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Advanced Assessment of Medical Devices

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Deadline for manuscript submissions:

30 November 2024

Message from the Guest Editors

The preclinical assessment of implantable medical devices is essential for enhancing both their safety and efficacy before reaching the patient. In light of recent high-profile clinical failures, preclinical testing regimes which previously used simplified or averaged conditions and ex situ analysis have faced increased scrutiny. This fails to capture clinically relevant failure modes and provides limited actionable or predictive data on the long-term performance of devices, hindering the effective translation and adoption of emerging technologies.

This Special Issue of Bioengineering on Advanced Assessment of Medical Devices aims to showcase device development and assessment that goes beyond the current state of the art by inviting contributions from the community in the following areas (among others):

- Advanced preclinical testing;
- Device–biology interaction;
- Co-creation with patients, clinicians, regulators, and industrial partners;
- Machine learning and in silico digital twin methodologies;
- Predictive models for device behaviour in vitro and in vivo;
- High-throughput methodologies for biomaterial characterisation.



mdpi.com/si/205061

Special Issue



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Message from the Editor-in-Chief

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