

보조생식기술연구를 위한 마우스 실험
모델이용 방법

Mouse as an experimental model
for human ART

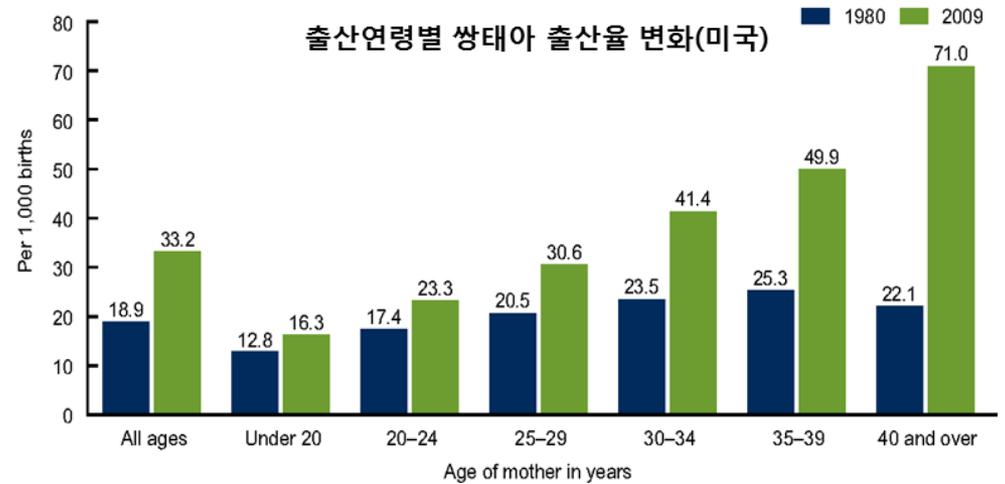
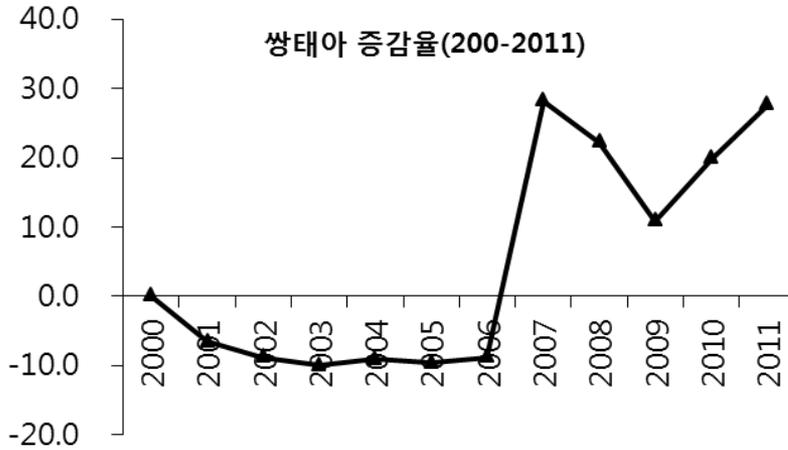
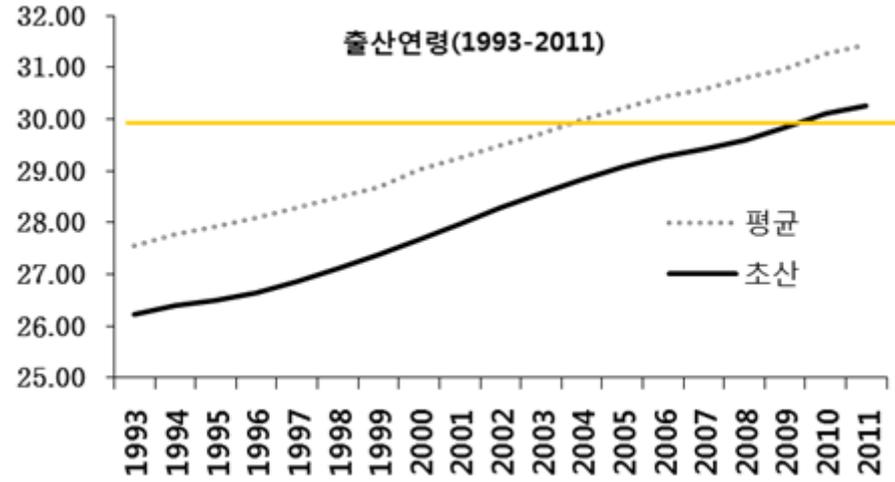
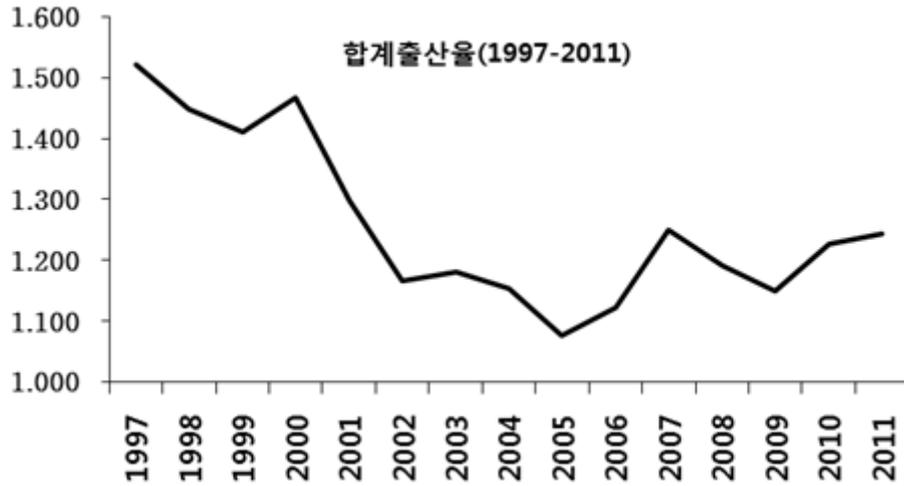
Inchul Choi PhD

