

Germ cell development and its regulation by interacting growth factors during human ovarian development

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ESHRE: Mammalian folliculogenesis October 2009

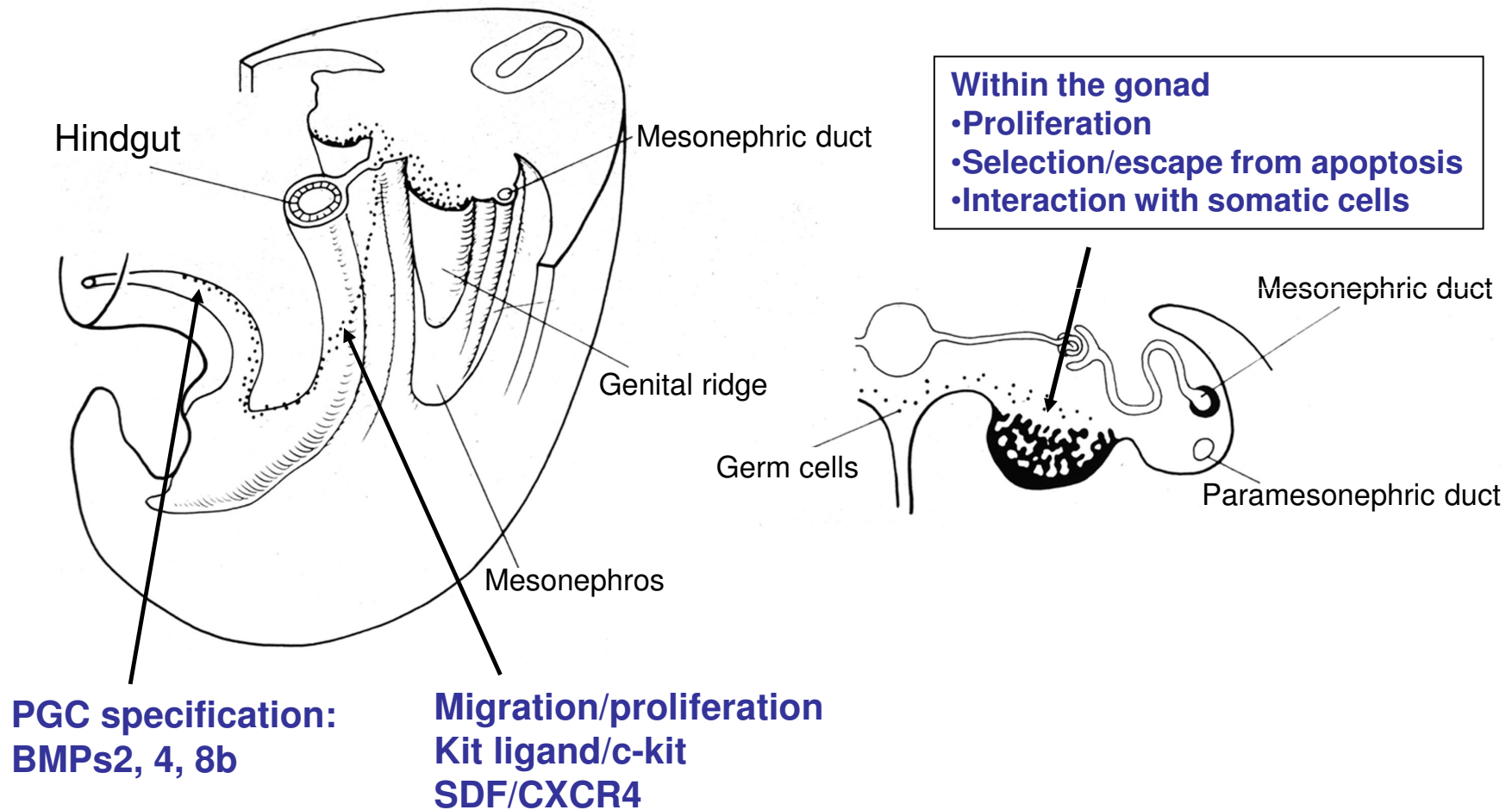


Key processes

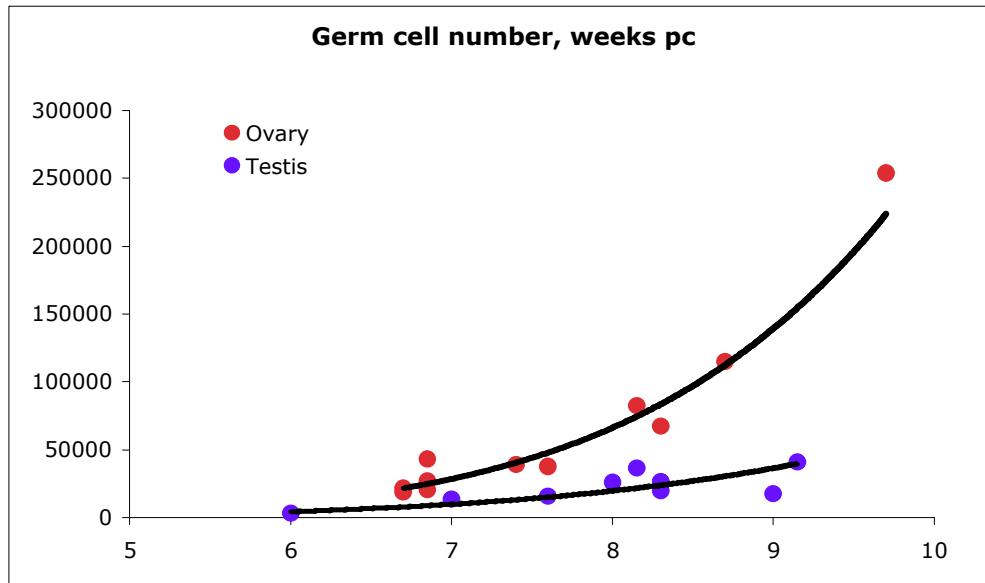
- Germ cell proliferation and differentiation
- Maturation and selection
- Follicle formation

Interaction with somatic cells throughout
-germ cell intrinsic and extrinsic pathways

