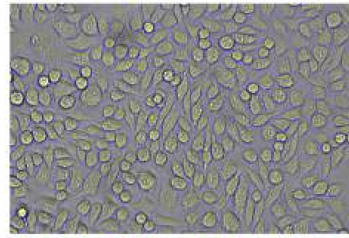
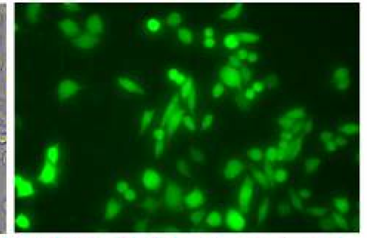
88% EGFP-KI in HEK293T cell pool by Flash-KI

C-terminal EGFP knock-in in the T1R1 gene in A19 cells

Using Flash delivery of the CRISPR/Cas9 editing system and donor template, knock-in efficiency was compared with and without KI Enhancer drug.
Results showed that the addition of KI Enhancer increased knock-in efficiency by more than 200-fold.



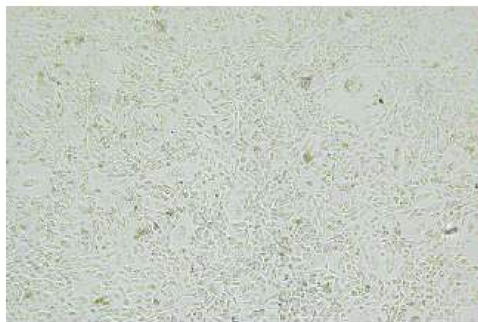
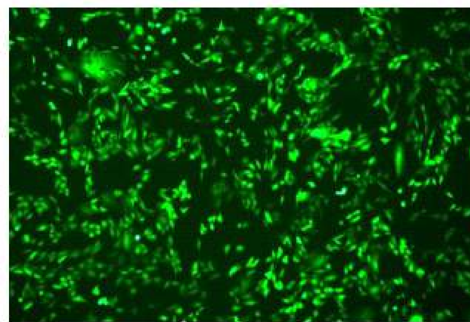
0.2% EGFP-KIin A9 cell pool by Flash-KI without KI enhancer drug

46% EGFP-KI in A9 cell pool by Flash-KI with KI enhancer drug

High-yield CHO cell line development

Flash-KI technology was used to achieve targeted knock-in at high-expression genomic loci in CHO-K1 cells, combined with high-expression selection markers to generate stable, high-producing polyclonal cell populations suitable for production.

Gene Knockout cell

Efficient, Clean, Whole-Genome Coverage

The EditX™ Gene Editing Platform, powered by an optimized CRISPR/Cas9 system and integrated with Flash delivery technology, enables efficient, non-toxic delivery of RNP complexes into cells.It supports stable gene knockout across more than 300 cell types, including tumor cell lines, neuronal cells, stem cells, immune cells, and primary cells, helping customers overcome key experimental bottlenecks.

Scan for Knockout Service

To date, we have successfully delivered over 4,500 knockout cell models, widely adopted by pharmaceutical companies and research institutions for applications such as functional genomics, genetic disease mechanism studies, drug target validation, and synthetic biology engineering.

Service Advantages

Validated whole-genome sgRNA

Leveraging thousands of project experiences, we have developed a proprietary sgRNA design logic backed by experimentally validated whole-genome sgRNAs.

High-Efficiency Cell Transfection

Our exclusive Flash delivery technology enables efficient, non-toxic delivery of the CRISPR editing system into immortalized cell lines, primary cells, and stem cells—ensuring both high cell viability and knockout efficiency.

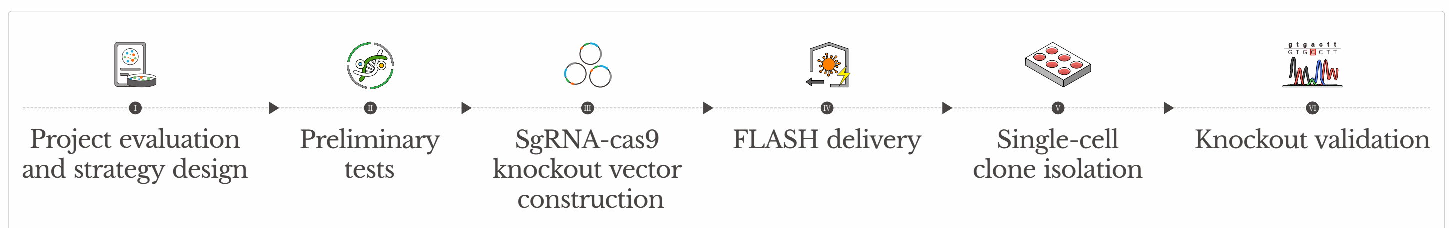
Hassle-Free Cell Selection

Using the UP.SIGHT, a premium 3D cell printing system from Cytena (Germany), we efficiently select positive monoclonal cells.

Key Applications

- **Single Gene Knockout**
- **Multiple Gene Knockout**
- **Fragment Knockout**

Workflow



Deliverables

1. Sanger sequencing or NGS validation data

2. Certificate of Analysis (COA) including:
- Mycoplasma testing
- Sterility (bacterial contamination) testing
- Cell viability assessment

3.Cell Lines Delivered
- 1 homozygous knockout monoclonal cell line (or 1 polyclonal cell line, editing efficiency >70%)
- 1 parental control cell line

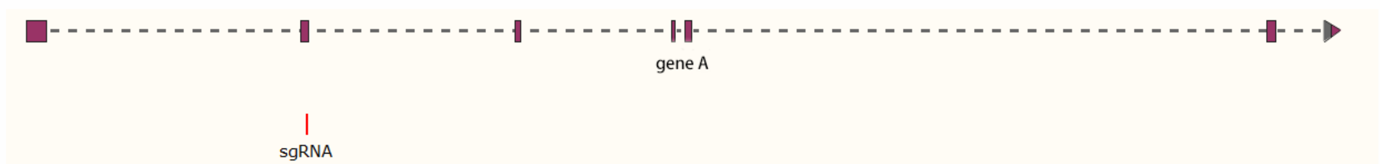
Each cell line is provided as:
2 vials per clone, 1 × 10^6 cells per vial

Case Studies

Frameshift Knockout (gKO)

Introduction of small insertions or deletions (indels) at the target site to disrupt the open reading frame, resulting in premature stop codons and loss of functional protein expression.
Ideal for creating complete loss-of-function models through single-site edits.

Case Study Highlights
Objective: Single-Gene Knockout in HEK293 Cells
Project Goal: Achieved efficient knockout of Gene A in HEK293 cell lines, providing a robust model for downstream functional studies.
Project Design: sgRNA was designed in exon 2 of gene A.



Sequencing results: A 1-base deletion occurred at the sgRNA site of gene A with a knockout efficiency of 100%, resulting in a frameshift mutation that caused premature termination of expression, indicating that gene A was successfully knocked out.

Fragment Knockout

Precise deletion of a larger genomic region (typically several hundred to several thousand base pairs), removing essential exons or functional domains of a gene.
Suitable for eliminating critical functional regions to ensure gene inactivation and to study domain-specific effects.

Case Study Highlights
Objective: Precise Small Fragment Knockout in Huh6 Cells
Project Goal: Successfully generated a small fragment deletion in Gene A within Huh6 cells, resulting in complete loss of target gene function.
Project Design: In Huh6 cells, two guide RNAs were designed to target the coding region of Gene A, achieving a fragment knockout.

Sequencing results: We successfully achieved the knockout of Gene A, as mutations occurred at the guide RNA target site in the monoclonal cell line, resulting in a 73 bp deletion. This deletion caused a frameshift mutation, leading to premature termination of gene encoding.

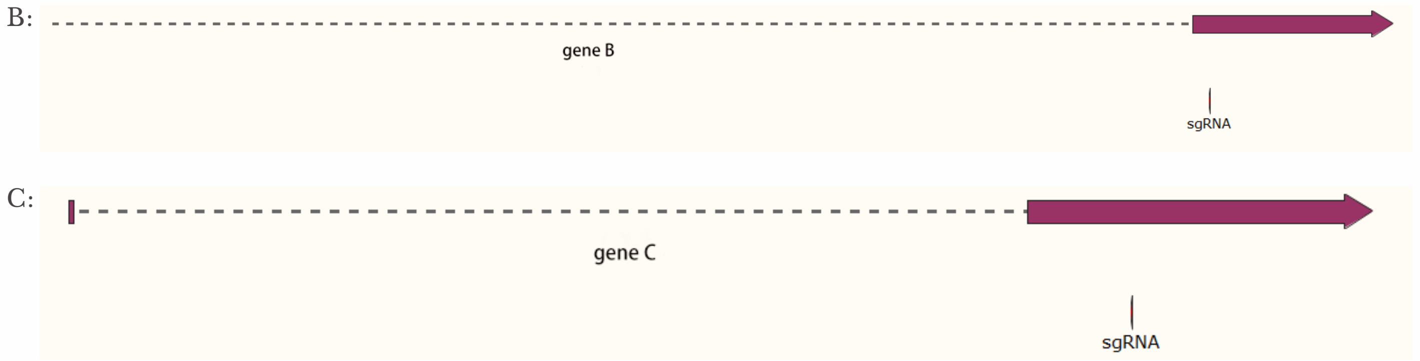
Double Knockout (dKO)

Simultaneous knockout of two genes within the same cell line or organism. This approach is used to study genetic interactions, redundancy, or compensatory mechanisms between related pathways.
Enables the dissection of complex biological networks by targeting multiple genes at once.

Case Study Highlights
Objective: Double Gene Knockout in THP-1 Cells
Project Goal: Engineered a simultaneous knockout of Gene B and Gene C in THP-1 cells, enabling the study of genetic interactions and compensatory mechanisms.
Project Design: Two sgRNAs were designed in the exon region of gene B, and two sgRNAs were designed in the exon region of gene C.

