FRED HUTCH
CURES START HERE®

RESEARCH TOOL

Method to Induce the Early Totipotent Embryonic Transcriptional Program

Brief Technology Description

Exogenous expression of DUX family member proteins to activate the transcriptional program of the totipotent embryonic state.

BUSINESS OPPORTUNITY
Exclusive licence
Non-exclusive license
Sponsored research

TECHNOLOGY TYPE
Method
Research tool

STAGE OF DEVELOPMENT
Preclinical *in vitro*

PATENT INFORMATION
US patent pending

LEARN MORE
Tech ID: 17-033
partnering@fredhutch.org
206-667-4304

Technology Overview

Researchers led by Dr. Stephen Tapscott at Fred Hutch and Dr. Bradley Cairns at the University of Utah have uncovered novel mechanistic understandings of DUX family member proteins and their role in embryonic genome activation (EGA) as recently published in ***Nature Genetics***. These studies suggest novel methods to improve cellular reprogramming. The potential to activate the transcriptional totipotent program has applications that include reproductive biology and regenerative medicine. This method might also be leveraged to enhance somatic cell nuclear transfer (SCNT).

Applications

- Activate transcription of genes associated with a more totipotent early embryonic stem cell state to enhance the potential of iPS cells
- Activate transcription of genes associated with a more totipotent early embryonic stem cell state to enhance SCNT

Potential Advantages

- Increased efficiency of SCNT
- Ability of DUX programmed cells to differentiate into multiple lineages, including extraembryonic tissues

Market Overview

The market for global regenerative medicine is expected to reach $49.1B by 2021. The cell therapy segment is expected to dominate the market. Drivers of this market include limitations on the ability to engineer stem cells and tissues. The technology developed by Fred Hutch and the University of Utah has multiple applications and could be leveraged to improve the totipotent state of engineered cell products.

Investigator Overview

Stephen Tapscott, MD, PhD, Human Biology and Clinical Research Divisions
Bradley Cairns, PhD, Dept. of Oncologocial Sciences, University of Utah