PGC formation, migration and colonisation of the gonad

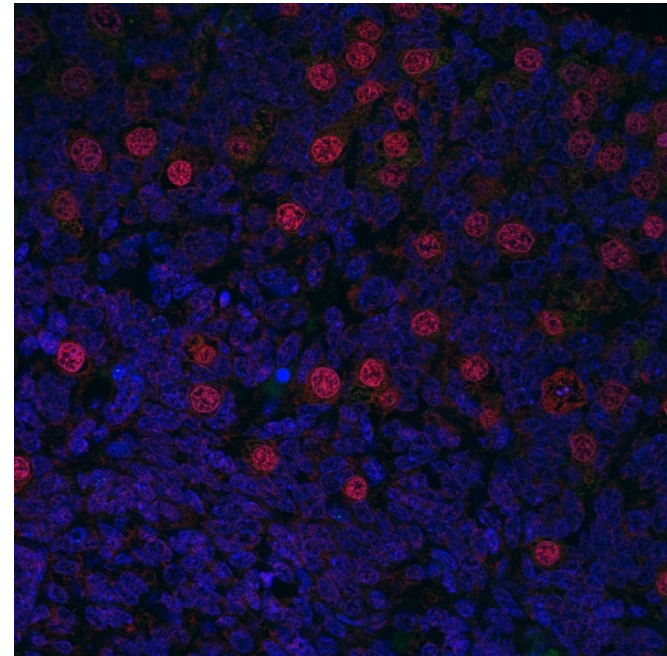


Male/female commonalities and differences

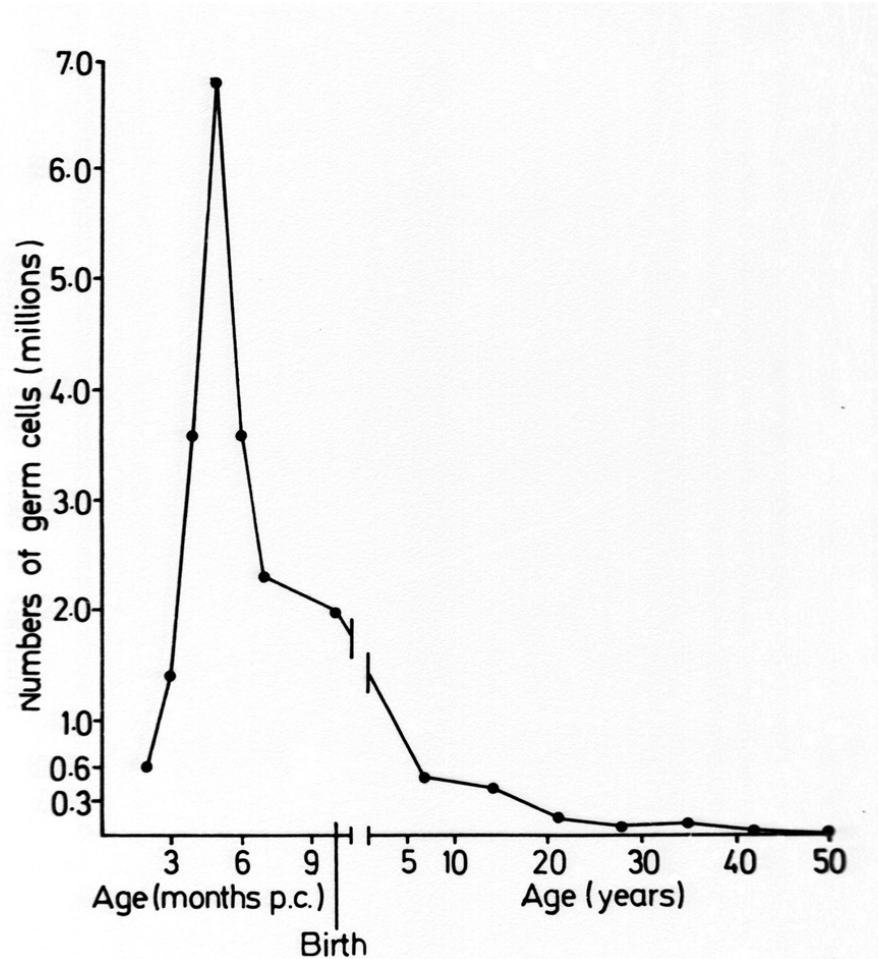