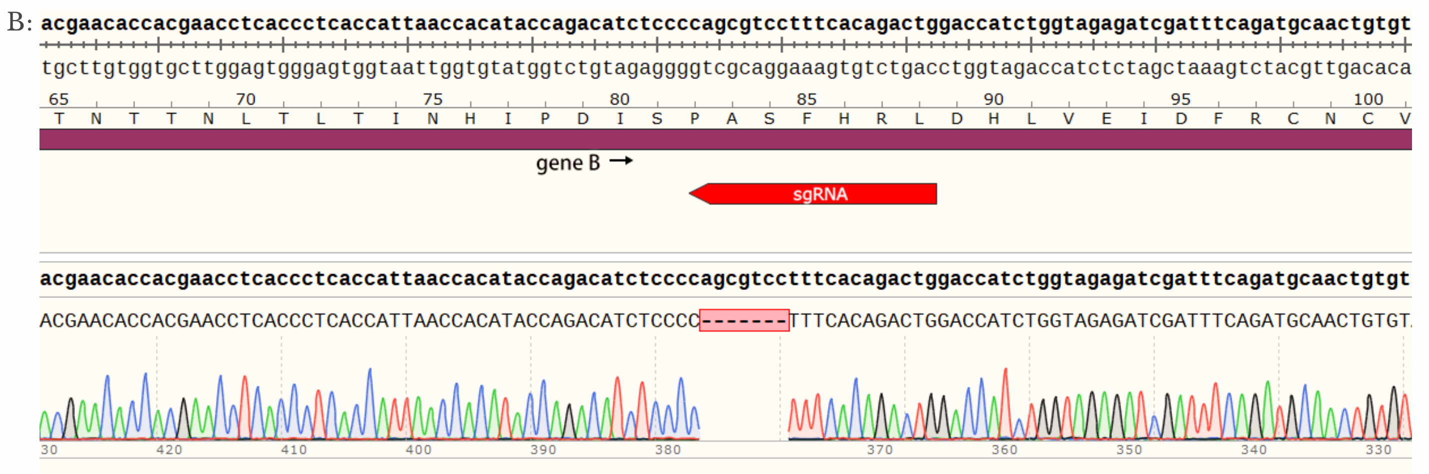
B:

C:

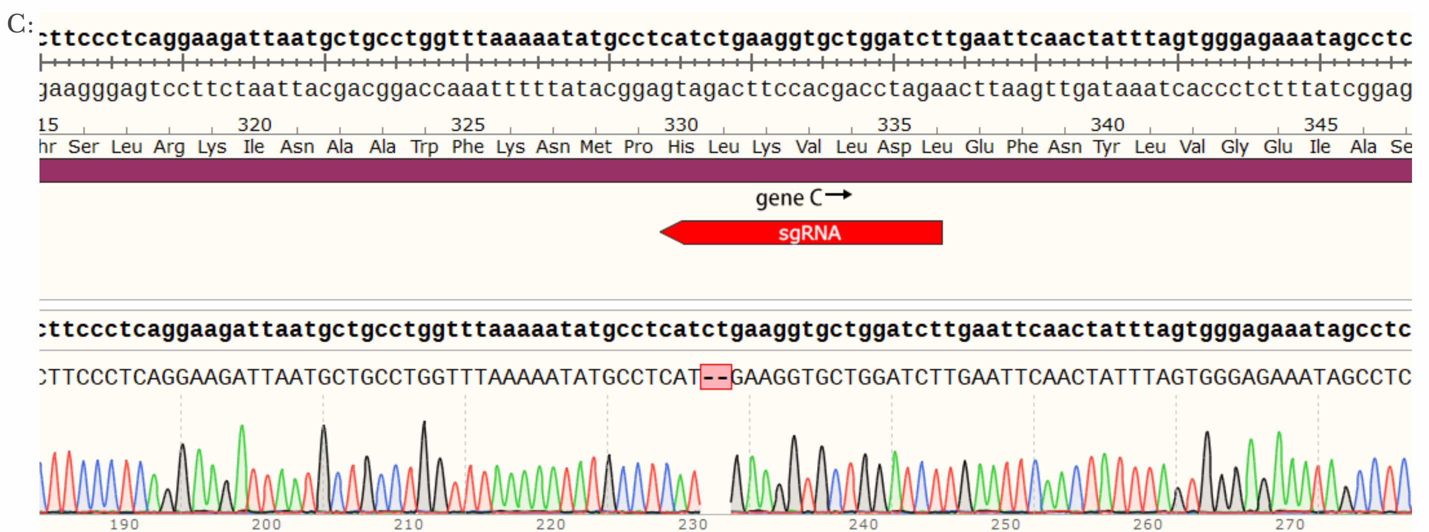


Sequencing results: In THP-1 cells, a 7-base deletion occurred at the sgRNA site of gene B with a knockout efficiency of 100%, causing a frameshift mutation and premature termination of expression, indicating that gene B was successfully knocked out. Simultaneously, a 2-base deletion occurred at the sgRNA site of gene C with a knockout efficiency of 100%, resulting in a frameshift mutation and premature termination of expression, indicating a successful knockout of gene C.

B:



C:



- iPSC Gene Editing CRO Services -

Knockout · Knock-in · Point mutation – one-stop precision editing while maintaining stemness and genomic stability

Induced pluripotent stem cells (iPSCs) offer great potential for disease modeling and drug discovery, but are sensitive to editing conditions – low transfection efficiency, high cell damage, and loss of pluripotency remain major challenges.

EDITGENE has established a specialized delivery and culture system for iPSCs using our CRISPR-EDITx (Flash-KO), FLASH-KI, and Bingo™ base editing platforms with Flash delivery. We support KO, KI, and point mutation services, preserving iPSC pluripotency, karyotype stability, and genomic integrity to deliver high-quality, ready-to-use edited cell models.

Service Advantages

Gentle and efficient delivery system

Our proprietary Flash delivery technology significantly improves iPSC transfection efficiency to 60–80% while minimizing cell damage, maintaining cells in a well-differentiated state.

Optimized editing strategies

For different editing types (KO, KI, point mutation), our CRISPR-EDITx (Flash-KO), FLASH-KI, and Bingo™ base editing technology platforms ensure high-efficiency, low-off-target precision editing in iPSCs.

Complete single-clone screening and QC system

We have established a full workflow from single-cell plating, clone picking, to rapid validation, ensuring pure/site-directed edited clones with strict testing for pluripotency markers and mycoplasma.

Key Applications

Disease modeling:

Familial genetic disease iPSC models (dominant/recessive mutations), tumor suppressor gene knockout models, neurodegenerative diseases (Parkinson's, Alzheimer's, etc.), cardiomyopathy, metabolic disease models.

Drug screening and toxicology:

Target validation cell line construction, high-throughput drug screening models, compound toxicity assessment models, efficacy evaluation and mechanism studies.

Cell therapy development:

Off-the-shelf iPSC-derived cell products.

Development and differentiation research:

Lineage-specific gene function analysis, study of key developmental regulatory elements, basic research for regenerative medicine applications.

Deliverables

1. Sanger sequencing or NGS validation data

2. Certificate of Analysis (COA) including:
- Mycoplasma testing
- Sterility (bacterial contamination) testing
- Cell viability assessment

3.Pluripotency marker testing

4.Cell Lines Delivered
- 1 homozygous edited monoclonal cell line
- 1 parental control cell line

Each cell line is provided as:
2 vials per clone, 1 × 10^6 cells per vial

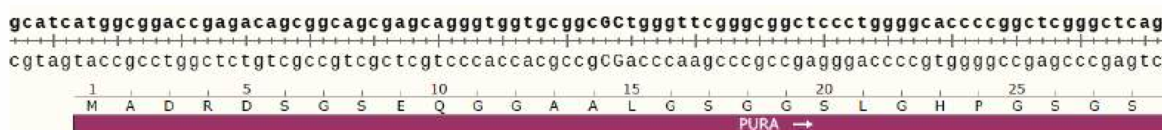
Case Studies

Neurodevelopmental Disorder iPSC Model (Gene Knockout)

Utilized optimized Flash delivery protocol to generate iPSC PURA knockout cells, recapitulating a neural developmental defect (PURA syndrome) model for studying molecular mechanisms, cellular phenotypes, and potential intervention strategies for neurodevelopmental disorders resulting from loss of function of this gene.

Results: 85% polyclonal editing efficiency, obtained homozygous knockout monoclonals, positive expression of pluripotency markers (OCT4, NANOG, SSEA4), successfully delivered to client.

iPSC PURA-KO polyclonal sequencing results

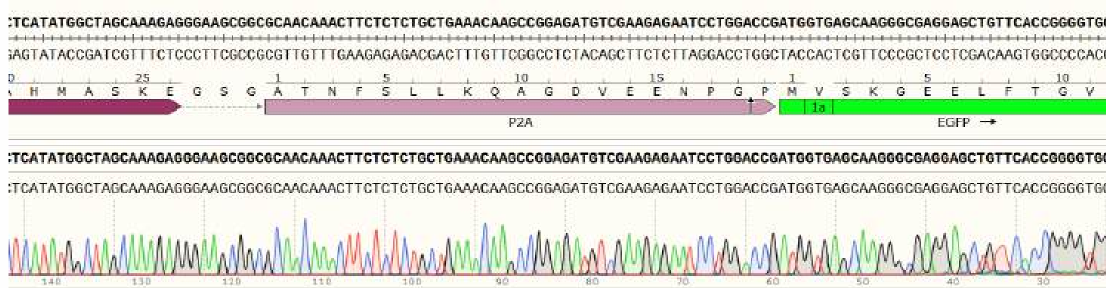


iPSC PURA-KO homozygous monoclonal sequencing results

Safe Harbor Site Reporter Gene Knock-in (Gene Knock-in)

Employed Flash-KI-mediated HDR strategy to deliver CRISPR/Cas9 editing system and Donor template, knocking in the EGFP reporter gene at a safe harbor site in iPSCs, delivered to client for tracking differentiation processes.

Results: Successfully obtained homozygous knock-in monoclonals, correct insertion confirmed by sequencing, stable EGFP expression, pluripotency validation passed.

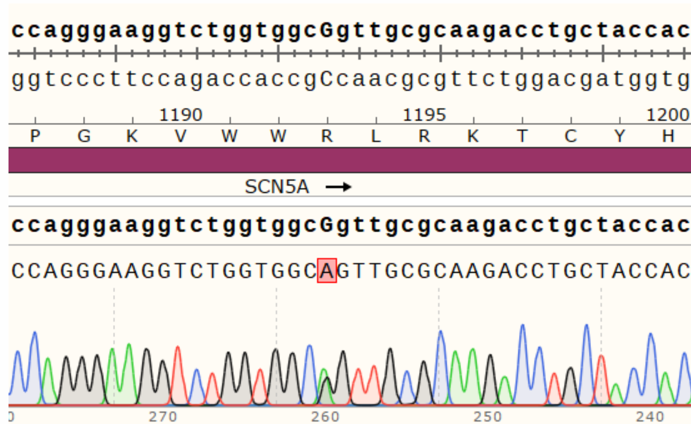


iPSC EGFP-KI monoclonal sequencing confirms successful EGFP gene knock-in

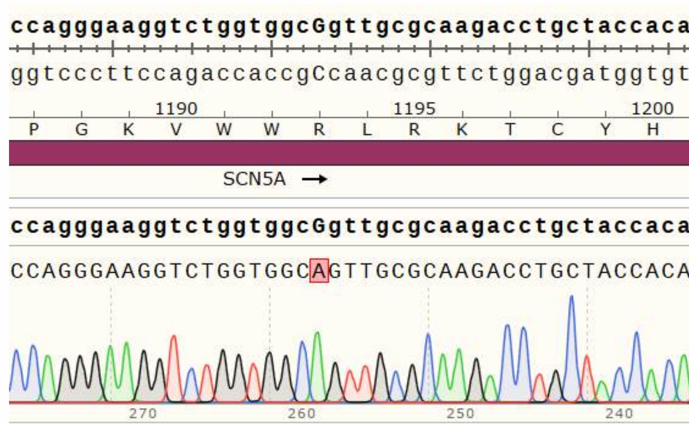
Heart Disease Point Mutation iPSC Model (Gene Point Mutation)

Utilized Bingo™ Base Editing technology platform combined with EDITGENE's unique pegRNA and nicking gRNA design concepts to generate an iPSC SCN5A point mutation disease model, accelerating research on cardiac sodium channel disorders.

Results: 60% iPSC polyclonal editing efficiency, obtained homozygous mutant monoclonals; Sanger sequencing confirmed correct editing, pluripotency validation passed, successfully delivered to client for scientific projects.



