



Supporting Cell Lines that Improve Gamete Production from Human Pluripotent Cells

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SUMMARY

Scientists at UCLA's Broad Stem Cell Research Center have derived six human supporting cell lines that can be used in differentiation strategies to generate gametes from pluripotent stem cells.

BACKGROUND

Pluripotent stem cells refer to any cell type that is capable of self-renewal and differentiation into embryonic and germ cell layers. Examples of pluripotent stem cells include stem cells derived from the inner cell mass of human blastocysts or stem cells derived from alternate methods such as induced pluripotent stem (iPS) cells or stem cells derived from culture-induced reprogramming such as testicular stem cells or embryonic germ cells. The ability to differentiate pluripotent cells into gametes (germ cells) can be used to study the molecular regulation of gamete development in humans. Unfortunately, the current methods of generating gametes from pluripotent cells are inefficient and highly variable.

INNOVATION

Researchers at UCLA have derived six cell lines that can be used as a supporting cell layer in two dimensional adherent differentiation assays to generate gametes from pluripotent stem cells.

APPLICATIONS

- ▶ Study molecular regulation of gamete development in humans
- ▶ Screen for molecules that affect germ cell development
- ▶ Identify genetic pathways that cause infertility or birth defects
- ▶ Generate gametes for use in reproductive medicine
- ▶ Generate oocytes for somatic cell nuclear transfer to generate embryonic stem cell lines

ADVANTAGES

- ▶ Consistent and robust differentiation of germ cells from multiple pluripotent sources (various hESC lines or hiPS cells)
- ▶ Ability to obtain a reproducible yield of primitive germ cells that are thoroughly characterized

RELATED MATERIALS

- ▶ Adult stem cells may aid the infertile. *LA Times*. [\[more\]](#)
- ▶ Scientists reprogram induced pluripotent cells into precursors of eggs, sperm. *UCLA press release*. [\[more\]](#)
- ▶ Grow Your Own Eggs and Sperm: Researchers take a step toward letting infertile women be their own egg donors. [\[more\]](#)
- ▶ Derivation of Primordial Germ Cells From Human Embryonic and Induced Pluripotent Stem Cells Is Significantly Improved By Co-Culture With Human Fetal Gonadal Cells. [\[more\]](#)

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OTHER INFORMATION

KEYWORDS

luripotent stem cells, induced

pluripotent stem cells, human

embryonic stem cells, differentiation,

gametes, germ cells, research tool,

cell line

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Stem Cell
- ▶ **Research Tools**
 - ▶ Cell Lines

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