

# Orthogonal Inducible Cas13 Platform for Programmable RNA Regulation

<b>Therapeutic Area</b>	Oncology	<b>Indications</b>	CRISTAL [Control of RNA with Inducible Split Cas13 Orthologs and Exogenous Ligands] Platform
<b>Modality</b>	Gene therapy	<b>Development Stage</b>	Pre-clinical

## Overview

### Background

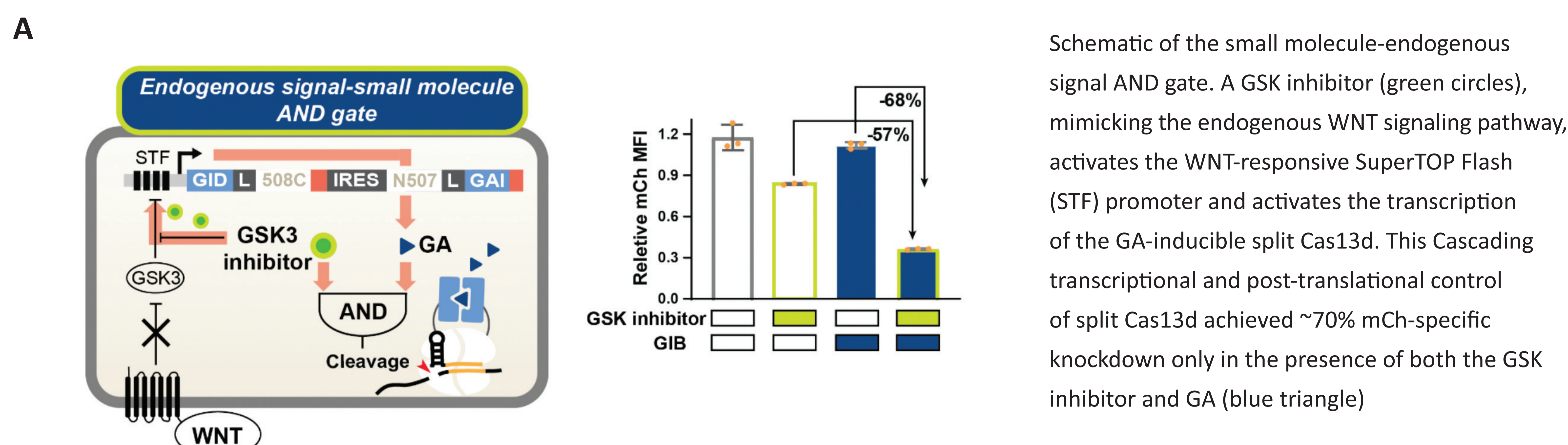
- The versatile Cas13, an RNA-guided ribonuclease, has exhibited remarkable potential in RNA manipulation, sensing, and editing across systems. It offers efficient RNA cleavage with minimal off-target effects, enhancing its safety profile compared to other regulatory machinery.
- Yet, its uncontrolled activity hinders cell engineering. To address this, Boston University researchers introduced the CRISTAL platform, featuring inducible split Cas13 orthologs, enabling precise RNA regulation for cell engineering and RNA biology exploration.

