CRISPR/Cas9 is a RNA-guided, targeted genome editing tool which is versatile, simple, and affordable. Cas9 in complex with the guide RNA will lead to double-stranded breaks in a sequence-specific manner. Genome editing can be achieved via homology based and non-homology based repair mechanisms.

**CRISPR/Cas9 Products**

- **KN2.0 Gene knockout kits:** ~50% bi-allelic knockout efficiency
- **CRISPR/Cas9 vectors** (All-in-one, Lenti, Cas9)
- Cas9 antibodies / Cas9 enzymes
- AAVS1 / ROSA26 transgene insertion
  Expression in genomic safe location
- CRISPRa / CRISPRi kits
- Functional Cas9 Protein

**Custom Services**

- gRNA cloning service into CRISPR vectors
- Donor vector of your own design

**Applications using CRISPR/Cas9 as a genome editing tool**

1. **Indels** (no donor template DNA)
   
   ![Indels Diagram](Diagram1)

2. **Gene knock-out with a reporter(s) knock-in**
   
   ![Gene knock-out Diagram](Diagram2)

3. **Native Promoter Study**
   Luciferase under the endogenous promoter
   
   ![Native Promoter Diagram](Diagram3)

4. **Conditional knockout**
   For essential genes or tissue-specific study
   inserting LoxP sites around the exon(s) to be knocked-out
   
   ![Conditional Knockout Diagram](Diagram4)

5. **Specific mutations (with donor template DNA)**
   - SNPs—SNP associated disease, gene correction
   - Desired deletions/insertions
   - Tagging the endogenous genes

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Genome Editing with CRISPR/Cas9

CRISPR/Cas9 All-in-one vectors

- pCas-Guide-EF1a-GFP
  - 10 kb

Cas9 Lenti Vector

- pLenti-EF1a-Cas9-IRES-Puro
  - 12.3 kb

pCas-Guide-EF1a-GFP was transfected into HEK293 cells. The fluorescent picture shows the expression of GFP.

More CRISPR vectors: https://www.origene.com/products/vectors/crispr-vectors

Scheme of Genome-editing knockout: KN2.0

- Target sequence
- Linear donor
- Cotransfection
- Cas9/gRNA
- Chromosome
- Donor can be inserted in forward or reverse direction
- Forward integration
- Reverse integration

CRISPR Video Youtube