

Supplementary Data

Supplementary Table 1 Primers used for qPCR analysis.

Supplementary Table 2 Summary of annotation results.

Supplementary Table 3 Summary of differentially expressed genes involved in other pathways in ovary of *P. fulvidraco* after rt-hLEP injection *in vivo*.

Supplementary Fig. 1 The length distribution of All-Unigene.

Supplementary Fig. 2 GO classification analysis of All-Unigene. GO functions are shown in *X* axis. The *right Y* axis shows the numbers of genes which have the GO function, and the *left Y* axis shows the percentage.

Supplementary Fig. 3 Comparison of relative expression levels between RNA-seq and qPCR results. The y-axis is the gene expressed fold change and the x-axis is the gene name.

Leptin R, leptin receptor; *C-Myc*, proto-oncogene c-myc; *PI3K*, phosphatidylinositol 3-kinase; *Acs1*, long-chain acyl-CoA synthetase; *CPT*, carnitine palmitoyltransferase; *Hadhb*, hydroxyacyl-CoA dehydrogenase, β subunit; *Echs*, enoyl-CoA hydratases; *Acsds*, acyl-CoA dehydrogenases; *Hsd17b4*, hydroxysteroid 17- β dehydrogenase; *Acc*, acetyl-CoA carboxylase; *CYP8B1*, sterol 12- α -hydroxylase; *ACO*, acyl-CoA oxidase; *FATDC36*, CD36 antigen; *MEK1*, mitogen-activated protein kinase kinase 1; *Raf*, B-Raf proto-oncogene serine/threonine-protein kinase; *PKC*, protein kinase C; *MAPK*, mitogen-activated protein kinase; *Cdc*, cyclin-dependent kinase; *APC*, anaphase-promoting complex; *STAG3*, cohesin complex subunit SA-3; *SMC1*, structural maintenance of chromosome 1; *Cdk2*, cyclin-dependent kinase 2.

Supplementary Fig. 4. Effects of etomoxir and carnitine on the mRNA levels of leptin and LepR in oocytes from yellow catfish with rt-hLEP treatment *in vitro*. mRNA expression values were normalized to β -actin and GAPDH expressed as a ratio of the control (control=1). Values are expressed as mean $\pm$ SEM (n= 4 independent biological experiments). Different letters

indicated significant differences among groups ($P < 0.05$).

Supplementary Table 1

Gene	Forward primer (5'-3')	Reverse primer (5'-3')
<i>Leptin R</i>	TACGTCCACCGTATCTGCAA	GCTGCTCAGACTCTCCTGCT
<i>C-Myc</i>	GATGAACGCGTGAAGTCTGA	ATATCCGAAAGCAGGGGACT
<i>PI3K</i>	TGCAGCCTTCAACAAAGATG	TCCCCAATTCCCAAAACATA
<i>Acs1</i>	ACACATGTTGAGCGAGTTG	GGTGGGCTCAGAGTCATAA
<i>CPT-1</i>	GTCAACAATGAGACGCGAGA	GCCATTGTTGATCATGTGCTG
<i>Hadhb</i>	CTGGCCATAAAACACCGAGT	AGTGCATCCCAATCACCTTC
<i>Echs1</i>	TTTTTGGCACACTGGAACAA	TTCTGGCTGTCCAAACTGTG
<i>PPARα</i>	CGAGGATGGGATGCTGGTG	CGTCTGGGTGGTTCGTCTGC
<i>Hsd17b4</i>	TGGTTGATGAAACCACCAGA	TTGAATCCTCCCATTCTGC
<i>Acca</i>	GCATTGCGTGAAGAGAACAA	TCAGCATGGTGACCAGAGAG
<i>CYP8B1</i>	GCTGGCTTATGGAGTTCTGG	GTCTGCTGCGATTCAGACAC
<i>ACOX1</i>	CCGGACATCTACGTCACCTT	TACGAGACGATGCCACTCAG
<i>FATDC36</i>	AGGTGCTCCTGTGCTCATT	CGTCCAGGTAGGTGGAGTGT
<i>MEK1</i>	GTTGAGGGTCTCCATGCAAT	AGCGCATATTCAGGAGCATT
<i>Raf</i>	GGCCGTCTTTAACGGAGAG	CTCCTCGGGAATGTCGTG
<i>PKC</i>	CTTCAAGCAGCCCACATTCT	AAACAGCACACTTGGCACTG
<i>MAPK</i>	TGGTTTGCTGATGACACCAT	CGTTGGCTTGATATCCCATT
<i>Cdc2</i>	CCACTTCCTCCGACTCTCAG	GGGGTACTGCACTCCTGTGT
<i>APC/C</i>	CCTCAGCGCTGCTATTAACC	TTCACCAGAGGGTTGGACTC
<i>STAG3</i>	GCTCTGGGAGCAACACTTTC	TGTGGGGTGAGTGTGTGTTT
<i>SMC1</i>	GAGCAAATGAAGGCGAAAAG	GTCTTGGTCTGCTCGAGGTC
<i>Cdk2</i>	ACAAAATCACAGGCGAAACC	TGGGGTGATTGAGTTCCTTC
<i>GAPDH</i>	CATTACGAGGGCACGCTT	GGAGTTTCTGGACTTTAGGGAT
<i>β-actin</i>	ATCTTGCGTCTGGACTTGG	AGGCAGCGGTGTTTCATT

