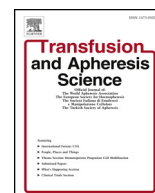




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Cell culture – Fact and fiction

Cees Th. Smit Sibinga^{a,*}, Jerard Seghatchian^b

^a IQM Consulting, Zuidhorn and University of Groningen, Netherlands

^b International Consultancy in Strategic Advices on Safety Improvements of Blood-Derived Bioproducts and Suppliers Quality Audit/Inspection, London, UK

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The *ex vivo* culturing of various types of human cells, both circulating in human blood and from solid tissue, has been explored for decades now, largely for research reasons. With the detailing of quality requirements and the need for continued quality management to reduce and contain risks, culturing of pluripotent stem cells into differentiated mature blood cells for transfusion practices seems to emerge out of fiction into reality. This development has been explored at limited laboratory level and unveiled a series of obstacles to become useful or even routine in clinical practice.

Questions raised are both of qualitative and quantitative type, besides the medical- and moral-ethical questions. What is fact and what is fiction?

Will cultured cells behave similar or even superior when transfused or used *in vivo* as compared to conventionally human derived and processed cells? Will their life cycle be similar or superior, with a longer half-life *in vivo*? Will they indeed be immunologically neutral and universal? Will these cultured cells be drug, internal climate and infection resistant? Will they have the same physiologic and pathophysiologic behaviour and overcome problems of related morbidity?

Will pluripotent stem cells originating from a human being be commercialized?

Will during, the culturing process over time, the molecular composition, architecture and construction of these cells, membranes and intracellular elements, remain consistent or change, and will these changes cause maleficent effects when transfused *in vivo*?

What will be the effect of industrial scaling up and how will that relate to the real clinical need? How frequent need source pluripotent stem cells to be refreshed or replaced? Will culture media and environments affect quality and functional efficacy? What if pharmaceutical industry claims the ownership and manufacturing rights and

develops commercial competition and market dominance? How would the current donor community experience such developments and what will be the effect on social solidarity and altruism? Will the 'Gift of Life' become a historical phenomenon, changing human affections into programmed artificial intelligence away from compassion and empathy?

So far literature has expressed a manifold of expected advantages, but not really considered the medium and long term disadvantages, both in manufacture, medicine and psychology [1]. Do we need to reconsider the 1948 fundamental and universal human rights to live with [2]? Will we, as a unique creation, change ourselves in lifetime slaves of our human intelligence and advancing technologies?

Although the enlightenment since the 18th Century and before [3] shows an impressive scientific, technical, industrial, environmental and community development taking place at an increasing pace, it is clearly manifesting only in a limited part of the world. COVID-19 pandemic dramatically unveils our shortcomings, particularly in the social, commercial, political, ethical and health environments [4]. The fact that we are still unable to fully accommodate our existence with the principles of the universal human rights and strive to escape in advanced technologies and fictitious solutions, arguing for a privileged development like cell culturing, does not really provide a clear justification.

It is obvious there is a lot of important existential food created, whether cultured or naturally grown and prepared, for genuine human thoughts now and forever!

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* Corresponding author.

E-mail addresses: c.sibinga@planet.nl (C.T. Smit Sibinga), jseghatchian@btopenworld.com (J. Seghatchian).

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