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Expert Spotlight: Increasing the production efficacy of iHPCs using StemRNA™ technology

Bob Annand is our Senior Technical Product Manager and resident stem cell expert. He has over a decade of experience in advancing new therapeutics, and has a PhD in biochemistry.

Bob joined REPROCELL in 2016 when the company acquired Stemgent, a USA-based company specialising in stem cell products and services . Since then, he has assisted in the establishment of several of our stem cell products - including our 3rd Gen StemRNA Reprogramming Kit - and also hosts our webinar series, which is available on YouTube.

During REPROCELL's move into the clinical stem cell space, Bob has assisted with the marketing of this service and answering any customer questions. He has also authored a number of journal articles and written for publications, including European Biopharmaceutical Review and BioInformant.

Publications

Generation of Human iPSCs by Reprogramming with the Unmodified Synthetic mRNA (2020)

Simultaneous Determination of CYP450 Induction and Metabolism in Metabolically Competent Human Hepatocyte Cell Line HepaRG (2009)

Caspase-1 (interleukin-1beta-converting enzyme) is inhibited by the human serpin analogue proteinase inhibitor 9 (1999)

Regulation of Protein Phosphatase 2A Activity by Caspase-3 during Apoptosis (1998)

Evaluation of Cryopreserved, Differentiated HepaRG Cells for the Simultaneous Determination of CYP450 Induction and Metabolism

Expert Spotlight: Increasing the production efficacy of iHPCs using StemRNA™ technology

A key attribute of induced pluripotent stem cells (iPSCs) is their ability to differentiate into any cell type. However, iPSC quality can vary, depending on the reprogramming method used in their creation. Our scientists wanted to determine whether they could use RNA technology to generate hematopoietic progenitor cells (HPCs) at a higher efficacy than standard reprogramming techniques.

What are iPSC-derived hematopoietic progenitor cells (iHPCs)?

iHPCs are a type of blood stem cell generated by differentiating iPSCs. They have potential for use as an autologous treatment for blood cancer and disorders, and would provide more treatment options for patients.

What reprogramming technology did you use?

For this case study, we used our StemRNA 3rd Gen Reprogramming Kit, as iPSCs created using this technology can easily be differentiated into mature phenotypes. Using StemRNA, we saw the emergence of CD43+ iHPCs from ten days following differentiation.

How does using the StemRNA 3rd Gen Reprogramming Kit to make hiPSCs compare to other reprogramming methods?

In addition to establishing a iHPCs differentiation protocol, we also wanted to compare our reprogramming methodology to others on the market. We compared our cells to two other episomal lines from an external company, and found that our scientists were able to produce more than six times the number of CD43+ iHPCs using the StemRNA 3rd Gen Reprogramming Kit.

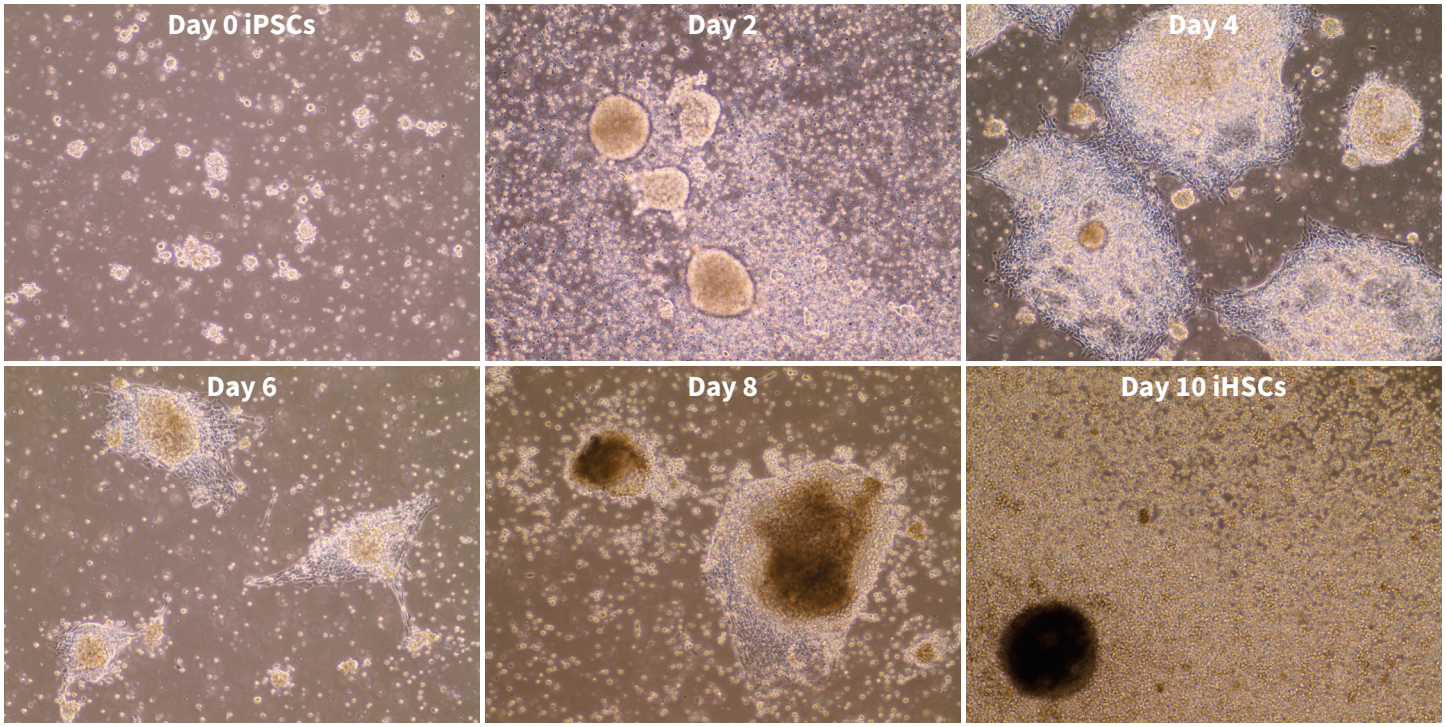

Figure 1. Example of iPSC Differentiation. Embryoid Body (EB) formation and emerging induced Haematopoietic Progenitor Cells (iHPCs) derived from REPROCELL's iPSCs are shown at different stages of the differentiation protocol. On day 10, non-adherent cells are harvested from the culture supernatant and analysed by flow cytometry demonstrating a high conversion of human iPSCs to CD43+.

For further information on REPROCELL's human fresh tissue studies, visit www.reprocell.com