Leptin R, leptin receptor; *C-Myc*, proto-oncogene c-myc; *PI3K*, phosphatidylinositol 3-kinase;

Acsl, long-chain acyl-CoA synthetase; *CPT*, carnitine palmitoyltransferase; *Hadhb*, hydroxyacyl-CoA dehydrogenase, β subunit; *Echs*, enoyl-CoA hydratases; *PPAR*, Peroxisome proliferator-activated receptor; *Hsd17b4*, hydroxyacyl-CoA 17- β dehydrogenase; *Acc*, acetyl-CoA carboxylase; *CYP8B1*, sterol 12- α -hydroxylase; *ACO*, acyl-CoA oxidase; *FATDC36*, CD36 antigen; *MEK1*, mitogen-activated protein kinase kinase 1; *Raf*, B-Raf proto-oncogene serine/threonine-protein kinase; *PKC*, protein kinase C; *MAPK*, mitogen-activated protein kinase; *Cdc2*, cyclin-dependent kinase 1; *APC*, anaphase-promoting complex; *STAG3*, cohesin complex subunit SA-3; *SMC1*, structural maintenance of chromosome 1; *Cdk2*, cyclin-dependent kinase 2.

Supplementary Table 2

	Number of unigene hits	Percentage ^a
All-unigenes	36,149	—
All annotated unigenes	27,241	75.36%
Annotated to NR database	24,275	67.15%
Annotated to NT database	23,751	65.70%
Annotated to Swiss-Prot database	22,768	62.98%
Annotated to KEGG database	18,950	52.42%
Annotated to COG database	9,852	27.25%
Annotated to GO database	16,835	46.57%

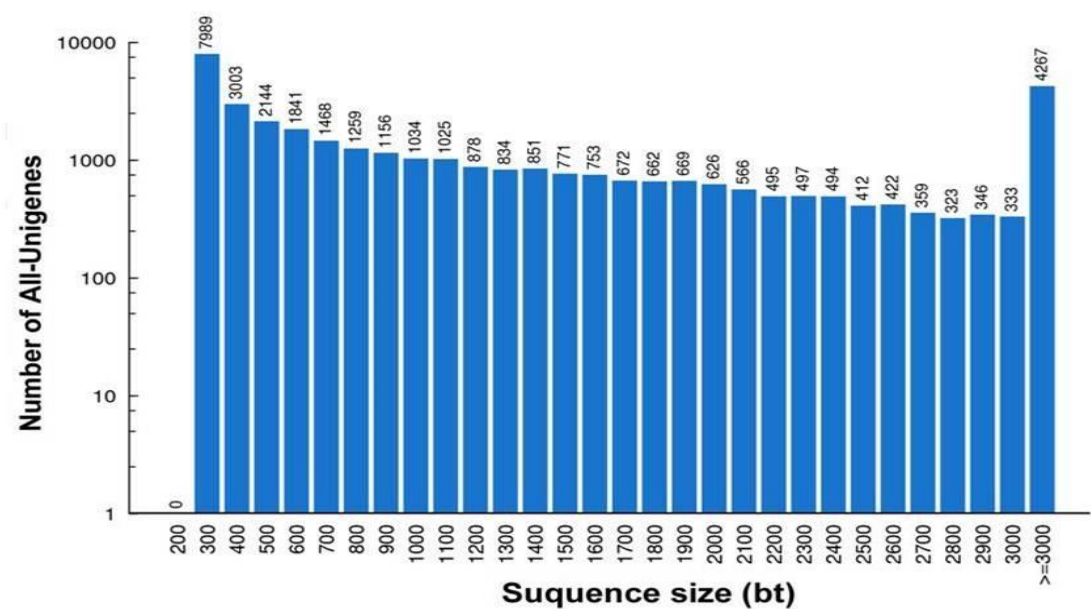
^a Proportion of the 36,149 assembled All-unigenes

