Supplementary Information

Supplementary Table 1. Expression of IMD/ADM2 transcripts in human and mouse EST libraries with a germ-cell origin.

Supplementary Fig. 1. List of microarray studies probing oocyte transcripts in the GEO Profile database.

Supplementary Fig. 2. Video recording of COC culture in the control **(A)**, IMD/ADM2 (100 ng/ml) (**B**), and FSH (1 ng/ml) (**C**) groups. The time-lapsed recordings were taken over a 13-hr period starting at 20 hr after culture. These videos are related to main Figure 3A.

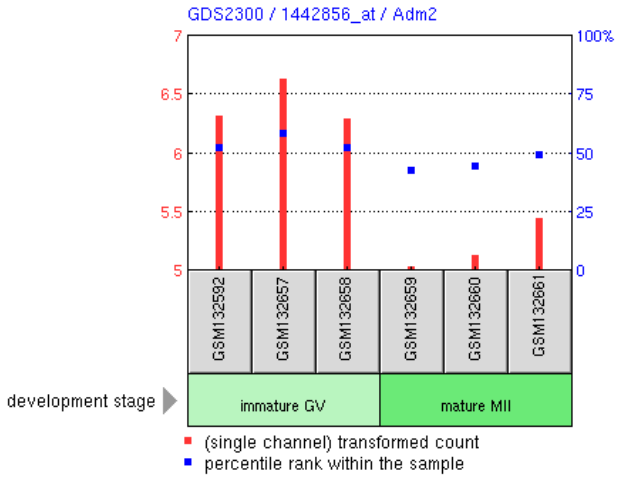
Supplementary Table 1. Expression of intermedin transcripts in human and mouse EST libraries with a germ cell origin.

Mouse IMD EST	Tissue Origin	Human IMD EST	Tissue Origin
BG918210	mammary	BX400262	T CELLS
BY733242	submandibular gland	BX348456	T CELLS
BB705319	*in vitro* fertilized eggs	AI970452	lung carcinoma
BY320656	synovial fibroblasts	AI638686	germ cell tumors
BY361392	*in vitro* fertilized eggs	AI633839	germ cell tumors
AI616110	mouse two-cell embryo	AI650897	germ cell tumors
BB701007	*in vitro* fertilized eggs		
BB701058	*in vitro* fertilized eggs		

Supplementary Fig. 1. List of microarray studies probing oocyte tand cumulus cell ranscripts in the GEO database.

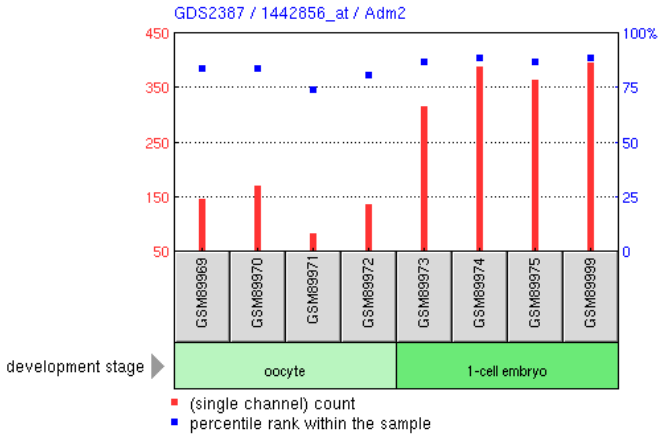
1. GDS2300 | GPL1261

Title:	Germinal vesicle stage and metaphase II stage oocyte comparison [26]
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS2300
Experiment:	Comparison of oocytes at the germinal vesicle stage (GV) to those at the metaphase II (MII) stage. GV-stage oocytes are transcriptionally silent. Results show that the destruction of transcripts that occurs during oocyte maturation is selective.



