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Supplemental information

Identification of *Scd5* as a functional regulator of visceral fat deposition and distribution

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Supplementary Material

Figure S1. Multiple alignment of SCDs homologs amino acid sequences of human, zebrafish, mouse and rat. Related to Figure 1.

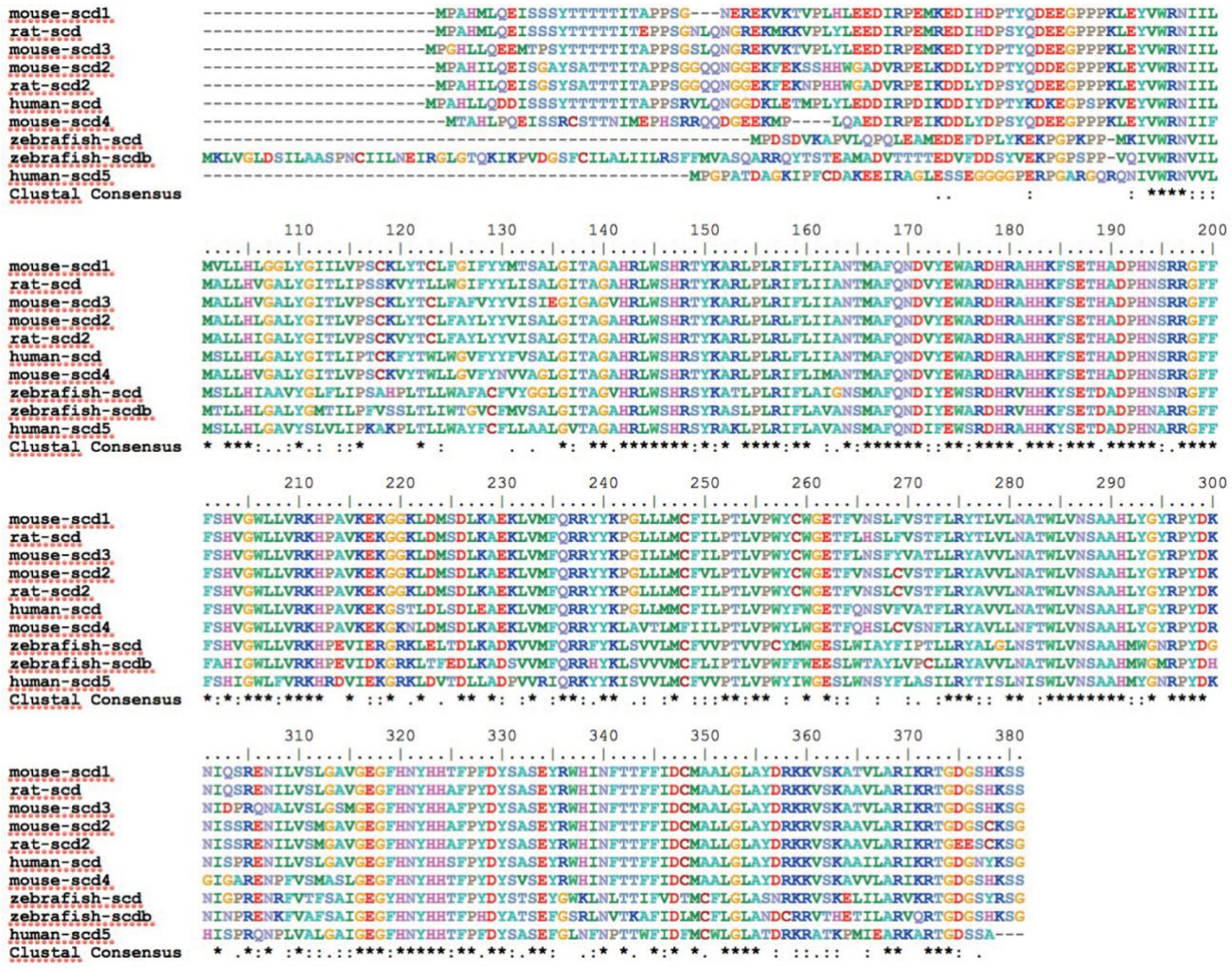

Figure S2. The resulting amino acid sequence changes of zScd knockout. Related to Figure 2.

Figure S3. *scd5*$^{-/-}$ showed unaffected SAT and deposited VAT. A. SAT volumn of 4mpf *scd5*$^{-/-}$ had no significant differences with *scd5*$^{+/+}$. B. Lateral view example of adipose tissues 3D reconstruction of VAT (green) and SAT (red). Related to Figure 2.

