

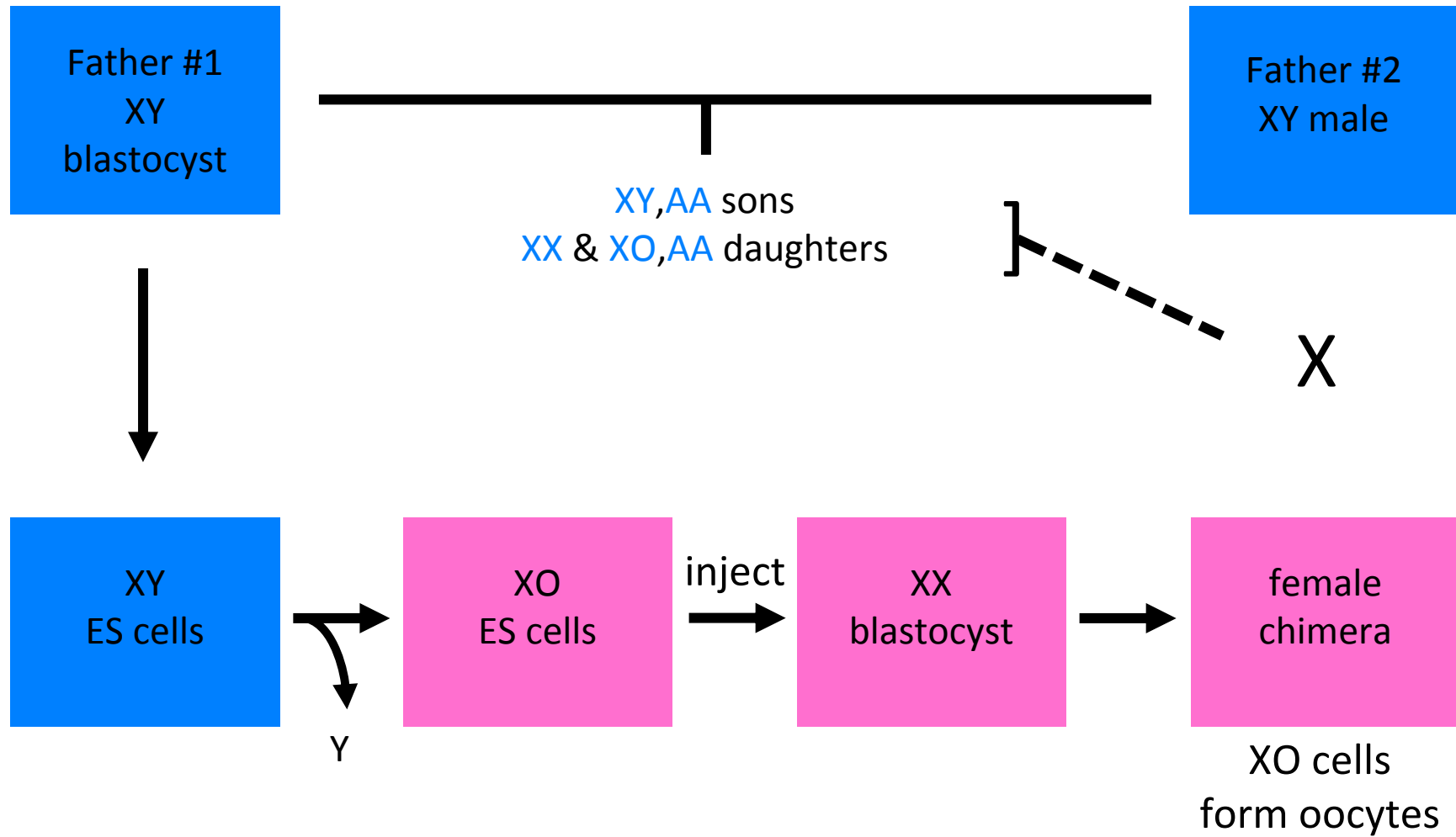
## Deng et al., Supplemental Figure legends

**Supplemental Figure S1.** Scheme to generate mice from two fathers using ES cells. A male (XY) blastocyst is disassembled to derive an ES cell line, eliminating the original individual. The XY ES cell line is screened for the spontaneous loss of the Y chromosome to isolate XO clones. These XY-derived XO ES cells are injected into blastocysts to generate female chimeras. The female chimeras serve as surrogates to differentiate oocytes from the XY-derived XO iPS cells and carry the progeny to term (dashed line). Genetically, the progeny from the female chimera are sons and daughters of Father #1 and Father #2 (horizontal line). Blue boxes, male phenotype; pink boxes, female phenotype; blue letters, alleles derived from Fathers #1 and #2.

