Special Issue

CRISPR-Cas Microsystems in Diagnostics and Therapeutics: Innovations in Biosensor and Microfluidics

Message from the Guest Editors

CRISPR-Cas systems have emerged as powerful and efficient tools for precise genome editing and transcriptional regulation across a wide range of organisms. Their simplicity, programmability, and versatility have positioned them at the forefront of modern biotechnology, enabling transformative applications in agricultural enhancement, therapeutic development, microbial engineering, and sustainable bioenergy production. CRISPR-based technologies are now routinely employed to investigate the molecular mechanisms underlying infectious, degenerative, and hereditary diseases, to improve crop yield and resilience, and to promote environmentally sustainable biofuel generation.

As CRISPR-Cas systems continue to evolve, advancements in their specificity, temporal control, and safety profiles are accelerating the translation of CRISPR-based interventions from the laboratory into clinical and field applications, with profound potential to impact global health and sustainability.
Given the rapid pace of innovation in this field, the continuous evaluation of technological progress and its broader implications is crucial.

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