Data from Bendtsen et al 2003, 2006

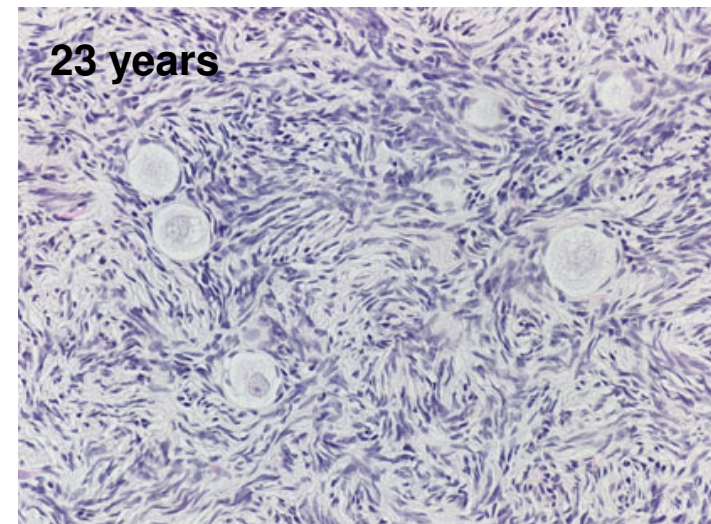
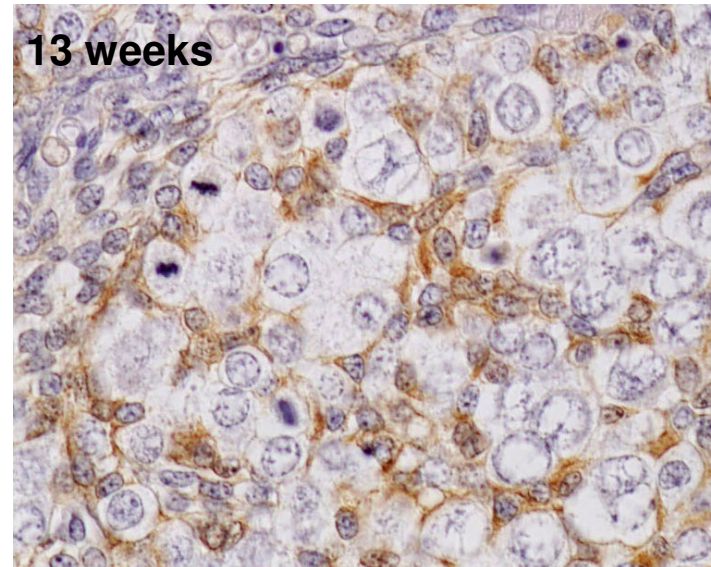
Germ cells: Oct4 at 7 wk pc



