KDDF
Korea Drug Development Fund

Asset #22
Dana-Farber Cancer Institute

Antisense Inhibitors of Long Noncoding RNA as Treatment for Multiple Myeloma

Therapeutic Area	Oncology	**Indications**	Multiple Myeloma
Modality	Nucleotide	**Development Stage**	Hit to Lead/Lead Optimization

Overview

Background

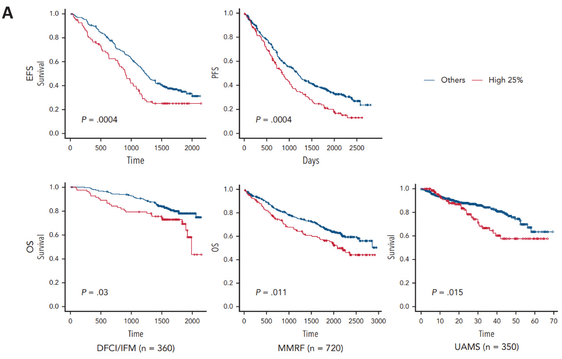
- Researchers at Dana-Farber Cancer Institute have developed advanced antisense oligonucleotides (ASOs) to inhibit RROL with improved bioavailability and selectivity. These modified ASOs employ two distinct mechanisms to hinder RROL activity: RNase-based degradation and “steric block” interference. Both ASO types exhibit potent anti-proliferative effects on multiple myeloma (MM) cells, while sparing healthy cells. In mouse models, these ASOs lead to substantial tumor growth inhibition without notable toxicity, offering promising therapeutic potential for MM treatment.

Technology Advantages

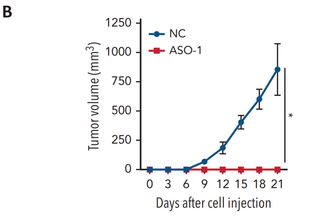
- Chemical modifications impart the ASOs with efficient cellular uptake properties and resistance to enzymatic degradation
- The inherent RNA target selectivity of ASOs limit off-target toxicity
- Demonstrated strong tumor growth inhibition

Key Data

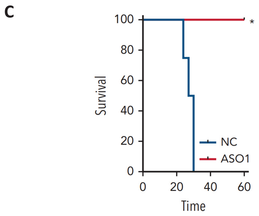
MIR17HG-derived lnc-17-92 mediates cell growth dependency in an miRNA- and DROSHA-independent manner



Prognostic significance (event-free survival [PFS] and overall survival [OS]) of high lnc-17-92 expression (top quartile) in 3 large cohorts of MM(Multiple Myeloma) patients



Effects of lnc-17-92 depletion in a matrigel-based AMO1DR-KO xenograft in NOD SCID mice. Tumor growth of AMO1DR-KO with (ASO-1) or without (NC) lnc-17-92 depletion



Survival analysis of tumor-injected mice.
*P < .05. ns, not significant (P > .05 after Student t test)

IP Status & Publication(s)

Intellectual Property

Patent Number
PCT Application Filed

Patent Family
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Publication(s)

- Agirre, X. (2023). RROL lncRNA role in multiple myeloma. Blood
- Morelli at al. (2023). A MIR17HG-derived long noncoding RNA provides an essential chromatin scaffold for protein interaction and myeloma growth. Blood