SCN5A point mutation polyclonal sequencing results



SCN5A point mutation homozygous monoclonal sequencing results

- Functional Genomic Screening CRO Services -

CRISPR screens: CRISPR KO, CRISPRi, CRISPRa

One-stop solution for CRISPR screening – from genome-wide screening to advanced enrichment analysis, accelerating target discovery

CRISPR library screening uses genome-wide sgRNA libraries combined with CRISPR technology to perform a "carpet bombing" functional screen of thousands of genes within cells. By applying specific selection pressures (such as drugs, toxins, viral infection, specific culture conditions, etc.), genes associated with phenotypes are enriched – these can be key targets conferring drug resistance, sensitivity, proliferation, death, or gain of function. This technology is widely used in cutting-edge fields such as drug target discovery, drug resistance mechanism analysis, synthetic lethality screening, essential gene identification, and immune regulator discovery – serving as a "searchlight" for functional genomics research.

EDITGENE has ready-to-stock CRISPR knockout (KO), interference (CRISPRi), and activation (CRISPRa) human/mouse sgRNA plasmid libraries of various types, paired with professional library construction, sequencing, and advanced gene enrichment analysis to support cutting-edge research in drug targets, drug resistance mechanisms, and synthetic lethality.

Service Advantages

Ready-to-Use Libraries, Fast Start

Full human/mouse genome-wide sgRNA plasmid libraries imported from Addgene, covering dozens of mainstream libraries (Brunello, Brie, Calabrese, etc.). In addition to genome-wide libraries, pathway-focused libraries (kinase, GPCR, epigenetic, metabolic, etc.) are also available. After customer confirmation, we proceed directly to packaging and screening, saving 2–3 months of library construction time.

Three Screening Modes, Full Coverage

- **CRISPR KO:** Complete gene knockout, suitable for loss-of-function screening.
- **CRISPRi:** Transcriptional inhibition, suitable for essential genes or partial inhibition.
- **CRISPRa:** Transcriptional activation, suitable for gene activation screening or gain-of-function studies.

One-Stop Closed-Loop Service

From library amplification, lentivirus packaging, cell screening, genomic extraction, amplicon library construction, high-throughput sequencing to advanced enrichment analysis (MAGeCK, MAGeCK-VISPR, pathway enrichment, etc.), the entire process is fully in-house controlled, delivering a complete data report.

Three Screening Modes, Full Coverage

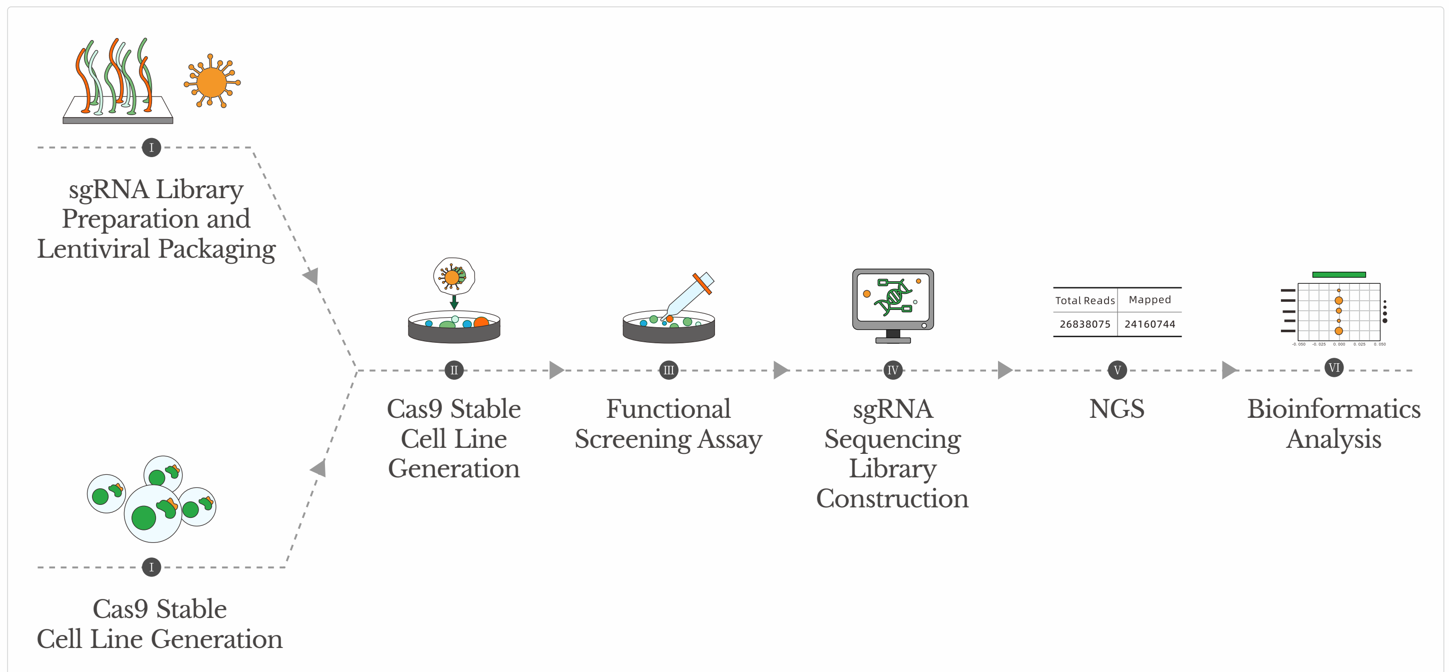
More than just sgRNA counting, we provide:

- Target gene ranking and confidence scoring
- GO/KEGG/GSEA enrichment analysis
- Positive/negative selection gene screening
- Customized analysis

Service Types

Mode	Principle	Applicable Scenarios
CRISPR KO	Cas9 cuts DNA, introducing frameshift mutations and completely disrupting gene function	• Drug resistance/sensitivity gene screening • Synthetic lethality target discovery • Virus entry essential genes • Tumor suppressor / oncogene screening
CRISPRi (Interference)	dCas9-KRAB binds to the promoter, inhibiting transcription initiation; reversible, low toxicity	• Essential gene screening (avoiding cell death) • Non-coding RNA functional screening • Partial inhibition to mimic dosage effects
CRISPRa (Activation)	dCas9-VPR binds to the promoter, activating endogenous gene expression	• Gain-of-function screening • Drug target activation screening • Cell reprogramming factor screening • Resistance activation mechanism research

Workflow



Deliverables

1. Complete experimental report.

2. NGS sequencing data.

3.Analysis results (including enriched gene lists and visualization charts).

Case Studies

Cas9 Stable Cell Line Construction

Cas9 stable cell lines are established by transducing the target cells with Cas9 lentivirus. Once the Cas9-expressing stable cell line is generated, validated sgRNAs are used to assess editing efficiency.

Gene	Editing efficiency
A	70%
B	44%

NGS Quality Control Results of sgRNA Plasmid Library

The sequencing data was analyzed using MAGeCK. The quality control results indicated that over 85% of reads aligned to the target library, demonstrating good PCR and sequencing quality. The Gini Index of the library was less than 0.1, with a coverage of 99.8%, reflecting uniform distribution of sgRNAs. These combined results confirm the high quality of the prepared sgRNA plasmid library.

Total Reads	Mapped	Percentage	Total sgRNAs	Zerocounts	GiniIndex
26838075	**24160744**	**0.9002**	**77441**	**109**	**0.05866**

Post-Screening Library Sequencing and Bioinformatics Analysis

Genomic DNA is extracted from the selected cells, followed by amplification and sequencing. The sequencing data from the sgRNA library is analyzed using the MAGeCK-RRA algorithm for quality control and identification of differential genes between screened groups. Subsequently, downstream functional enrichment analysis is performed using the MAGeCKFlute toolkit.

1. MAGeCK Quality Control Analysis

The mageck count algorithm is used to align forward sequencing reads to the sgRNA library and calculate QC metrics. The MAGeCKFlute toolkit is then employed to visualize the statistical data.

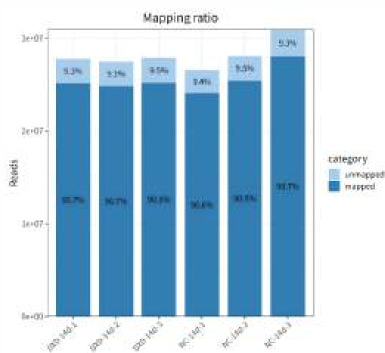


Figure1.1 Mapping ratio

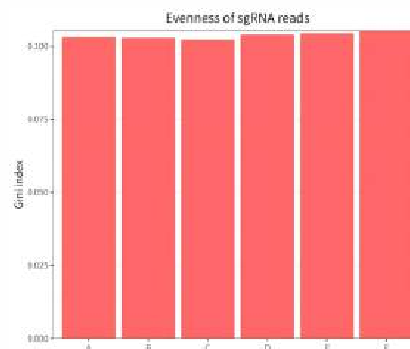


Figure1.2 Gini index

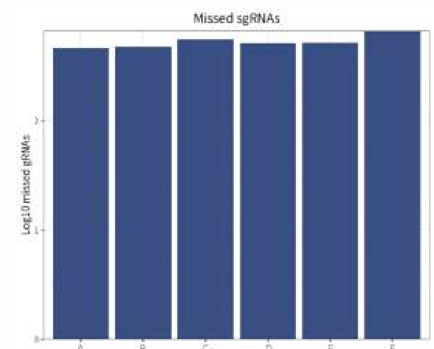


Figure1.3 Missed SgRNAS

2. Differential Gene Analysis

Using the MAGeCK RRA algorithm, sgRNAs are ranked based on P-values (negative binomial model), and significant genes are identified through the -RRA model for both positive and negative selection. The MAGeCKFlute toolkit is used to visualize the analysis data. A differential analysis is performed with Library D as the control, successfully identifying significant genes.

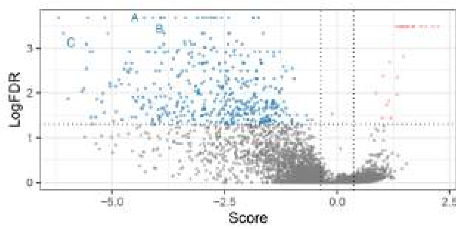


Figure1.4 Volcano plot

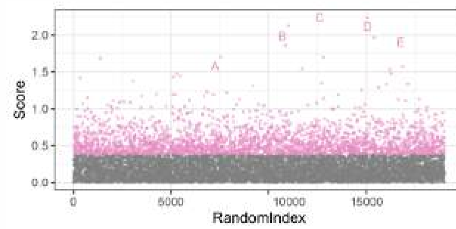


Figure1.5
Dot plot-positive screening genes

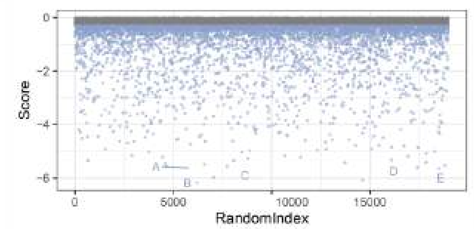


Figure1.6
Dot plot-negative screening genes

3. Functional Enrichment Analysis

The MAGeCKFlute toolkit is used to compare gene function databases, applying the hypergeometric test (HGT) statistical method to perform KEGG, REACTOME, GOBP, and Complex enrichment analyses for both positively and negatively selected genes.

