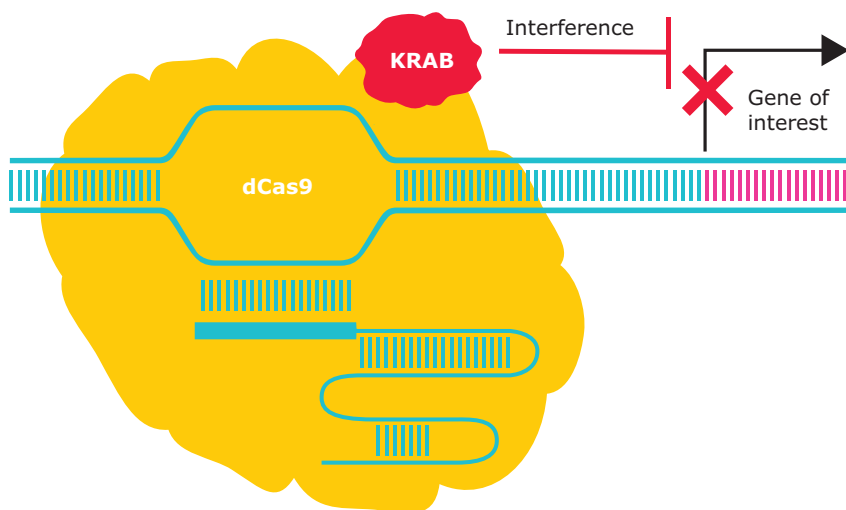


# CRISPRi Whole Genome & Non-Coding Libraries

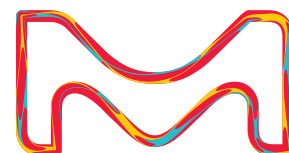
Lentiviral Libraries and Pools to Take Your Research Beyond the Bench

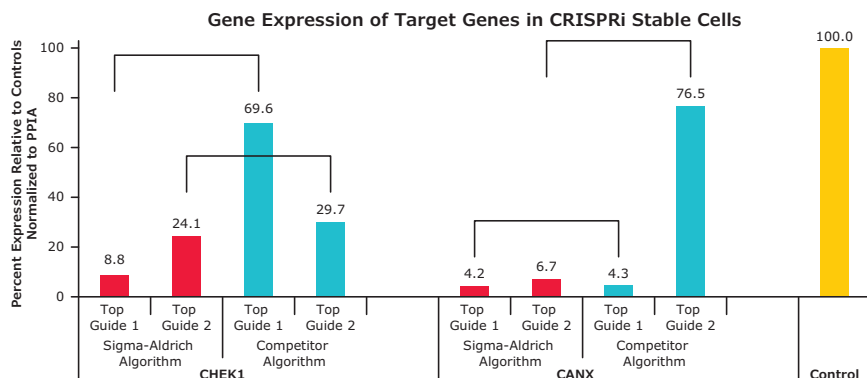
## Superior algorithm placement and gRNA scaffold improvements enhance your CRISPRi screening experiments

The power of CRISPR for genome engineering, coupled with the ability to perform large-scale, whole genome, loss-of-function (LOF) screening, has allowed for new breakthroughs identifying gene pathways in drug resistance and disease. CRISPR is most commonly used to create double-stranded breaks that often result in loss of gene function (CRISPR-KO). However, the full extent of CRISPR's utility extends beyond just targeted cutting of DNA. Nuclease-independent applications of CRISPR provide equal targeting specificity but instead of cutting, CRISPRi allows for targeted interference of gene function by delivering transcriptional repressor domains to a specific target sequence using modified dCas9 + gRNA complexes. Gene knockdown is complementary to CRISPR-KO and CRISPRa (activation) and has distinct advantages over existing loss-of-function strategies like RNAi. We partnered with University of California San Francisco to provide the best-in-class CRISPRi screening tools available.



**Figure 1:** In the CRISPRi complex catalytically inactive dCas9 recruits the primary transcriptional repressor, the Krüppel associated box (KRAB) domain, which silences the targeted gene.





**Figure 2: Comparison of expression levels using the Sigma-Aldrich® CRISPRi system compared to competitors.**

Graph shows relative expression levels of CHEK1 and CANX, two difficult to repress gene targets in stable KRAB-dCas9 cells as determined using qRT-PCR, comparing the highest ranked guides from two different design algorithms. Sigma-Aldrich CRISPRi guides showed up to 72% more efficient gene knockdown compared to competing algorithms in all sites analyzed.

### Available Libraries, Pools and Kits

Product Description	Target	Product Number	Number of Genes
<b>CRISPRi Library</b>			
Human Whole Genome & Non-Coding CRISPRi Library	Whole genome	CRISPRILIB-1KT	18,905
Control and Effector Kit: Positive & negative controls with dCas9	Coding and non-targeting	CRISPRICON-1KT	Coding gene RAB1A and a non-targeting control
<b>CRISPRi Subpools</b>			
10x Feature Barcode Optimization Kit		CRISPRi10X-1KT	Coding gene RAB1A and a non-targeting control
Druggable Genome Pool	Coding	CRISPRIS01-1KT	2,318
Cancer & Apoptosis Pool		CRISPRIS02-1KT	2,916
Stress Proteostasis Pool		CRISPRIS03-1KT	3,093
Mitochondria/Trafficking/Motility Pool		CRISPRIS04-1KT	2,219
Gene Expression Pool (Transcription Factors)		CRISPRIS05-1KT	2,292
Membrane Proteins Pool		CRISPRIS06-1KT	2,418
Unassigned Pool (Uncategorized Gene Function, Novel Targets)		CRISPRIS07-1KT	1,824
Common Cancer Cell Lines Pool & iPSC Pool: Common to 7 cell lines (5 cancer, iPSC, HFF)		CRISPRIS08-1KT	691
iPSC Pool		CRISPRIS09-1KT	3,000
Common Cancer Cell Lines Pool (HeLa, HEK293T, K562, MCF7, U87 cell lines)		CRISPRIS10-1KT	1,329

### Features

- Each pool contains one subpool of top 5 gRNAs per gene as well as a separate subpool of 5 supplemental gRNAs per gene for increased sensitivity and includes non-targeting controls
- Vectors contain both BFP and Puromycin as selection markers and an optimized scaffold for sgRNA expression and function
- KRAB-dCas9 gene silencing allows loss-of-function screening with less risk of toxicity to your cells due to double stranded breaks
- Individual CRISPRi clones can be easily ordered online or by contacting your local sales representative. Custom pools are also available

Learn More at [SigmaAldrich.com/CRISPRi](https://SigmaAldrich.com/CRISPRi)

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