Regenerative medicine and cell therapy
Hossein Baharvand and Nasser Aghdami (eds), 2012
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Cell therapies are clinical practices already by decades in fields like blood tumors and severe burns, but the term itself when associated with regenerative medicine switches on a cascade of imaginery thoughts that risk to create false hopes; in other words, the imaginary idea that physicians can cure all of the diseases, since each day the media report of some very important advance in stem cell biology. This is a mistake, mirrored by the downbeat idea that speculators are pledging false possibilities selling illusions of miracle cures. Well, the book edited by Professors Hossein Baharvand and Nasser Aghdami (Royan Institute for stem cell biology and technology, Tehran, Iran), two distinguished and recknown scientists, make the clinical application of stem cell therapies clear.

The book is intended mainly for clinicians but has so many interesting aspects for stem cell biologists as well. The fourteen chapters mainly focus on neurodegenerative diseases that can be treated with cell therapies (Alzheimer, Parkinson, Huntington, motor neuron and retinal diseases), cardiac, musculoskeletal, pancreatic and liver diseases. Two chapters are devoted to the derivation of stem cells from the germ line and the cord blood, two noncontroversial sources of stem cells that already find innovative (fertility preservation) and well established (blood tumors) clinical therapies by the use of stem cells which can be derived from those tissues, not speaking of the possibility to induce those very same cells to acquire different phenotypes in front of the technical ability acquired by biologists to induce their genetic reprogramming using defined culture cocktails. As for the neurological disorders there is a special focus on the therapeutic strategy of repairing neuronal subtypes, differentiated from induced pluripotent stem cells which are in turn derived from the fibroblasts of the affected patients, and than to use these functional neurons to treat the patients. A great hope comes from the reading of the two chapters devoted to diabetes, where we are told that the islet transplantation procedure (that already involved more than 30,000 patients worldwide from the first 1967 transplant) and the xenotransplantation of pig islets are challenged by the unthinkable acquired knowledge of the scientific community to get a direct genetic reprogramming of liver to pancreas. This thanks to the study of the pancreatic and duodenal homeobox 1 (Pdx1) gene which act as a *master* regulator of the molecular cascade of events that firstly specify the pancreas and then the formation of beta cells. Something to teach to our *reductionist* students !

Finally, I think this is a book where histo- and cytochemical techniques are hided behind the multifaced fascinating presentation of the therapeutic possibilities, but they are there: grounding these promising possibilities.

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