Assistant Professor

CHUNGNAM NATIONAL UNIVERSITY



Background



(a) Spontaneous

(b) IVF

Clinical losses

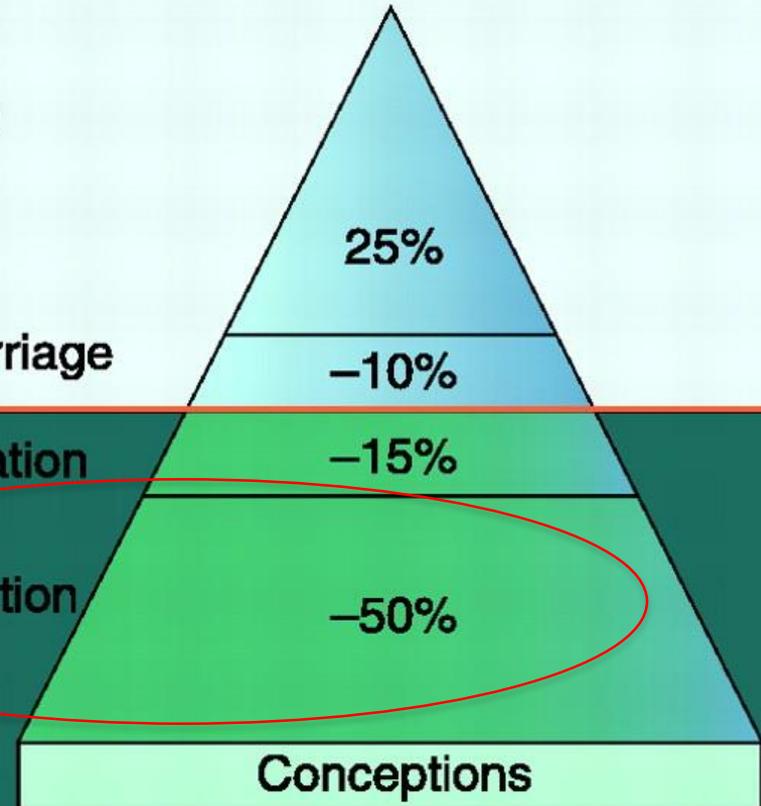
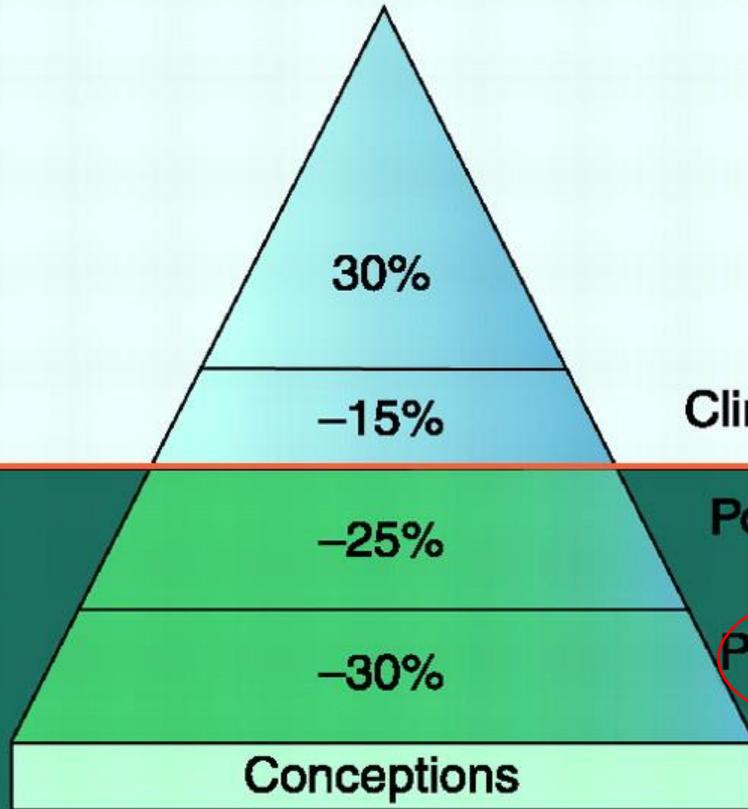
Pre-clinical losses

