Pluripotent stem cells - Methods and protocols
Uma Lakshmipathy and Mohan C. Venturi (eds), 2013
Springer protocols
Methods in Molecular Biology, vol. 997
Humana press, Springer Verlag, Heidelberg
ISBN: 978-1-62703-347-3
Pages: 292; Figures: 47; Color figures: 26; €114,39

The 2012 Nobel prize for Physiology or Medicine has been awarded conjunctely to Sir John Gurdon and Shinya Yamanaka *for the discovery that mature cells can be reprogrammed to become pluripotent,* as during the syxties John Gurdon challenged the dogma that the specialised cell is irreversibly committed to its fate and just few years ago Shinya Yamanaka was the first to induce mature cells to reverse their development and turn back into induced pluripotent stem cells.

This premium marks the avalanche of studies that during this last decade has been carried out on all of the types of stem cells for several purposes (including translational medicine by cellular therapies based on stem cells) from basic research to grounded clinical therapies. These studies along the past few years highlight the substantial progress has been made in better defining (and in the understanding of) the stemness concept.

This fact is something of particular value since the genetic epistemology that resides behing the stem cell definition is frequeltly used and abused to legiferate, to promise and sell to the market therapies and generally speaking to rise hypes and hopes at the intersection of ethics, clinical therapies, science and law, funding basic research, granting patents, cloning and embryo status. Thus, it is particularly wellcome a book devoted to the basic of the pluripotent stem cells (the stem cells showing the great developmental plasticity) and detailing how to generate them (part I, seven chapters), to culture and to differentiate pluripotent stem cells (part II, six chapters), to characterize them (part III, five chapters) and finally on how to modify them (part IV, four chapters). Quite relevant to all of the (hot) issues related to stem cell biology is the chapter by Hossein Baharvand and Seyedeh-Nafiseh Hassani on a simple and highly reproducible chemical approach to generate mouse embryonic stem cells from day 3.5 aged whole blastocysts: particularly appreciated is the fact that this system is highly efficient regardless of the genetic background, no matter it is a C57BL/6, BALB/c, DBA/2, FVB/N or NMRI. Well done, especially at the light of the capacity we reached in very few years to induce pluripotency without the use of the very famous Yamanaka's *fab four* and simply using proteins. All of the chapters are of great value and help in the every day lab working of the stem cell byologist, no doubt; however I have to tell about another chapter that captured my attention (but I am pretty sure each of the reader will find out their favoured from the chapter list), that of Ronald W. Abruzzese and Richard A. Fekete about the single cell gene expression analysis of pluripotent stem cells: there is no particular cleverness in saying that single-cell sequencing-based technologies will revolutionize whole-organism science considering the capacity of the technique to show the extreme heterogeneity and variability of stem cells.

This is a fact that must be dissected and fully understood before the use of pluripotent stem cells can become a reality in translational medicine, the objective of a *fast and furious* competition that we have to carefully scrutinize to avoid dangerous shortcuts (like that tragically occuring in these days in Italy with the governmental approval of a fake and unproven trial based on putative mesenchymal stem cells, STAMINA trial) for patients and science.

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