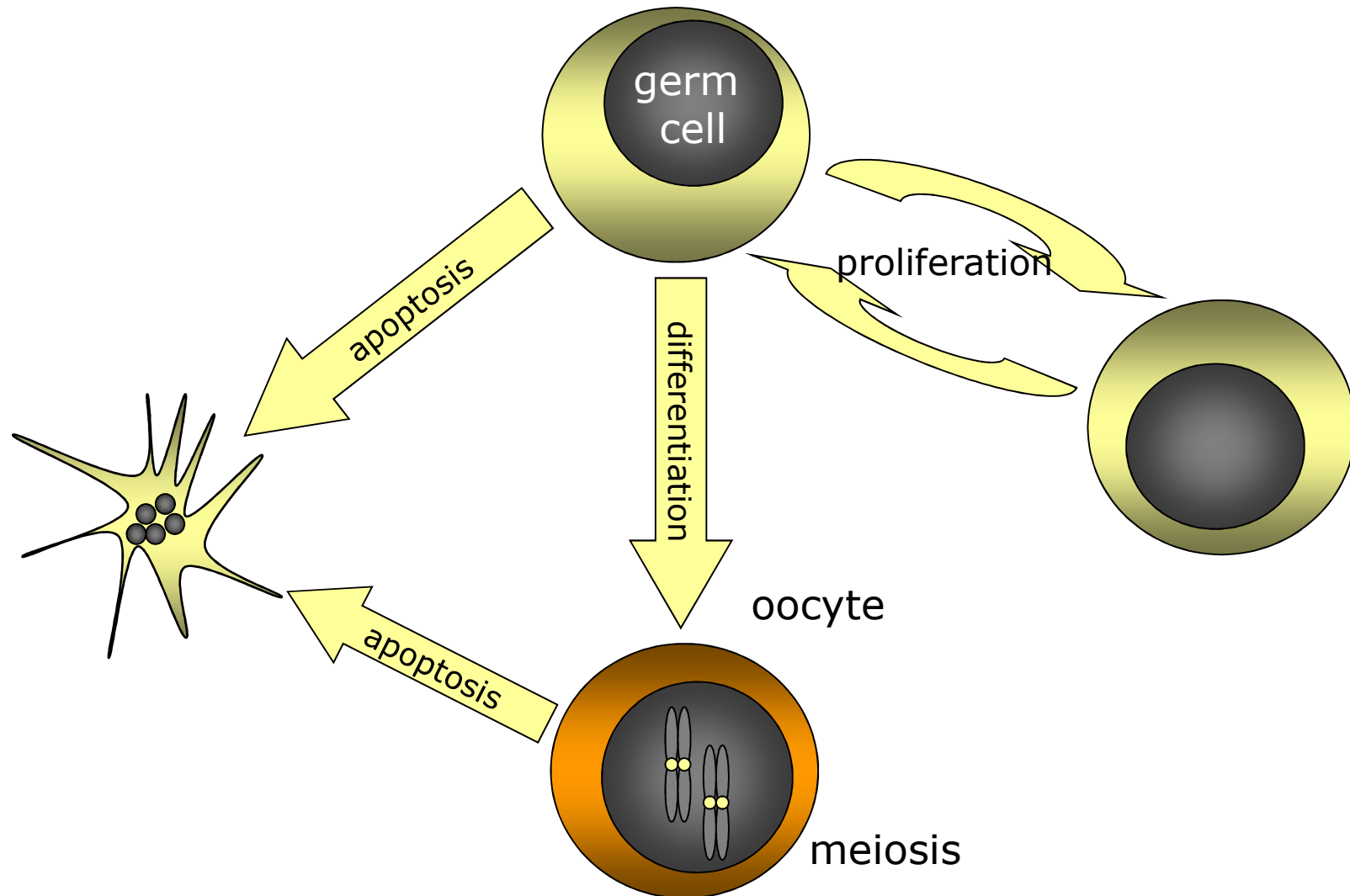
Human oocyte dynamics



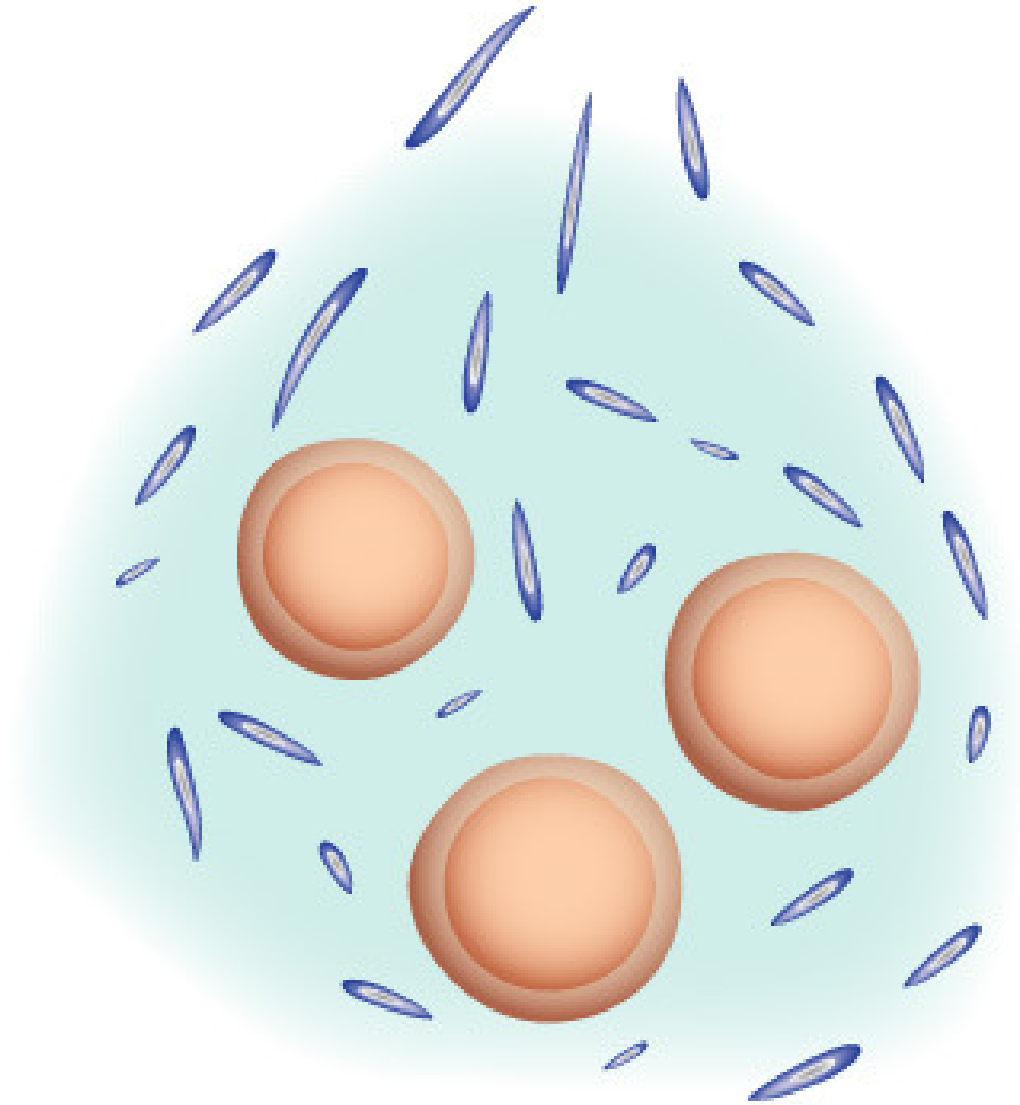
