Orthopedic Biomaterials

Bingyun Li • Thomas Webster
Editors

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Progress in Biology, Manufacturing, and Industry Perspectives

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Preface

It is clear that advances in orthopedic biomaterials need strong input from clinicians as well as those in industry and academia. Neither can operate in a vacuum to provide solutions that will help bone health. This book provides just that. We have chapters from clinicians, industry and academia to discuss Orthopedic Biomaterials: Progress in Biology, Manufacturing, and Industry Perspectives.

Importantly, while many biomaterial textbooks have omitted the merging of these key constituencies, they have also neglected to emphasize the role that manufacturing plays in biomaterial properties—and this could not be any more important today when we think of soft biomaterials, nanofabrication, new polymers, self-assembled materials, and biologics to name a few. Think of all of the clinical input and academic research that goes into generating the next generation of biomaterials only to be lost due to poor manufacturing processes? Or, the development of an elegant nanofabrication process to modify bone screws that can not be implemented clinically due to cost or manufacturing constraints? Or, a new bone tissue engineering material that can be manufactured, but not implanted since clinicians do not have the necessary tools to do so? Or, what about, biologics that can not be purified during manufacturing without altering their attractive bone growth properties?

All of these issues are so intertwined, yet, unfortunately, many are only realized at the end when researchers try to commercialize technologies. And then follows frustration, wasted resources, and lost technologies. This book puts such issues front and center and in doing so, encourages us all to think about them before one single experiment is conducted. Only then, will we satisfy our growing needs for improved orthopedic biomaterials.

So, please enjoy this book and think of your own approaches that need to integrate biology and manufacturing from an industry perspective before you conduct your first experiment! We will all be better for it and, yes, then the train does not need to stop!

Morgantown, WV, USA — Bingyun Li
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