

Human embryonic stem cells handbook**Kursad Turksen (ed)****Methods in molecular biology; vol. 873, 2012****Humana Press – Springer Verlag, Heidelberg****ISBN: 978-1-61779-793-4****Pages: 324; Figures: 53; €109,95**

After the Nobel prize in physiology or medicine was awarded jointly to Sir John Gurdon and Shinya Yamanaka for the discovery that mature cells can be reprogrammed to become pluripotent, it became imperative to write down the review for a book entirely devoted to human embryonic stem cells (hES), those cells that are a urgent need for researchers, those cells that rekindle the ethical debates and finally, last but not least, those cells whose study paved the way to obtain induced pluripotent stem cells by the OSKC's Yamanaka method (the OSKC acronym refers, for those not familiar with the topic, to the four stemness genes used to transfect somatic fibroblasts: Oct4, Sox2, Klf4 and c-Myc).

This imperative need is simply due to the fact that the book edited by Prof. Kursad Turksen (regenerative medicine program, Ottawa hospital research Institute) cover the whole range of topics related to cellular stemness and thus so many scholars should be interested in. I appreciated so much the initial statement done by Prof. Turksen that *...significant challenges remain before their (i.e., hES) potential for restoration and regeneration processes in patients can be realized*. This statement is the conceptual framework within which the twenty chapters of the books are spanning, dealing with methods and clear-cut protocols to isolate, molecularly characterize, culture and expand hES. Still difficult remains to handle the intrinsic variability of hES with

the aim to standardize the protocols for both their isolation and characterization, necessary prerequisite for both efficient expansion and differentiation in defined media culture. Only the fulfillment of all of these requirements will provide the physicians with the needed cells to carry on cellular therapies in the new vision of the regenerative medicine.

To achieve these goals biologists need robust protocols (for isolation, characterization, expansion and differentiation) to provide accountable clinically useable cells. In other words, to treat human diseases there is the necessity of cell factory providing gold grade cells: large amounts of clean and stable cells at a specific cytodifferentiative step and which differentiative fate is totally under full researcher's control. The book provide an impressive number of protocols for each of the four pipeline steps so that one can compare each of them and the hopefully standardized protocols will shortly be developed by the entire scientific community. This approach has another relevant advantage: it is a usefull teaching method for those enter the fascinating field of hES biology. Quite interesting to me was the reading of the hES derivations (isolation and expansion) from poor quality embryos and from aneuploid embryos as well as the stem cells culture systems in suspension.

Several chapters deal with the derivation of neuroprogenitors cells from hES which is a quite well understandable choice of the Editor due to the devastating incidence of both neurodegenerative diseases and neural strokes face the behind schedule of their hyped dressed up science.

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