Data from Block 1952; Baker 1963

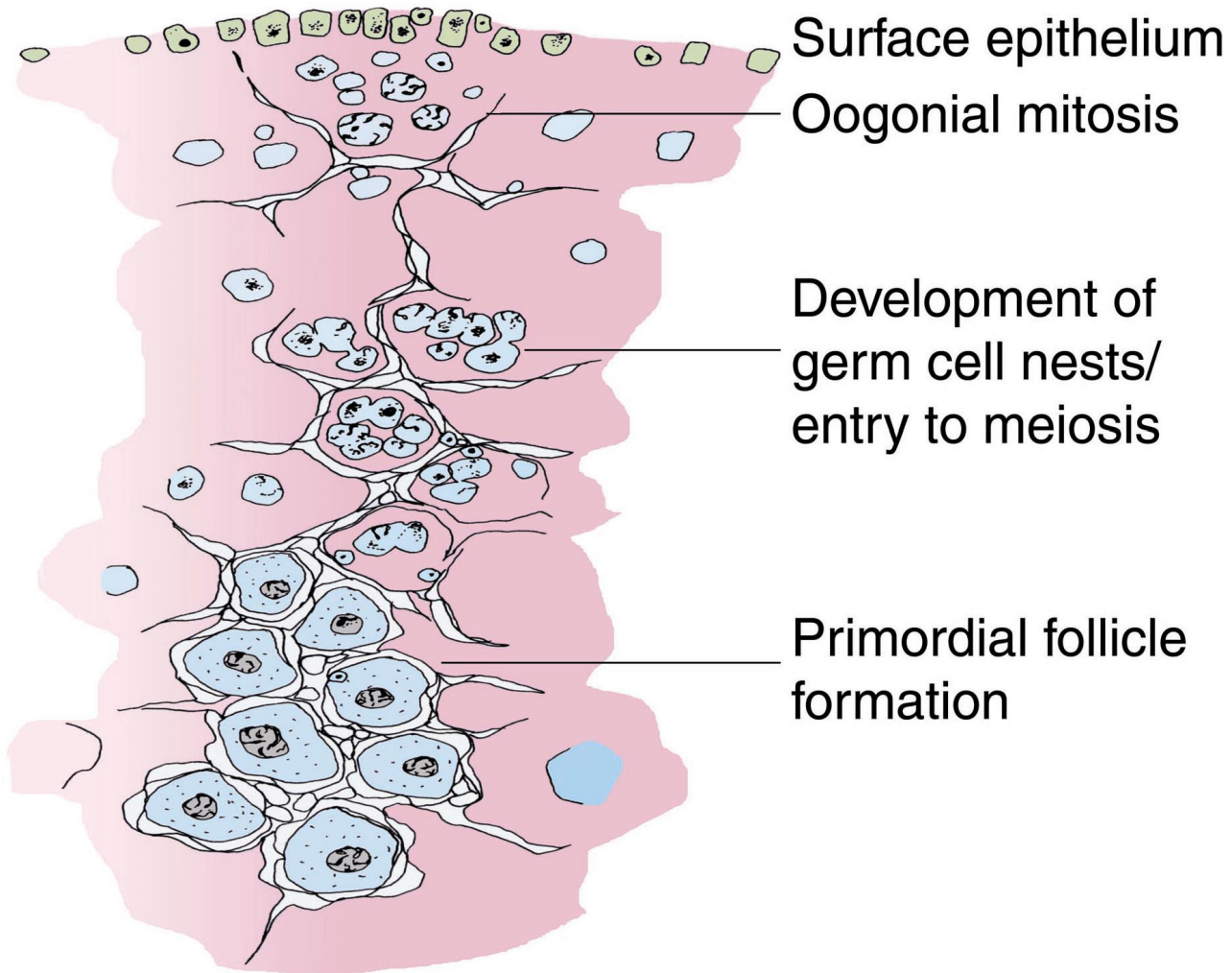


Intrinsic and extrinsic factors regulate germ cell fate decisions



