

OVARIAN KALEIDOSCOPE DATABASE

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Purpose: To facilitate integration of published literature and genomic information on ovarian genes, we have set up an online database containing genes expressed in the ovary together with their ovarian expression pattern and function.

Materials and methods: The Ovarian Kaleidoscope Database (OKdb, <http://ovary.stanford.edu>) provides information regarding the biological function, expression pattern and regulation of genes that are expressed in the ovary. It serves as a gateway for the ovarian research community by offering data about gene information, chromosomal localization, human and murine mutation phenotypes, and original literature links. All of this information is searchable online not only by gene name but also by criteria such as the cellular and ovarian function of the gene and gene product, their expression in different ovarian cell types, or their association with specific ovarian phenotypes.

Results: We now have >3,000 individual gene pages with 20-25 users accessing the database every day. We have improved the database by including 1) DNA microarray data to display gene expression patterns during multiple stages of follicle and oocyte development together with oocyte transition into early embryos, 2) Transgenic mouse models and human infertility phenotypes to highlight ovarian gene mutations and associated phenotypes, 3) the Ovulatory Gene Pathways to depict genes involved in ovulation, 4) A KEGG search in which ovarian genes are matched with diverse gene pathways documented in Kyoto Encyclopedia of Genes and Genomes to allow the identification of pathway genes. Science NetWatch twice featured OKdb in 2000 and 2005 with the title “Hot pick” and “DATABASE: Foundations of Fertility”, respectively. OKdb was also highlighted as an editorial in Endocrinology.

Conclusion: The present ovarian gene database provides a bioinformatic tool to facilitate ovarian research by elucidating the expression of ovarian genes at different developmental stages and different ovarian cell types. Together with understanding of cellular functions of these genes, the physiological roles of diverse ovarian genes could be revealed.