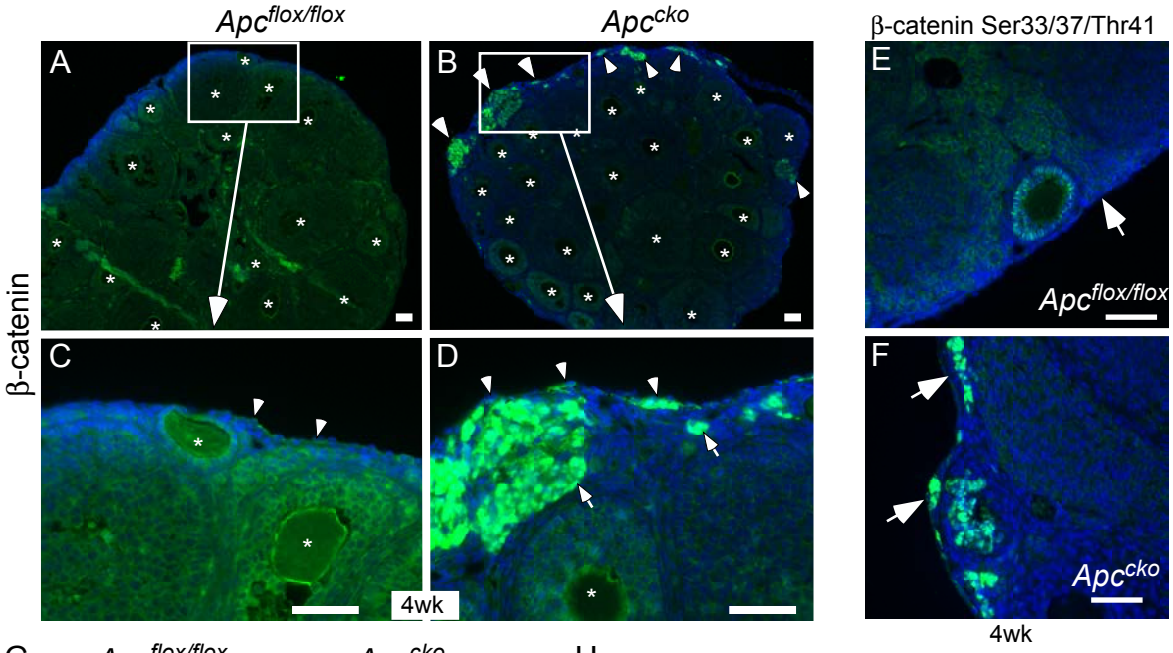
Supplementary Fig.1. (A-F) Nuclear accumulation of total β-catenin and unphosphorylated β-catenin in OSE cells (arrowheads) and pretumoral lesions (arrows) of mutant ovaries. In contrast, only membranous staining for β-catenin was observed in OSE cells of control ovaries, and follicles (asterisk) of control and mutant ovaries. (G) TCF1 and LEF1 expression in 4wk old control (a&c) and mutant (b&d) ovaries. (H) Western blot analyses of β-catenin, pGSK3β, GSK3β, LEF1, TCF1, Cyclin d1 between control and mutant ovaries (n=3/each). β-actin was used as loading control. (I) Gross ovaries from control, $APC^{cko/+}$ and APC^{cko} mice. Bars=50um.

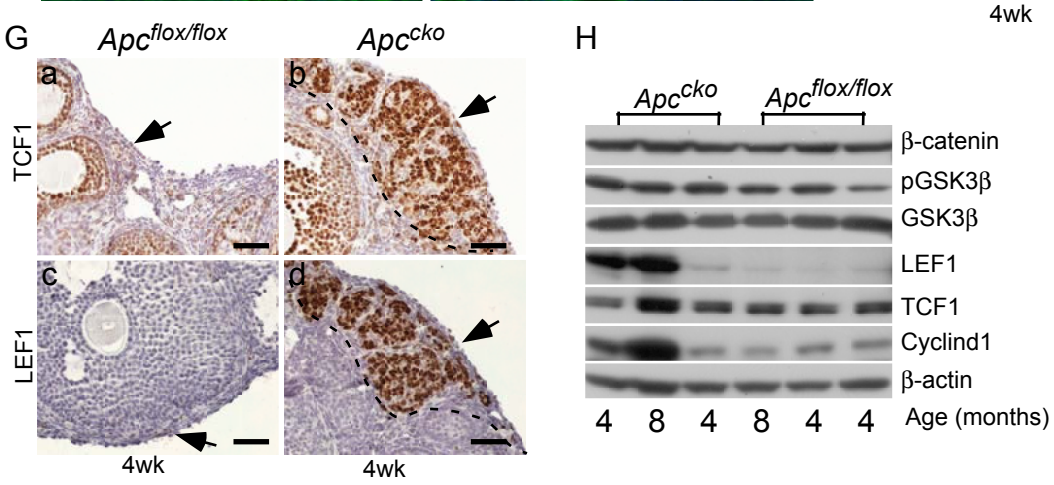
Supplementary Fig.2. H&E staining of control (A&B), $APC^{cko/+}$ (C&D), and APC^{cko} (E&F) ovaries showing normal ovarian histology, including OSE cells (arrow). Normal looking follicles (f) and corpora lutea (cl) were observed in all three groups of animals. (G-J) Hyperplasia (arrow) and shedding (arrowhead) OSE cells was observed in mutant but not control ovaries at 4 months of age. Bars=50um.

