Regenerative medicine

Development of novel biological or synthetic scaffolds or hydrogels for direct use or as drug carriers in promoting enhanced tissue repair. For example, treatments for complex diabetic wounds, following brain tumour excavation or stroke, in orthopaedic joint management or in the field of aesthetics.

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2. Gels- 2025 doi: 10.3390/gels11010050. Utilisation of High Molecular Weight and Ultra-High Molecular Weight Hyaluronan in Management of Glioblastoma-Alex-Adrian Salagean et al

Blood vessel production and repair by vascular angiogenesis. Optimizing 'proper' mature patent vessel development or re-development through pharmacological modulation of critical cell signalling molecules, hypoxia and exercise, or normalization of complex micro-environmental cues.

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2. Pharmacol Ther. 2025 doi: 10.1016/j.pharmthera.2025.108934. Crosstalk between anti-angiogenic and pro-angiogenic pathways in disease: Mechanisms and therapeutic strategies. Runa Wang et al

Promoting extension/longeivity of physiologic regeneration via control of autophagy and senescence to slow down cellular degeneration associated with ageing. Investigations into modulation of associated pathways particularly mTOR/AMPK, mitochondrial oxidative stress and inflammaging/SASP will be prioritised.

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2. JAMA. 2025 doi: 10.1001/jama.2025.11289. Geroscience: A Translational Review. Stephen B Kritchevsky et al

Pre-clinical or clinical characterization of Mesenchymal Stem cell or exosome-based therapies particularly focussed upon their potential use in cell and tissue repair associated. with neurodegeneration or ischaemic heart disease.

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1. Pharmaceutics. 2023 doi: 10.3390/pharmaceutics15112637. Advanced Progress in the Role of Adipose-Derived Mesenchymal Stromal/Stem Cells in the Application of Central Nervous System Disorders, Haiyue Wu et al
2. Int J Mol Sci, 2024. doi: 10.3390/ijms25073778. Stem Cell Therapy against Ischemic Heart Disease. I-Ting Tsai et al

Predicting optimised regenerative response. Developing and validating predictive biomarkers, personalized interventions, and AI-driven models with multi-omics approaches to enhance the efficacy and safety of regenerative/recovery strategies with applications in the field of sports medicine and focussed upon vascular and heart health or musculoskeletal ageing.

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