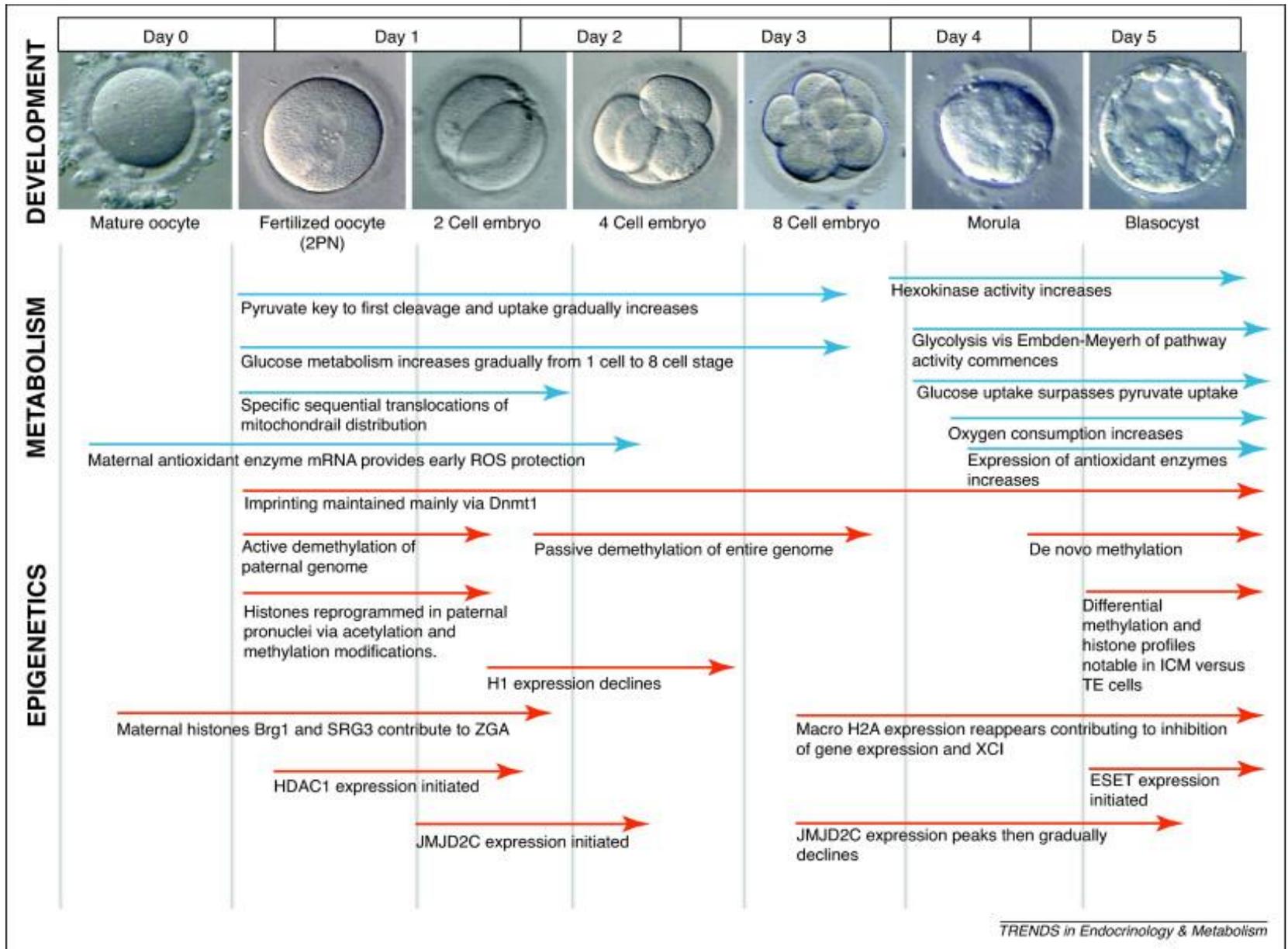
Live birth

Clinical miscarriage

Post-implantation

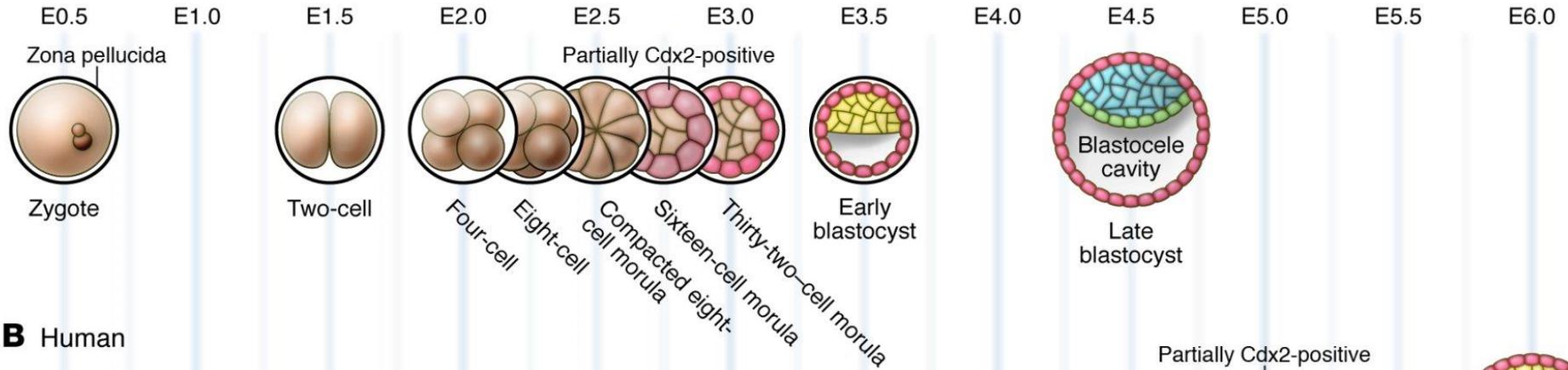
Pre-implantation



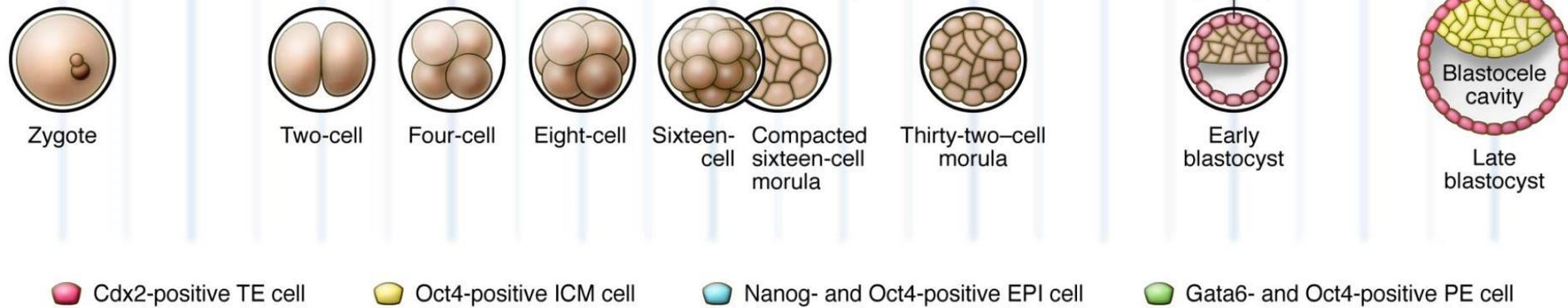


Timeline of preimplantation development Mouse vs Human

A Mouse



B Human



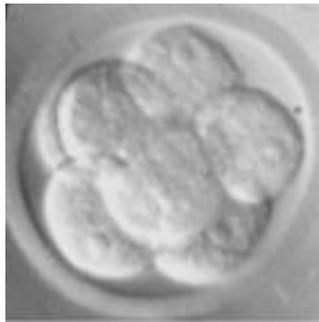
(Cockburn and Rossant 2010)