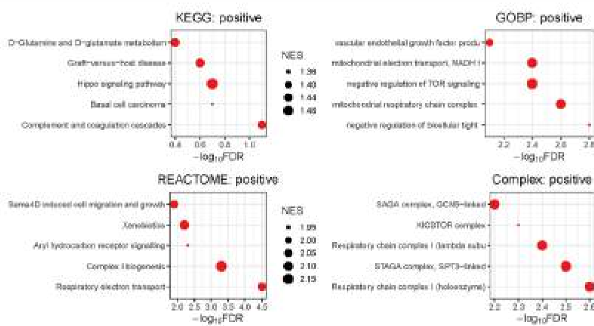


Figure 1.7 Positive Functional Enrichment Analysis

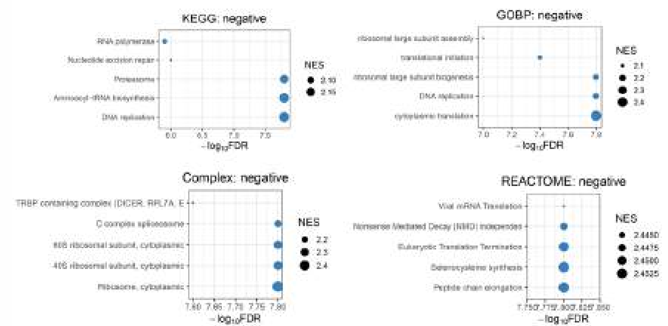


Figure 1.8 Negative Functional Enrichment Analysis

Why Choose Us?

Ready-to-use Libraries + Full Process Experience + Professional Analysis

1.Sign & Start:

Extensive off-the-shelf human/mouse libraries (KO/CRISPRi/CRISPRa), no construction needed, significantly shortens project timelines.

2.Extensive Experience:

Completed 50+ library screening projects covering various cell types including adherent, suspension, and stem cells.

3.Advanced Bioinformatics Team:

Professional bioinformatics team providing full services from standard analysis to customized data mining.

4.Traceable Data:

Provides raw sequencing data, complete analysis code, and reports to support future publications.

Custom Libraries

Custom sgRNA Libraries – Built as You Need, Delivered with Precision

For your specific gene sets of interest (e.g., kinases, GPCRs, epigenetics, metabolic pathways, immune-related genes, etc.), we custom design and construct sgRNA libraries. Choose between **Array libraries** (each sgRNA synthesized and packaged individually, suitable for arrayed screening) or **Pool libraries** (all sgRNAs mixed in a single vector library, suitable for high-throughput pooled screening). Whether you need plasmids, lentivirus, or full-process screening services, we deliver flexibly – you simply provide the target gene list, and we provide a one-stop solution from design to results.

Aspect	Array Library	Pool Library
Construction Method	Each sgRNA synthesized separately, cloned into individual vectors, packaged separately (if virus needed)	All sgRNAs synthesized as a pool, cloned into a single vector library via Gibson assembly
Library Size	Tens to thousands of sgRNAs (suitable for low-medium throughput)	Thousands to genome-wide (hundreds of thousands of sgRNAs)
Screening Method	Arrayed (plate-based), phenotype detected per sgRNA	Pooled screening, sgRNA enrichment/ depletion detected by NGS
Suitable Scenarios	Candidate gene validation, pathway-focused validation, medium-throughput drug target evaluation	Genome-wide functional screening, drug resistance/sensitivity gene discovery, synthetic lethality screening
Delivery Options	○ Plasmids ○ Lentivirus	○ Plasmids ○ Lentivirus ○ Full-process screening (pooled screening + NGS analysis)
Construction Timeline	4–6 weeks	4–8 weeks (plasmid/virus); full-process screening add 6–8 weeks
Quality Control	Each sgRNA0 validated by Sanger sequencing	NGS detection of library coverage and uniformity (≥ 1000× coverage)

Service Advantages

Array + Pool Dual Modes	Flexible Delivery Levels
Array for validation & medium-throughput screening; Pool for genome-wide or large-scale pooled screening. We recommend the best fit for your experiment.	Choose from library plasmids, ready-to-use lentivirus, or full-process screening – three options.

Fast Customization	Professional Quality Control
Validated sgRNA database – provide gene list, get candidate sgRNAs immediately. Plasmid library delivery in 4–6 weeks; full-process Pool screening add 6–8 weeks.	Array: each sgRNA verified by Sanger sequencing. Pool: NGS verification of representation (≥1000× coverage) to ensure library quality.

Service Content

Library Plasmid Construction

Based on your provided gene list (design 2–4 sgRNAs per gene), synthesize and clone into lentiviral vectors. Optional vector types: CRISPR KO (Cas9), CRISPRi (dCas9-KRAB), CRISPRa (dCas9-VPR).

Library Lentivirus Packaging

Custom Library Full-Process Screening

Key Applications

- **Secondary validation of Top genes obtained from genome-wide screening**
- **Medium-throughput screening focused on specific pathways (e.g., kinase, epigenetic)**
- **Evaluation of drug target candidate lists**
- **CRISPRa/i screening**

Delivery Standards

More than just library construction – we offer three delivery tiers.

Delivery Tier	Array Library	Pool Library	Suitable for Customers
Plasmid	Individual plasmids per tube	Mixed plasmid pool (≥100 μg)	Have cell screening capability and can package virus themselves

Delivery Tier	Array Library	Pool Library	Suitable for Customers
Lentivirus	Individual virus per tube (100 μL/well, titer ≥10^8 TU/mL)	Mixed lentivirus pool (1 mL, titer ≥10^8 TU/mL)	Need ready-to-use virus and can perform infection/screening themselves
Full-proces s screening	Not supported (array screening to be performed by customer)	Includes cell screening + NGS sequencing + advanced analysis	Wish to outsource the entire screening project and directly obtain enriched gene list

Case Studies

Construction of immune-related gene sgRNA plasmid pool

Chip-synthesized sgRNA oligo pool for immune-related genes was cloned into LentiGuide-puro vector via Gibson assembly to obtain an sgRNA pool library. Library quality was assessed by NGS.

MAGeQC quality control analysis results: >85% of sequencing reads matched the target library, indicating good library construction and sequencing quality; GiniIndex <0.1, coverage 99.1%, good uniformity of sgRNA distribution; custom sgRNA pool library plasmid quality passed.

Total Reads	Mapped	Percentage	Total sgRNAs	Zerocounts	GiniIndex
1173741	1039917	88.6%	2450	23	0.06923

Why Choose Us?

1.Dual-mode customization:
Both Array and Pool libraries can be customized on demand, flexibly adapting to different throughput needs.

2.Flexible delivery tiers:
Plasmids, lentivirus, or full-process screening (Pooled) – choose without bundling.

3.Full species support:
Human, mouse, rat, zebrafish, pig, etc. – inquiries welcome.

4.Strict quality control:
Array libraries – single sgRNA sequencing validation; Pooled libraries – NGS deep QC.

5.Extensive experience:
Completed 200+ custom library projects covering kinase, GPCR, metabolic, epigenetic, and other pathways.

6.After-sales support:
Complete experimental records provided to support subsequent publications.

- Other CRO Services -

Gene Overexpression cell

Enhanced Lentiviral Overexpression System | Equipped with OE Booster, Breaking Through Limits of Protein Expression and Secretion

EDITGENE's lentiviral system incorporates OE booster enhancement elements. On the basis of stable integration mediated by lentivirus, it further enhances target gene expression across the entire chain from transcription, translation to secretion, significantly increasing the yield of recombinant proteins, antibodies, and vaccine antigens, empowering biopharmaceutical R&D and production.

Service Advantages

Stable inheritance

Expression maintained for over 20 passages, suitable for stable cell line construction and long-term production.

OE Booster Multi-Level Enhancement of mRNA and Protein Expression

OE booster elements enhance mRNA synthesis, provide high mRNA stability, extend mRNA half-life, sustain translation, and promote protein expression and secretion.

Synergistic effect

Lentivirus ensures stable gene presence, while OE booster ensures efficient gene expression – a dual approach achieving a leap in protein yield.

Key Applications

Biologics R&D

Significantly increase monoclonal yield of stable cell lines, reduce production costs.

Drug and vaccine development

Increase antigen expression levels, enhance immunogenicity evaluation efficiency.

Difficult-to-express proteins

Overcome traditional low-expression bottlenecks for membrane proteins, secreted proteins, etc.

Deliverables

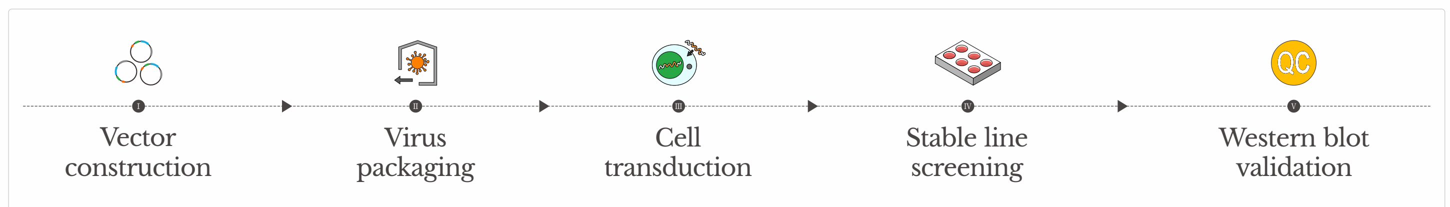
1. Expression levels verified by qPCR and Western blot.

2.COA report:
- Mycoplasma/bacterial contamination test
- cell viability test

3.Cell Lines Delivered
- 1 stable overexpression monoclonal cell line,
- 1 parental cell line

Each cell line is provided as:
2 vials/cell line, 1×10^{6} cells/vial

Workflow



Application

OE Booster Enhanced Lentiviral System – Empowering Multiple R&D Directions

1.Recombinant protein production:
By stably overexpressing antibodies, viral vaccine antigens, and other recombinant proteins in high-performance production cell lines such as CHO and HEK293, and by combining the OE booster with lentiviral-mediated stable integration, our system significantly increases the protein yield per cell while reducing downstream purification costs, making it particularly advantageous for large-scale biologics manufacturing and process development.

2.Gain-of-function studies:
When stably overexpressing target genes in disease model cells to investigate gain-of-function phenotypes, the OE booster ensures that sufficiently high and sustained levels of functional protein are achieved, thereby enabling more reliable downstream mechanistic studies, including signaling pathway analysis, drug response evaluation, and phenotypic characterization.

Reporter cell

Stable, Sensitive, Traceable – Empowering Drug Screening and Mechanism Studies

Reporter cell lines are engineered to express specific reporter genes, enabling **real-time** and **quantitative** monitoring of signaling pathways and gene transcription. They are widely used in gene regulation, pathway analysis, receptor-ligand interaction studies, protein localization, high-throughput drug screening, and target validation.

Powered by lentiviral overexpression and **FLASH-KI** technologies, **EDITGENE** offers stable reporter cell lines covering key pathways (NF-κB, NFAT, GPCR, cAMP) and oncology targets (EGFR, PIK3CA, KRAS). Reporter systems include **GFP, RFP, luciferase**, and **HiBiT**. From vector design to multi-level validation, we deliver high-sensitivity and high-stability models for drug discovery and functional studies.

Service Advantages

Dual-platform technology, flexible strategies

Flash-KI knock-in enables precise, position-effect-free integration reflecting endogenous dynamics; lentiviral integration efficiently builds exogenous promoter-driven reporters for high-throughput screening.

High sensitivity and dynamic range

FLASH-KI site-specific integration provides controllable protein expression and enhanced genetic stability for reliable results.

High signal-to-noise ratio, response fold change up to 10–100 times

We achieve this through strict monoclonal screening and validation using Cytena's top-tier UP.SIGHT 3D cell printing system.

Three-level validation

Sanger or NGS sequencing for genetic level; qPCR for transcriptional activity; enzyme activity assay or substrate response curve for protein/functional level.