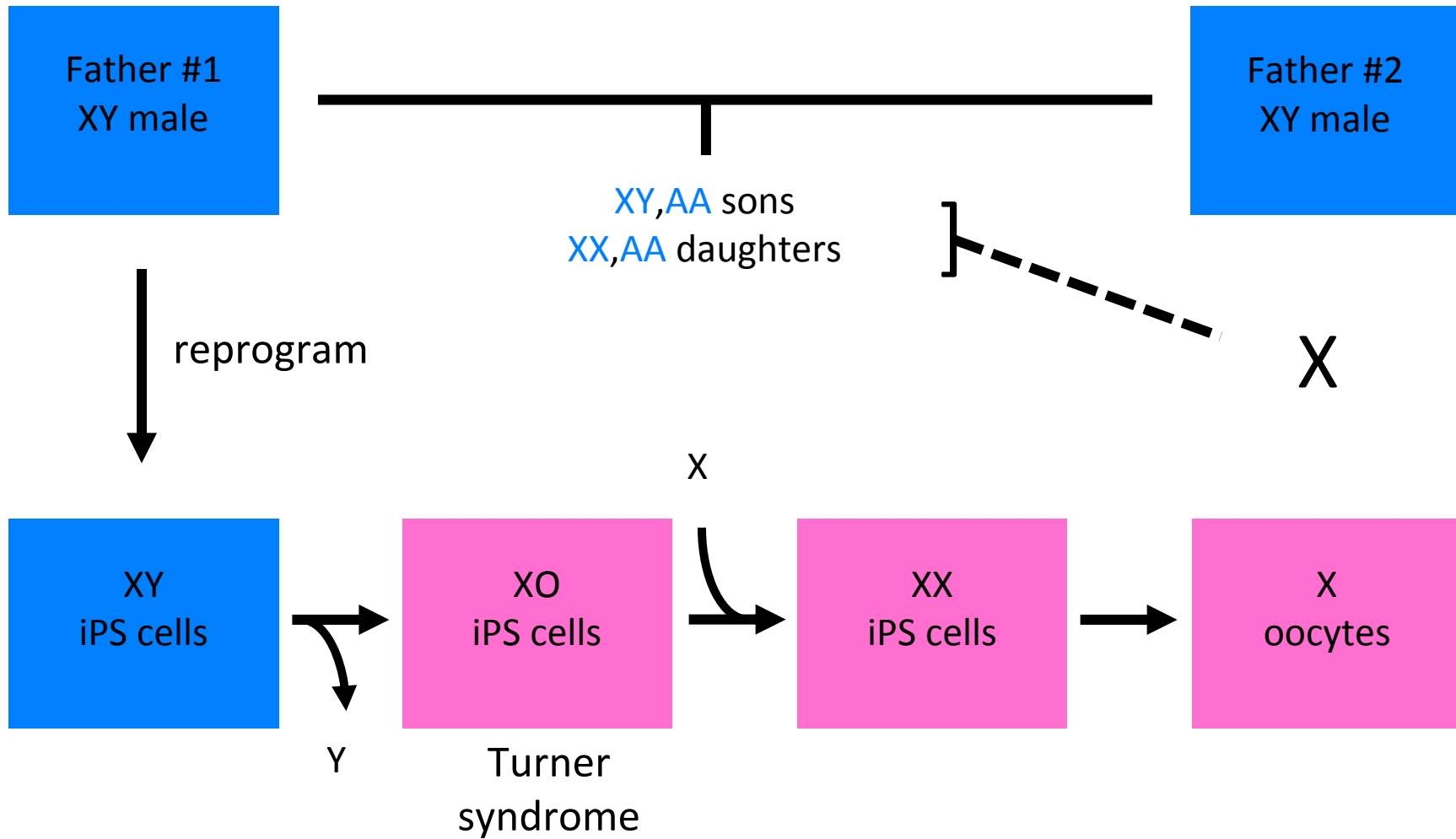
**Supplemental Figure S2.** Scheme to generate human sons and daughters from two fathers using iPS cells. Somatic cells from Father #1 are reprogrammed to generate iPS cells that are screened for the spontaneous loss of the Y chromosome to isolate XO (45,X) clones. An X chromosome from the XY-derived XO iPS cell line is transferred into the same XO iPS cell line using microcells to create XX iPS cells and bypass Turner syndrome infertility. In the future, it may be possible to differentiate oocytes from iPS cells in vitro. Blue boxes, male phenotype; pink boxes, female phenotype. Blue letters, alleles derived from Fathers #1 and #2.

**Supplemental Figure S3.** Scheme to generate sons and daughters (mouse or human) from two mothers. Somatic cells from Mother #1 are reprogrammed to generate iPS cells that are screened for the spontaneous loss of an X chromosome to isolate XO (45,X) clones. A Y chromosome from a maternal father or brother is transferred into the XX-derived XO iPS cell line using microcells to create XY iPS cells. In the future, it may be possible to differentiate sperm cells from iPS cells in vitro. Blue boxes, male phenotype; pink boxes, female phenotype. Pink letters, alleles derived from Mothers #1 and #2; blue Y, chromosome derived from a male.

Deng et al., Supplemental Fig. S1



Deng et al., Supplemental Fig. S2



Deng et al., Supplemental Fig. S3

