

Transcriptional Alterations Induced by Delta-9 Tetrahydrocannabinol in the Brain and Gonads of Adult Medaka

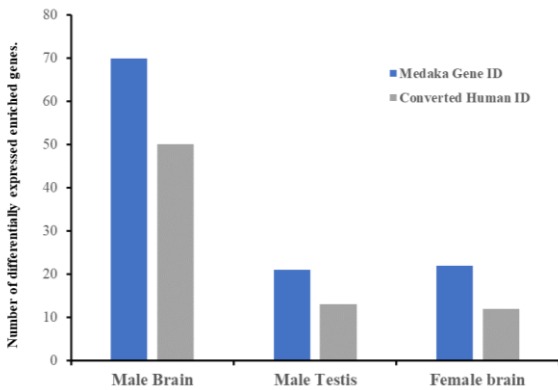
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Supplemental Figures



Supplementary Figure S1. The human ortholog of medaka genes in the male brain, testis, and female brain. Y axis indicates the number of differentially expressed genes enriched.

2A

Target name	Term ID	P(adj)	$-\log_{10}(\text{Padj})$
structural constituent of muscle	GO:0008307	3.234×10^{-7}	
oxidoreduction-driven active transmembrane transpor...	GO:0015453	3.076×10^{-4}	
primary active transmembrane transporter activity	GO:0015399	1.803×10^{-3}	
cytochrome-c oxidase activity	GO:0004129	4.341×10^{-3}	
electron transfer activity	GO:0009055	5.034×10^{-3}	
oxidoreductase activity, acting on a heme group of do...	GO:0016675	5.146×10^{-3}	
proton transmembrane transporter activity	GO:0015078	5.649×10^{-3}	
structural molecule activity	GO:0005198	6.276×10^{-3}	
active ion transmembrane transporter activity	GO:0022853	1.520×10^{-2}	
active transmembrane transporter activity	GO:0022804	1.892×10^{-2}	
creatine kinase activity	GO:0004111	3.565×10^{-2}	
phosphotransferase activity, nitrogenous group as acc...	GO:0016775	4.984×10^{-2}	

2B

Target name	Term ID	P(adj)	$-\log_{10}(\text{Padj})$
muscle contraction	GO:0006936	2.332×10^{-7}	
ATP metabolic process	GO:0046034	5.975×10^{-7}	
muscle system process	GO:0003012	2.284×10^{-6}	
generation of precursor metabolites and energy	GO:0006091	1.307×10^{-5}	
actin-myosin filament sliding	GO:0033275	1.631×10^{-4}	
oxidative phosphorylation	GO:0006119	1.102×10^{-3}	
proton transmembrane transport	GO:1902600	1.842×10^{-3}	
aerobic electron transport chain	GO:0019646	2.231×10^{-3}	
mitochondrial ATP synthesis coupled electron transport	GO:0042775	3.453×10^{-3}	
ATP synthesis coupled electron transport	GO:0042773	3.453×10^{-3}	
striated muscle contraction	GO:0006941	3.613×10^{-3}	
nucleoside diphosphate phosphorylation	GO:0006165	4.675×10^{-3}	

2C

Target name	Term ID	P(adj)	$-\log_{10}(\text{Padj})$
contractile fiber	GO:0043292	6.239×10^{-7}	
myofilament	GO:0036379	6.383×10^{-7}	
sarcomere	GO:0030017	4.462×10^{-6}	
myofibril	GO:0030016	9.320×10^{-6}	
striated muscle thin filament	GO:0005865	3.515×10^{-5}	
respiratory chain complex	GO:0098803	4.514×10^{-4}	
cytochrome complex	GO:0070069	4.718×10^{-4}	
respirasome	GO:0070469	7.479×10^{-4}	
cytoplasm	GO:0005737	7.672×10^{-4}	
supramolecular fiber	GO:0099512	1.870×10^{-3}	
supramolecular polymer	GO:0099081	2.018×10^{-3}	
mitochondrial inner membrane	GO:0005743	2.974×10^{-3}	

Supplementary Figure S2. The top 12 enrichments of the biological processes from the Gene Ontology enrichment annotation of male brain from THC-exposed medaka. 2A) Enrichment of biological processes. 2B) Enrichment of molecular function. 2C) Enrichment of cellular components.

