

In-vivo

Changing how wounds heal.

Developed by KAUST Environmental Epigenetics Research Lab · Regenerative Medicine · Biotech



THE PROBLEM

Inflammation-driven regenerative failure is a frontier of medicine

Roughly half of all deaths can be linked to inflammation- and fibrosis-related regenerative failures, and frailty is a rising burden as populations age — including in the Kingdom, where the over-60 group is projected to more than double by 2030. Enhancing the body's ability to regenerate tissue is one of the most promising frontiers in modern medicine.

THE SOLUTION

Harnessing the body's natural healing cocktail

When tissue is injured, specific cells sense the damage and release a mix of molecules — the secretome — that guides healing. The team at KAUST, with Prof. Valerio Orlando, discovered that this process is switched on by retrotransposon RNA resembling viral RNA, which activates a balanced innate-immune response that jump-starts repair. The team reproduces this cell-free, easily purifiable secretome in the lab for use in treatment.

TECHNOLOGY · KEY SPECIFICATIONS

Mechanism	RNA-triggered secretome activating innate-immune-driven repair
Format	Cell-free, easily purifiable, formulation-ready
Applications	Bone fracture, wound healing, skin repair and cosmetics
Preclinical models	Osteoporosis (ovariectomized) and critical-size bone defect
Partnership	~USD 2.5M over 18 months

IMPACT

01

Restoring tissue repair

Stimulating regeneration in bone, muscle and skin with a single platform.

02

Addressing aging and frailty

Targeting age-related degeneration as the Kingdom's elderly population grows.

03

Validated and patented

Reinforcing scientific and translational credibility through NTI-supported preclinical work.

04

From discovery to venture

Advancing along the biotech pathway toward investment and clinical application.