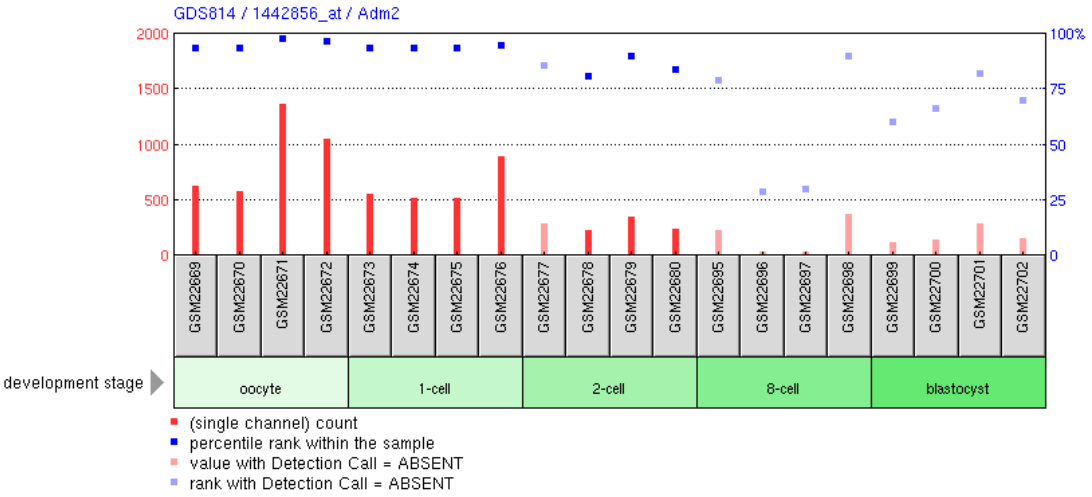
2. GDS2387 | GPL1261

Title:	Oocyte and one-cell embryo polysomal mRNA [27]
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS2387
Experiment:	Analysis of the polysomal maternal mRNA (MmRNA) populations of oocytes and late one-cell stage embryos. Results provide insight into the mechanisms that regulate the stage-specific translation of MmRNAs in early development.



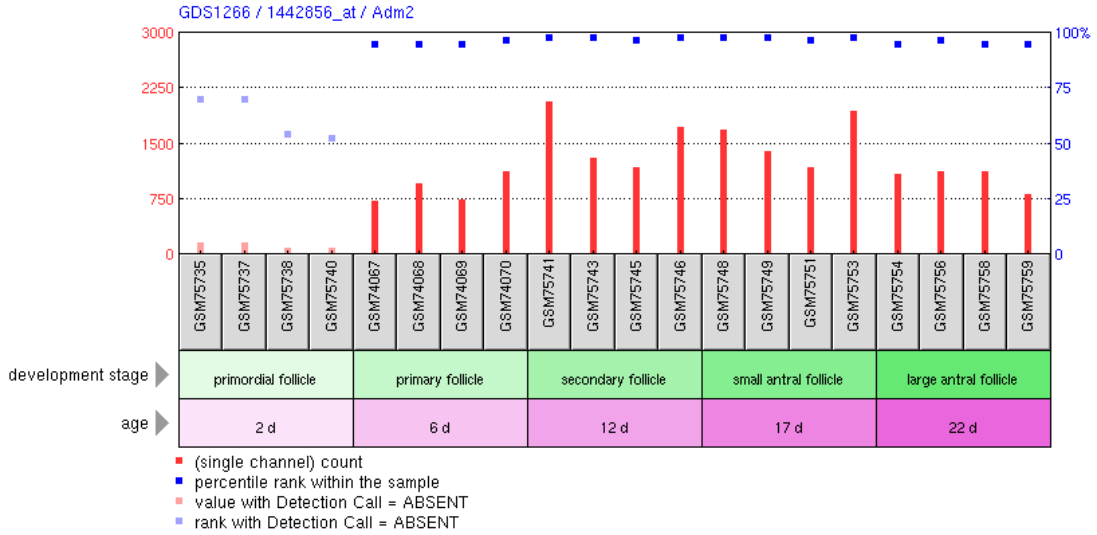
3. GDS814 | GPL340

Title:	Preimplantation embryo development (MOE430B) [28]
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS814
Experiment:	Expression profiling of CF-1 x B6D2F1/J preimplantation embryos. Oocytes and embryos at the 1-cell, 2-cell, 8-cell, and blastocyst stages examined. Results provide insight into mechanisms underlying the major transitions in preimplantation development.



