

1. Record Nr.	UNINA9910156257903321
Autore	Ciarletta Pasquale
Titolo	Mathematical Models and Methods for Living Systems : Levico Terme, Italy 2014 // by Pasquale Ciarletta, Thomas Hillen, Hans Othmer, Luigi Preziosi, Dumitru Trucu ; edited by Luigi Preziosi, Mark Chaplain, Andrea Pugliese
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-42679-6
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (XI, 321 p. 111 illus., 78 illus. in color.)
Collana	C.I.M.E. Foundation Subseries ; ; 2167
Disciplina	570.15118
Soggetti	Biomathematics Medicine Applied mathematics Engineering mathematics Mathematical and Computational Biology Biomedicine, general Applications of Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Preface -- Cell-based, continuum and hybrid models of tissue dynamics -- The Diffusion Limit of Transport Equations in Biology -- Mathematical Models of the Interaction of Cells and Cell Aggregates with the Extracellular Matrix -- Mathematical modeling of morphogenesis in living materials -- Multiscale computational modelling and analysis of cancer invasion.
Sommario/riassunto	The aim of these lecture notes is to give an introduction to several mathematical models and methods that can be used to describe the behaviour of living systems. This emerging field of application intrinsically requires the handling of phenomena occurring at different spatial scales and hence the use of multiscale methods. Modelling and simulating the mechanisms that cells use to move, self-organise and develop in tissues is not only fundamental to an understanding of embryonic development, but is also relevant in tissue engineering and

in other environmental and industrial processes involving the growth and homeostasis of biological systems. Growth and organization processes are also important in many tissue degeneration and regeneration processes, such as tumour growth, tissue vascularization, heart and muscle functionality, and cardio-vascular diseases.

---