<http://www.jci.org/articles/view/41229/figure/1>

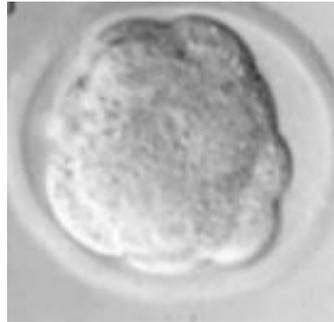
Mouse early embryo development

Implantation failure or early miscarriage

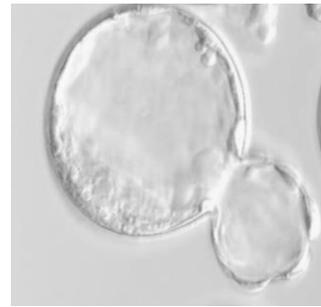
Preimplantation embryo failure



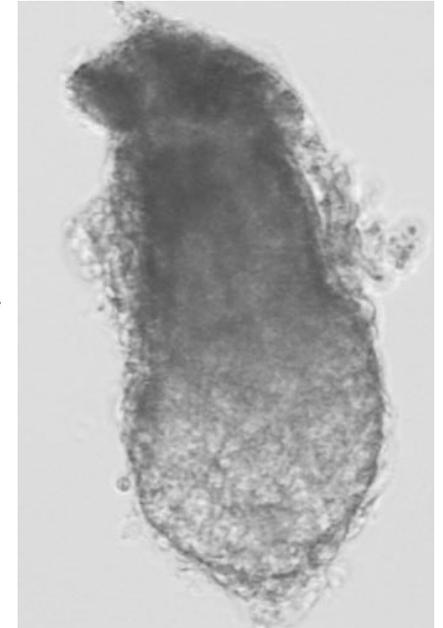
8-cell



Morula



Blastocyst



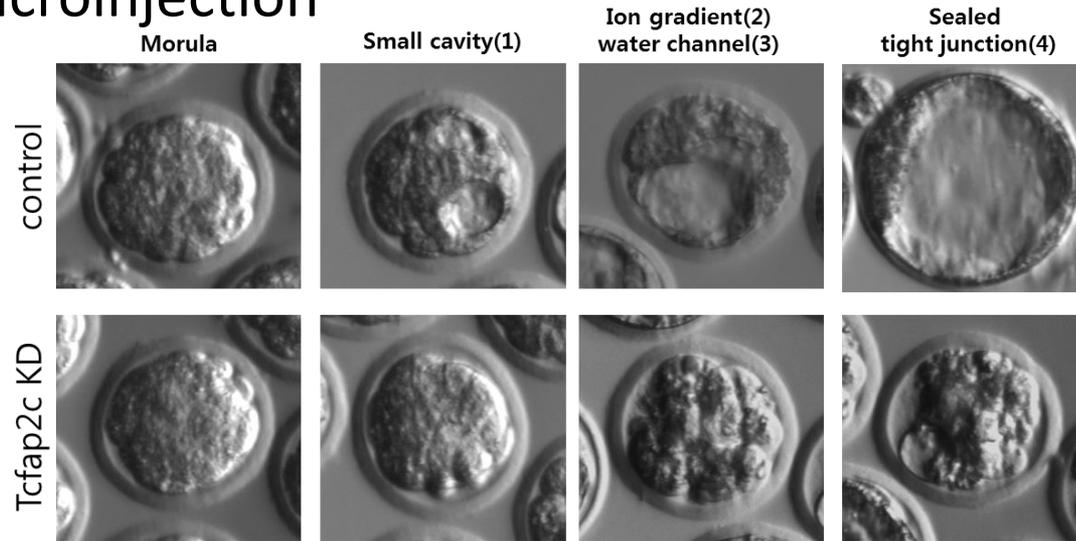
Day 6.5 embryo

Blastocyst formation

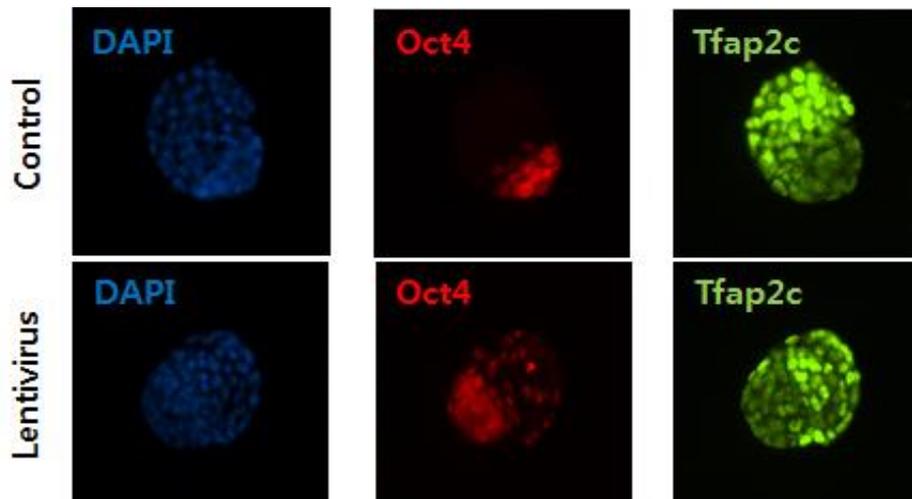
Lineage specification and
differentiation