3A

Target name	Term ID	P(adj)	$-\log_{10}(\text{Padj})$
oxidoreduction-driven active transmembrane transpor...	GO:0015453	1.362×10^{-5}	
cytochrome-c oxidase activity	GO:0004129	2.604×10^{-5}	
oxidoreductase activity, acting on a heme group of do...	GO:0016675	3.091×10^{-5}	
active ion transmembrane transporter activity	GO:0022853	5.218×10^{-5}	
electron transfer activity	GO:0009055	1.335×10^{-4}	
proton transmembrane transporter activity	GO:0015078	1.468×10^{-4}	
active transmembrane transporter activity	GO:0022804	4.370×10^{-4}	
primary active transmembrane transporter activity	GO:0015399	5.725×10^{-4}	
inorganic cation transmembrane transporter activity	GO:0022890	3.091×10^{-3}	
cation transmembrane transporter activity	GO:0008324	4.646×10^{-3}	
inorganic molecular entity transmembrane transporter...	GO:0015318	8.086×10^{-3}	
ion transmembrane transporter activity	GO:0015075	1.675×10^{-2}	

3B




Target name	Term ID	P(adj)	$-\log_{10}(\text{Padj})$
aerobic electron transport chain	GO:0019646	1.161×10^{-4}	
mitochondrial electron transport, cytochrome c to oxy...	GO:0006123	1.589×10^{-4}	
ATP synthesis coupled electron transport	GO:0042773	1.656×10^{-4}	
mitochondrial ATP synthesis coupled electron transport	GO:0042775	1.656×10^{-4}	
ATP metabolic process	GO:0046034	2.141×10^{-4}	
respiratory electron transport chain	GO:0022904	3.578×10^{-4}	
oxidative phosphorylation	GO:0006119	8.341×10^{-4}	
electron transport chain	GO:0022900	1.967×10^{-3}	
aerobic respiration	GO:0009060	2.782×10^{-3}	
generation of precursor metabolites and energy	GO:0006091	3.983×10^{-3}	
cellular respiration	GO:0045333	6.312×10^{-3}	
energy derivation by oxidation of organic compounds	GO:0015980	2.232×10^{-2}	

3C




Target name	Term ID	P(adj)	$-\log_{10}(\text{Padj})$
cytochrome complex	GO:0070069	5.802×10^{-7}	
respiratory chain complex	GO:0098803	1.647×10^{-5}	
respirasome	GO:0070469	2.487×10^{-5}	
respiratory chain complex IV	GO:0045277	4.049×10^{-5}	
mitochondrial respiratory chain complex III	GO:0005750	2.740×10^{-3}	
respiratory chain complex III	GO:0045275	2.740×10^{-3}	
mitochondrial inner membrane	GO:0005743	1.286×10^{-2}	
organelle inner membrane	GO:0019866	2.018×10^{-2}	
envelope	GO:0031975	3.762×10^{-2}	
organelle envelope	GO:0031967	3.762×10^{-2}	

Supplementary Figure S3. Top 12 enrichments of the biological processes from the Gene Ontology enrichment annotation of testis from Δ^9 -THC-exposed medaka. 3A) Enrichment of biological processes. 3B) Enrichment of molecular function. 3C) Enrichment of cellular component.






4A

Target name	Term ID	P(adj)	$-\log_{10}(\text{Padj})$
cyclin-dependent protein serine/threonine kinase regu...	GO:0016538	2.588×10^{-4}	
protein kinase regulator activity	GO:0019887	2.091×10^{-2}	
kinase regulator activity	GO:0019207	3.043×10^{-2}	

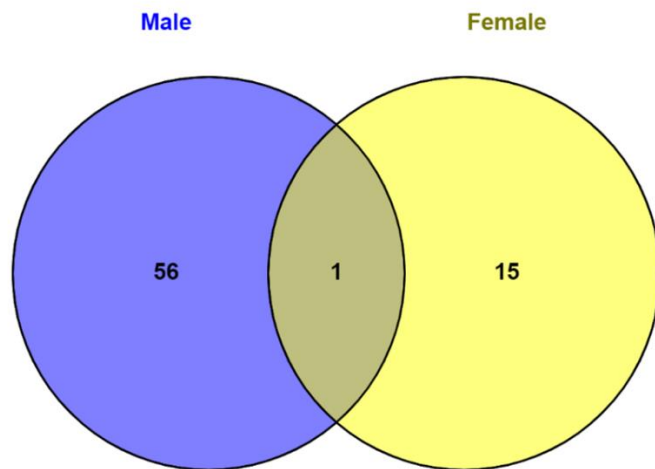
4B

regulation of cyclin-dependent protein serine/threoni...	GO:0000079	1.228×10^{-2}	
regulation of cyclin-dependent protein kinase activity	GO:1904029	1.394×10^{-2}	
mitotic cell cycle phase transition	GO:0044772	4.180×10^{-2}	

4C

cyclin-dependent protein kinase holoenzyme complex	GO:0000307	1.202×10^{-4}	
cyclin A2-CDK2 complex	GO:0097124	2.369×10^{-4}	
serine/threonine protein kinase complex	GO:1902554	1.092×10^{-3}	
protein kinase complex	GO:1902911	1.794×10^{-3}	
transferase complex, transferring phosphorus-containi...	GO:0061695	2.902×10^{-2}	

Supplementary Figure S4. Gene Ontology enrichment annotation of the female brain. 4A) Enrichment of biological processes. 4 B) Enrichment of molecular function. 4C) Enrichment of cellular components.



Supplementary Figure S5. Venn diagram of DEG in males and female showed a unique set of genes differentially expressed in THC-exposed medaka