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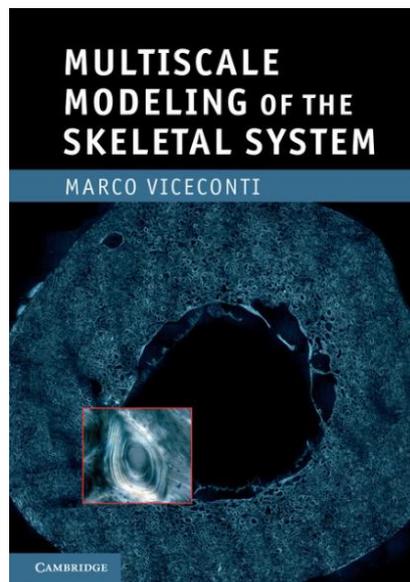
## Multiscale modelling of the Skeletal System

Cambridge Press

Marco Viceconti – University of Sheffield, U.K.

Integrative approaches to biomedical research promise to advance our understanding of the human body and physiopathology of diseases. In this book, the author focuses on the skeletal system, demonstrating how multiscale modeling can determine the relationship between bone mechanics and disease.

Introductory chapters explain the concept of integrative research, what a model is, predictive modeling, and the computational methods used throughout the book. Starting with whole body anatomy, physiology and modeling, subsequent chapters scale down from bone and tissue levels to the cellular level, where the modeling of mechanobiological processes is addressed. Finally, the principles are applied to address truly complex, multiscale interactions. Special attention is given to real-world clinical applications: one in pediatric skeletal oncology and one on the prediction of fracture risks in osteoporotic patients. This book has wide interdisciplinary appeal and is a valuable resource for researchers in mechanical and biomedical engineering, quantitative physiology and computational biology.



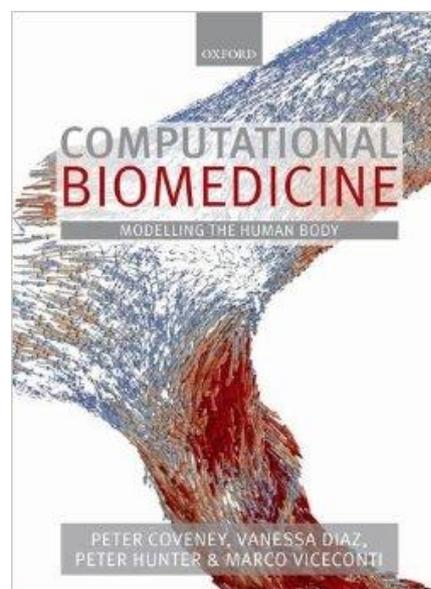
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## Computational Biomedicine

Oxford press

Peter Coveney, Centre for Computational Science, University College London,  
Vanessa Diaz, Department of Mechanical Engineering, University College London,  
Peter Hunter, Auckland Bioengineering Institute and Marco Viceconti, Department of Mechanical Engineering, University of Sheffield

Computational Biomedicine lays the foundations for a new approach to the subject - one that unifies the different strands of a broad-ranging subject, and demonstrates how computational biomedicine is a powerful tool with the potential to revolutionise our understanding of the human body, and the therapeutic strategies available to maintain and protect it. Written by a team of world-leading experts in the field, it explores the modelling of physiological systems at different scales - cells, tissues, organs - before considering the issues around biomedical computing, and data collection and analysis. It emphasises how a theoretical understanding of computational biomedicine translates into practice, with illustrative examples and case studies used throughout. Exploring how we can achieve the goal of modelling a virtual human, Computational Biomedicine is the perfect introduction to the subject for anyone new to the field, from student to researcher.



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