Special Issue

Integration of Multi-Omics Analysis and Biomaterial Innovation in Tissue Repair and Regeneration

Message from the Guest Editor

Biomaterial-based strategies are at the forefront of tissue engineering and regenerative medicine. Recent advances in biomaterials have opened new avenues for efficient and precise tissue repair and regeneration. Concurrently, the deep integration of multi-omics technologies, as well as single-cell and spatial omics, with biomaterial engineering has significantly broadened our understanding of tissue repair and regeneration. High-resolution multi-omics data integration enables systematic dissection of cellular heterogeneity, immune microenvironment dynamics, and key regenerative signaling pathways, providing a solid basis for the rational design and functional optimization of biomaterials.

This Special Issue highlights recent progress in experimental, computational, and translational research integrating multi-omics and biomaterial innovation for tissue repair and regeneration. We welcome studies including multi-omics applications in tissue repair, novel or smart biomaterial development, mechanistic studies of omics-biomaterial synergy, multi-omics data integration and modeling, and translational or clinical advances in tissue repair and reconstruction.

Guest Editor

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Biomedicines (ISSN 2227-9059) is an open access journal devoted to all aspects of research on human health and disease, the discovery and characterization of new therapeutic targets, therapeutic strategies, and research of naturally driven biomedicines, pharmaceuticals, and biopharmaceutical products. Topics include pathogenesis mechanisms of diseases, translational medical research, biomaterial in biomedical research, natural bioactive molecules, biologics, vaccines, gene therapies, cell-based therapies, targeted specific antibodies, recombinant therapeutic proteins, nanobiotechnology driven products, targeted therapy, bioimaging, biosensors, biomarkers, and biosimilars. The journal is open for publication of studies conducted at the basic science and preclinical research levels. We invite you to consider submitting your work to Biomedicines, be it original research, review articles, or developing Special Issues of current key topics.

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