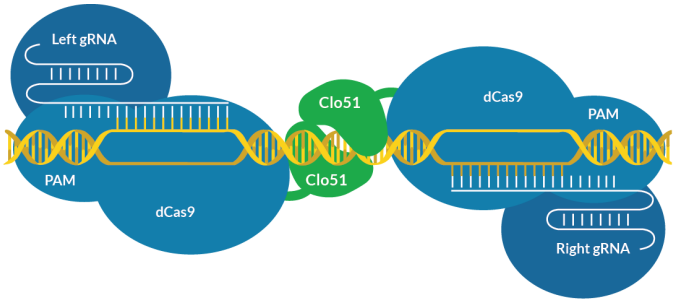
DATASHEET Cas-CLOVER

Hera BioLabs

Cas-CLOVER for Early Drug Development And Drug Discovery

Scientists use "molecular scissors" like Cas-CLOVER to learn about cell and gene therapies, study disease states and their molecular targets and pathways, and produce stable cell lines and reagent tools. Gene editing accelerates drug discovery and development in pharmacology, drug metabolism, and toxicology, which support key advances in pharmaceutical research. In fact, knock-out screening is now widely practiced for discovering novel therapeutics.[1]



Advantages of Cas-CLOVER Compared to Other Gene Editing Tools

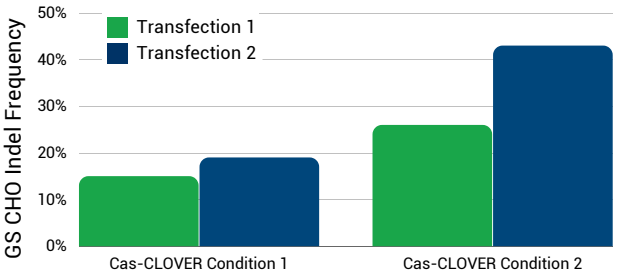
Cas-CLOVER is unique compared to the other gene editing tools as it combines the efficiency of CRISPR/Cas9 with the specificity of TALENs (Figure 1):

- **High Efficiency:** Cas-CLOVER is recruited to the target-site by guide RNAs (gRNAs) in the same way Cas9 is recruited, but it has higher on-target activity that is comparable to CRISPR/Cas9 technology.
- **High Specificity:** Cas-CLOVER utilizes two gRNAs which recruit two dCas-Clo051 nucleases to initiate targeted disruption. The nuclease is fully dimeric, meaning activity only occurs where a pair of nucleases bind correctly to genomic DNA. No off-target cutting was detectable by deep sequencing.
- **Easy to Use:** Cas-CLOVER technology can be integrated into any gene editing application or workflow with just a simple design change. With clearly and independently issued licensing, Cas-CLOVER has easy and convenient terms for both R&D and commercial applications.

Figure 1

	Cas-CLOVER	CRISPR	TALEN
Off-Target Effects	Undetectable	Moderate	Low
Anchor Sequence Availability	Frequent	Frequent	Plentiful
Activity	High	High	High
Build Time	1-2 weeks	1-2 weeks	2-4 weeks

Figure 2



The specificity of Cas-CLOVER enables multiple rounds of targeting at one locus to increase indel frequency without introducing the risk of unwanted off-target mutations. Here are the indel frequencies of 26% and 43% at the CHO GS locus for one and two rounds of targeting (Figure 2). These on-target frequencies in CHO cells are higher than reported for ZFN and comparable to those of CRISPR/Cas9.

Cas-CLOVER: the Future of Gene Editing for Therapeutics Research

Using Cas-CLOVER to discover novel therapeutics to treat disease is an exciting step into a new age of gene editing. Whether utilizing its ability to create cellular and animal models to mimic and study diseases, or screening for the next vital therapeutic, gene editing in drug discovery and development is the future.

[1] le Sage, C., Lawo, S., & Cross, B. C. S. (2020). CRISPR: A Screener's Guide. SLAS Discovery, 25(3), 233–240. https://doi.org/10.1177/2472555219883621.

Contact Us to Learn More

If you would like to explore how Cas-CLOVER could help accelerate your research, please email us: services@herabiolabs.com or call: 859-414-0648.