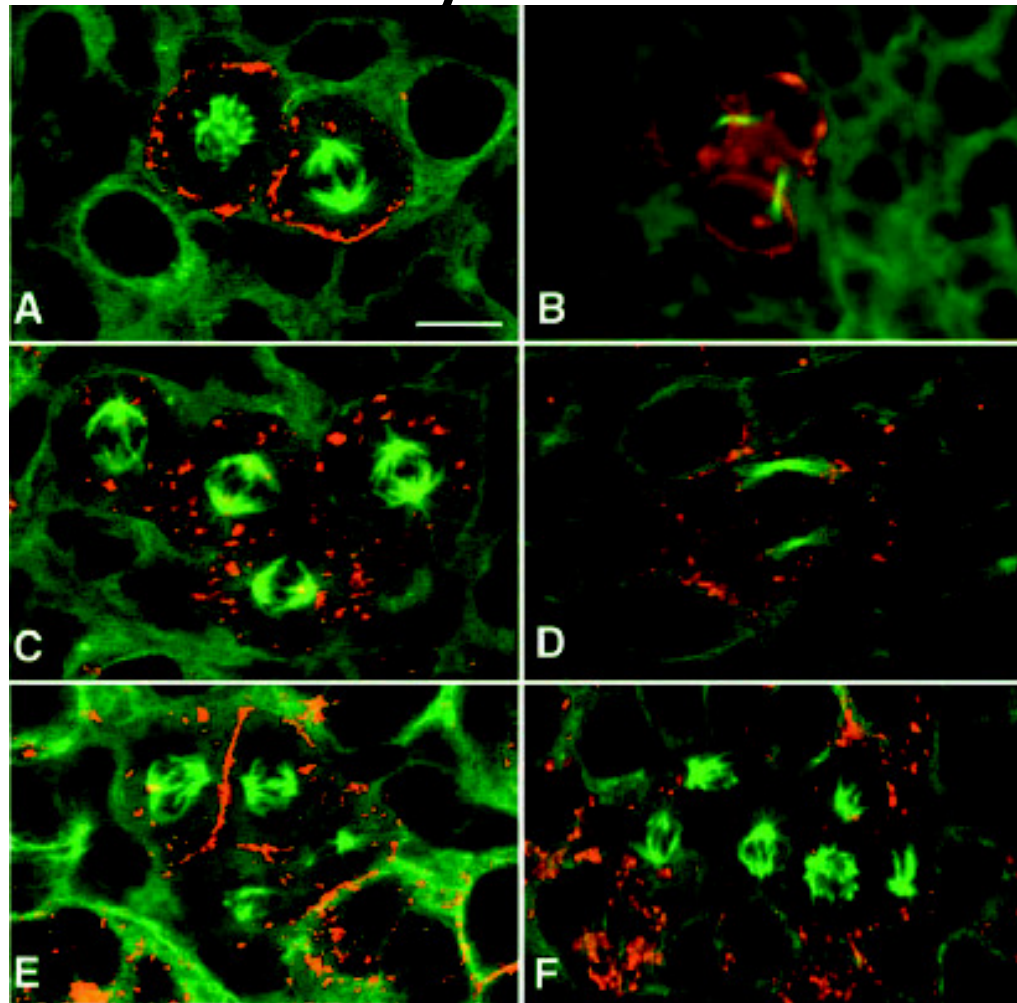
Ovarian development: oogonial cluster to primordial follicle





