

Transport Phenomena in Biological Systems

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The efficient transport of molecules is essential for the normal function of cells and organs and the design of devices for medical applications and biotechnology. *Transport Phenomena in Biological Systems* provides an introduction to the integrated study of transport processes and their biological applications.

The book consists of four sections, which cover physiological fluid mechanics, mass transport, biochemical interactions and reactions and the effect of mass transfer, and transport in organs and whole organisms. In order to provide students with a firm understanding of biological transport processes, engineering concepts are provided within the context of specific biological problems. Examples and problems elaborate on the concepts in the text or develop new concepts. The introductory chapter presents a brief overview of transport processes at the cell and tissue level and relevant concepts in cell biology and physiology are presented throughout the text. An appendix provides an overview of relevant mathematical concepts used in the text. The problems at the end of each chapter require either analytical solution or numerical solution using MATLAB®.

This book can be used for both introductory and advanced courses. Advanced topics covered include transport in the kidney, oxygen transport, tumor-mediated processes, cell adhesion, transport of drugs in tumors, and body pharmacokinetic models. References are provided for

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