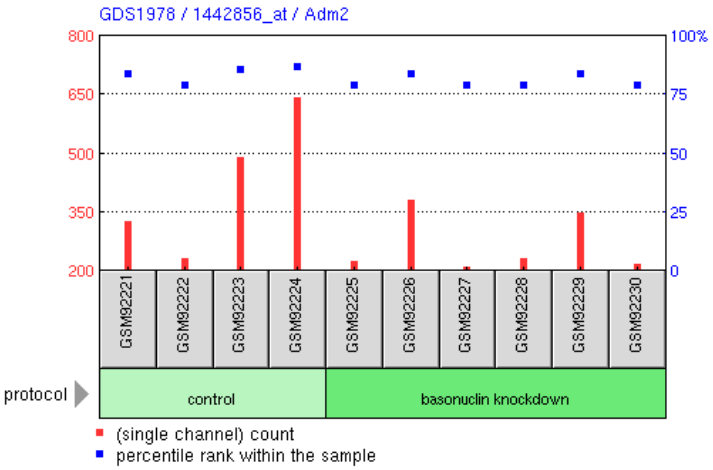
4. GDS1266 | GPL340

Title:	Oocyte development (MOE430B) [29]
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS1266
Experiment:	Analysis of oocytes from follicles at the primordial to large antral stages of development, collected from B6SJLF1 animals at 2 to 22 days of age. Provides insight into the development of eggs of high meiotic and developmental competence.



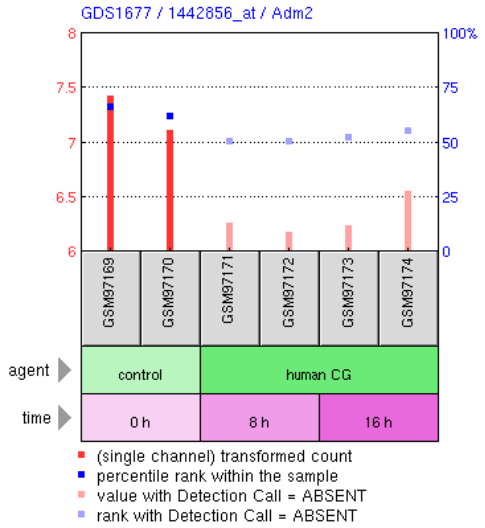
5. GDS1978 | GPL1261

Title:	Zinc-finger protein basonuclin knockdown effect on oocytes [30]
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS1978
Experiment:	Analysis of oocytes following RNAi knockdown of basonuclin (Bnc1), a zinc-finger protein found in abundance in oocytes. The Bnc1 gene qualifies as a maternal-effect gene because the source of pre-implantation embryonic Bnc1 is maternal. Results provide insight into the function of Bnc1.



