RS-2025-25454812

Development of a Potent Dual-acting Gene Therapy for Spinal Muscular Atrophy

GenKOre

OTHERS | Hit

Product Type	Gene & Nucleic acids
Indication	Spinal Muscular Atrophy (SMA)
Target	SMN2 gene (ISS-N1 site)
MoA(Mechanism of Action)	A one-time administration of the AAV9-based dual-function vector enables simultaneous: (1) **gene editing** of the SMN2 ISS-N1 region to restore exon 7 inclusion, and (2) **gene replacement** with SMN1 cDNA for immediate SMN protein expression. TaRGET system-driven editing ensure durable, functional SMN2 expression, while SMN1 supplementation promotes early functional recovery.
Competitiveness	• **Dual-acting strategy:** The dual-modality AAV achieves both the Zolgensma (SMN1 replacement) and Spinraza (SMN2 E7 inclusion) therapeutic benefits in one shot, providing lifelong efficacy. • **Rapid phenotypic rescue:** Timely delivery of the SMN1 gene at critical stages enables early restoration of SMN protein levels and prompt recovery of motor function. • **Single-vector, Dual action:** The hypercompact size of the TaRGET system enables efficient AAV delivery, allowing both Cas12f1/gRNA and SMN1 cDNA to be packaged within a single AAV9 vector for dual action comprising gene editing and gene replacement. • **Overcoming current limitations:** Combining SMN1 replacement and functional SMN2 restoration in one AAV provides durable efficacy through one-time treatment that addresses the limitations of currently available SMA therapies.
Development Stage	Hit
Route of Administration	• Intrathecal (IT) injection • One-time injection