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Bio-inspired Materials for Biomedical Engineering (Wiley-Society for Biomaterials)

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This book covers the latest bio-inspired materials synthesis techniques and biomedical applications that are advancing the field of tissue engineering. Bio-inspired concepts for biomedical engineering are at the forefront of tissue engineering and regenerative medicine. Scientists, engineers and physicians are working together to replicate the sophisticated hierarchical organization and adaptability found in nature and selected by evolution to recapitulate the cellular microenvironment. This book demonstrates the dramatic clinical breakthroughs that have been made in engineering all four of the major tissue types and modulating the immune system. Part I (Engineering Bio-inspired Material Microenvironments) covers Bio-inspired Presentation of Chemical Cues, Bio-inspired Presentation of Physical Cues, and Bio-inspired Integration of Natural Materials. Part II (Bio-inspired Tissue Engineering) addresses tissue engineering in epithelial tissue, muscle tissue, connective tissue, and the immune system.

About the Author Anthony B. Brennan is the Margaret A. Ross Endowed Professor of Materials Science and Engineering and a professor of Biomedical Engineering at the University of Florida. He received his Bachelor's degree in chemistry from State University of New York at Potsdam in 1975 and his Ph.D. in Materials Engineering Science from Virginia Polytechnic Institute and State University in 1990. Dr. Brennan has been a member of the faculty at the University of Florida since 1991. His materials focus is on the structure of the interphase between the cell and the substrate. Chelsea M. Kirschner obtained a Bachelor's degree in Materials Science and Engineering at the University of Florida in 2006, and her Ph.D. in Biomedical Engineering from the University of Florida in 2010. Dr. Kirschner completed a postdoctoral research fellowship at the University of Colorado at Boulder in 2013. Her research focused on the influence of spatially and temporally patterned hydrogel architectures and chemistries on adult stem cell shape and differentiation. She is currently a Biomedical RD Engineer at Sharklet Technologies in Aurora, CO.