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New method for reducing tumorigenicity in induced pluripotent stem-cell based therapies

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The potential for clinical use of induced pluripotent stem cell (iPSC) technology for transplant-based therapeutic strategies has previously been hindered by the risk of dysregulated cell growth, specifically the development of tumors. The ability to use etoposide treatment to halt teratoma formation in iPSCs for the treatment of heart disease, specifically acute myocardial infarction, is demonstrated in an article in *Stem Cells and Development*.

In the article 'Inhibition of DNA topoisomerase II selectively reduces the threat of tumorigenicity following induced pluripotent stem cell-based myocardial therapy' Saranya Wyles, Andre Terzic, Timothy Nelson, and coauthors, Mayo Clinic (Rochester, MN), discovered a strategy that alone or in conjunction with other methods could significantly reduce the risk of a tumorigenic event occurring. Their work demonstrates how pretreatment with genotoxic etoposide significantly lowered the threat of abnormal growths by removing the contaminated pluripotent cells and establishing an adjunctive therapy to further harness the clinical value of iPSC-derived cardiac regeneration.

"For anyone seeking to exploit iPSC technology in a clinical setting, the Mayo Clinic has described a strategy that significantly mitigates the risk of tumor development. Furthermore, the paper provides benchmark strategies for assessing the localization and persistence of cell-based treatments in a preclinical model," says Editor-in-Chief Graham C. Parker, PhD, The Carman and Ann Adams Department of Pediatrics, Wayne State University School of Medicine, Detroit, MI.

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More information: *Stem Cells and Development* online.liebertpub.com/doi/pdfp … 0.1089/scd.2014.0259

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