Service Types

Overexpression reporter cell lines

The reporter gene is placed under the control of a specific promoter or signaling pathway response element and stably integrated into the cell genome. Overexpression reporter cell lines are characterized by sensitive signal response, wide detection window, and high construction efficiency. They are suitable for signaling pathway activation/inhibition studies, high-throughput drug screening, and initial functional screening experiments.

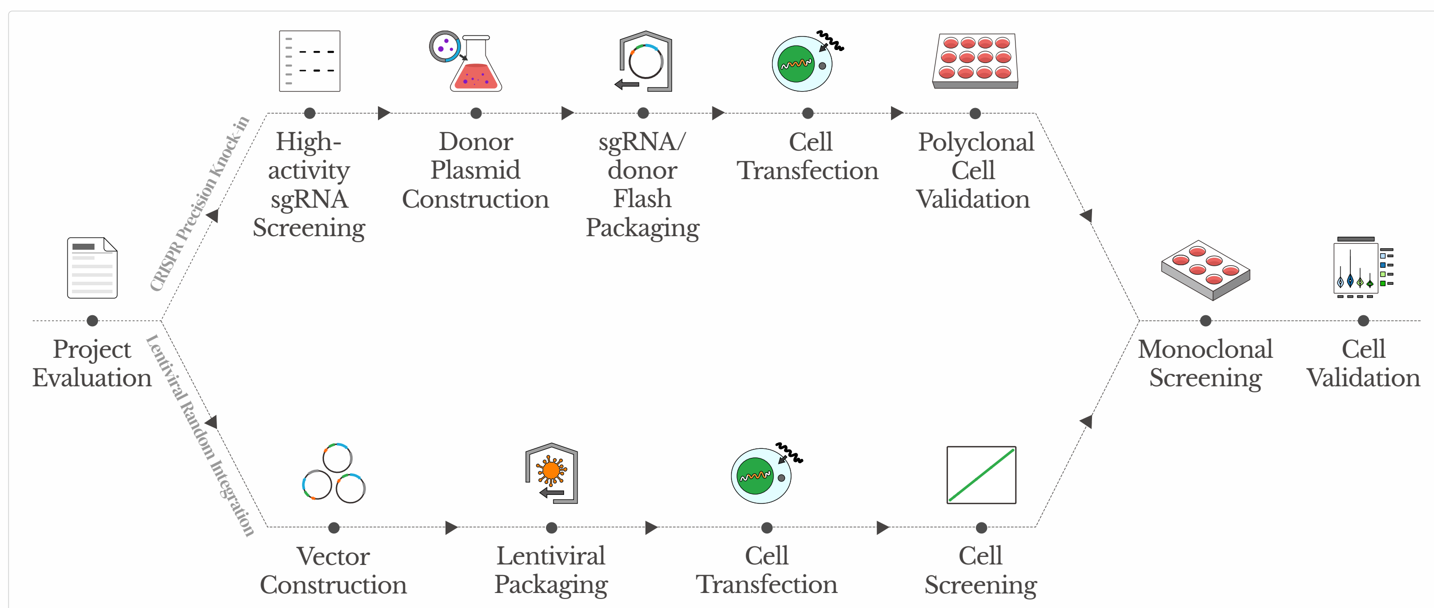
Knock-in reporter cell lines

Relying on the **Flash-KI** technology platform, the reporter gene is precisely inserted into an endogenous gene locus or its regulatory region, allowing the reporter signal to be generated within the endogenous expression context. This more faithfully reflects physiological gene regulation and signaling changes, making it suitable for mechanistic studies, detailed functional analysis, and validation experiments.

CRISPR Site-Specific Knock-in vs. Lentiviral Random Integration – Precision Targeting or Efficient Construction

Aspect	CRISPR/Cas9 Site-Specific Knock-in	Lentiviral Random Integration
Integration method	Reporter gene precisely knocked into target locus or safe harbor site (e.g., AAVS1, Rosa26)	Lentivirus-mediated random integration of reporter gene into host genome
Suitable scenarios	Endogenous gene tracing, real-time monitoring of target gene expression dynamics, scenarios requiring single-copy precise control	Exogenous promoter-driven reporter systems, rapid construction, high-throughput drug screening
Signal uniformity	Highly uniform, minimal variation between clones	Position effects may exist; requires screening for high-expressing uniform clones
Endogenous interference	Can retain or knock out endogenous gene, truly reflecting target status	Independent of endogenous regulation, suitable for exogenous pathway construction
Construction timeline	12–14 weeks	4–6 weeks

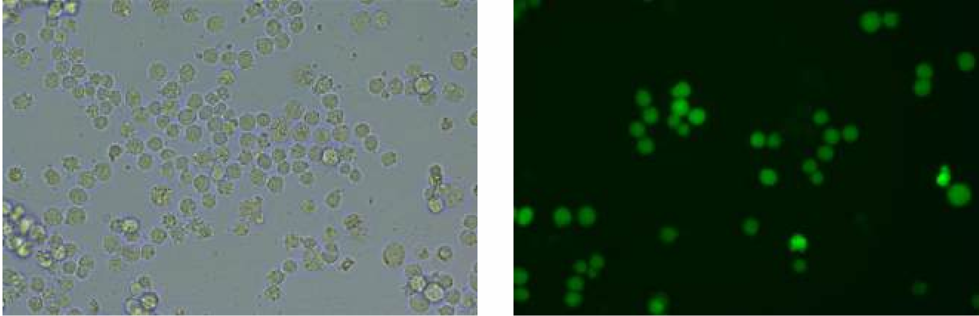
Workflow



Case Studies

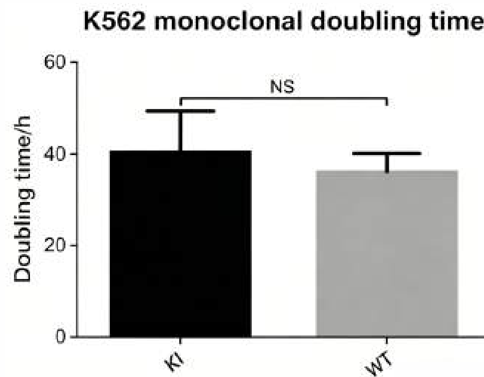
EGFP reporter K562 cell

EGFP was knocked into the safe harbor locus of K562 cells to generate EGFP reporter cells. The polyclonal knock-in efficiency reached 37%. After screening monoclonal cell lines and culturing for 15 consecutive passages, EGFP mRNA expression remained stable, demonstrating long-lasting and reliable gene integration.

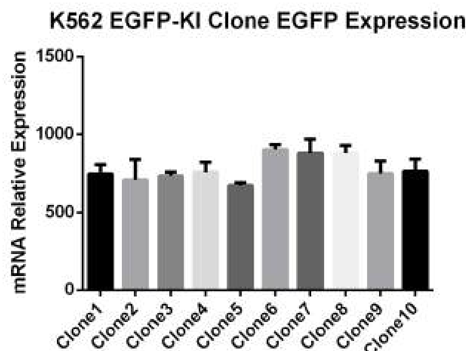


Knock-in efficiency in polyclonal cells reached 37%

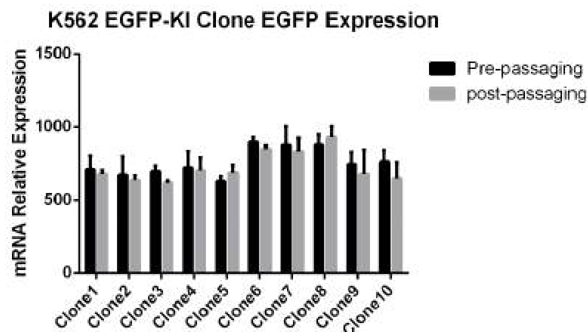
There was no significant difference in the doubling time between K562 EGFP-KI monoclonal cell lines and wild-type (WT) cells, clearly demonstrating that the insertion of the EGFP reporter gene does not adversely affect the proliferation or growth characteristics of K562 cells.



The EGFP mRNA expression levels among the selected monoclonal cell lines showed no statistically significant variation, indicating that the EGFP-KI monoclonal cells are highly uniform. This excellent clonal uniformity can significantly shorten the time required for monoclonal screening and validation.

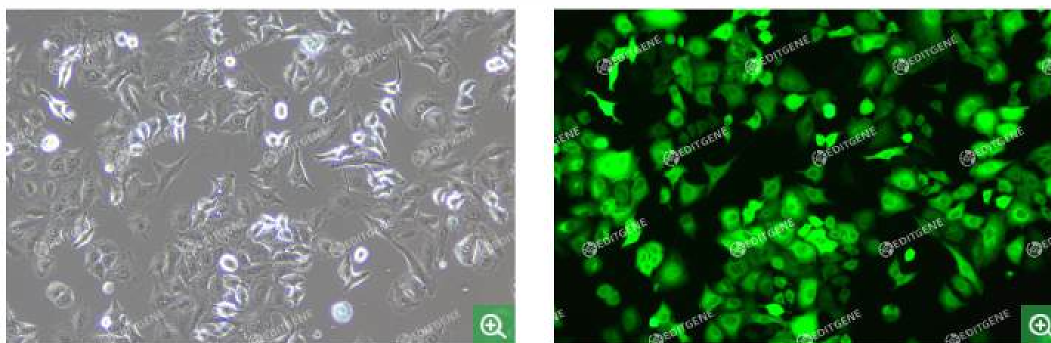


After being continuously passaged and cultured for as many as 15 generations, the EGFP mRNA expression levels remained consistently stable across different K562 EGFP-KI monoclonal cell lines, confirming that the integrated reporter gene is reliably maintained and persistently expressed over long-term culture without significant fluctuation or silencing.



copGFP Reporter A375 cell

The CopEGFP gene sequence was cloned into an enhanced lentiviral overexpression vector, and high-titer lentiviral particles were packaged and produced. These lentiviral particles were then used to infect the human melanoma cell line A375, resulting in the generation of high-expression copGFP Reporter A375 cells.



- Technical platform -

Flash Delivery Platform

FLASH Delivery Platform – Broad-Spectrum, High Efficiency, Low Toxicity

Next-Gen Delivery for Knockout, Knock-in & Point Mutation

CRISPR editing needs efficient, safe delivery. Traditional methods (electroporation, lipofection, AAV) have low efficiency, high cell damage, and stringent conditions, limiting their use.

EDITGENE's Flash platform uses optimized protein/nucleic acid co-delivery for efficient, gentle delivery of Cas9 RNP and donor templates, avoiding electroporation and liposomes. We built Flash-KO™, Flash-KI™, and Flash-PE™ for knockout, knock-in, and point mutation. FLASH is validated in 400+ cell lines, including hard-to-transfect cells like iPSCs, hESCs, organoids, immune cells, delivering superior results.

Service Advantages

Broad-spectrum applicability

Validated in 400+ cell lines, excelling in hard-to-transfect types like iPSCs, hESCs, organoids, and immune cells.

Ultra-high editing efficiency

65% of cell lines achieve >80% knockout efficiency; point mutation pool efficiency 98%; knock-in 88% – surpassing traditional methods.

Extremely low cytotoxicity

Innovative protein delivery avoids DNA plasmid-related immunogenicity and random integration, keeping cell viability above 90%.

Diverse application scenarios

Covers three core areas – knockout (Flash-KO), point mutation (Flash-PE), and knock-in (Flash-KI) – to meet diverse research needs.