Regulation of Gene expression

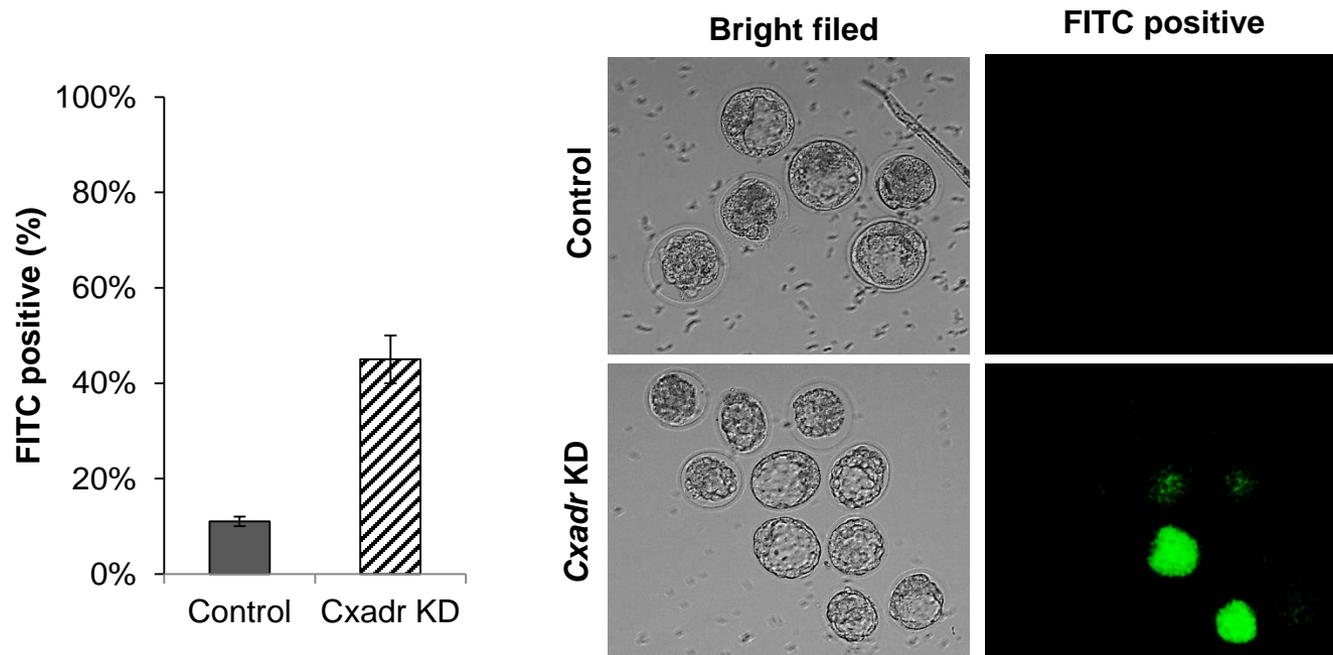
■ Microinjection



■ Virus infection



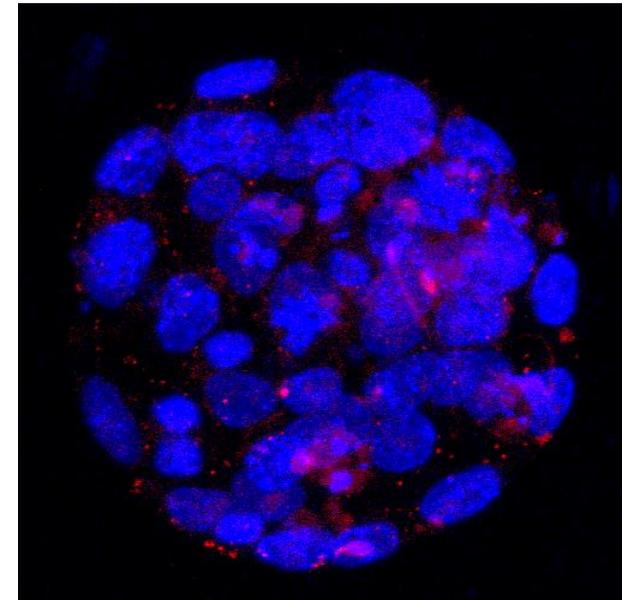
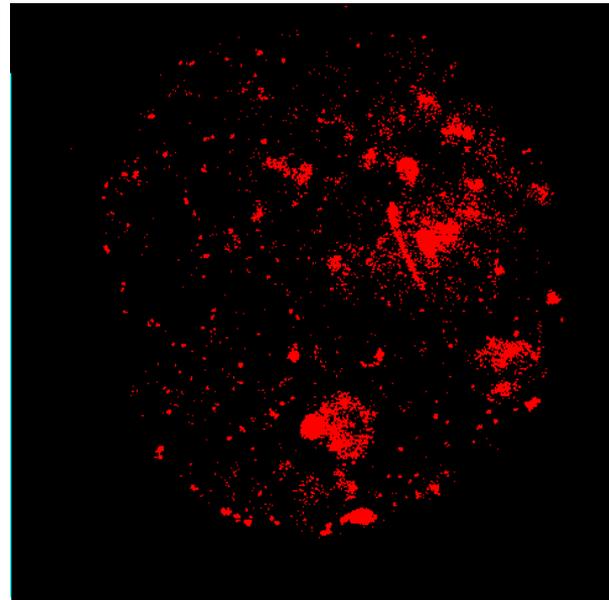
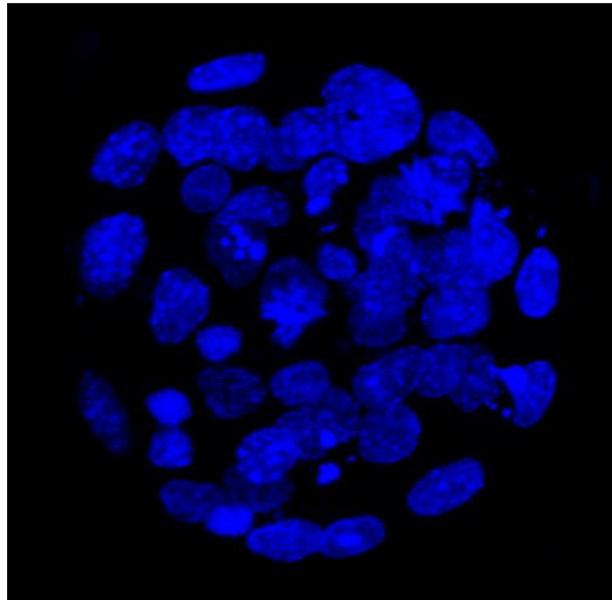
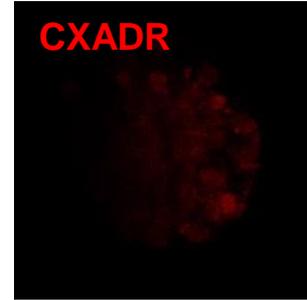
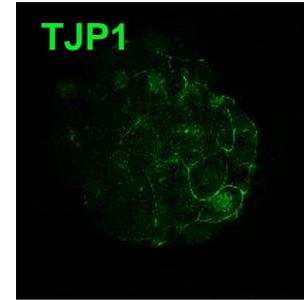
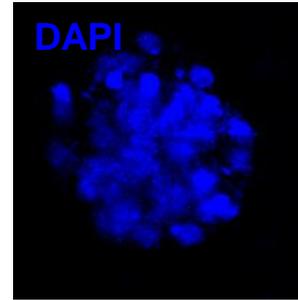
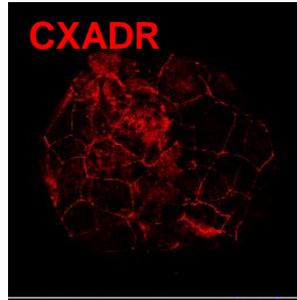
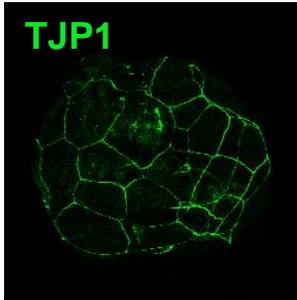
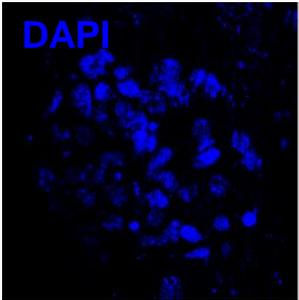
FITC dextran uptake for TJ integrity



