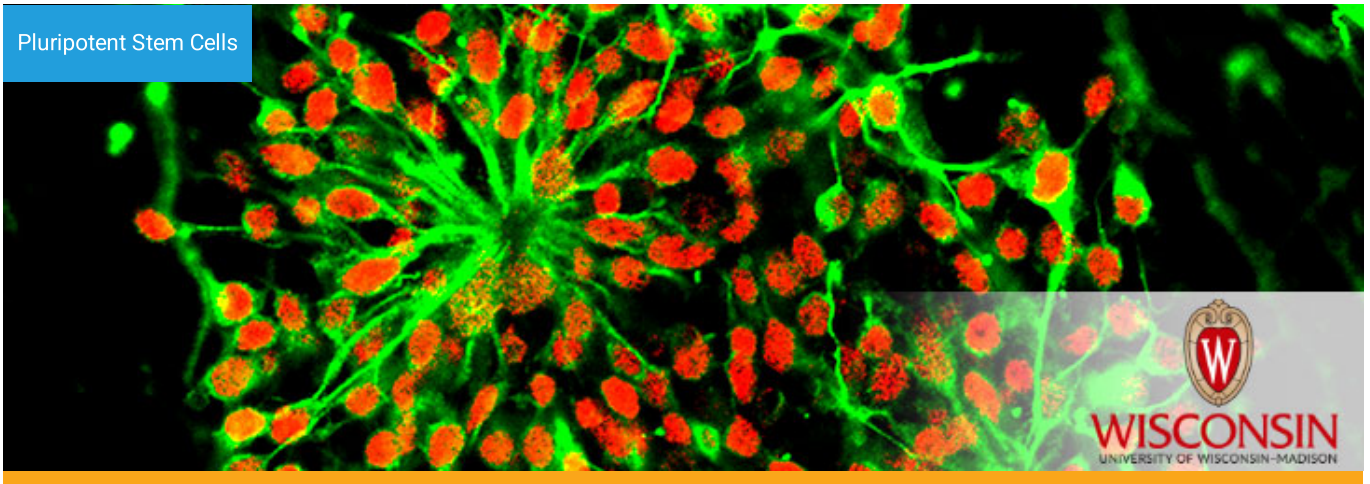




Xeno-Free Protocol for Generating Endothelial Cells from Human Pluripotent Stem Cells

[View U.S. Patent No. 11,220,672 in PDF format.](#)

WARF: P140372US02

Inventors: James Thomson, Jue Zhang

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing the first fully defined method of its kind to derive human endothelial cells suitable for clinical applications.

Overview

Endothelial cells (ECs) are vital to blood vessel formation. Generating ECs from human pluripotent stem cells (hPSCs) has powerful potential for cardiovascular health and drug development. However, standard protocols use xenogenic (animal-derived) reagents such as bovine serum albumin that are often poorly defined, pose safety concerns for clinical applications and contribute to highly variable results and limited reproducibility.

The Invention

UW–Madison researchers have developed a fully defined and xenogenic material-free method of producing and expanding clinically relevant human ECs for therapeutic and tissue modelling applications. Populations of up to 80 percent CD31⁺ ECs are generated from both human embryonic and induced pluripotent stem cells.

Like existing protocols, the new method uses factors including Bone Morphogenetic Protein (BMP), Activin A and a TGF-Beta 1 inhibitor.

Applications

- Generation of clinical grade endothelial cells
- Potential applications include engineering of new blood vessels, EC transplantation into the heart, myocardial regeneration, treatment of regional ischemia, drug and toxicity screening

Key Benefits

- First xeno-free, albumin-free, fully chemically defined method of its kind
- Highly efficient and reproducible

Stage of Development

The protocol has been shown to generate 50-80 percent CD31⁺ ECs depending on the cell line. The results demonstrate robust and efficient generation of human ECs in fully defined conditions, which addresses a crucial production requirement for potential clinical utility.

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. [See our privacy policy.](#)

For More Information About the Inventors

- [James Thomson](#)

OK



WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850

Related Technologies

- [WARF reference number P140400US02 describes the researchers' development of vascularized neuronal tissue models derived from hPSCs.](#)
- [WARF reference number P140410US02 describes the researchers' method to make microglia.](#)

Tech Fields

- [Pluripotent Stem Cells : Differentiation](#)

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

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. [See our privacy policy.](#)

OK



WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850