Application Scenarios

FLASH System Application Scenarios: Full-Scene Coverage

Application Scenario	Technology Solution	Core Advantage	Suitable for Customers
Gene Knockout	Flash-KO	Covers 400 cell lines	88% of cell lines have efficiency >60%
Point Mutation	Bingo (Flash-PE)	Efficient editing in non-sorted cells	Pool efficiency 98%; Project success rate 85%
Gene Knock-in	Flash-KI + Enhancer	Knock-in efficiency increased 200-fold	Knock-in efficiency up to 88%

Key Data and Validation Results — Flash Delivery System, Enabling Gene Editing Beyond Cell Type and Editing Type Limitations

Data Category	Key Indicator	Specific Value
Knockout Efficiency	Percentage of cell lines with efficiency >80%	53%
	Percentage of cell lines with efficiency >60%	88%

Data Category	Key Indicator	Specific Value
Point Mutation	Pool editing efficiency	98%
	Project success rate	73%
Gene Knock-in	Efficiency improvement fold	5-7 times
	293T GAPDH knock-in efficiency	88%
	A9 T1R1 knock-in efficiency	46%
	hESC TH knock-in efficiency	20%
Delivery Scale	Cumulative successful cases	300+

Data based on internal company testing and delivery case statistics.

Case Studies

iPSC SOX9 Gene Knockout

• **Challenge:**

The customer needed to knock out the SOX9 gene in iPSCs. Traditional methods achieved <5% efficiency and easily induced differentiation.

• **Solution:**

FLASH-RNP complex co-delivery combined with UP.SIGHT single-cell printing.

• **Outcome:**

Editing efficiency reached 90%, homozygous knockout monoclonal clones obtained within 3 weeks, pluripotency marker expression normal.

Overcoming Difficult Transfection: iPSC SCN5A Point Mutation

• **Cell type:** iPSC (induced pluripotent stem cell).

• **Target:** SCN5A (cardiac sodium channel).

• **Editing efficiency:**60%.

• **Significance:**

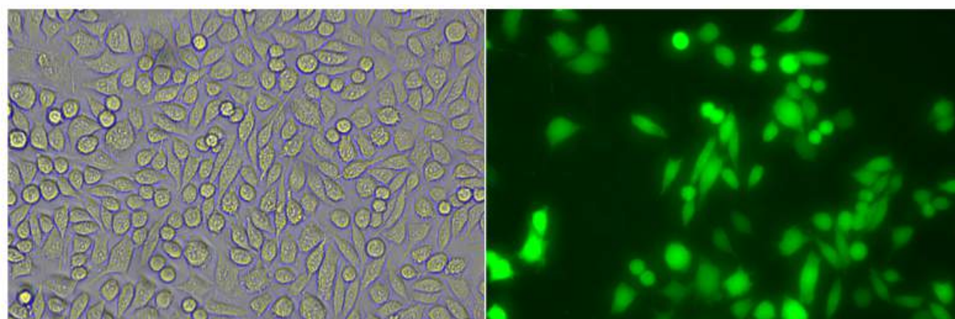
Traditional iPSC point mutation efficiency is <10%. The breakthrough 60% efficiency opens a new avenue for constructing genetic heart disease models.

T1R1-EGFP KI (A9 cells)

• **Purpose:** Endogenous labeling of a taste receptor-related gene.

• **Result:**

Single transfection, direct detection of the cell pool showed knock-in efficiency of 46%. This fully demonstrates that FLASH-KI technology breaks through the low efficiency limitation of traditional HDR for site-specific gene knock-in.



46% EGFP-KI in A9 cell pool by Flash-KI

Single-cell editing platform

Gene Knockout Clones in One Step – Ultimate Efficiency

Traditional workflows for constructing gene-edited cell lines typically involve a lengthy, multi-stage process: first, polyclonal pool screening, followed by positive monoclonal selection, and finally monoclonal expansion. This conventional approach often takes 10 to 14 weeks to complete. Moreover, during the polyclonal screening phase, there is a risk of dominant clone shift, where certain clones may outgrow others, potentially compromising the representativeness of the final cell line and introducing bias into downstream experiments.

To overcome these limitations, EDITGENE has pioneered a revolutionary single-cell gene editing technology platform that deeply integrates single-cell plating, single-cell culture, and gene editing into a seamless workflow. Using the German-engineered Cytena UP.SIGHT system, individual cells are precisely and reliably plated into 96-well plates with high accuracy. This is combined with our proprietary CFM pro-cloning drug, which significantly enhances the efficiency of single-cell clone formation by promoting cell attachment and growth. Subsequently, the Flash-KO method is applied to perform gene editing directly at the single-cell level, enabling knockout in a single step without any prior cell pooling. As a result, we can obtain single-cell-derived, gene-edited cell lines in one go, completely bypassing the traditional polyclonal screening phase. This streamlined approach shortens the overall project timeline to just 6–8 weeks, saving valuable time and resources while ensuring clonal purity and representativeness.

Service Advantages

UP.SIGHT single-cell plating

A top-tier 3D cell printing system that achieves single-cell plating accuracy greater than 99%, thereby ensuring reliable monoclonal origin for each well.

CFM pro-cloning drug

A proprietary drug that promotes single-cell attachment and growth, significantly improving cloning efficiency – a powerful tool for editing cells that are difficult to clone.

FLASH delivery method

Performs gene editing directly at the single-cell level, with no cell pool step and no selection required. Obtain successfully edited single clones in one step, with monoclonal knockout success rates of 60–100%.

High-throughput capability

Supports parallel editing in 96-well plates. Validated for simultaneous construction of 96 different genes in multiple cell types, suitable for arrayed CRISPR library screening.

Case Studies

From Single Cell to Monoclonal – One Step Achieved

• **Goal:**
The objective was to generate a B2M knockout cell line in 293T cells for use in immune evasion studies, which require complete loss of B2M function to disrupt MHC-I surface expression.

• **Protocol:**
The process began with precise single-cell plating using the UP.SIGHT system, followed by CFM pro-cloning culture to enhance single-cell survival and proliferation. Subsequently, the FLASH-KO method was applied to deliver the CRISPR editing complex directly into each single cell, eliminating the need for a prior cell pool step.

• **Outcome:**
The cloning efficiency reached 62.5% in a 96-well plate, meaning 60 out of 96 wells developed into viable clones. Among these, the success rate for obtaining homozygous knockout monoclonals was 80%, as confirmed by Sanger sequencing. Consequently, the overall project timeline was shortened by 2–3 weeks compared to traditional workflows that require multi-round polyclonal screening.

HeLa B2M Gene Knockout – 100% Knockout Success Rate

• **Goal:**
The aim was to establish a B2M knockout cell line in HeLa cells, a widely used cervical cancer cell line, to study the role of B2M in tumor immune escape and to provide a clean background for subsequent engineering.

• **Protocol:**
The workflow consisted of UP.SIGHT single-cell plating to ensure monoclonal origin, CFM pro-cloning culture to maximize clone formation from single cells, and FLASH-KO transfection to achieve gene disruption directly at the single-cell level without any pre-selection or cell pooling.

• **Outcome:**
A total of 65 clones were formed in a single 96-well plate, representing a cloning efficiency of approximately 68%. Remarkably, 100% of the picked clones were confirmed to be homozygous knockout monoclonals by genotyping, with no wild-type alleles remaining. Notably, no additional selection steps such as antibiotic or FACS sorting were required, and the final monoclonal cell lines were obtained directly in one step, saving both time and resources.

Point Mutation Cell Models

Pre-edited cell lines allow scientists to precisely study the biological consequences of a single base change, greatly advancing fundamental research and drug discovery applications.

- **Decoding gene function:**

Introducing a mutation into a specific gene and observing the resulting cellular phenotype is the "gold standard" for studying gene function and regulation.

- **Dissecting disease mechanisms:**

Recreating patient-relevant mutations in cells enables precise in-vitro study of disease initiation and progression.

- **Target identification and validation:**

Cells with a specific mutation allow rapid validation of a gene as a drug target and screening for compounds that selectively act on the mutant version.

- **Drug screening and efficacy assessment:**

Disease-relevant mutant cells enable high-throughput screening of candidate drugs and evaluation of their effects (proliferation inhibition, apoptosis induction, etc.).

- **Resistance mechanism and combination therapy:**

Creating drug-target mutations in cells allows detailed study of acquired resistance and the development of next-generation drugs or combination regimens.

Our proprietary Bingo™ platform , ensuring

- **Scarless, highly precise base changes**
- **Consistent editing performance**
- **Standardized QC workflows across all in-stock models**

Key features

- **High physiological relevance:**

Especially with in-situ edited models, mutant genes are expressed under endogenous regulatory elements, mimicking the in-vivo situation better than overexpression or simple knockout.

- **Precise and controllable:**

Enables accurate simulation of single-base variants; heterozygosity/homozygosity can be chosen to model different genetic backgrounds.

Our hotspot point mutation cell panels allow you to study mutation-driven mechanisms at single-base resolution, without additional indels or exogenous scars.
Ideal for:

- Mechanistic studies of pathogenic variants
- Target validation & functional genomics
- Drug sensitivity & resistance modeling
- Biomarker discovery and assay development

Catalog #	Cell Line	Gene	PM Site/Locus
EDC03059	HCT 116	EGFR	p.T790M, c.2369C>T
EDC03033	HCT 116	EGFR	p.S768I, c.2303G>T
EDC03029	HCT 116	EGFR	p.H773_V774insH, c.2319_2320insCAC
EDC03211	HCT 116	EGFR	p.Q787R, c.2360A>G
EDC03159	HCT 116	EGFR	p.C797S, c.2389T>A and p.Q787Q, c.2361G>A
EDC03164	HCT 116	EGFR	p.C797S, c.2390G>C and p.Q787Q, c.2361G>A
EDC90137	A-549	EGFR	p.L858R, c.2573T>G
EDC03144	K-562	G6PD	p.G316S, c.946G>A
EDC03008	K-562	G6PD	p.F173L, c.517T>C
EDC03154	K-562	G6PD	p.R463H, c.1388G>A
EDC03168	K-562	G6PD	p.R459L, c.1376G>T
EDC03152	K-562	G6PD	p.L342F, c.1024C>T
EDC03076	HCT 116	G6PD	p.V291M, c.871G>A
EDC03077	HCT 116	G6PD	p.H32R, c.95A>G
EDC03080	HCT 116	G6PD	p.G131V, c.392G>T
EDC03066	HCT 116	G6PD	p.R459L, c.1376G>T
EDC03108	HCT 116	G6PD	p.L342F, c.1024C>T
EDC03181	K-562	G6PD	p.H32R, c.95A>G
EDC03046	HCT 116	GJB2	c.35delG
EDC03053	HCT 116	GJB2	c.35insG
EDC03057	HCT 116	GJB2	p.V37I, c.109G>A
EDC03054	HCT 116	GJB3	p.C165T, c.494C>T
EDC03081	HCT 116	HRAS	p.Q61R, c.182A>G
EDC03113	HCT 116	HRAS	p.G12V, c.35G>T
EDC03105	HCT 116	HRAS	p.Q61K, c.181C>A
EDC03111	HCT 116	HRAS	p.G13R, c.37G>C
EDC03112	HCT 116	HRAS	p.G12D, c.35G>A
EDC03226	HeLa	HSPD1	p.K133E, c.397A>G and p.S488R, c.1462_1463TC>CG
EDC03010	HeLa	HSPD1	p.K133E, c.397A>G
EDC03011	HeLa	HSPD1	p.S488R, c.1462_1463TC>CG
EDC90410	HeLa	HSPD1	p.R446A, c.1336_1337CG>GC
EDC03036	HCT 116	KRAS	p.G13S, c.37G>A
EDC03038	HCT 116	KRAS	p.G13R, c.37G>C
EDC03035	HCT 116	KRAS	p.G13D, c.38G>A

