INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Targeting Neutrophils with PolySA Particles Prevents Post-traumatic Osteoarthritis Progression

TECHNOLOGY NUMBERS: 2026-105, 2018-395, 2019-409

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2026-105

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Therapeutics and Vaccines
Life Sciences
Accelerate Blue Foundry - 2025/Life Sciences

Inventor
Lola Eniola-Adefeso
Michael LaRue Felder

Further information
Dr. Surin Mong
smong@umich.edu

View online page

Accelerate Blue Foundry - 2025 (Life Sciences)

OVERVIEW

Biodegradable PolySA (poly-salicylic acid) microparticles offer a breakthrough strategy to halt the progression of post-traumatic osteoarthritis by physically rerouting and blocking harmful neutrophils at sites of joint injury.

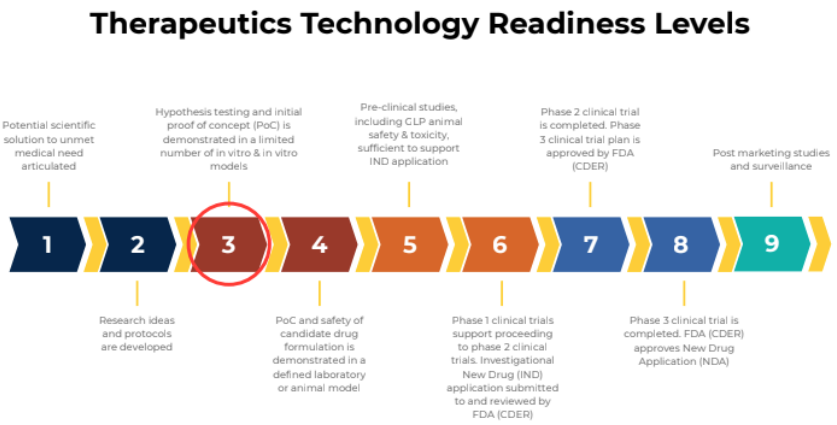
DESCRIPTION

This technology utilizes microparticles constructed from a rapidly degrading, biocompatible polymer that incorporates salicylic acid—a natural anti-inflammatory molecule—within its backbone. When administered soon after joint injury, these PolySA particles target neutrophils and monocytes in the blood to reroute them away from sites of inflammation. This early alteration of the inflammatory cascade then has downstream effects, inhibiting the progression of post-traumatic osteoarthritis. The activity of these particles is due to the intracellular release of salicylic acid, a known anti-inflammatory compound, that is able to alter neutrophil and monocyte phenotypes once internalized.

VALUE PROPOSITION

- **Physical and Biochemical Action**: First-in-class technology that blocks immune cell entry to inflamed joint without systemic immunosuppression.
- **Biodegradable Safety**: Made from biocompatible poly-salicylic acid, the particles naturally degrade into a therapeutic compound, reducing risks associated with persistent synthetic materials.
- **Disease-Modifying Potential**: Early intervention with PolySA particles prevents long-term joint degeneration, addressing an unmet need for therapies that can halt, rather than just manage, osteoarthritis progression after injury.

TECHNOLOGY READINESS LEVEL



INTELLECTUAL PROPERTY STATUS

ALL ISSUED PATENTS:

- US11376221
- US11826469
- US12296048
- EP3993783
- CN114126598A

Other patent applications pending.

MARKET OPPORTUNITY

There is a significant unmet need for effective, disease-modifying treatments for post-traumatic osteoarthritis (PTOA) following sports injuries, accidents, or orthopedic surgery—conditions that impact millions and often lead to chronic pain and disability. High-value application areas include orthopedic and sports medicine, trauma care, and military medicine for early intervention following joint injuries. This approach is further supported by rising rates of musculoskeletal injuries and demand for therapies that not only relieve symptoms but actively prevent disease progression in active and aging populations.