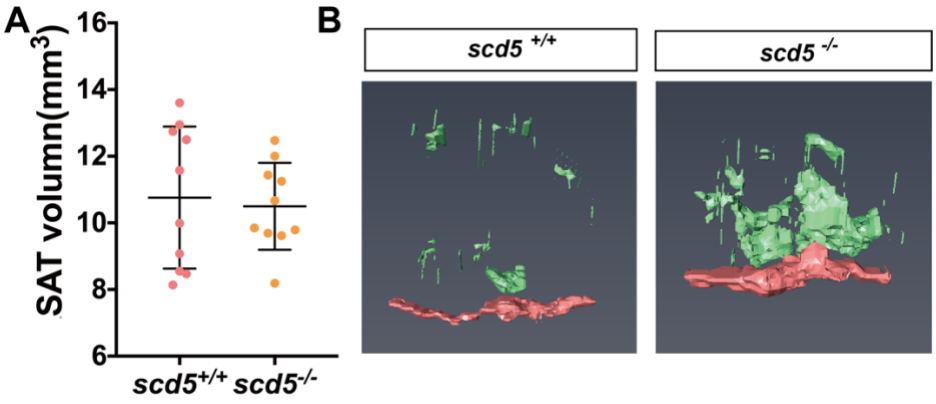

Figure S4. Lateral view example of adipose tissues 3D reconstruction of four dietary supplementations. VAT (green) and SAT (red). Related to Figure 3.

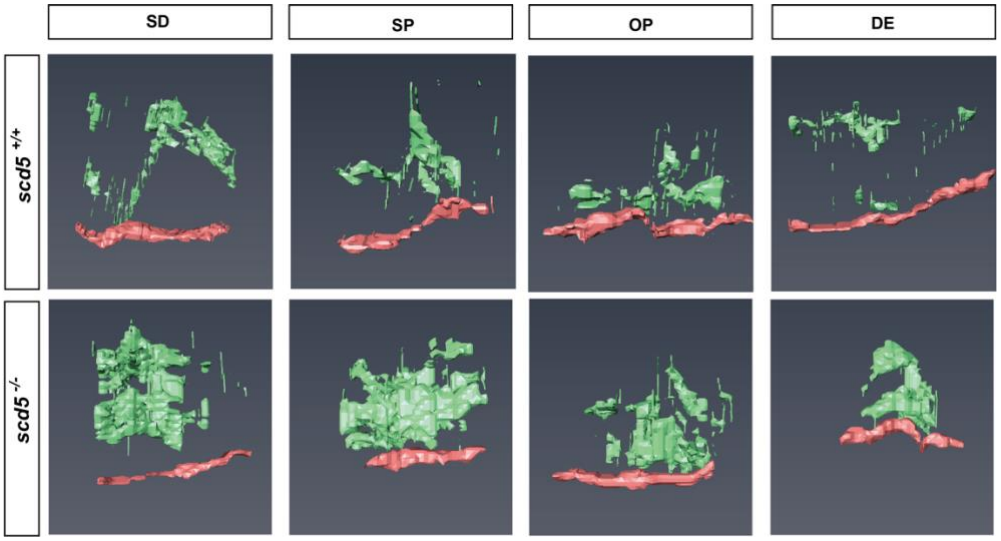

Figure S5. Data statistics on body length, spine length and SAT volume of four different dietary supplementations fed zebrafish. A-C, Two-way ANOVA results of every groups compared to *scd5*$^{+/+}$ -SD were shown. D-F, Two-way ANOVA results of three diets vs control for *scd5*$^{+/+}$ and *scd5*$^{-/-}$. ***P < 0.001 represents statistical significance of interaction between genotype and dietary. Data are represented as mean ± SD, all dots are shown. Related to Figure 3.

