

Somatic stem cells - Methods and protocols
Shree Ram Singh (ed), 2012
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Developmental and stem cell biology are certainly two hot topics in nowadays life sciences: Therefore an unrivalled resource, and a fascinating read, on these topics is wellcome. This is the case of the *Somatic stem cells. Methods and protocols* edited by Prof. Shree Ram Singh (mouse cancer genetics program, National Cancer Institute, Frederick, MD, USA). An outstanding team of contributors offer a 33-critical surveys on all of the biological and technical aspects underlying somatic stem cells (SSC) biology. In fact the chapters cover every aspects of SSC biology, including the disease's modeling, from their identification, isolation and characterization from different tissues and organs to their expansion, purification and clinical use for cellular therapies. Particularly usefull is the idea to work out the chapters all with the same structure: very short introductory remarks, detailed step by step methods, the list of the necessary reagents, materials, instruments and a final section warning about troubleshooting so that one can avoid known pitfalls. The nearly six hundred pages are worthy to go through by molecular, cell and developmental biologists both experienced and newcomers since the three parts in which the book is divided are a wonderful source of interrelated topics highlighted in different animal models spanning from the lower organism like the fascinating planarians to the more familiar murine and human models. The first chapter is intended as the hopeful framework presenting the *current thoughts on the*

therapeutic potential of stem cell and in fact, eventhough focused on mesenchymal stem cells, is telling the reader about the challenges and the practical opportunities we are handling in SSC biology when talking of SSC niche, the action of interferon gamma and the cytokines and their role in controlling the stem cells pluripotency. Likely the reader would have welcome some more chapters in this part I introduction up against the 29 chapters of part III (one more interesting than the other, quite difficult to say which of these chapters is catching more the reader attention and interest) devoted to the SSC studies in murine and human model.

Should the chapters be sectioned by cell types with an introductory chapter would likely have rendered much more easier the reading for those are not well familiar with the topics. Having say that, I must stress for the benefit of the reader that no one single aspects of SSC biology is missed. I was (for my personal background) particularly interested in SSC from umbilical cord and their potential application for the generation of functional pancreatic islets, as well as from dental pulp (both of which are noncontroversial source of stem cells). The detection and isolation of cancer stem cells and the labeling by nanoparticles (quantum dots, something so interesting to cyto- and histochemists!) of stem cells to track their *in vivo* brain distribution are readings that give hope for the needed therapies we are waiting for. Part II is a fascinating three chapters section deserving a particular mention, since it addresses the stem cell biology in models like the *Drosophila* larval brain and midgut and the regenerative blastema in flatworm of the *Dugesia japonica* species.

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