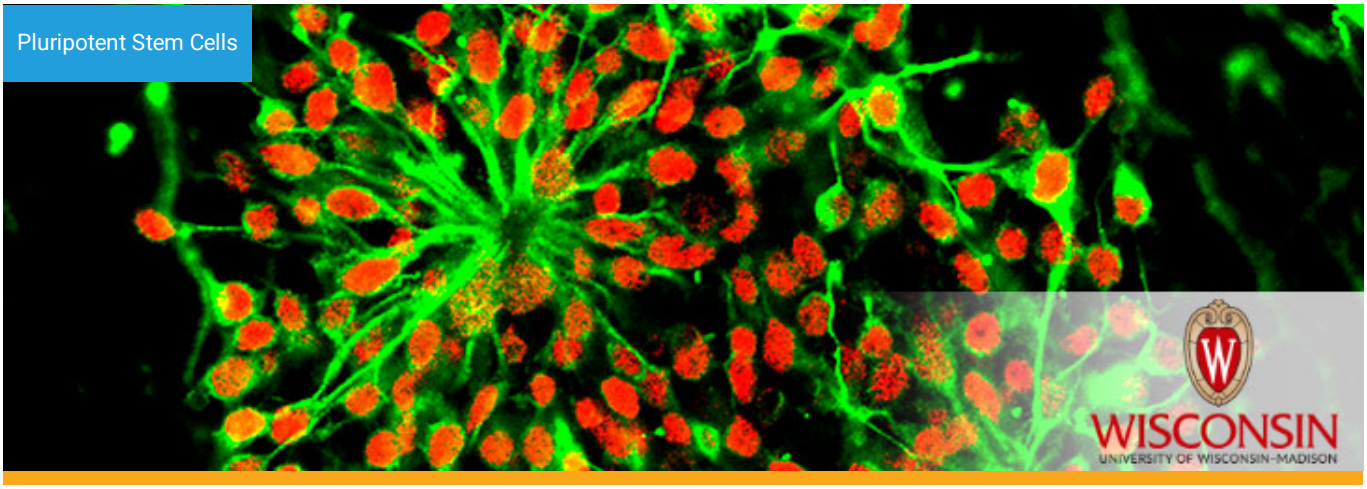

Generating Vasculogenic Cell Populations from Human Stem Cells

View U.S. Patent No. 9,868,939 in PDF format.

WARF: P130364US02

Inventors: Igor Slukvin, Akhilesh Kumar

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for differentiating human pluripotent stem cells to pericytes and smooth muscle cells.

Overview

Human pluripotent stem cells (hPSCs), either embryonic or induced, provide access to the earliest stages of human development. They also offer a starting point for deriving large numbers of vasculogenic cells that could be utilized for therapeutic tissue engineering, e.g., creating new blood vessels to treat peripheral artery disease.

To exploit this potential, methods are needed for guiding pluripotent cell differentiation *in vitro* and developing scalable sources of such cells.

The Invention

UW–Madison researchers have developed a method for generating substantially pure populations of vasculogenic cells (i.e., pericytes and smooth muscle cells) from induced pluripotent stem cells following their differentiation into mesenchymal colony-forming progenitors, called mesenchymoangioblasts (MABs).

The process includes culturing the progenitors in a serum-free medium under conditions that promote differentiation to MABs. Subsequently, the MABs are cultured in medium containing PDGFBB to obtain pericytes, or sphingosylphosphorylcholine (SPC) and transforming growth factor beta (TGFβ) to obtain smooth muscle cells.

Applications

- Producing pericytes and vascular smooth muscle cells from hPSCs
- Regenerative medicine
- Vascular tissue engineering (e.g., creating blood vessels *in vitro* or *in vivo* to revascularize damaged tissue or treat peripheral artery disease)

Key Benefits

- Method uses a well-defined mesodermal progenitor to produce pericytes and smooth muscle cells from pluripotent stem cells.
- Scalable
- Provides very specific surface markers for pericytes from pluripotent stem cells

Additional Information

For More Information About the Inventors

- Igor Slukvin

Tech Fields

- Pluripotent Stem Cells : Differentiation

For current licensing status, please contact Andy DeTienne at adetienne@warf.org or 608-960-9857