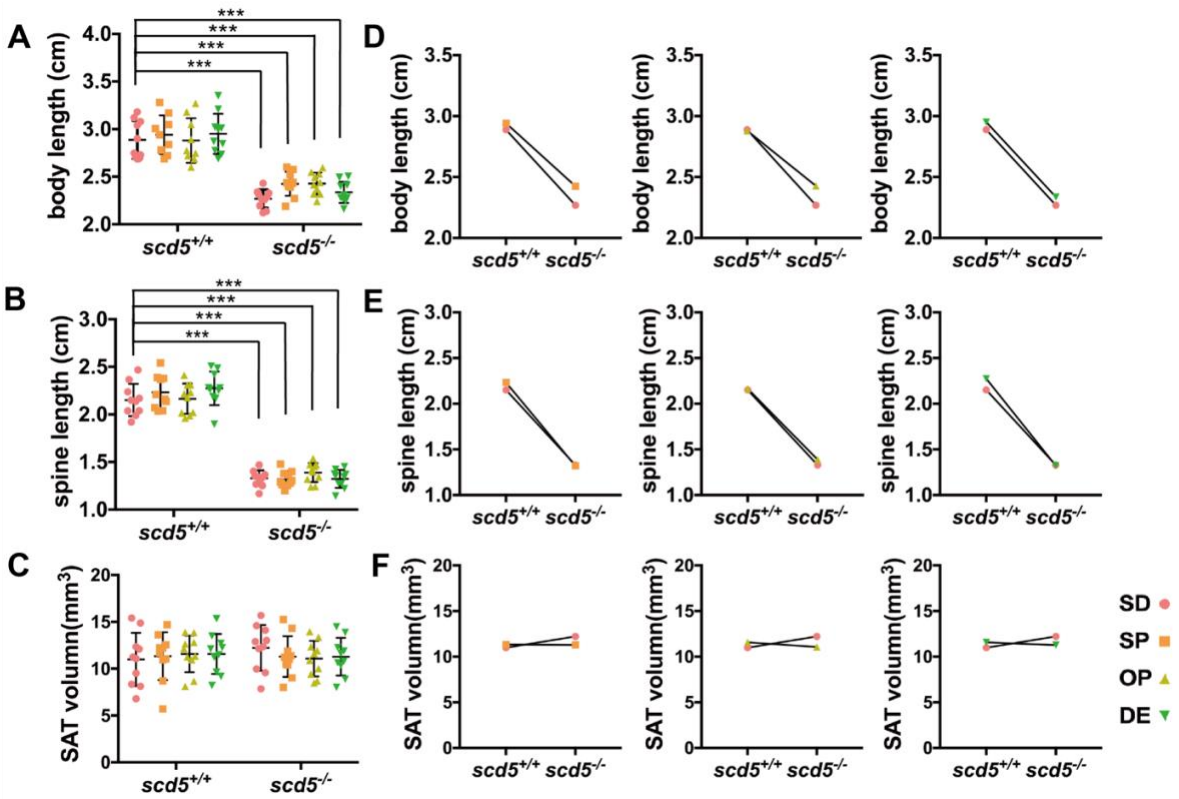

Figure S6. Top 20 significant GO terms on scd5-V-down gene sets (A) and scd5-S-down gene sets (B). Related to Figure 5.