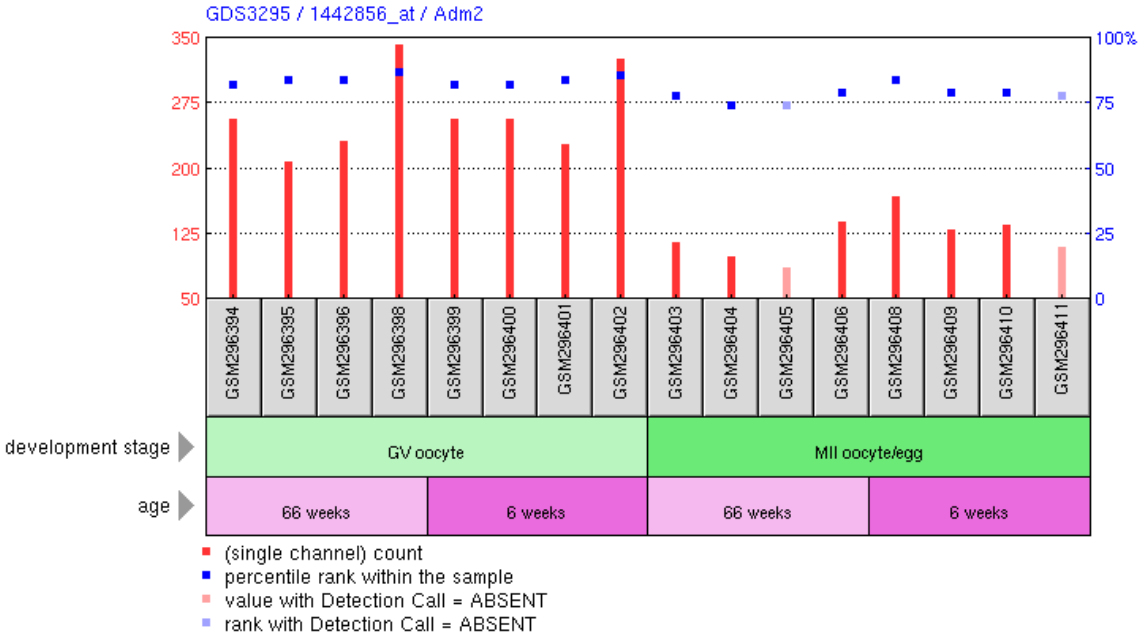
6. GDS1677| GPL1261

Title:	Cumulus oocyte complex during ovulation: time course [2]
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS1677
Experiment:	Analysis of cumulus oocyte complexes (COCs) isolated from ovaries prior to ovulation or from the oviduct after ovulation. Follicular growth stimulated using equine chorionic gonadotropin (CG) and ovulation induced using human CG. Results identify candidate genes in COCs that impact ovulation.



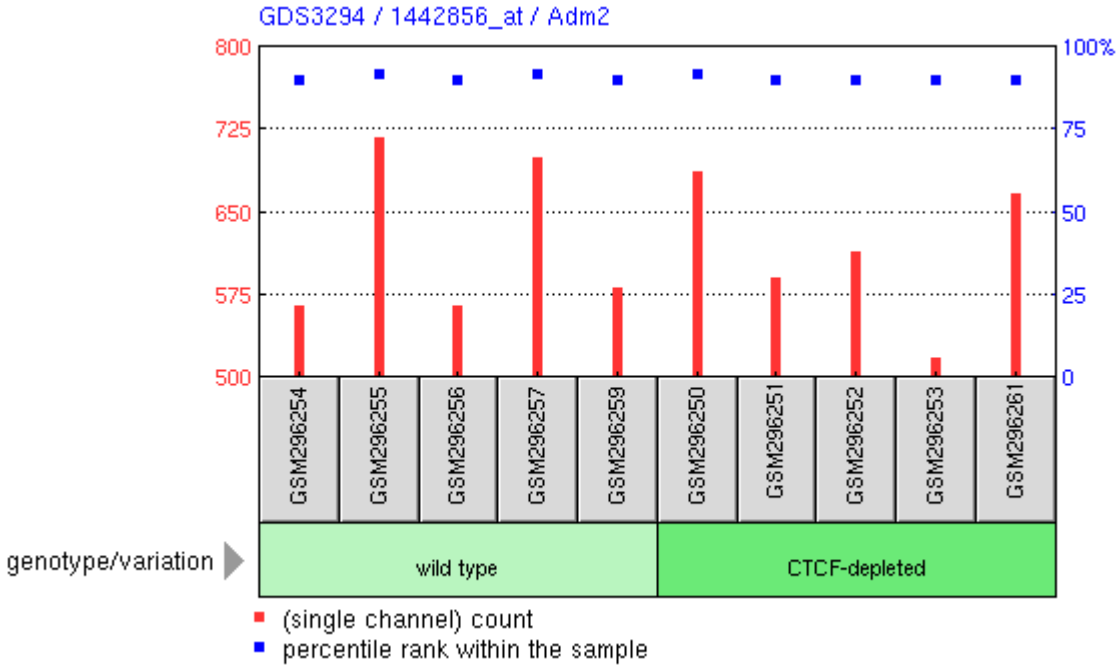
7. GDS3295 | GPL1261

Title:	Age-associated aneuploidy model
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS3295
Experiment:	Analysis of germinal vesicle (GV)-intact oocytes and metaphase II (MII) eggs obtained from young and old females. An increased incidence of aneuploidy is observed with increasing maternal age. Results provide insight into the molecular basis underlying the age-associated increase in aneuploidy.



