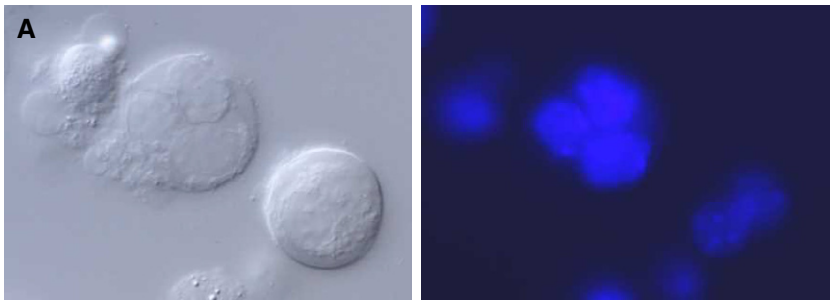
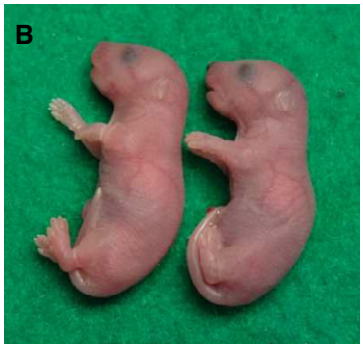
Expanded View Figures





Birth of mice from Exoc1 conditional knockout mice

No. oocytes cultured	No. (%) 2-cells	No. transferred	No.(%) implanted	No. (%) offspring	With mutation
96	66 (69)	46	11 (24)	6 (13)	3

C

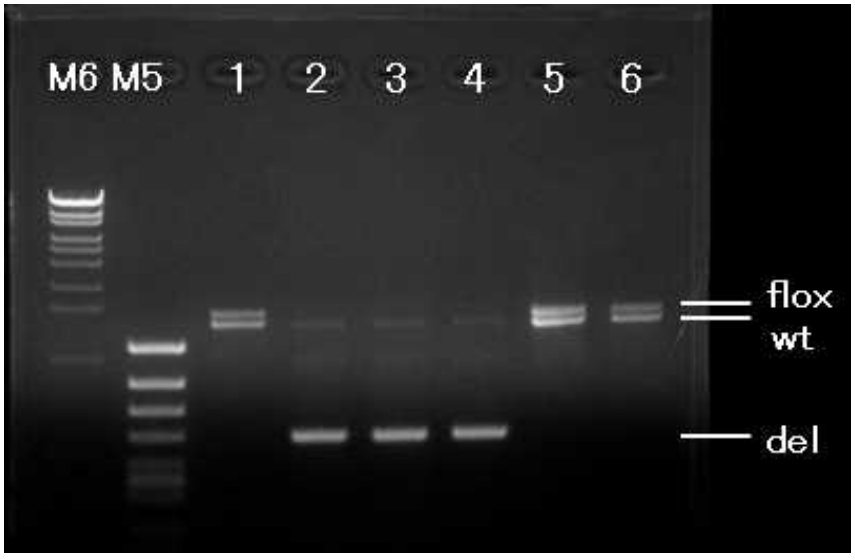


Figure EV1. Birth of mice following injection of oocytes with primary spermatocytes collected from germline-specific *Exoc1*-knockout mice.

A Multinucleated cells (syncytial spermatocytes) obtained from an *Exoc1*-knockout male mouse. Each multinucleated cell contained 2–4 spermatocyte nuclei. Differential interference contrast microscopy (left) and Hoechst-staining (right) images. Bar = 10 μm.

B Mice born from *Exoc1*-knockout spermatocytes.

C Polymerase chain reaction analysis in mice born from *Exoc1*-knockout spermatocytes. Mice #2, #3, and #4 carried the *Exoc1*-knockout allele (del) while mice #1, #5, and #6 did not. Three pups that did not carry the *Exoc1* mutation were most likely derived from spermatogonia that escaped the Cre-induced *Exoc1* deletion. The expected amplicon sizes are as follows: flox allele, 1,426 bp; wild type allele, 1,291 bp; deletion allele, 490 bp.