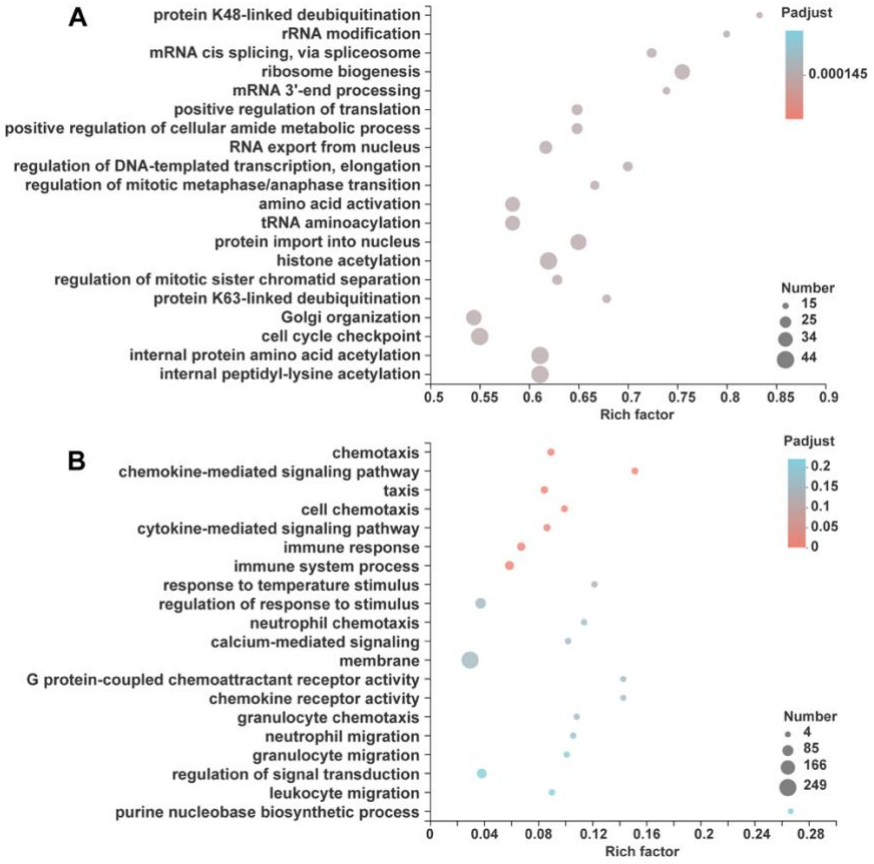

Figure S7. Relative expression of key nodes of AMPK signaling pathways in brain of *scd5*$^{+/+}$ and *scd5*$^{-/-}$. n=4. *P < 0.05, **P < 0.01, ****P < 0.0001 represents statistical significance (unpaired t test). Related to STAR Methods " Real-time Quantitative Polymerase Chain Reaction (RT-qPCR) Analysis " section.

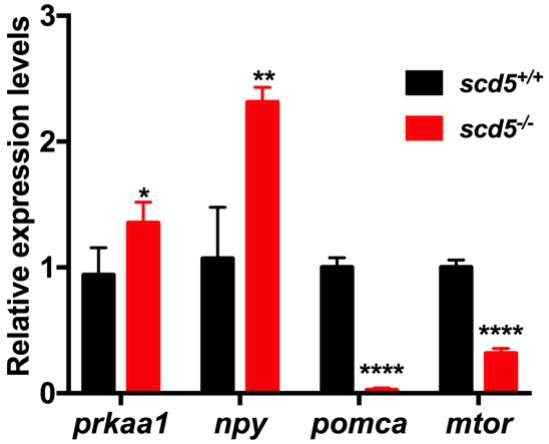

Table S2. Experimental diet compositions. Related to STAR Methods " Dietary, feeding and measurement" section.

	SD	SP	OP	DE
A. Diet（%DM）				
Crude protein	55	55	55	55
Crude fat	16	16	16	16
Crude fiber	2.5	2.5	2.5	2.5
Carbohydrate	10	10	10	10
ash	15	15	15	15
phosphorus	1.5	1.5	1.5	1.5
B. FA（mg g-1 DM）				
Stearic acid	—	35	—	—
Palmitic acid	—	35	—	—
Oleic acid	—	—	35	—
Palmitoleic acid	—	—	35	—
DHA	—	—	—	35
EPA	—	—	—	35

Table S3. Primers used for QRT-pcr. Related to STAR Methods " Real-time Quantitative Polymerase Chain Reaction (RT-qPCR) Analysis " section.

Primer name	Primer sequence (5'-3')
actin-f	cgagctgtcttcccatcca
actin-r	tcaccaacgtagctgtctttctg
wnt10b-f	attccagaggatctcctcgt
wnt10b-r	tgtcagtaactacctgtctgc
sfrp5-f	ctacagtgtgagaagttccc
sfrp5-r	ctttggaaactggagtctgag
pparaa-f	tcaactcctttcacatgctg
pparaa-r	ccggagttaagacatctaatatcg
pparab-f	atcatctgctgtggagatcg
pparab-r	gagaacgttaacaatgctctcc
pparg-f	atcgactacgagaacaaccc
pparag-r	tgtcctgtagctgtacatgtg
cebpa-f	ctacattgatccgtctgcc
cebpa-r	ggagctgttgtggaataagtc
cebpb-f	gcttcatgatatttctgagcac
cebpb-r	caaagagtccaaatagatgctg
cebpd-f	cctgctatctatgacgatgag

cebpd-r	ttgacatggactcaatgtatgc
fas-f	catattctgggtgtgcgtg
fas-r	acccatcagtgaatccagac
acc-f	actgaggtcacagattaccg
acc-r	ctcaaatgatgcttccttggt
acox1-f	gagaaatagagtctctggttattgg
acox1-r	catatcgctcacttcgagag
acadl-f	tattccacagatggctgct
acadl-r	actccttgaaggtcactgc
acaa1-f	ttcctccggatgtaatggg
acaa1-r	tatcatccacagtcagtccag
phyh-f	gtggagtgtttcactggac
phyh-r	ggtcttcttacctgtgtctg
lpin1-f	gcactatgctaccaatggg
lpin1-r	tcttctcaatgacctccctg
pck1-f	gaagaagtgcttcgctctg
pck1-r	tggtgatgcccagaatcag
prkaa1-f	gatggagagtttctaaggacga
prkaa1-r	ccctgcgtataaccttcca
pomca-f	gatctgaagtcagagctcag
pomca-r	gtatgcattccaagatgttctc

npy-f	aacctcataacaaggcagag
npy-r	tcctcatatctggtctggg
mtor-f	ggtacaagcaaacatttgagga
mtor-r	gatcatccttattcatccctttctc