

A Composition For Wound Healing, Tissue Adhesive, and Methods Thereof

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About the Technology:

A UV-curable GelMA-methacrylated gellan (mGG) hybrid hydrogel incorporating FGF and silver nanoparticles enables in situ, shape-adaptive wound treatment with dual regenerative and antimicrobial functionality. It provides sustained FGF release to enhance fibroblast activity, angiogenesis, and collagen deposition, while AgNPs prevent infection. The bioabsorbable, mechanically robust matrix has demonstrated superior efficacy over Regen-D in preclinical models. Scalable and clinically translatable, it represents a high-value next-generation wound healing solution.

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Lead Inventor(s):

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Institute(s):

1. Indian Institute of Technology Bombay
2. Delhi Pharmaceutical Sciences & Research University

Technology Domain: Therapeutic Drugs

Disease Area (Broad): Trauma and Burns

IP Filing: Indian Patent App. No. 202311029171

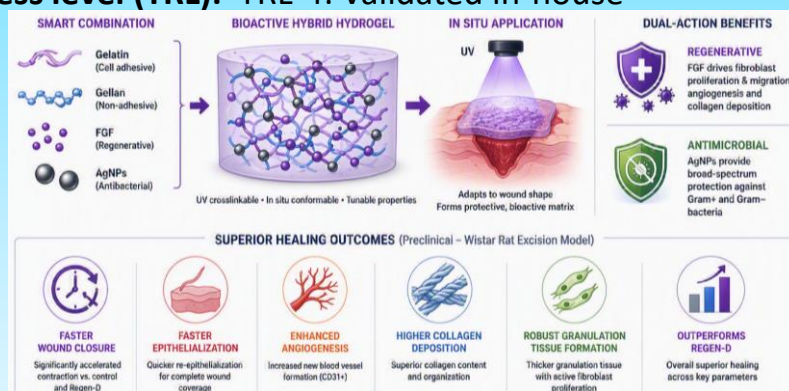
Date of EOI Publication: 4th Aug 2026

EoI Deadline: 25th Aug 2026

Need and utility of the Technology from Public health perspective:

There is a strong unmet need for advanced wound care solutions that integrate healing acceleration, infection control, and user convenience. Current options lack adaptability and bioactivity, leading to prolonged recovery and higher care burden. A tunable, biodegradable hydrogel platform enabling scalable, customizable therapy can significantly improve patient outcomes and reduce hospital dependency.

Technology Readiness level (TRL): TRL-4: Validated in-house



Validation Status and Study Outcome:

- **In vitro:** Enhances fibroblast migration/proliferation + strong antibacterial activity (non-toxic)
- **Preclinical:** Accelerated wound closure, angiogenesis & collagen deposition ($\geq$ Regen-D) in a rat wound model.
- **Efficacy:** Demonstrated robust granulation tissue formation, faster epithelialization & superior overall healing outcomes
- **Safety:** Biocompatible with reduced inflammation and effective tissue regeneration

Market Potential: Large and growing global wound care market driven by rising chronic wounds, infections, and demand for advanced bioactive therapies.

Unmet Need: Lack of integrated solutions combining rapid healing, infection control, and scalable, patient-friendly application across clinical and home settings.

Publication:

- Jahan I, Ganesan V, Sahu M, Nandave M, Sen S. Adhesivity-tuned bioactive gelatin/gellan hybrid gels drive efficient wound healing. *Int J Biol Macromol.* 2024 Jan;254(Pt 2):127735. doi: 10.1016/j.ijbiomac.2023.127735. Epub 2023 Nov 2. PMID: 37923047.