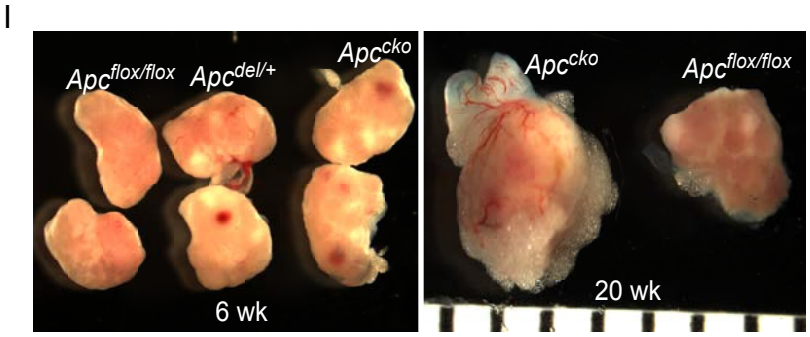
Supplementary Fig. 3. (A&B) Total β-catenin and unphosphorylated β-catenin expression in OEAs formed in APC^{cko} mice. Cystic (cy) development in APC^{cko} ovaries (C). Cytokeratin 8 (CK8) positive cysts in APC^{cko} ovaries (D). Positive control (mouse oviduct) for CK8 staining (E). Bars=50um.

Supplementary Fig. 4. P27kip1 (A&B) and FOXO1 (C&D) protein in control and mutant ovaries. Arrow in panel A marking ovarian surface epithelium. Arrowheads in B and D pointing to the cancerous lesions in mutant ovaries. Ovi: oviduct. Bars=50um.

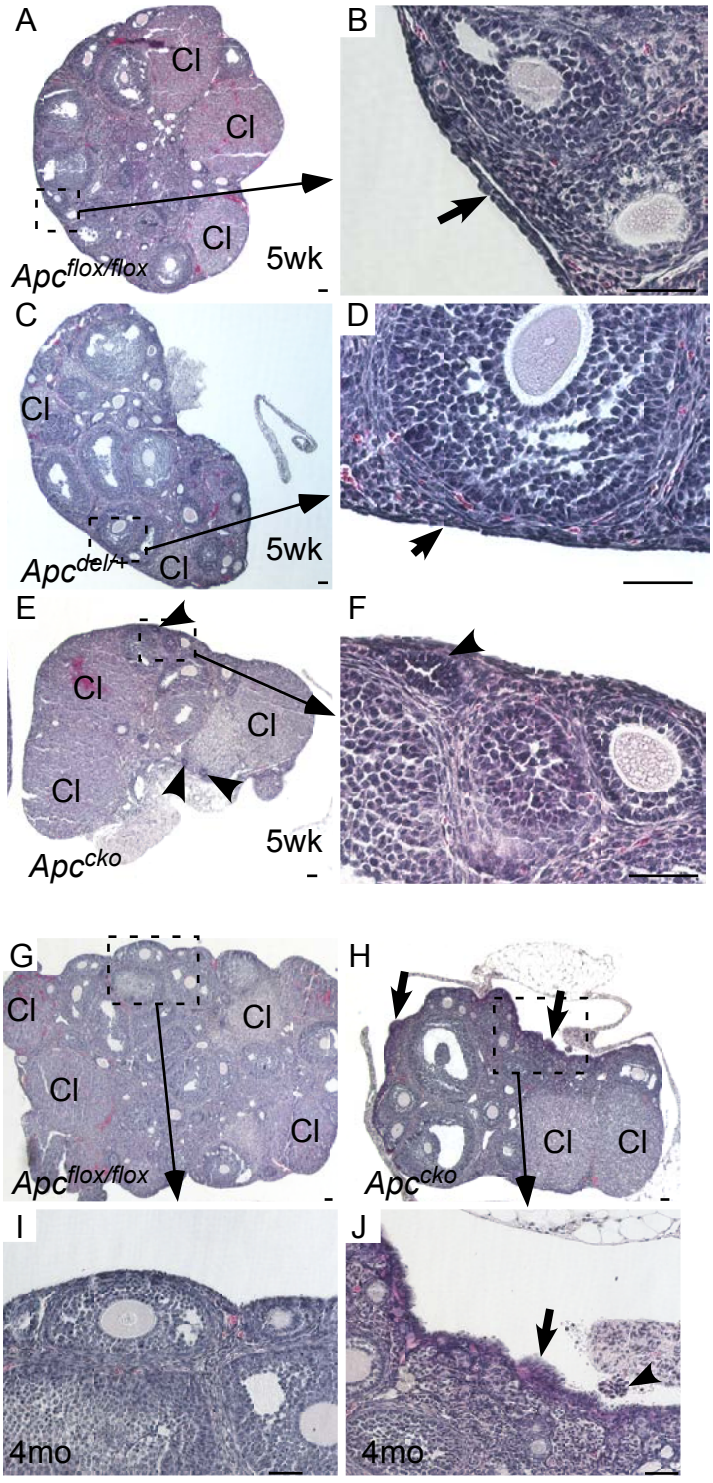
Supplementary Fig. 5. HOSE cells infected with control vector (A a-c), CA-β-catenin (A d-f), and APC (A g). H&E stained section of tumor formed in NOD/SCID s/c transplanted with AN3CA, an endometrial cancer cell line (B). Intraperitoneal tumors were observed grossly attached to intestine in some CA β-catenin HOSE-injected mice (C, a-f) and in APCkd HOSE-injected mice (C, g and h). Bars=50um.