### Technology Advantages

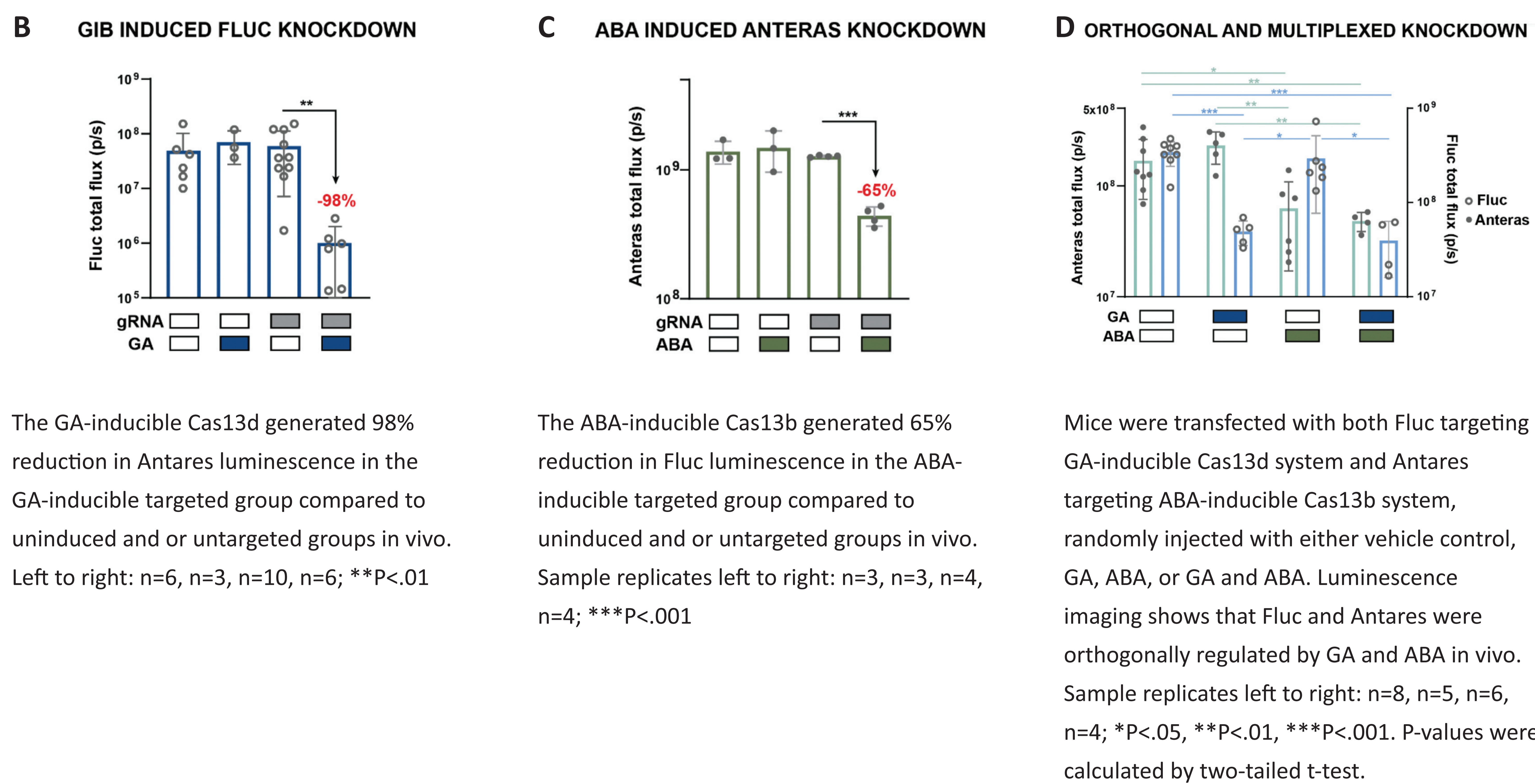
- Orthogonal, low leakiness, and high dynamic range of inducible Cas13d and Cas13b
- Engineered Cas13 logic circuits for endogenous signaling and exogenous inputs
- Safer reversible gene expression regulation at the RNA level
- Simultaneous multiplexed control of multiple genes with combinatory Cas13s
- Validated high induced activity in mammalian cells and mice
- Orthogonal regulatory mechanism, no genome modification needed

## Key Data

### Multiplex control of split Cas13d ribonucleases



### Simultaneous and orthogonal regulated gene knockdown in mice



## IP Status & Publication(s)

### Intellectual Property

**Patent Number**  
US 11572565 B2 (2023.02.07)

**Patent Family**  
PCT, US

### Publication(s)

- Ding at al. (2023). Orthogonal inducible control of Cas13 circuits enables programmable RNA regulation in mammalian cells. bioRxiv (Cold Spring Harbor Laboratory)