Drawing by Paul Hartley

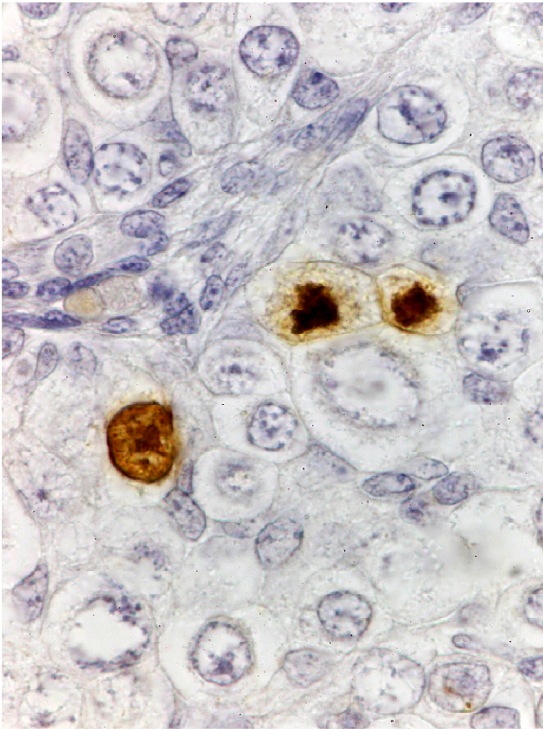
Synchronous division in germ cell cysts



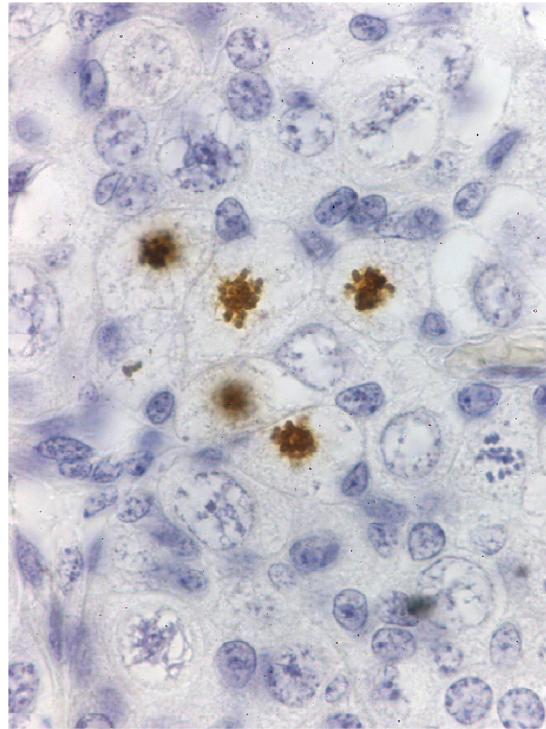
d13.5 p.c.
EMA: red
Anti-tubulin: green

Clustering of mitotic germ cells

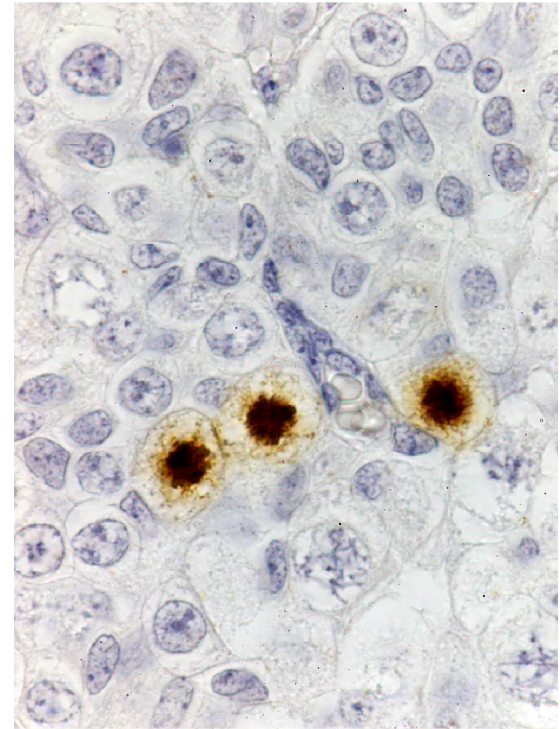
15 weeks



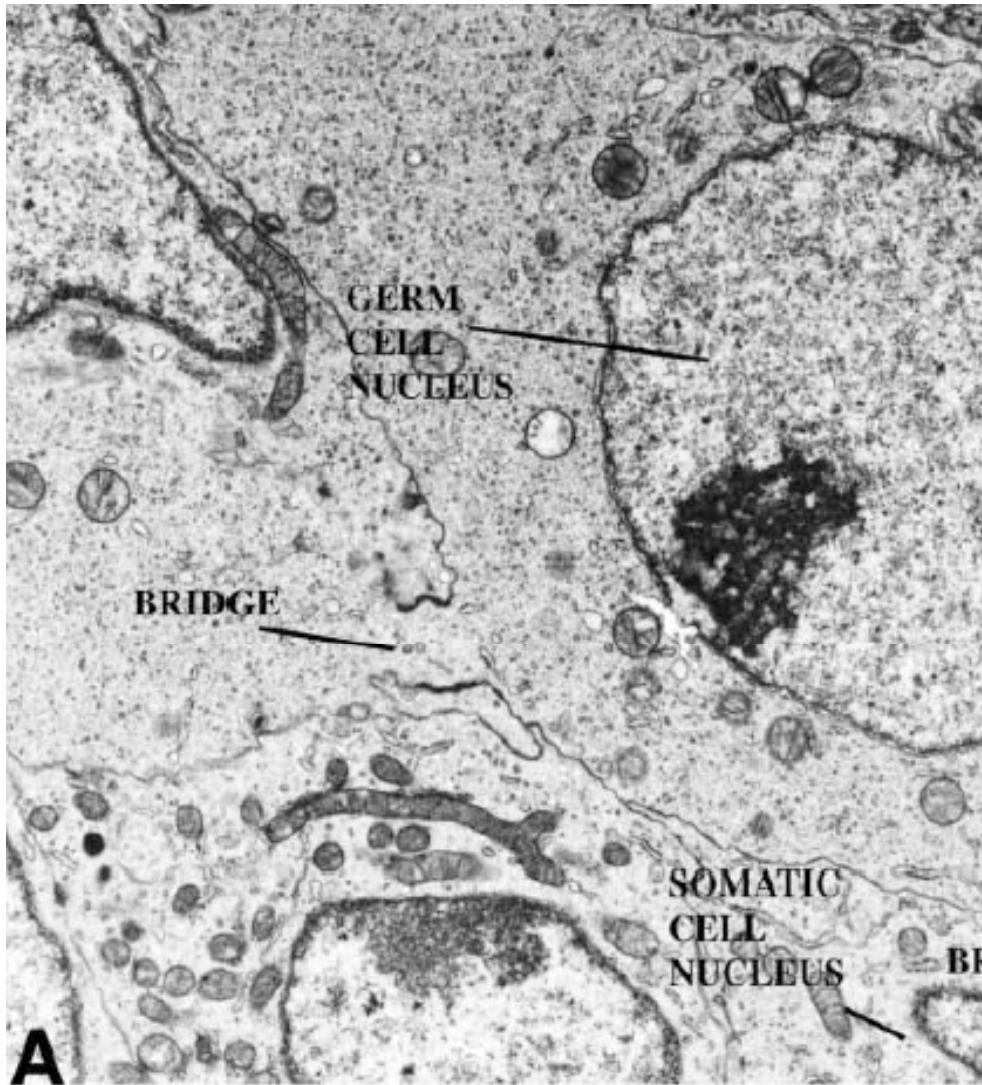
17 weeks



19 weeks



Immunostaining for phosphoH3



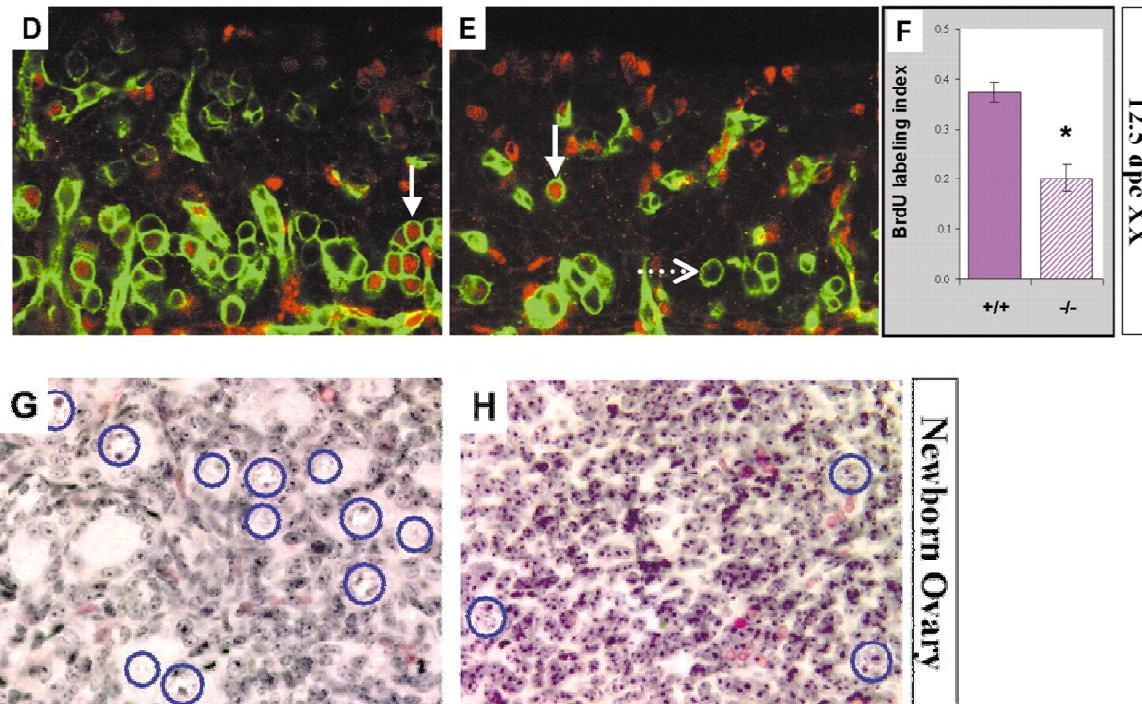
Germ cells
are connected
