

Supplemental Table S1. Sequences of primers used for quantitative PCR.

Supplemental Table S2. List of 473 proteins that were differentially expressed in female mouse gonads during 11.5–13.5 dpc.

Supplemental Table S3. GO analysis of 473 differentially expressed proteins, arranged by cellular components.

Supplemental Table S4. GO analysis of 102 mitochondrion-enriched differentially expressed proteins, arranged by biological processes.

Supplemental Table S5. Gene list of Electron Transport Chain (*Mus musculus*) from WikiPathways (WP295).

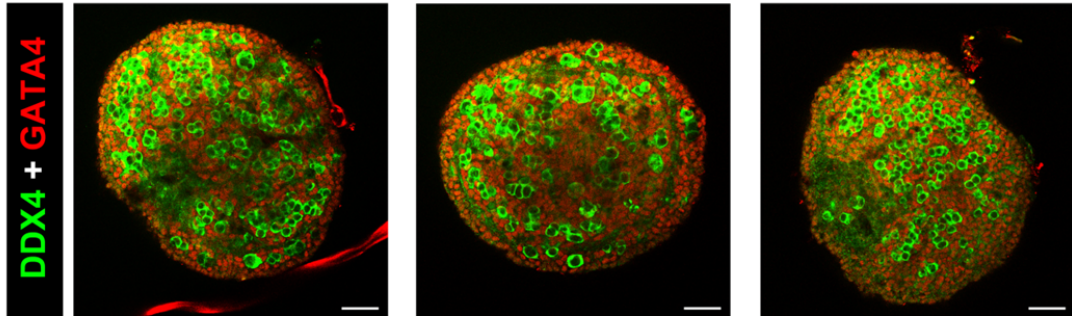
Fig. S1. Immunofluorescence staining of differentially expressed proteins in female mouse gonads from 11.5-13.5dpc. The proteins were selected from the four different classes based on their expression patterns (AXAN2, GATM, RBPMS2, UCHL1 and ALDH1A1 from class C1, AFP and ALDH1A2 from class C2, CAV1, COFILLIN and GNPDA1 from class C3 and SOAT1 and CPT1A were chosen from class C4, details in Table S2). The immunofluorescence signals of AXAN2, GATM, RBPMS2, UCHL1 and ALDH1A1 increased evidently at 13.5dpc; the immunofluorescence signals of AFP and ALDH1A2 visibly declined during 11.5-13.5dpc; the fluorescence intensities of CAV1, COFILLIN and GNPDA1 immunostaining gradually increased during this time course; while the immunofluorescence intensities of SOAT1 and CPT1A increased from 12.5dpc and sustained a high level at 13.5dpc. The results were approximately in agreement with the LC/MS3 quantification results. Bar, 50 μ m.

Fig. S2. Disruption of the electron transport chain shows no detectable phenotype changes in the somatic cells of female gonads and in early male gonads. *A*, Immunofluorescence results from female somatic cells stained with GATA4, showing no detectable changes. *B*, Immunofluorescence staining revealed a normal morphology in the male gonads under rotenone treatment, with germ cells marked by OCT4 staining. Bar, 50 μm .

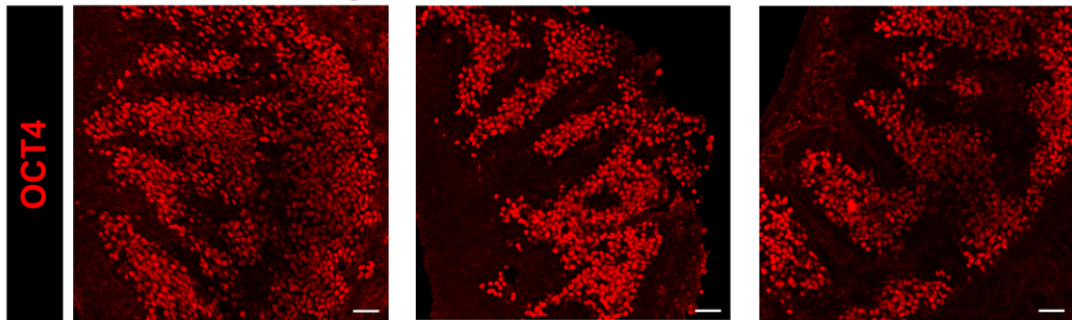
Fig. S3. Levels of ATP and ROS in the rotenone treated group, and adding CoQ10 rescues changes in ATP and ROS levels. In the rotenone treated group, ATP levels were decreased and ROS levels increased. Addition of CoQ10 to rotenone rescued the phenotype, with ATP levels significantly increased and ROS significantly decreased. Error bars indicate SEM and similar experiments were each repeated at least three times (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, Student's t-test).

Fig. S2

A Somatic cells of female gonad



B Testis cords of male gonad



Normal

Control

ROT 0.1 μ M

Fig. S3