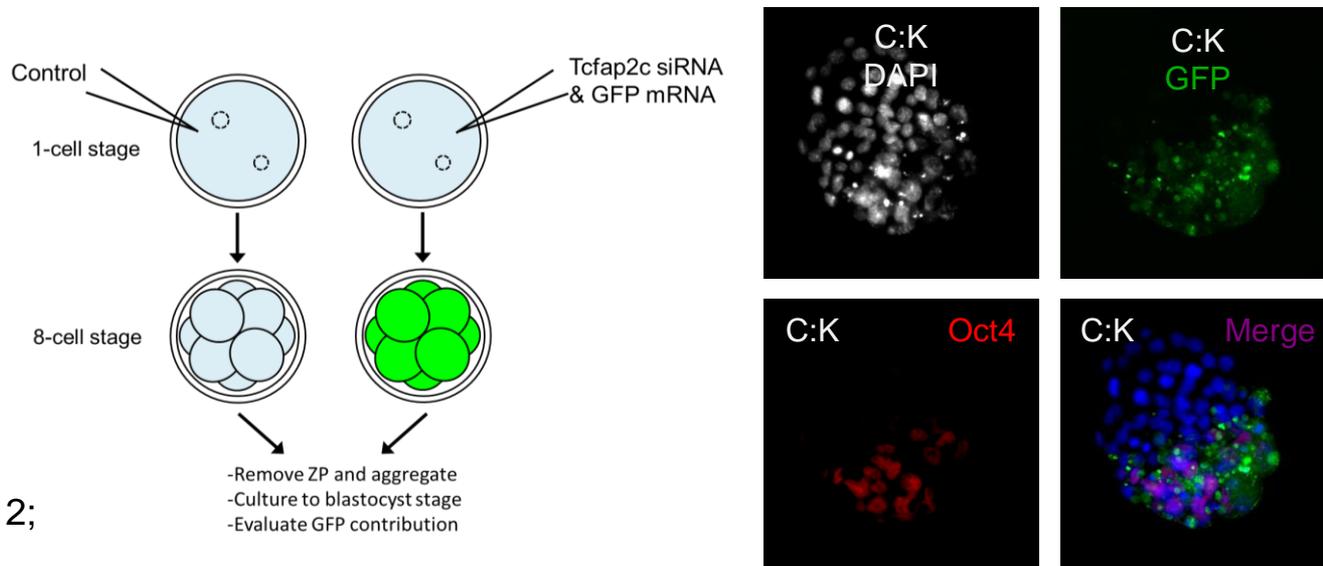
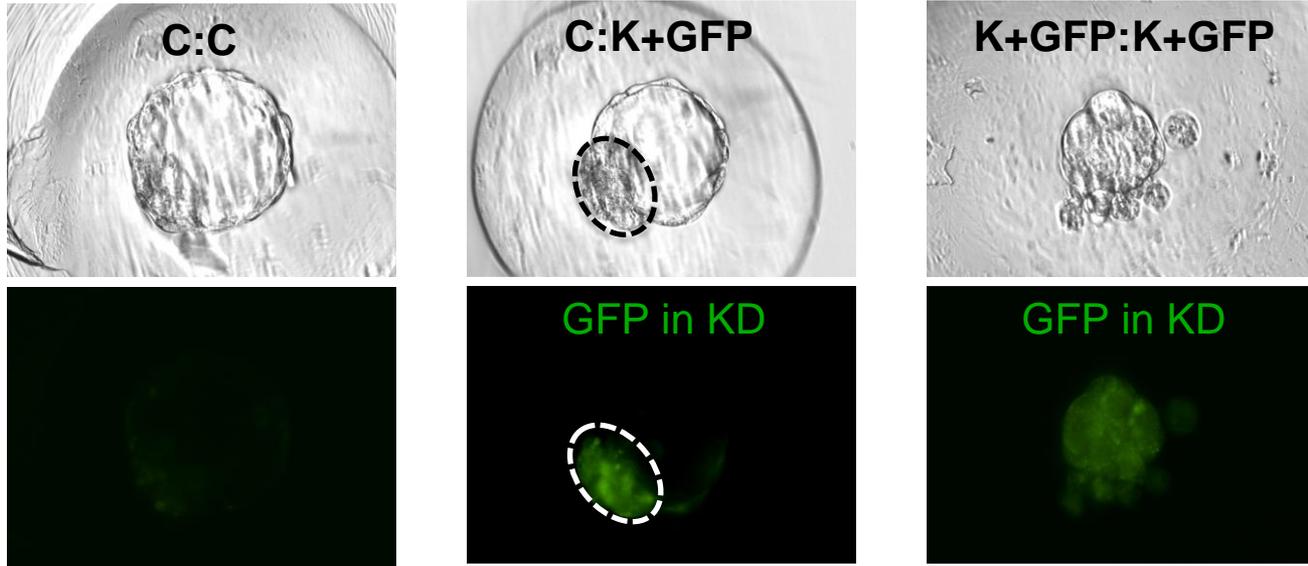
Proximal Ligation Assay

