**Supplementary Table 5.** List of significantly enriched KEGG pathways among the genes downregulated in C3 testis transcriptome against both parents.

| Sl. No. | KEGG pathway                                | Input number | Background number | p-value       |
|---------|---------------------------------------------|--------------|-------------------|--------------|
| 1       | Metabolic pathways                          | 33           | 1243              | 2.62E-18     |
| 2       | Drug metabolism - other enzymes             | 7            | 46                | 1.41E-09     |
| 3       | Pyrimidine metabolism                       | 7            | 105               | 2.74E-07     |
| 4       | Circadian entrainment                       | 5            | 95                | 4.35E-05     |
| 5       | Proximal tubule bicarbonate reclamation     | 4            | 23                | 3.40E-06     |
| 6       | Dorso-ventral axis formation                | 4            | 28                | 6.87E-06     |
| 7       | Pyruvate metabolism                         | 4            | 40                | 2.50E-05     |
| 8       | Glutathione metabolism                      | 4            | 52                | 6.53E-05     |
| 9       | Long-term depression                        | 4            | 60                | 0.000110291  |
| 10      | Amphetamine addiction                       | 4            | 67                | 0.000165189  |
| 11      | Bile secretion                              | 4            | 71                | 0.0002042    |
| 12      | Retrograde endocannabinoid signaling        | 4            | 101               | 0.000734776  |
| 13      | Glutamatergic synapse                       | 4            | 114               | 0.001135083  |
| 14      | Dopaminergic synapse                        | 4            | 130               | 0.001811747  |
| 15      | cAMP signaling pathway                      | 4            | 199               | 0.007913681  |
| 16      | MicroRNAs in cancer                         | 4            | 299               | 0.02966777   |
| 17      | PI3K-Akt signaling pathway                  | 4            | 342               | 0.044686194  |
|   | Pathway                                         | Rank | PA | FDR    |
|---|------------------------------------------------|------|----|--------|
| 18| Nicotine addiction                             | 3    | 40 | 0.000609084 |
| 19| Fat digestion and absorption                    | 3    | 41 | 0.000651821 |
| 20| Cocaine addiction                              | 3    | 49 | 0.001063577 |
| 21| N-Glycan biosynthesis                           | 3    | 49 | 0.001063577 |
| 22| Arginine and proline metabolism                | 3    | 50 | 0.001124241 |
| 23| Amyotrophic lateral sclerosis (ALS)            | 3    | 51 | 0.001187046 |
| 24| Long-term potentiation                          | 3    | 66 | 0.002404487 |
| 25| Glycolysis / Gluconeogenesis                    | 3    | 67 | 0.00250515 |
| 26| Drug metabolism - cytochrome P450              | 3    | 69 | 0.00271421 |
| 27| PPAR signaling pathway                         | 3    | 72 | 0.003047454 |
| 28| Metabolism of xenobiotics by cytochrome P450   | 3    | 73 | 0.00316386 |
| 29| Chemical carcinogenesis                         | 3    | 82 | 0.004335122 |
| 30| Pancreatic secretion                            | 3    | 96 | 0.006621559 |
| 31| Glucagon signaling pathway                     | 3    | 102| 0.007783206 |
| 32| Purine metabolism                              | 3    | 176| 0.031832183 |
| 33| Other glycan degradation                        | 2    | 18 | 0.00265081 |
| 34| Renin-angiotensin system                        | 2    | 23 | 0.004133282 |
| 35| Vitamin digestion and absorption               | 2    | 24 | 0.004466506 |
| 36| Glycosaminoglycan biosynthesis - heparan sulfate / heparin | 2    | 24 | 0.004466506 |
|   | Pathway                                                                 | Score | Fold Change | p-value    |
|---|------------------------------------------------------------------------|-------|-------------|------------|
| 37 | Citrate cycle (TCA cycle)                                              | 2     | 30          | 0.006714873|
| 38 | Galactose metabolism                                                  | 2     | 31          | 0.007130224|
| 39 | Pentose and glucuronate interconversions                              | 2     | 36          | 0.009375512|
| 40 | Tryptophan metabolism                                                 | 2     | 40          | 0.011368553|
| 41 | Sphingolipid metabolism                                               | 2     | 47          | 0.015259185|
| 42 | Amino sugar and nucleotide sugar metabolism                           | 2     | 48          | 0.015855461|
| 43 | Ovarian steroidogenesis                                               | 2     | 50          | 0.017077522|
| 44 | Mineral absorption                                                    | 2     | 52          | 0.018338376|
| 45 | Starch and sucrose metabolism                                         | 2     | 57          | 0.021655931|
| 46 | Steroid hormone biosynthesis                                          | 2     | 58          | 0.022347156|
| 47 | Glycerolipid metabolism                                               | 2     | 59          | 0.023047433|
| 48 | Retinol metabolism                                                    | 2     | 65          | 0.027434824|
| 49 | Adipocytokine signaling pathway                                       | 2     | 70          | 0.031325782|
| 50 | Platinum drug resistance                                              | 2     | 75          | 0.035420243|
| 51 | Aldosterone synthesis and secretion                                   | 2     | 81          | 0.040589509|
| 52 | Hematopoietic cell lineage                                            | 2     | 88          | 0.046954118|
| 53 | Ribosome biogenesis in eukaryotes                                     | 2     | 89          | 0.047891427|
| 54 | Protein digestion and absorption                                     | 2     | 90          | 0.048835557|
| 55 | Sulfur metabolism                                                     | 1     | 10          | 0.041372824|
| 56 | Ubiquinone and other terpenoid-quinone                                | 1     | 11          | 0.045048579|
biosynthesis

Databases: KEGG PATHWAY, Statistical test method: hypergeometric test / Fisher's exact test, FDR correction method: Benjamini and Hochberg.

KEGG, Kyoto Encyclopedia of Genes and Genomes; PI3K, phosphoinositide 3-kinase.