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| Nota di contenuto | 1 Extracellular matrix and tissue regeneration, Zygmunt Mackiewicz, Yrjö Tapio Konttinen, Emilia Kaivosoja, Vasily Stegajev, Hanoch Daniel Wagner, Jaakko Levón and Veli-Matti Tiainen -- 2 Stem cell niche, Chenhui Wang, Jun Chen, Pei Wen, Pei Sun and Rongwen Xi -- 3 Stem cells and asymmetric cell division, Rita Sousa-Nunes and Frank Hirth -- 4 Stem cells in the developing and adult nervous system, Fumitaka Osakada and Masayo Takahashi -- 5 Epigenetic mechanisms regulating the transition from embryonic stem cells towards a differentiated neural progeny, Marijn Schouten, Nik Papaloukas, Pascal Bielefeld, Silvina A. Fratantoni and Carlos P. Fitzsimons -- 6 Mathematical models in stem cell differentiation and fate predictability, Wayne M. Eby and Natalia Coleman -- 7 Organ and appendage regeneration in the axolotl, Johanna E Farkas, Piri Eler, Polina D Freitas, Alexandra Sweeney, and James R Monaghan -- 8 Development and regeneration of the vertebrate brain, Brian Key -- 9 Role of innate immune signaling in nuclear reprogramming, Shu Meng, Palas Chanda and John P. Cooke -- 10 Cardiac regeneration in zebrafish, Chi-Chung Wu and Gilbert Weidinger -- 11 Genetics and regeneration in vertebrates, Elizabeth |

Sommario/riassunto

Regenerative medicine is the main field of groundbreaking medical development and therapy using knowledge from developmental and stem cell biology, as well as advanced molecular and cellular techniques. This collection of volumes on Regenerative Medicine: From Protocol to Patient, aims to explain the scientific knowledge and emerging technology, as well as the clinical application in different organ systems and diseases. International leading experts from all over the world describe the latest scientific and clinical knowledge of the field of regenerative medicine. The process of translating science of laboratory protocols into therapies is explained in sections on regulatory, ethical and industrial issues. This collection is organized into five volumes: (1) Biology of Tissue Regeneration, (2) Stem Cell Science and Technology, (3) Tissue Engineering, Biomaterials and Nanotechnology, (4) Regenerative Therapies I, and (5) Regenerative Therapies II. The textbook gives the student, the researcher, the health care professional, the physician and the patient a complete survey on the current scientific basis, therapeutical protocols, clinical translation and practiced therapies in regenerative medicine. Volume 1 contains eleven chapters addressing the latest basic science knowledge on the "Biology of Tissue Regeneration". The principles of cell regeneration control by extracellular matrix and the biology of stem cell niches are explained. Depicted are the principles of molecular mechanisms controlling asymmetric cell division, stem cell differentiation, developmental and regenerative biology, epigenetic and genetic control as well as mathematical modelling for cell fate prediction. Regenerative biology of stem cells in the central nervous and cardiovascular systems leading to complex tissue regeneration in the model species axolotl and zebrafish, as well as the impact of immune signalling on nuclear reprogramming are outlined. These up to date accounts gives the readers advanced insights into the biological principles of the regenerative processes in stem cells, tissues and organisms. .