Apc^flox/flox
Apc^cko
β-catenin Ser33/37/Thr41
A
B
E
β-catenin
C
D
F
4wk
Apc^flox/flox
Apc^cko
4wk

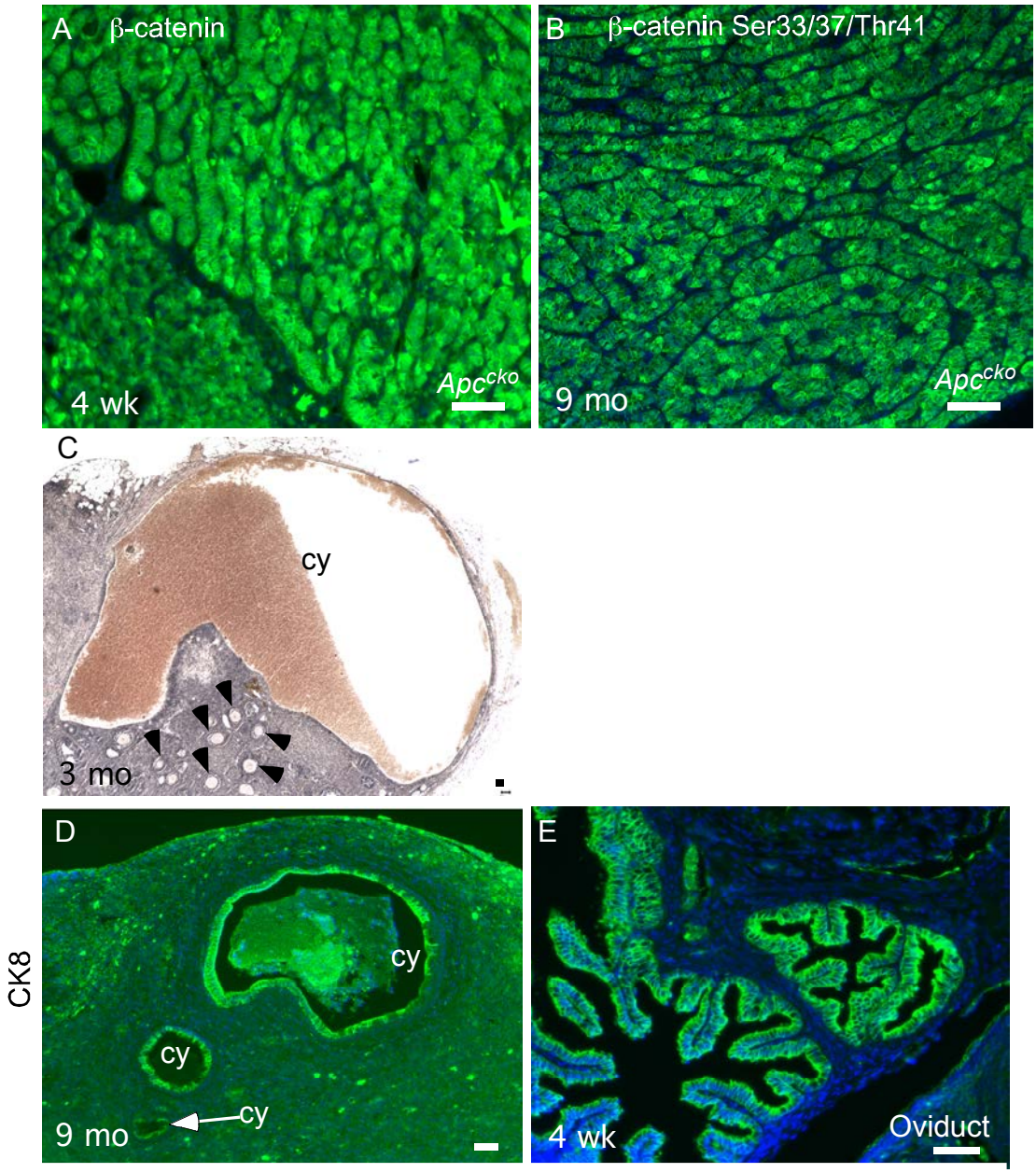

G
Apc^flox/flox
Apc^cko
a
b
TCF1
c
d
LEF1
4wk
4wk
H
Apc^cko
Apc^flox/flox
β-catenin
pGSK3β
GSK3β
LEF1
TCF1
Cyclind1
β-actin
4 8 4 8 4 4