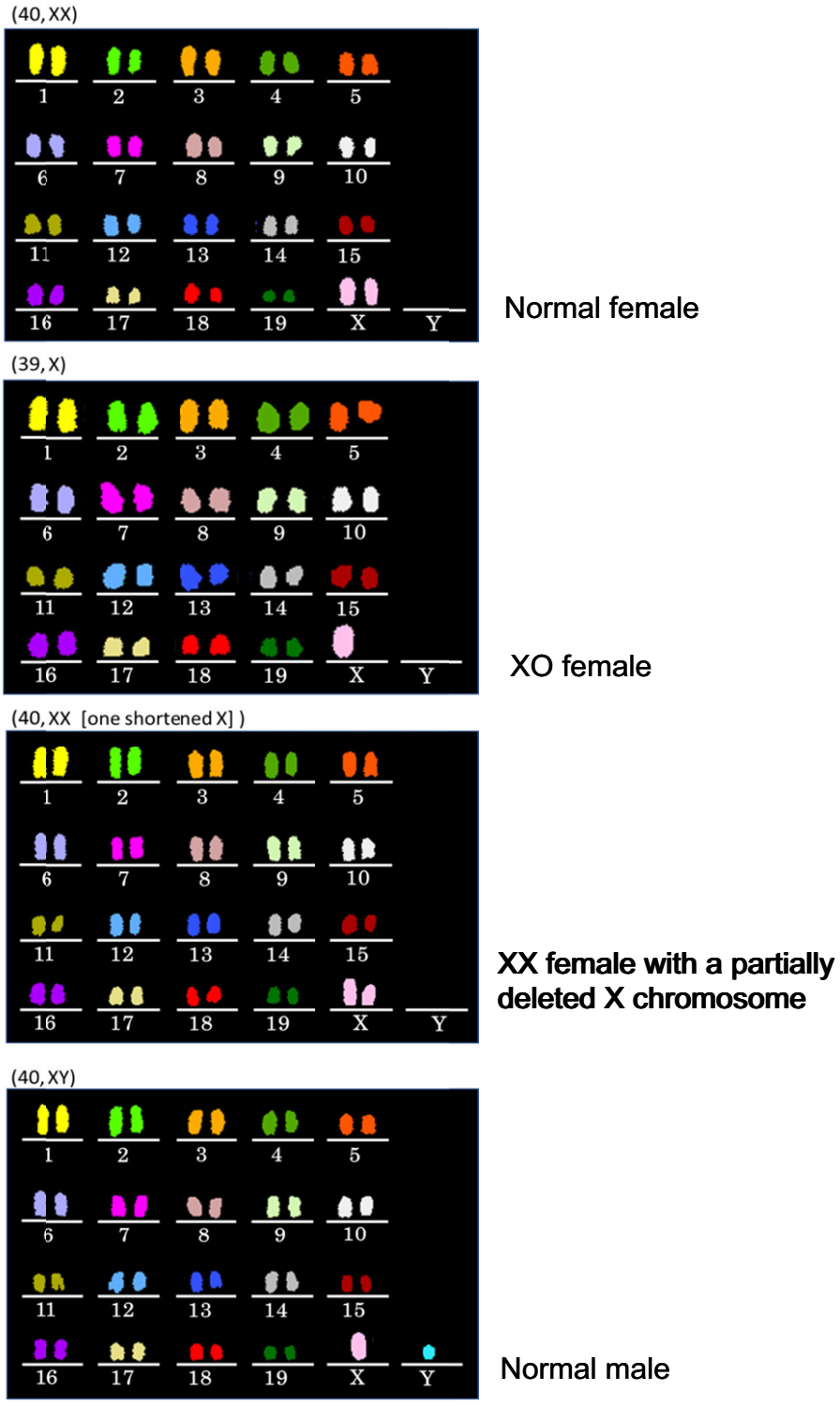


Figure EV2. Chromosomal multicolor FISH analysis of the offspring derived from Stx2-deficient spermatocytes.

No abnormalities were found in autosomes, but there were two cases of sex chromosomal abnormalities.

