Novel Repressor Proteins for Gene Regulation and CRISPRi

A solution to CRISPRi's limitations

The current gold standard for decreasing gene expression in human cells is to use a dCas9-Zim3KRAB, a dCas9-10 KOX1KRAB, or a dCas9-KOX1KRAB+MeCP2 protein that can be targeted to a geneâ??s promoter and shut down its expression. The current CRISPRi limitations include incomplete gene knockdown, sgRNA sequence-dependent repression activity, and variable performance across human cancer cell lines. Therefore, what is needed is new CRISPR interference system that addresses these issues.

A new CRISPRi platform to develop CRISPR-based therapeutic agents

This invention is comprised of methods and compositions of a new Cas CRISPR gene interference (CRISPRi) platform that uses novel fusion proteins to target a gene's promoter for inhibition and/or deletion. The central aim of this technology is to enable the development of CRISPR-based therapeutic agents.

Summary Bullets

- The new CRISPRi platform uses novel fusion proteins to specifically inhibit target genes of interest and overcome the off-target issues with existing CRISPR platforms already on the market.
- The technology can be used as a life science tool and/or for diagnostics and therapeutics.
- The platform aims to limit off-target editing, circumvent incomplete gene knockdown sgRNA sequence-dependent repression activity, and variable performance across human cancer cell lines.

Potential Commercial Applications

- A novel CRISPRi platform that uses novel fusion proteins to specifically inhibit target genes of interest.
- Potential to overcome the off-target issues with existing CRISPR platforms already on the market.
- Use as a life science tool and/or for diagnostics and therapeutics.
- Invention aims to limit off-target editing, circumvent incomplete gene knockdown sgRNA sequence-dependent repression activity, and variable performance across human cancer cell lines

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IP Status

Patent application has been filed :

Publications

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Images

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