Age (months)


I
Apc^flox/flox
Apc^del/+
Apc^cko
6 wk
Apc^cko
Apc^flox/flox
20 wk

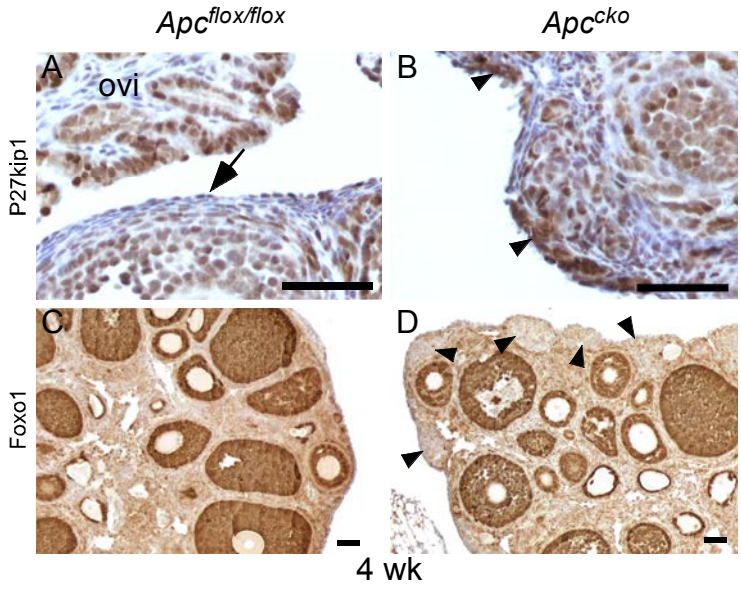
SFig. 1


A
Cl
Cl
Cl
5wk
Apc flox/flox
B
C
Cl
Cl
5wk
Apc del/+
D
E
Cl
Cl
Cl
5wk
Apc cko
F
G
Cl
Cl
Cl
Cl
Apc flox/flox
H
Cl
Cl
Apc cko
I
4mo
J
4mo