Control Blastocyst

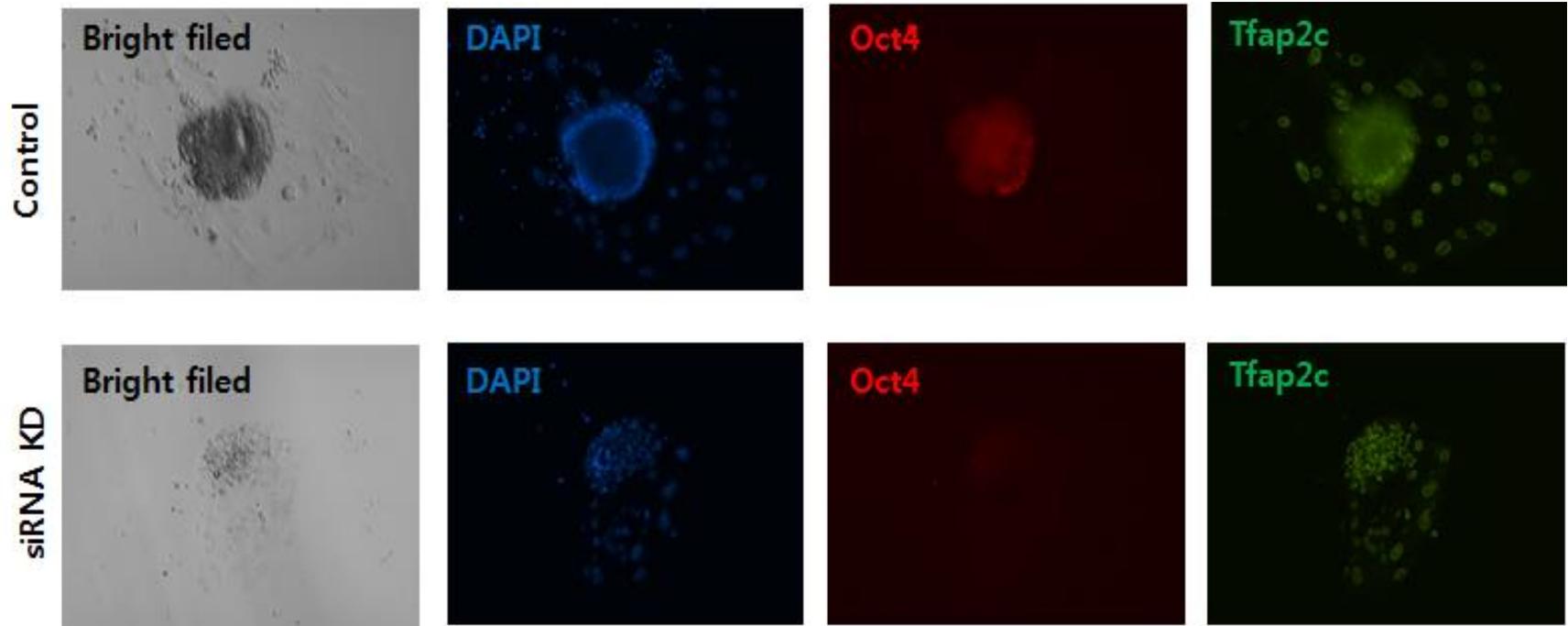
Cxadr KD blastocyst



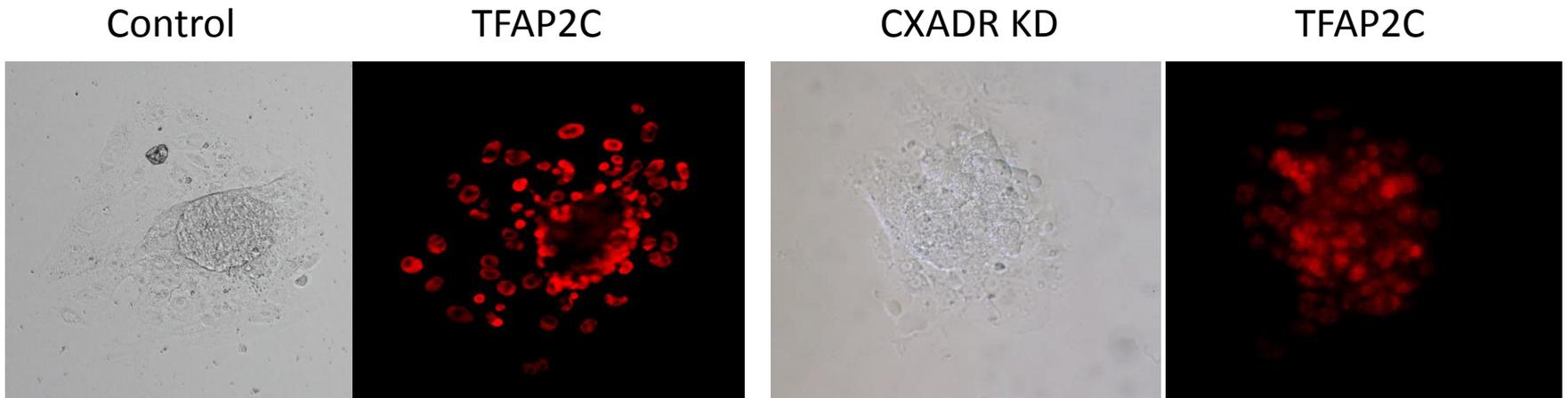
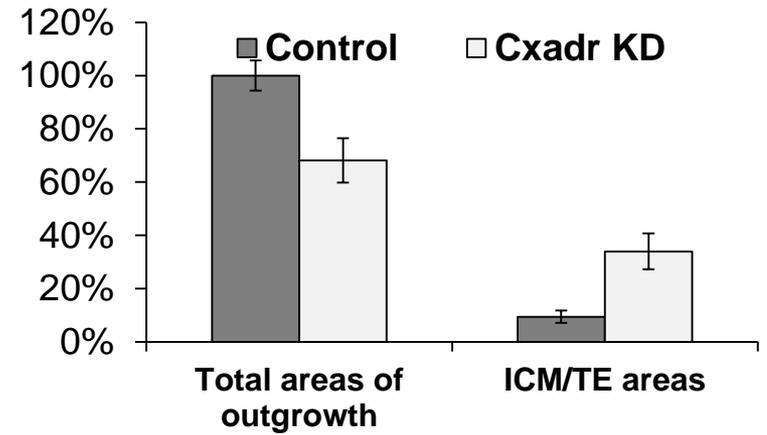
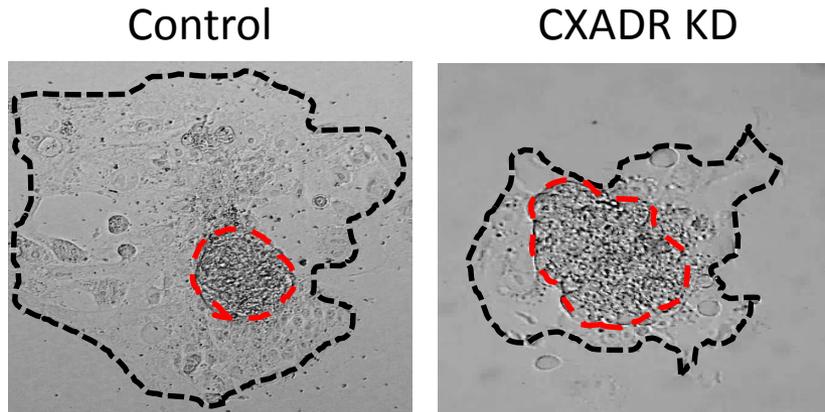
Embryo Aggregation and Tracing