Supplementary Table 3

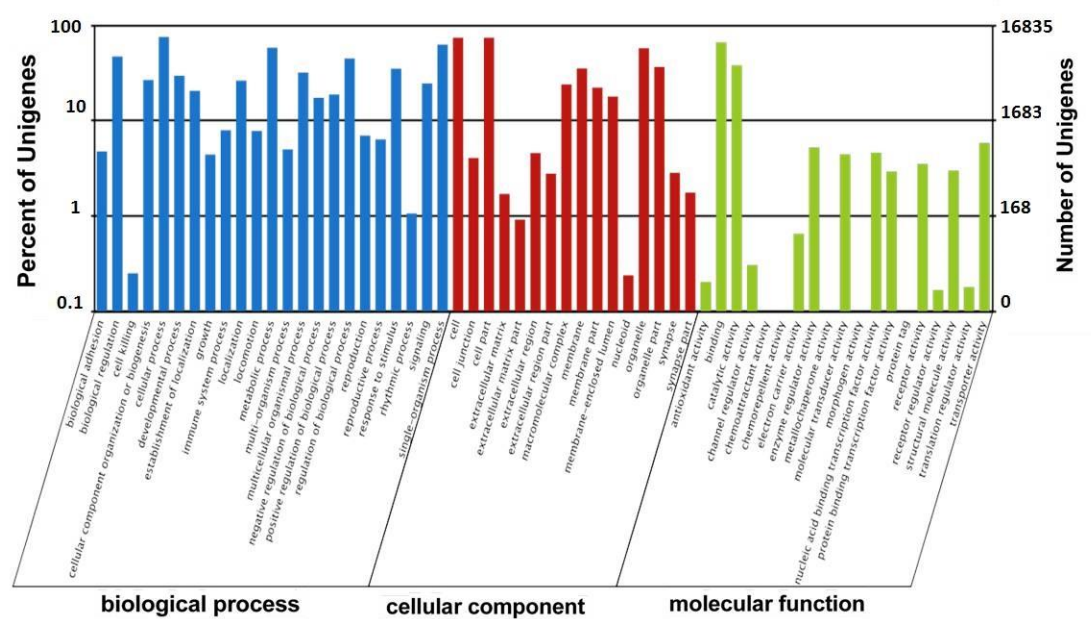
Pathways	Up-regulated genes	Down-regulated genes	Pathway ID
Signal transduction			
mTOR signaling pathway	<i>STK11, RAPTOR</i>	<i>PDPK1</i>	map04150
Notch signaling pathway	<i>NOTCH1, PSEN1</i>	—	map04330
Calcium signaling	<i>SLC8A, F2R, EGFR, PHKG, PPP3C, MYLK</i>	<i>RYR1</i>	map04020
Digestion and metabolism			
Fat digestion and absorption	<i>FATP4, MGAT2, APOB</i>	<i>CD36</i>	map04975
Protein digestion and absorption	<i>COL1A, PAT1, SLC8A, CPB1, CTRB1</i>	—	map04974

STK11, serine/threonine-protein kinase 11; *RAPTOR*, regulatory associated protein of mTOR; *PDPK1*, 3-phosphoinositide dependent protein kinase-1; *PSEN1*, presenilin 1; *SLC8A*, solute carrier family 8; *F2R*, coagulation factor II (thrombin) receptor; *EGFR*, epidermal growth factor receptor; *PHKG*, phosphorylase kinase gamma subunit; *PPP3C*, serine/threonine-protein phosphatase 2B catalytic subunit; *MYLK*, myosin-light-chain kinase; *RYR1*, ryanodine receptor 1; *FATP4*, solute carrier family 27 member 4; *MGAT2*, 2-acylglycerol O-acyltransferase 2; *APOB*, apolipoprotein B; *CD36*, CD36 antigen; *COL1A*, collagen, type I, alpha; *PAT1*, solute carrier family 36 member 1; *CPB1*, carboxypeptidase B; *CTRB1*, chymotrypsinogen B1.

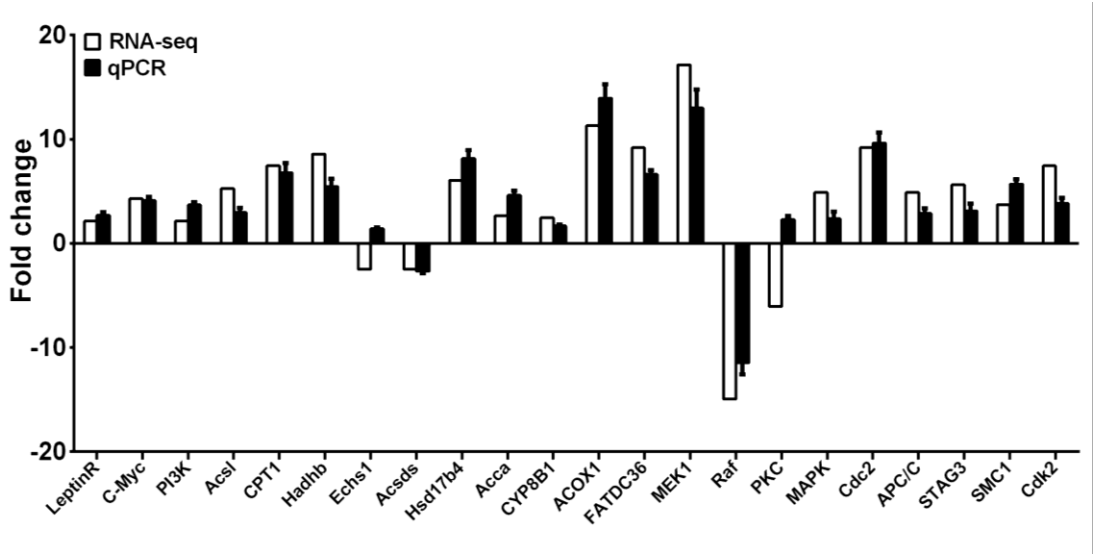
Supplementary Fig. 1



Supplementary Fig. 2



Supplementary Fig. 3



Supplementary Fig. 4.