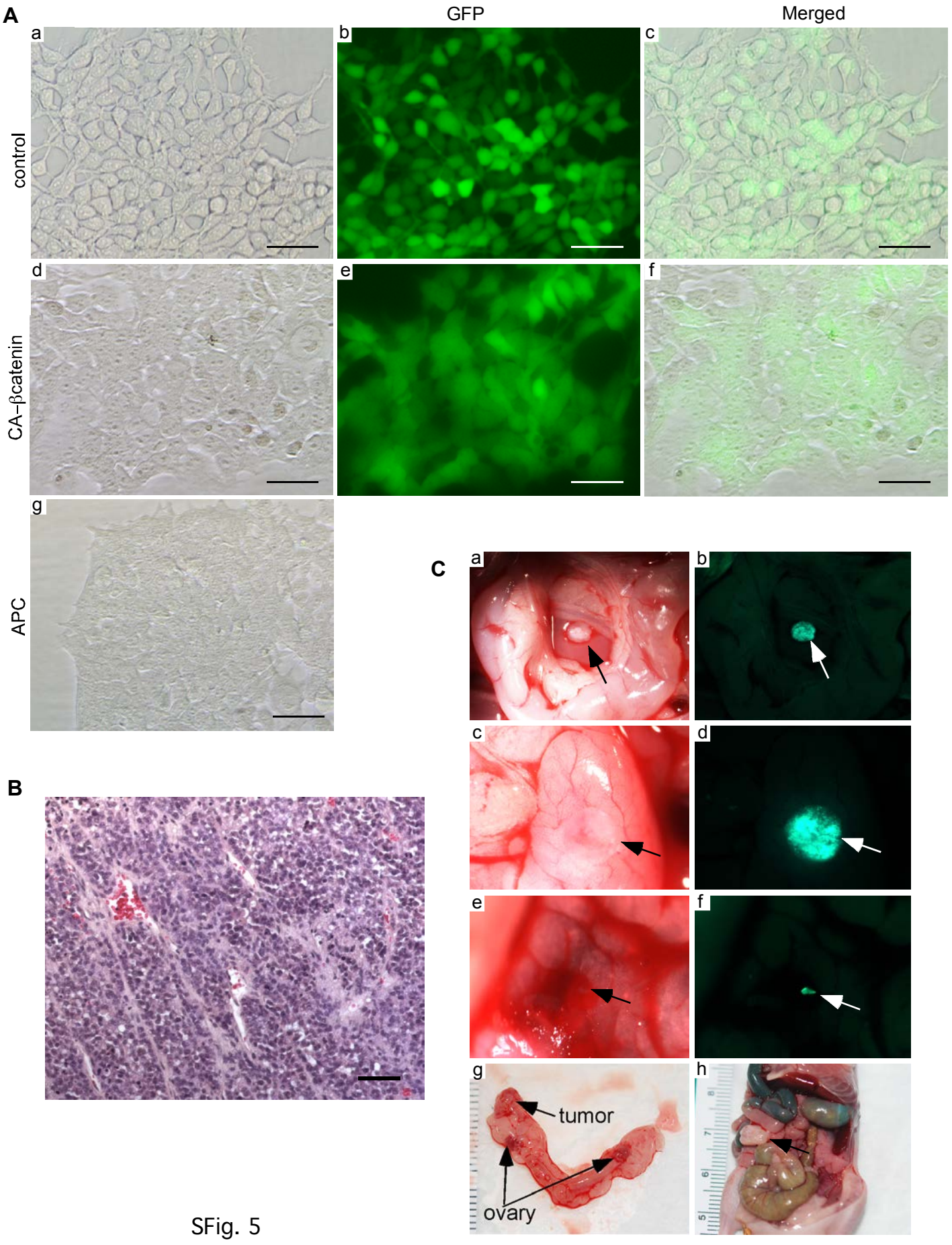
SFig. 2


A β-catenin
4 wk
Apc^cko
B β-catenin Ser33/37/Thr41
9 mo
Apc^cko
C
cy
3 mo
D
cy
cy
cy
9 mo
E
4 wk
Oviduct
CK8

SFig. 3



SFig. 4


A
GFP
Merged
a
b
c
control
d
e
f
CA–βcatenin
g
APC
B
C
a
b
c
d
e
f
g
h
tumor
ovary

SFig. 5

Supplementary Table I. Classification and characterization of oocytes collected from control and mutant mice ovaries.*

Oocytes	Control (n=4)	Mutant (n=5)	Significance
Metaphase II	26.33±2.08	14±4.24	p=0.006
Germinal Vesicle Breakdown	3.67±0.29	2±0	p=0.1
Germinal Vesicle Intact	0.00±0.00	0±0	
Atretic	2.67±1.89	7±2.83	p=0.3
Total	32.67±2.47	23±7.07	

*Values represent mean ± SD

Supplementary Table II. Fertilization efficiency and embryo quality of oocytes from control and mutant mice.

	Control (n=3)	Mutant (n=3)	Significance
Metaphase II	23.33 ± 1.67	18.33 ± 1.67	p=0.1
Fertilization	13.67 ± 2.03	10.33 ± 1.20	p=0.2
2-cell	13.67 ± 2.03	10.33 ± 1.20	p=0.2
Blastocyst	10.00 ± 1.53	7.333 ±1.20	p=0.2

*Values represent the mean ± SD.