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Introduction to Special Issue: 2016 Translational Medicine and Bioengineering Conference

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Introduction to Special Issue: 2016 Translational Medicine and Bioengineering Conference

Bioengineering & Translational Medicine was launched in 2016 with the goal to highlight the scientific and technological issues relevant to the translational challenges of bioengineering science and technologies. Clinical translation of promising biological technologies can have a transformative impact on human health. Several advances in bioengineering have already had a huge impact in the diagnosis and treatment of human diseases. However, with rapid development of new technologies coming down the innovation pipeline, it is critical to develop streamlined pathways for their eventual translation to the clinic. The journal has been met with significant excitement by the scientific community.

Last year saw another milestone for AIChE and SBE in the field of *Bioengineering and Translational Medicine*. Specifically, a new scientific meeting, Translational Medicine and Bioengineering Conference, was launched to further highlight the significance of this topic. The conference was organized on November 12 and 13, 2016 in San Francisco, CA (<https://www.aiche.org/sbe/conferences/translational-medicine-and-bioengineering-conference/2016>), just ahead of AIChE's annual meeting. It brought together scientists, bioengineers, leaders from industry, and various stakeholders as part of a single-track conference format at the interface of innovative biological technologies and clinical translation.

Professors Ravi Kane and Mark Prausnitz from Georgia Tech were the inaugural co-chairs of the conference, and along with individual session co-chairs, organized an exciting program that brought forth cutting-edge translational bioengineering technologies in biopharmaceuticals, gene and drug delivery, immunoengineering, biomanufacturing, and stem cells and regenerative medicine in technical sessions dedicated to each of these topics. Each session had a strong mix of invited speakers as well as contributed platform presentations. The program also included a panel discussion on entrepreneurship in which entrepreneurs from academia, industrial leaders, and technology transfer specialists shared invaluable thoughts and experiences in the path traveled from the lab bench to the clinic. The conference provided a unique platform for bioengineers to present innovative advances at different stages of the translational spectrum.

This special issue of *BioTM* features contributions from some of the participants in this conference as well as other scientists in the field. Prof. Christopher Jewell (U. Maryland) and coworkers review the latest advances in immunomodulatory biomaterials for applications

in regenerative medicine and tissue engineering.¹ Prof. Subbu Venkatraman (Nanyang Technological University, Singapore) and coworkers' timely review on translation of stents and occluders covers key advances of these devices in cardiovascular medicine.² In addition to these outstanding review articles, this special issue also includes six research reports. Prof. Eniola-Adefeso (U. Michigan) and coworkers report a detailed molecular-level study of adhesion of PLGA nanoparticles in human blood flow, with significant implications for drug delivery.³ Prof. Robert E. Atkins Jr. (U. Delaware) and coworkers describe the use of a hydrogel for modulating the elasticity of arteries following isolation using skeletonization.⁴ Prof. Jacob Elmer (U. Villanova) and coworkers compare different extracellular oxygen carriers from invertebrates as potential blood substitutes.⁵ Prof. Steven Jay (U. Maryland) and coworkers report the impact of biomanufacturing-related operating parameters on the production and biological activity of extracellular vesicles derived from mesenchymal stem cells.⁶ Prof. Sean Palecek (U. Wisconsin) and coworkers describe the generation of endothelial cells from human pluripotent stem cell-derived epicardial cells.⁷ Prof. Benjamin Keselowsky (U. Florida) and coworkers report the development of blend polymeric microparticles for T-cell activation.⁸

We invite you to read the excellent array of review and research articles in this issue of *Bioengineering and Translational Medicine*.




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