by ring canals

d13.5 p.c.

Pepling and Spradling 1998

The speed of the mitotic clock determines germ cell number

Green: germ cells
Red: proliferation

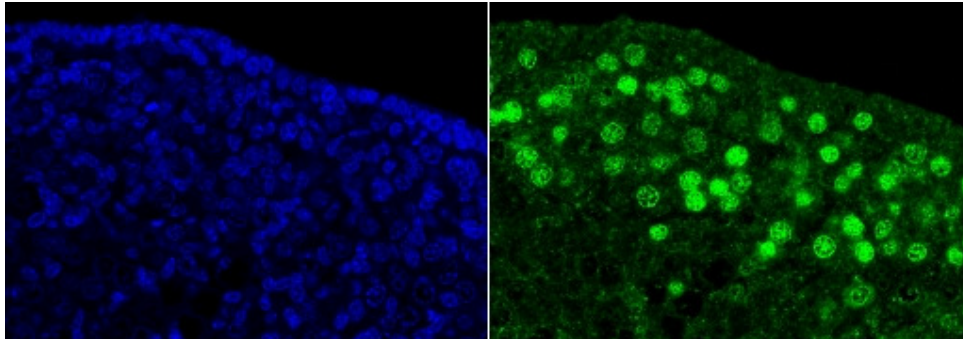


Decreased proliferation in Pin1^{-/-} PGCs

PGC to primordial follicle

- Germ cell maturation
- Activin A, Neurotrophins,
Prostaglandins in germ/somatic
interactions

Germ cell maturation



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