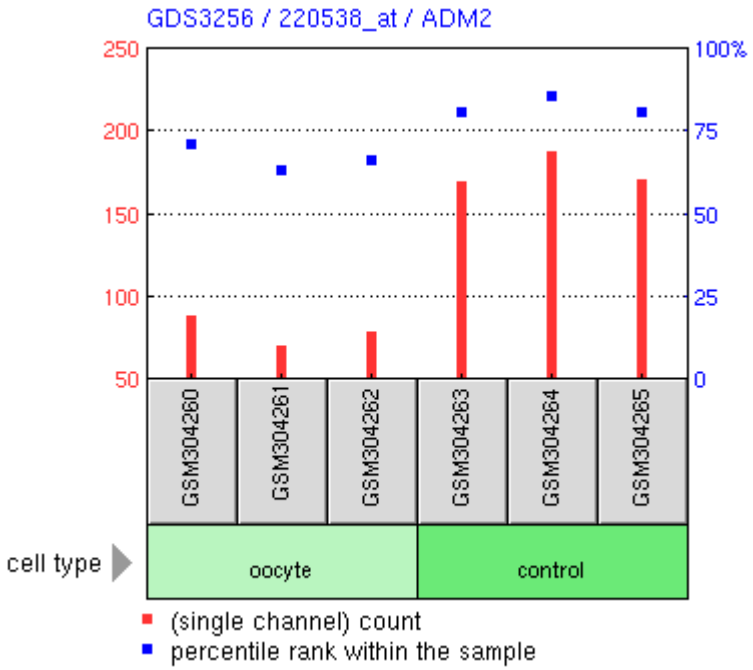
8. GDS3294 | GPL1261

Title:	CTCF depletion effect in oocytes
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS3294
Experiment:	Analysis of germinal vesicle (GV) oocytes depleted for maternal stores of CTCF by RNA interference (RNAi). Depletion of CTCF, an 11 zinc-finger DNA-binding protein, causes meiotic defects in the egg. Results provide insight into the molecular basis of this observation.



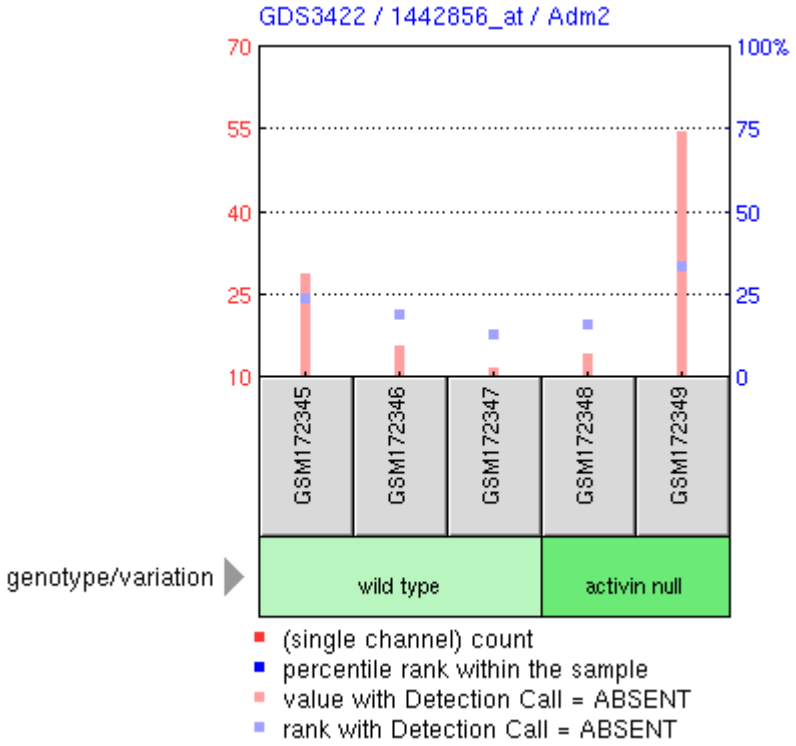
9. GDS3256 | GPL570

Title:	Metaphase II stage oocytes matured *in vivo*
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS3256
Experiment:	Analysis of young, untreated metaphase II (MII) oocytes. Results provide insight into the baseline of genes expressed in in vivo matured oocytes and into the molecular mechanisms underlying biological processes such as oogenesis, folliculogenesis, fertilization, and embryonic development.



