Nanotherapeutics for Vascular Regenerative Repair

Sajeesh Thampi
Research Assistant Professor
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LEHIGH UNIVERSITY | Department of Bioengineering

Sajeesh Thampi, PhD

Education and Training

- MSc, Chemistry, GRI, India
- PhD, Chemical Sciences/Biopharmaceutical Sciences, SCTIMST, India & University of Paris, France
- Postdoc, Sungkyunkwan University, South Korea
- Postdoc, Cleveland Clinic Foundation, OH

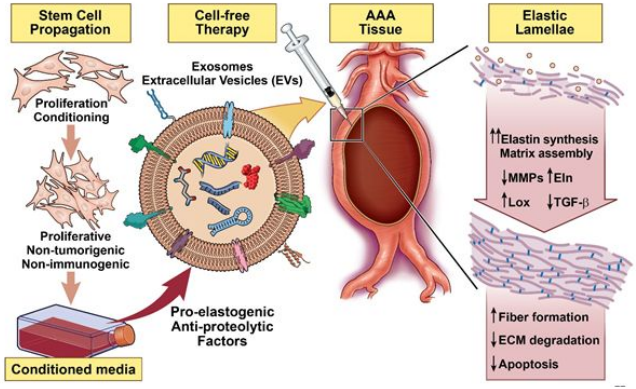
Key Publications

- **Sajeesh S,** Broekelman T, Mecham RP, Ramamurthi A. 2020 Stem cell derived extracellular vesicles for vascular elastic matrix regenerative repair. *Acta Biomaterialia* 113,267-278.
- **Sajeesh S**, Lee TY, Kim JK, Son SD, Woo SH, Kim S, Yun WY, Kim S, Li C, Lee DK. 2014 Efficient intracellular delivery and multiple-target gene silencing triggered by tripodal RNA based nanoparticles: A promising approach in liver specific RNAi delivery. *Journal of Controlled Release* 196, 28-36.
- **Sajeesh S**, Bouchemal K, Marsaud V, Vauthier C, Sharma CP. 2010. Cyclodextrin complexed insulin encapsulated hydrogel microparticles: An oral delivery system for insulin. *Journal of Controlled Release* 147, 377-384.

Keywords

Nanotherapeutics, Drug Delivery, Cardiovascular Therapeutics, Regenerative Medicine

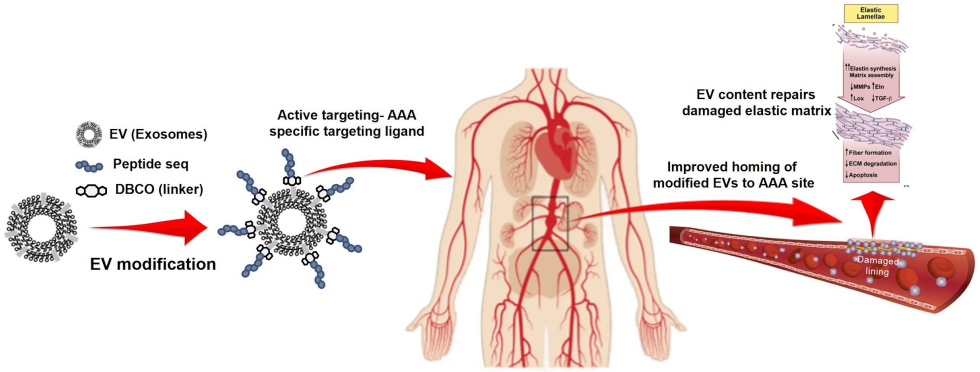
Stem Cell Derived Extracellular Vesicles for Vascular Elastic Matrix Repair



- **Abdominal Aortic Aneurysms (AAA)-**Proteolytic disorder characterized by chronic degradation of structural elastin matrix in the aortic wall.
- **Mesenchymal Stem Cell (MSC) derived EVs**- Effective treatment approach for vascular elastic matrix repair associated with AAAs.

Sajeesh et al. Acta Biomat. 2020 113,267-278
Sajeesh et al. Front. Cardiovas Med. 2022, 9, 879977

Surface Functionalized EVs for Targeted AAA Therapy

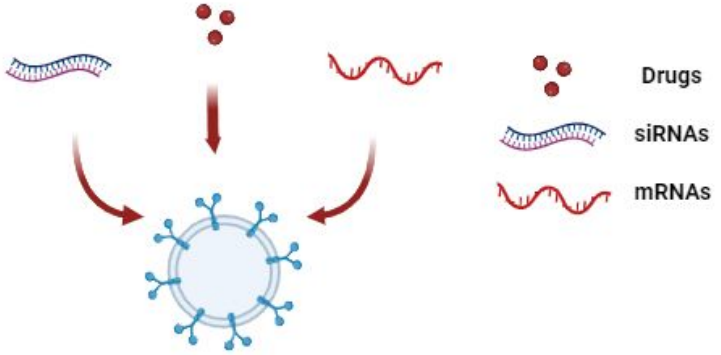


Surface Functionalized EVs for Targeted AAA Therapy

- **Poor targeting capabilities of MSC-EVs-** Non-specific uptake by liver and other organs.
- **Active targeting strategy-** Improved homing of MSC-EVs onto aneurysmal tissue via attachment of specific ligands on EV surface via copper-free click chemistry.

Sajeesh et al. Mol.Pharm 2023, 20,2801

EVs as Drug Delivery Systems



- **EVs as functional delivery system-** Biocompatible carrier system with intrinsic cell targeting capabilities.
- **Efficient delivery approach-** For drugs and nucleic acid (siRNA/mRNA) based therapeutics.

Contact

Email: sat520@lehigh.edu

Google Scholar:
https://scholar.google.com/citations?user=pu8WriMAAAAJ&hl=en