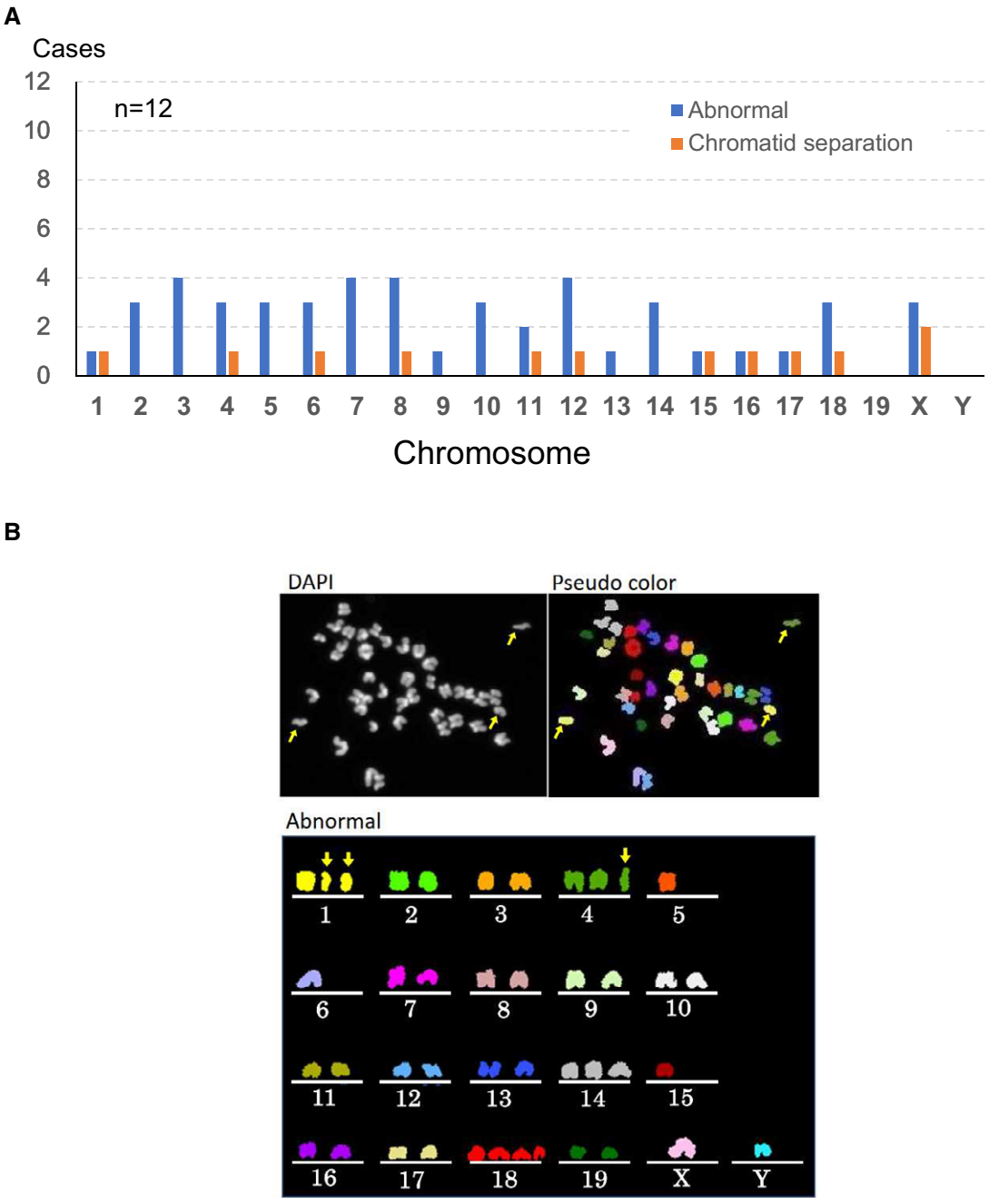


Figure EV3. Chromosomal multicolor FISH analysis of MII oocytes derived from spermatocyte injection.

A Chromosomal abnormalities were found in both autosomes and sex chromosomes.

B A representative image of an oocyte with chromosomal aberrations. Arrows indicate prematurely separated chromatids. Besides them, chromosomes 5, 6, 14, 15 and 18 were numerically abnormal.