Catalog #	Cell Line	Gene	PM Site/Locus
EDC03196	HCT 116	KRAS	p.G12S, c.34G>A
EDC03199	HCT 116	KRAS	p.G12R, c.34G>C
EDC03203	HCT 116	KRAS	p.G12C, c.34G>T
EDC03206	HCT 116	KRAS	p.G12D, c.35G>A
EDC03208	HCT 116	KRAS	p.G12A, c.35G>C
EDC03030	HCT 116	KRAS	p.G13C,c.37G>T
EDC03023	HCT 116	KRAS	p.Q61H,c.183A>C
EDC03073	HCT 116	NRAS	p.G12D,c.35G>A
EDC03074	HCT 116	NRAS	p.G12C,c.34G>T
EDC03123	HCT 116	NRAS	p.G12S,c.34G>A
EDC03072	HCT 116	NRAS	p.G13D,c.38G>A
EDC03124	HCT 116	NRAS	p.E62fs*6,c.183_183delA
EDC03122	HCT 116	NRAS	p.G13R,c.37G>C
EDC03177	HCT 116	NRAS	p.Q61R,c.182A>G
EDC03102	HCT 116	SLC26A4	p.L676Q,c.2027T>A
EDC03106	HCT 116	SLC26A4	p.T410M,c.1229C>T
EDC03107	HCT 116	SLC26A4	p.H723R,c.2168A>G
EDC03125	HCT 116	SLC26A4	p.G197R,c.589G>A
EDC03143	HCT 116	TP53	p.R158G,c.472C>G
EDC03063	HCT 116	TP53	p.H179R,c.536A>G
EDC03109	HCT 116	TP53	p.R273C,c.817C>T
EDC03118	HCT 116	TP53	p.R249M,c.746G>T
EDC03117	HCT 116	TP53	p.R249S,c.747G>T
EDC03133	HCT 116	TP53	p.C242Y,c.725G>A
EDC03127	HCT 116	TP53	p.V157G,c.470T>G
EDC03082	HCT 116	TP53	p.R249W,c.745A>T
EDC03084	HCT 116	TP53	p.R249G,c.745A>G
EDC03090	HCT 116	TP53	p.R158H,c.473G>A
EDC03091	HCT 116	TP53	p.R158C,c.472C>T
EDC03092	HCT 116	TP53	p.R158L,c.473G>T
EDC03093	HCT 116	TP53	p.G245S,c.733G>A
EDC03095	HCT 116	TP53	p.G245D,c.734G>A
EDC03096	HCT 116	TP53	p.R248W,c.742C>T
EDC03097	HCT 116	TP53	p.G245C,c.733G>T
EDC03100	HCT 116	TP53	p.R282G,c.844C>G
EDC03132	HCT 116	TP53	p.G245V,c.734G>T
EDC03134	HCT 116	TP53	p.V157F,c.469G>T
EDC03170	HCT 116	TP53	p.R273H,c.818G>A
EDC03171	HCT 116	TP53	p.R248L,c.743G>T
EDC03110	HCT 116	TP53	p.D281G,c.842A>G

Knockout Cell Panels

Gene knockout (KO) is the gold standard for elucidating gene function. Leveraging its CRISPR-EDITx (Flash-KO) technology platform, EDITGENE has pre-manufactured thousands of off-the-shelf gene knockout cells, including: knockout cells for key tumor targets, SLC transporter knockout cells, and HAP-1 series knockout cells covering multiple research areas. All cells have undergone monoclonal screening and genotype validation, and are ready to use upon arrival – order now and start your experiments immediately.

Scan for In-Stock KO Cells

Product Overview

SLC Family Gene Knockout Cells

The SLC (solute carrier) family is a key player in drug transport, metabolism, and disease pathogenesis. We have constructed single-gene knockout cells for major human SLC members (e.g., SLC2A1, SLC7A11, SLC22A1, etc.) across various cell backgrounds including HEK293, HeLa, A549, and HCT-116. These cells are suitable for metabolism research, drug uptake/efflux mechanism analysis, and target validation.

HAP-1 Series Knockout Cells

The HAP-1 cell line (a near-haploid human cell line) is an ideal model for gene editing due to its simple genome. We have generated knockout cells for key genes in pathways relevant to different research areas, such as DNA damage repair, cell cycle, immune regulation, metabolism, and neuroscience. You can quickly match the required cells based on your research direction.

Other Off-the-Shelf Gene Knockouts

In addition to the above series, we also offer off-the-shelf knockout cells for popular targets including tumor suppressor genes, kinases, transcription factors, and epigenetic regulators. Cell types include HEK293, HeLa, A549, HepG2, HCT116, MCF7, HAP-1, and more.

Knockin Cell Panel

Based on our proprietary Flash-KI™ platform, we have generated a comprehensive panel of off-the-shelf gene knock-in cells. Among these, LUC (luciferase) reporter gene knock-in cells are particularly noteworthy, as they cover multiple potential therapeutic targets for various types of cancer. In these cells, the LUC reporter gene is precisely integrated into the endogenous locus of the target gene, resulting in no position effects and conferring long-term, stable luminescence. As such, they serve as ideal tools for a wide range of applications, including tumor model construction, drug screening, and in vivo imaging studies.

Product Advantages

Precise knock-in, stable expression

Flash-KI™ enables precise gene knock-in and ensures stable, long-term expression of the integrated gene.

Preserves endogenous target biology

Preserves target biology: carefully designed knock-in site does not affect endogenous gene expression or function, faithfully reflecting its roles in tumorigenesis and treatment response.

High sensitivity, suitable for in vivo imaging

Offers exceptionally high sensitivity, making it an ideal and reliable choice for various in vivo imaging applications.

Off-the-shelf, ready to use, efficient delivery

Available directly from stock and ready for immediate use upon receipt, eliminating any waiting time for custom production.

Key Applications

Tumor therapy target validation:

Use LUC-labeled target-positive cells to establish tumor models in immunocompetent or immunodeficient mice, enabling real-time evaluation of the anti-tumor activity of targeted drugs (antibodies, CAR-T, ADCs, etc.).

Drug screening:

Rapidly assess the inhibitory effects of compounds on target-related tumor cell proliferation via in vitro luminescence detection.

Metastasis models:

Inject LUC-labeled cells via the tail vein or intracardially, and track metastasis processes such as lung metastasis or bone metastasis using in vivo imaging.

Combination therapy:

Monitor tumor regression or relapse dynamics under different dosing regimens.

LUC Knock-in Cell Lines

The Luciferase cell line provided by EDITGENE is stably expressing firefly luciferase. This cell line was tested for luciferase activity. Useful for in vitro and in vivo imaging. EDITGENE has a large inventory of Luciferase cells and can provide high-quality products in an efficiently and timely.

Scan for Knock-In Service

Cell	Target Gene	Tag	Cancer Type
U-937	HDAC7	Luciferase	Acute Myeloid Leukemia
U-937	NDUFC1	Luciferase	Acute Myeloid Leukemia
5637	SCAP	Luciferase	Bladder Carcinoma
5637	PTPN23	Luciferase	Bladder Carcinoma
MDA-MB-231	AKT1	Luciferase	Breast Carcinoma
MDA-MB-231	PDHB	Luciferase	Breast Carcinoma
HeLa	UBE3A	Luciferase	Cervical Carcinoma
HCT 116	BRCA2	Luciferase	Colorectal Carcinoma
HCT 116	SATB2	Luciferase	Colorectal Carcinoma
U-87MG	GAB1	Luciferase	Glioblastoma
U-87MG	SOX3	Luciferase	Glioblastoma
HepG2	HNF4A	Luciferase	Hepatocellular Carcinoma
HepG2	DHRSX	Luciferase	Hepatocellular Carcinoma

Reporter Cell

Reporter cell lines have become indispensable and powerful tools in a wide range of research areas, including gene regulation studies, drug screening, and in vivo imaging. Traditional methods such as transient transfection or plasmid-based screening often suffer from several critical limitations, including short duration of reporter expression, low positive cell rates, and unstable or inconsistent signal output. As a result, these conventional approaches frequently fail to meet the demands of long-term, reproducible experiments that require reliable and continuous monitoring of cellular activities.

To overcome these challenges, EDITGENE employs an OE booster-enhanced lentiviral system that mediates stable genomic integration of reporter genes. Using this advanced technology, we efficiently deliver either the CopGFP (green fluorescent protein) or the luciferase reporter gene into the host cell genome. This approach achieves not only stable but also highly uniform reporter signal expression across cell populations, ensuring consistent and robust performance in both in vitro and in vivo applications.

CopGFP Reporter Cell

The CopGFP cell line (green fluorescent protein-labeled) from EDITGENE stably expresses CopGFP, as confirmed by thorough testing for green fluorescent activity. This cell line is ideally suited for both in vitro and in vivo imaging applications, including cell tracking, promoter activity analysis, and whole-animal fluorescence imaging.

Scan for CopGFP Cells

Catalog #	Cell Line	Tag	Catalog #	Cell Line	Tag
EDC01005	MPC-5	CopGFP	EDC01353	DMS 273	CopGFP
EDC01008	MAC-T	CopGFP	EDC01368	U-251MG	CopGFP
EDC01029	RAW 264.7	CopGFP	EDC01407	OCI-AML-3	CopGFP
EDC01041	VSC4.1	CopGFP	EDC01416	PANC-1	CopGFP
EDC01050	ID8	CopGFP	EDC01447	THLE-2	CopGFP
EDC01059	MDBK	CopGFP	EDC01510	5637	CopGFP
EDC01062	A-549	CopGFP	EDC01254	NCI-H929	CopGFP
EDC01071	C2C12	CopGFP	EDC01269	NCI-H460	CopGFP
EDC01077	Hep-G2	CopGFP	EDC01272	Huh-7	CopGFP
EDC01080	HCT 116	CopGFP	EDC01281	U-87MG	CopGFP

Luc Reporter Cell

Scan for LUC Cells

The Luciferase cell line provided by EDITGENE is stably expressing firefly luciferase. This cell line was tested for luciferase activity. Useful for in vitro and in vivo imaging. EDITGENE has a large inventory of Luciferase cells and can provide high-quality products in an efficiently and timely.

Catalog #	Cell Line	Tag	Catalog #	Cell Line	Tag
EDC01006	MPC-5	LUC	EDC01127	THLE-2	LUC
EDC01009	MAC-T	LUC	EDC01526	5637	LUC
EDC01015	SW13	LUC	EDC01446	STC-1	LUC
EDC01018	Kupffer	LUC	EDC01255	NCI-H929	LUC
EDC01030	RAW 264.7	LUC	EDC01550	U-87MG	LUC
EDC01042	VSC4.1	LUC	EDC01294	HEC-1-B	LUC
EDC01048	MB49	LUC	EDC01303	HK-2 [Human kidney]	LUC
EDC01051	ID8	LUC	EDC01315	LL/2 (LLC1)	LUC
EDC01054	A-375	LUC	EDC01321	Neuro-2a	LUC
EDC01060	MDBK	LUC	EDC01324	OCI-AML-2	LUC

Cas9 / dCas9 Stable Cell

The core of CRISPR gene editing technology lies in the efficient and stable expression of the Cas9 protein and its mutants (e.g., dCas9). However, constructing stable cell lines is a cumbersome process involving lentivirus packaging, infection efficiency optimization, antibiotic selection, and activity validation. Moreover, expression levels vary significantly between batches, affecting the reproducibility and success rate of gene editing or transcriptional regulation experiments.