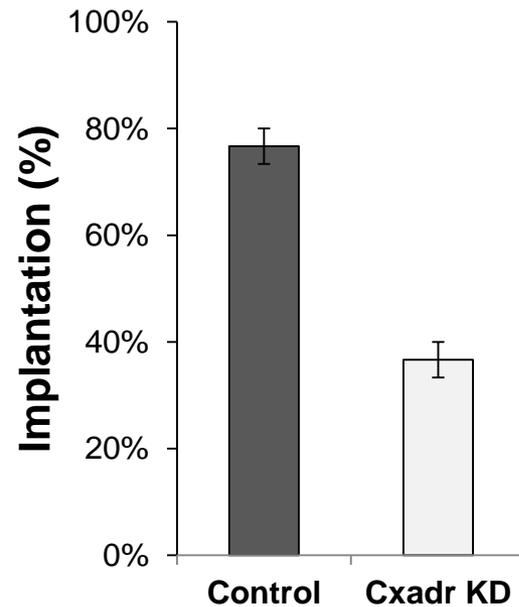
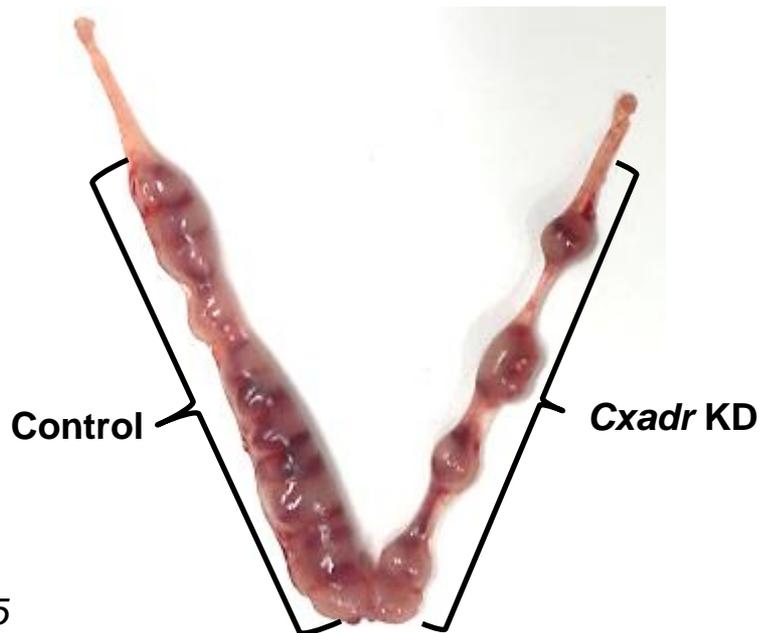
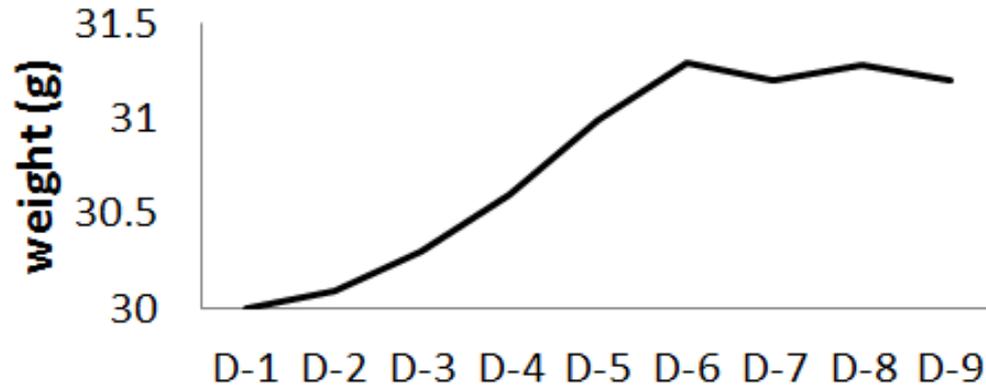
Outgrowth Assay



Outgrowth Assay



Embryo Transfer



Summary

- Microinjection
- Lent virus infection
- FITC dextran uptake
- In situ Proximal ligation assay
- Outgrowth
- Embryo transfer

- Comparative studies
- Ethical consideration

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Next generation Bio-green 21

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