Abstract

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Facilitating Cardiac Atrial Appendage Stem Cells' Road to the Clinic: Optimizing a Cardiomyogenic Differentiation Protocol

Ellen Heeren
Universiteit Hasselt,Belgium

Abstract

Heart failure is primarily caused by myocardial infarction (MI). MI results in irreversible loss of massive amounts of cardiomyocytes. To date, there is no curative therapy to restore cardiac function. However, a stem cell type discovered by our research group, the cardiac atrial appendage stem cell (CASCs), presents itself as a unique candidate for myocardial regeneration (1). For the CASCs therapy to become clinically applicable in vitro potency testing is required for quality control purposes. To this end, the commercial STEMdiff Cardiomyocyte Differentiation Kit was compared to a tailor made protocol for cardiac differentiation of induced pluripotent stem cells (Burridge). Cardiac marker expression was measured using qRT-PCR and immunocytochemistry. Analysis showed that differentiation according to STEMdiff induced significantly higher expression of early cardiac markers transcription factor) compared to the Burridge protocol. No significant differences were observed between the expression of late cardiac markers myosin heavy chain 6 (MYH6) and troponin T (TnT) in CASCs differentiated with STEMdiff compared to Burridge.

Biography

Ellen Heeren has obtained her master's degree in biomedical sciences from Hasselt University, Belgium. She completed an internship at the University of California, San Francisco, United States, as part of her master's thesis.

Although being at the mere start of her career, she has participated in two peer reviewed articles.

