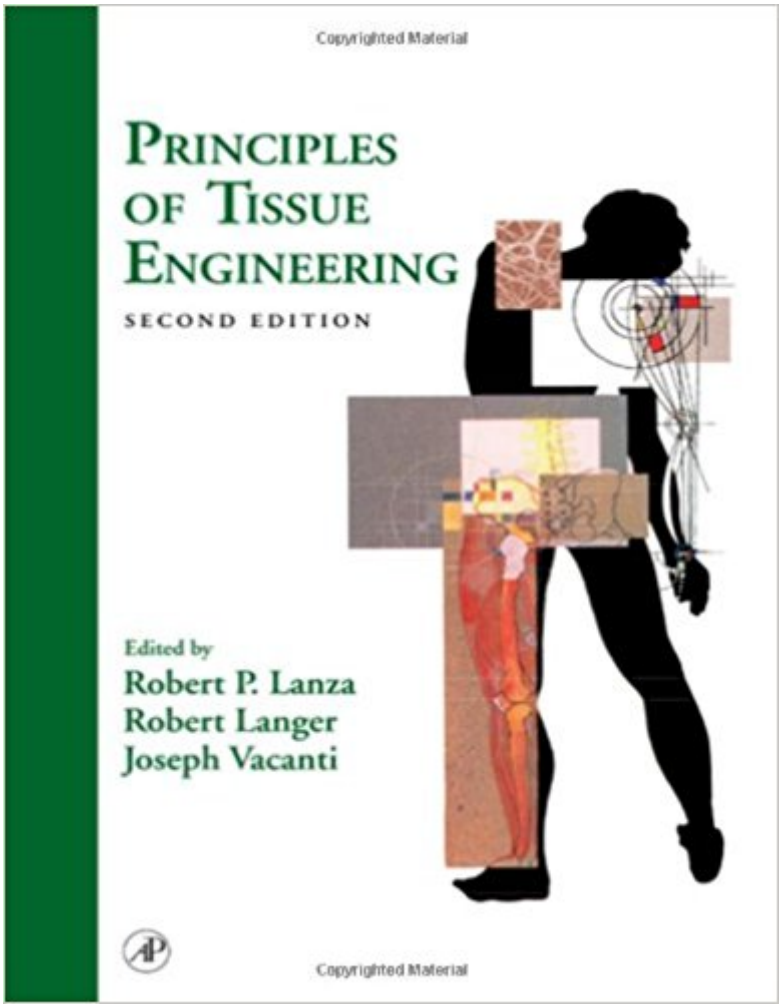
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Principles Of Tissue Engineering, Second Edition



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Synopsis

The opportunity that tissue engineering provides for medicine is extraordinary. In the United States alone, over half-a-trillion dollars are spent each year to care for patients who suffer from tissue loss or dysfunction. Although numerous books and reviews have been written on tissue engineering, none has been as comprehensive in its defining of the field. Principles of Tissue Engineering combines in one volume the prerequisites for a general understanding of tissue growth and development, the tools and theoretical information needed to design tissues and organs, as well as a presentation of applications of tissue engineering to diseases affecting specific organ systems. The first edition of the book, published in 1997, is the definite reference in the field. Since that time, however, the discipline has grown tremendously, and few experts would have been able to predict the explosion in our knowledge of gene expression, cell growth and differentiation, the variety of stem cells, new polymers and materials that are now available, or even the successful introduction of the first tissue-engineered products into the marketplace. There was a need for a new edition, and this need has been met with a product that defines and captures the sense of excitement, understanding and anticipation that has followed from the evolution of this fascinating and important field. Key Features* Provides vast, detailed analysis of research on all of the major systems of the human body, e.g., skin, muscle, cardiovascular, hematopoietic, and nerves* Essential to anyone working in the field* Educates and directs both the novice and advanced researcher* Provides vast, detailed analysis of research with all of the major systems of the human body, e.g. skin, muscle, cardiovascular, hematopoietic, and nerves* Has new chapters written by leaders in the latest areas of research, such as fetal tissue engineering and the universal cell* Considered the definitive reference in the field* List of contributors reads like a "who's who" of tissue engineering, and includes Robert Langer, Joseph Vacanti, Charles Vacanti, Robert Nerem, A. Hari Reddi, Gail Naughton, George Whitesides, Doug Lauffenburger, and Eugene Bell, among others