EDITGENE provides off-the-shelf Cas9 and dCas9 stable cell lines in multiple cell backgrounds. All cell lines have undergone functional activity validation and can be used directly in downstream experiments.

Product Advantages

Strict validation, functional guarantee

Cas9 stable cells:
Cleavage activity validated by Sanger sequencing of the target site; indel efficiency ≥70% after sgRNA transfection.

dCas9 stable cells:
Transcriptional inhibition (CRISPRi) validated by positive control gRNA (≥50% reduction in target gene mRNA by qRT-PCR) or transcriptional activation (CRISPRa) (≥5-fold increase in mRNA).

Long-term stability

The Cas9/dCas9 gene is integrated into the host genome. Each batch is tested for mycoplasma (negative) and bacteria/fungi (negative), meeting cell culture grade standards.

Flexible supporting services

We can simultaneously provide sgRNA expression plasmids or lentivirus, as well as one-stop CRISPR library screening services.

Custom stable cell line construction is available for specific cell backgrounds (delivery in 4-6 weeks).

Cas9 Expressing Cell Line

EDITGENE provides a Cas9 Stable Cell Line validated by CRISPR gene editing experiments. It is an efficient tool for CRISPR library screening and point mutation cell line generation. EDITGENE maintains a large inventory of Cas9-expressing cells and can deliver high-quality products efficiently and in a timely manner.

Scan for Cas9 Cells

Catalog #	Cell Line	Cas9 activity	Catalog #	Cell Line	Cas9 activity
EDC01687	HEL-Cas9	87%	EDC01250	NCI-H3122-Cas9	80%

Catalog #	Cell Line	Cas9 activity	Catalog #	Cell Line	Cas9 activity
EDC01229	IPEC-J2-Cas9	92%	EDC01340	UM-UC-3-Cas9	68%
EDC01244	LNCAP-CAS9	80%	EDC01073	SGC-7901-Cas9	89%
EDC01109	MKN45-Cas9	73%	EDC01169	MDA-T32-Cas9	73%
EDC01136	CACO-2-CAS9	96%	EDC01196	MDA-T41-Cas9	94%

dCas9 Stable Cell Lines

Catalog #	Cell Line	Gene	Application
EDC01476	HeLa	dCas9-KRAB	CRISPRi
EDC41472	HEK293T	dCas9-KRAB	CRISPRi
EDC41473	A549	dCas9-KRAB	CRISPRi
EDC41474	HCT 116	dCas9-KRAB	CRISPRi
EDC30075	HEK293T	dCas9-VPR	CRISPRa
EDC30076	A549	dCas9-VPR	CRISPRa
EDC30077	HCT 116	dCas9-VPR	CRISPRa
EDC001476	HeLa	dCas9-VPR	CRISPRa
EDC00075	MC-38	dCas9-VPR	CRISPRa

- Easy-to-Use Gene Editing Kits -

CRISPR Knockout Kit

The CRISPR KO Rapid Knockout Kit is specifically designed to deliver pre-assembled FLASH Cas9 RNP directly into cells, thereby enabling highly efficient and precise gene knockout. As a result, it serves as a convenient, ready-to-use gene knockout kit that eliminates the need for complex setup procedures.

This kit incorporates EDITGENE's innovatively developed CRISPR RNP delivery system, along with Cas enzymes that have been rigorously validated through thousands of real-world, hands-on gene editing experiments.

The FLASH-RNP complex formed by this system is capable of efficiently introducing indels across a broad range of mammalian cell lines, ensuring robust and reliable gene disruption performance.

Product Advantages

Ultra-high editing efficiency

- Validated in 400+ cell lines
- 65% of cell lines show editing efficiency >80%
- Knockout efficiency up to 100% in some cell lines

Rapid experimental timeline

- Knockout cell pools obtained 2-3 days post-transfection
- Monoclonal screening shortened to 4-6 weeks, significantly accelerating the experimental pace

Simple operation, no electroporation required

- Just add and use – no electroporator needed, suitable for most mammalian cells

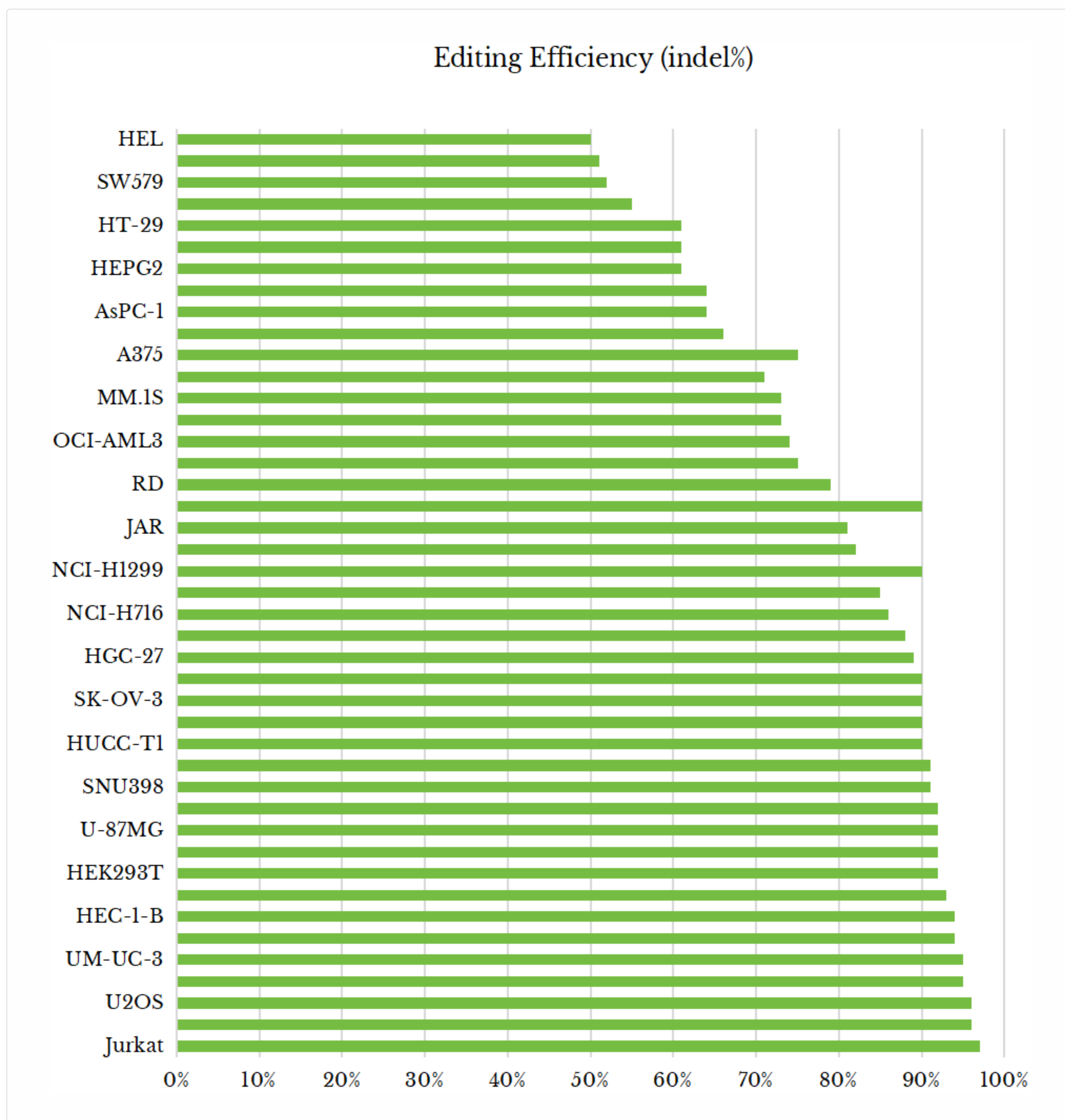
Low off-target, safer

- RNP complex acts transiently with a short half-life, significantly reducing non-specific cleavage
- No risk of exogenous DNA integration, meeting gene editing safety requirements

Simple operation, no electroporation required

- Cell viability increased by 3-fold compared to traditional electroporation methods
- Particularly suitable for sensitive cells such as iPS cells, hESC, organoids, and primary cells

Cell Polyclonal Editing Efficiency



Customer Testimonials

- " Mouse primary cell knockout, WB results show 80-90% efficiency. We have already repurchased four kits. "
- " Efficiency reached 80%, far exceeding other methods we used before. "
- " Very convenient and effective to use. Experimental reproducibility is also excellent. “

Customer Application Cases

Organoid Gene Knockout Application

Mouse Tongue Organoid Polyclonal Sequencing Results and ICE Analysis Results

iPSC Gene Knockout Application

hIPSC-B4 (B2M) Polyclonal Sequencing and ICE Analysis Results

CRISPR Point Mutation Kit

Bingo™ Point Mutation Kit generates precise site-directed mutant cell lines (substitutions, insertions, deletions) and provides cells, plasmids, and reagents – a one-stop solution.

Based on Prime Editing and EDITGENE's 10+ years of experience, Bingo™ far exceeds traditional systems. Our PE optimizations:
(1) Enhanced editing activity of SpCas9 and reverse transcriptase;
(2) Modified PE editing protein for improved pegRNA stability;
(3) Developed a broadly applicable MMR inhibition system, increasing editing efficiency by 2–3 fold across various cell types.

Compared with PE5/PE7: 4.7× higher efficiency, 20% higher success rate. The 3 Target Plasmids (pegRNA + gRNA) are uniquely designed for optimal efficiency & specificity.Mutation Validation product available for rapid, accurate genotyping.

Workflow

Cell preliminary experiment → Cell transfection → Cell pool screening → Cell pool editing efficiency detection → Monoclonal cell expansion and cryopreservation → Positive monoclonal cell identification → Monoclonal cell screening

Case Studies

1. Project Information

Cell: HeLa; Gene: HSPD1 (Gene ID: 3329); Mutation site: c.A391G

2. Bingo™ PE System Plasmid Design

Bingo™ pegRNA: Spacer: ggcttcgaagaagattagcaa; Extension: ttgaccacttCgctaatcttctcga
Bingo™ gRNA: agctttctcattgtgttat

3. Editing Efficiency Detection

The editing efficiency of the HeLa cell pool at the HSPD1 gene c.A391G site was 71%, and homozygous mutant monoclonal cells were successfully obtained.

Cell Pool Sanger Sequencing Results

Clonal cell Sanger Sequencing Results

Technical Services and Products>>>

Precise Gene Editing CRO Services

- Point Mutation cell
- Knock-in cell
- Gene Knockout cell

iPSC Gene Editing CRO Services

Functional Genomic Screening CRO Services

- CRISPR screens: CRISPR KO, CRISPRi, CRISPRa
- Custom Libraries

Other CRO Services

- Gene Overexpression cell
- Reporter cell

Technical platform

- Flash Delivery Platform
- Single-cell editing platform

Engineered Cell Models

- Point Mutation Cell Models
- Knockout cell panel
- Knockin cell panel
- Reporter cell : CopGFP, FLuc
- Cas9 / dCas9 stable cell

Easy-to-Use Gene Editing Kits

- CRISPR Knockout Kit
- CRISPR Point Mutation Kit

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