Special Issue

Innovations in Bone and Craniofacial Tissue Engineering: From Biomaterials and Mechanobiology to Clinical Applications

Message from the Guest Editor

The functional regeneration of bone and craniofacial tissues is an area that unites biomaterials science, stem cell and gene therapies, mechanobiology, and clinical disciplines—including orthodontics and oral surgery. Despite advances in scaffold design and bioactive factor delivery, challenges remain in guiding tissue growth under mechanical forces, modulating inflammation and oxidative stress, and translating benchtop breakthroughs into patient—ready solutions. This Special Issue will gather cutting—edge studies relating to the following areas:

- **Advanced biomaterials and scaffold fabrication** (3D printing and smart/biomimetic materials).
- **Stem cell and exosome—based approaches** for osteo and chondrogenesis.
- **Mechanobiology**—the interface of mechanical loading (e.g., orthodontic forces) and bone remodeling.
- **Gene/drug delivery systems** targeting osteoinduction, immunomodulation, and redox balance.
- **Orthodontic and craniofacial applications**, including alveolar bone regeneration during tooth movement.
- **Preclinical to clinical translation**, covering animal models, pilot trials, and regulatory considerations.

Guest Editor

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Message from the Editor-in-Chief

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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