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Customer Reviews

"It is comprehensive and up to date...the whole project represents a remarkable effort, coping as it does with an explosion of knowledge in this area. ...there are quite a number of reviews of this field, or parts of it, but relatively few text books, and certainly none as comprehensive as this. ...This is a timely book and truly reflects the enormous effort that is being put into tissue engineering at the present time. Highly recommended."--E.J. Wood in RETINOIDS (2001)

The first edition of Principles of Tissue Engineering, published in 1997, was rapidly recognized as the definitive reference in the field. Since that time, the discipline has grown tremendously, and few experts could have predicted the explosion in the knowledge of gene expression, cell growth and differentiation, the variety of stem cells and new polymers, or even the successful introduction of the first tissue-engineered products into the marketplace. Principles of Tissue Engineering, Second Edition defines and captures the evolution of this fascinating and exciting field. This comprehensive reference covers the prerequisites for a general understanding of tissue growth and development, the tools and theoretical information needed to design tissues and organs, and the applications of tissue engineering to diseases affecting organ systems.Key Features* Essential to anyone working in the field* Vast, detailed analysis of research with all of the major systems of the human body, e.g., skin, muscle, cardiovascular, hematopoietic, and nerves* Contributions by leaders in the latest areas of research, such as fetal tissue engineering and stem cells

This is a great book, covering most details of its field. It describes the physicians (and their patients) dream of substituting organs and cells and it also shows, how mankind could not solve problems ÃƒÂ Ã Â¿Ã Â up to now. History of artificial organs lacking the full function is one point, but the focus is on cells and their ability to build complete organs ÃƒÂ Ã Â¿Ã Â and therefore the book looks on the pathway for the future of organ substitution.The introduction covers some main ideas of tissue engineering ÃƒÂ Ã Â¿Ã Â what do we want ÃƒÂ Ã Â¿Ã Â what are we able to do ÃƒÂ Ã Â¿Ã Â what do we still have to get knowledge of. After a short review of the history, the

essentials of cell biology (Growth, Differentiation) are being introduced. The reader should have an idea of developmental biology to be able to follow topics like induction and morphogenesis. The authors emphasize the importance of the extracellular matrix as one of organ-prosthesisÃƒÂ Ã Â¿Ã Â main building blocks (ECM = scaffold; cells = function; cell signalling = integration and physiology).The second part describes technical aspects of in-vitro organ synthesis: tissue culture and ECM, tissue culture und growth factors, bioreactors and vascularization. The third part continues with in-vivo techniques of organ reparation, exemplified by methods for substitution of the ECM of skin, peripheral nerves and meniscus.Parts 4 ÃƒÂ Ã Â¿Ã Â 6 develop models for the substitution of the ECM (Collagen, BioPolymers), their implantation in the receiving organism and the resulting immunologic problems (emphasized).Parts 7 ÃƒÂ Ã Â¿Ã Â 20 are concerned with the organs themselves. After few words about stem cells and gene therapy the book explains reconstruction and substitution methods for breast, heart and blood vessels, Cornea, endocrine glands, liver (very good), kidney and haematopoietic system. Biomechanical problems are outlined in the part about the musculoskeletal system. On this place tissue engineering celebrates its oldest success (cartilage substitution). Today innervation processes are being focused.The book continues with substitutes for the senses (ear and eye), nerve cells, nerve regeneration and neural stem cells. Dents and skin could be all to make an ill patient ÃƒÂ Ã Â¿Ã Â healthyÃƒÂ Ã Â¿Ã Â by substitutes, one might think. But no, western medicine also knows something about substitutes for womb and placentaÃƒÂ Ã Â¿Ã Â On me the book made a good impression. The only point is: itÃƒÂ Ã Â¿Ã Â s quite too much text and too few pictures. It addresses medicals after their exams, practicing physicians and biologists. Chapters focus on the basic principles. There is a large number of links to more detailed publications.

A few too many equations, but clearly the most comprehensive text in the field. Contributors list reads like a 'Who's Who' of tissue engineering.

The book is mistitled as 'Principles' since it does not really do justice to the foundations of the field. It is more of a compilations of the research work of a 'few' investigators in the field.

A vast, detailed summary of the latest advances in tissue engineering.

A very rare book on a rare topics

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