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Abstract

**Transforming cell culture protocol to cellular manufacturing process:
Looking back at the bioartificial liver and looking forward to the stem cell**

In the past few years stem cells have inspired much hope in regenerative medicine. One ponders the transformation of the many discoveries in stem cells to routine practiced processes. Most stem cell applications will require extensive in vitro handling of cells, from isolation, cultivation, directed differentiation, to product cell separation and derivatization. Some require large quantities of cells for clinical applications, while others do not. All will share a common requirement: the production must be robust and generate product cells of consistent quality. Unlike the established manufacturing process of recombinant protein biologics, stem cell applications will likely see greater variation in their cell source and fluctuations in product quality. In devising stem cell based bioprocess, careful thought must be given to transform the laboratory protocols to robust processes. Much insight could be gained from many applications in tissue engineering. In this presentation, lessons learned from a bioartificial trial will be drawn to shed light on the development of stem cell technology.

Biography

Dr. Hu's research in cell culture technology deals with conventional and macroporous microcarriers, suspension culture, and cell-recycling systems. His recent work in cell culture involves the metabolic control of cell's physiological state and genome wide gene expression analysis of their regulation. He co-authored the textbook Bioseparations. He initiated the Engineering Foundation Conferences on Cell Culture Engineering more than a decade ago which has been among the most important forum of cell culture processing. Recent research activities of Dr. Hu also encompass metabolic engineering of antibiotic producing streptomycetes, and tissue engineering employing stem cells.