

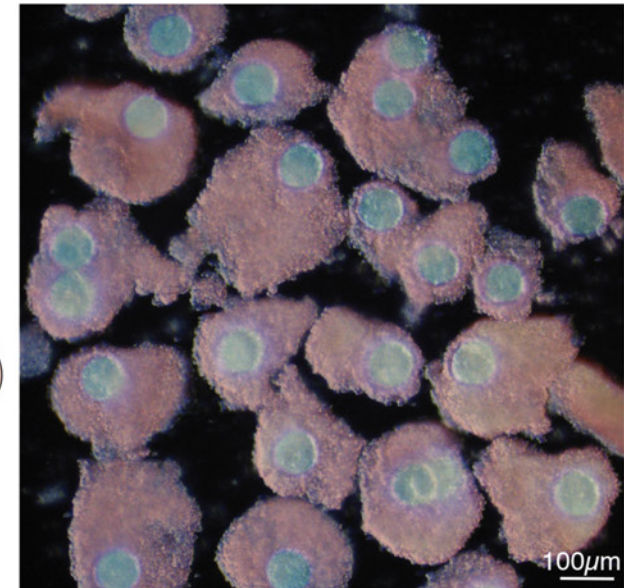
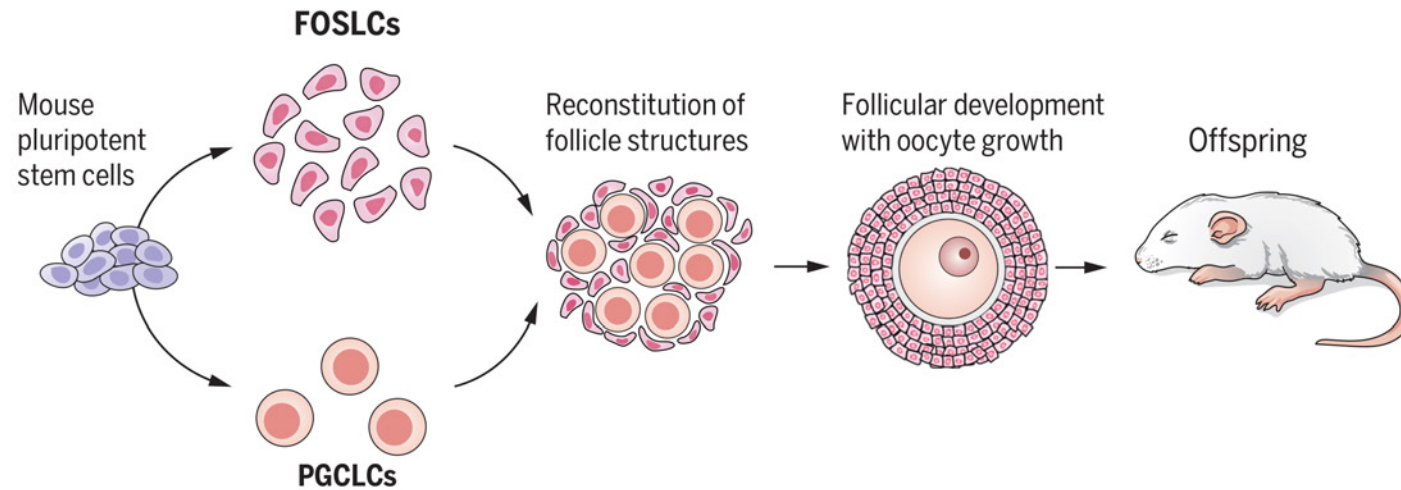
マウス多能性幹細胞を用いた卵胞の再構成 (*Science*, 2021)

RESEARCH ARTICLE SUMMARY

DEVELOPMENTAL BIOLOGY

Generation of ovarian follicles from mouse pluripotent stem cells

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Reconstitution of follicle structures, including oocytes, entirely from mouse pluripotent stem cells. Illustrations on the left show a schematic overview of reconstitution of both FOSLCs and PGCLCs from mESCs. Oocytes in the reconstituted environment gave rise to offspring after fertilization. The right image represents fully grown cumulus-oocyte complexes derived from FOSLCs (red) and PGCLCs (blue).

Stem Cell Reports

Perspective



OPEN ACCESS

ISSCR Guidelines for Stem Cell Research and Clinical Translation: The 2021 update

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ISSCR guidelines for the transfer of human pluripotent stem cells and their direct derivatives into animal hosts

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Human embryo research, stem cell-derived embryo models and *in vitro* gametogenesis: Considerations leading to the revised ISSCR guidelines

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ISSCR Guidelines for IVG Research

1. ヒト生殖細胞誘導研究

Based on this background, the committee recommended that basic research on human IVG without experiments designed to fertilize the resulting gametes should be permissible as a category 1B research activity.

2. ヒト胚作成研究

For scientists engaging in IVG with 46, XX or 46, XY cells where the research project involves IVM and fertilizing gametes to create human IVG-derived embryos, this research is permissible provided that embryos are maintained *in vitro* only. Such research must be reviewed under category 2 by a specialized scientific and ethics oversight process.

3. ヒト生殖への利用

Therefore, it was recommended that IVG for human reproductive purposes be categorized as a currently prohibited research activity until safety and ethical issues are resolved (category 3A). It was recognized that this technology will have the potential for use in human reproduction once safety and efficacy is proven, with the most promising approach likely to be IVG from immature follicles collected and frozen as part of fertility preservation before cancer treatment or sterility-inducing bone marrow transplants (Medicine, 2019). Furthermore, IVG and IVM to create sperm from pre-pubertal tissue may not be far behind.

Category 1B: research that is reportable to the entity or body responsible for the specialized scientific and ethics oversight process, but not normally subject to further or ongoing review, at the discretion of the entity responsible for the oversight process and subject to regulations and policies in the jurisdiction.

Category 2: forms of research with embryos, certain chimeras, and stem cell-based embryo models that are *permissible* only after review and approval through a specialized scientific and ethics review process.

Category 3A: prohibited research due to unresolved safety and ethics concerns.

日本のヒト生殖細胞誘導研究規制の問題点：私見

ES細胞やiPS細胞から生殖細胞を誘導する研究は、体細胞誘導研究とは別に informed consent を得る必要がある（私の知る限りほぼ日本だけ。）

これまで日本で樹立されたすべてのES細胞、ほとんどのiPS細胞は体細胞誘導研究のみに関してICを取得されており、生殖細胞研究には使用できない。

私見としては、多能性幹細胞から誘導される卵子や精子に由来するヒト胚を、「人の生命の萌芽」と位置づけ、その作成研究は、平成16年「ヒト胚の取り扱いに関する基本的考え方」にて許容されている、2) 生殖補助医療の向上に資する研究（基礎的研究）のためのヒト受精胚の新たな作成（作成したヒト受精胚自体を利用。研究後は廃棄。）、の研究に相当すると考えられるので、研究機関の倫理委員会により研究の科学的妥当性を審査し、適切と判断される場合は許容する、という方向性をとるべきであると考えます。