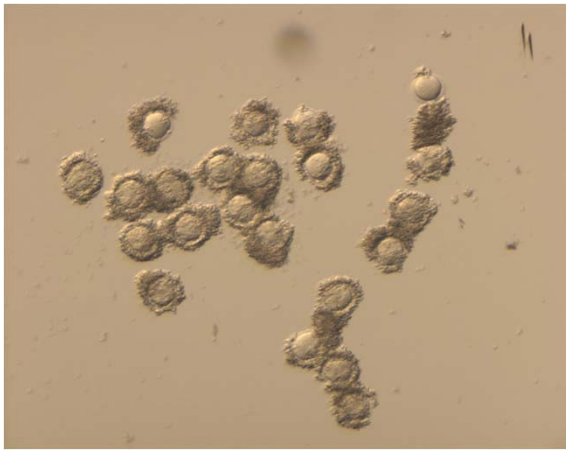
10. GDS3422 | GPL1261

Title:	Activin deficiency effect on ovarian granulosa cells
GEO dataset link	http://www.ncbi.nlm.nih.gov/sites/GDSbrowser?acc=GDS3422
Experiment:	Analysis of granulosa cells from animals deficient for all ovarian activins. Granulosa cells are associated with the developing oocyte. Results provide insight into the role of activins in ovarian growth, differentiation, and cancer.



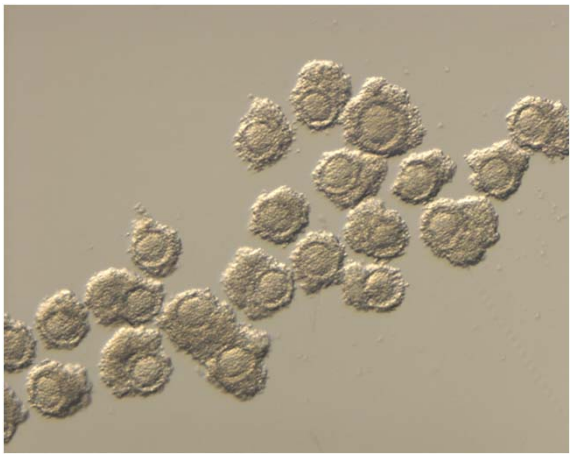
Supplementary Fig. 2. Video recording of COC culture in the control (A), IMD/ADM2 (100 ng/ml, B), and FSH (1 ng/ml, C) groups. The time lapsed recordings were taken in a 13 hr period starting at 20 hr after culture. These videos are related to Figure 3A.

A



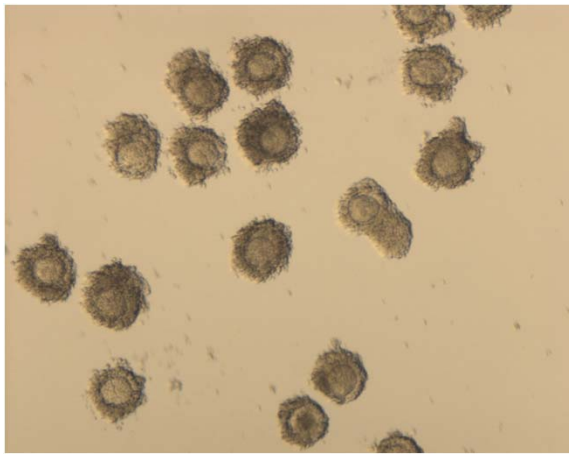
Control Video

B



IMD Video

C



FSH Video

Sup.Fig. 2