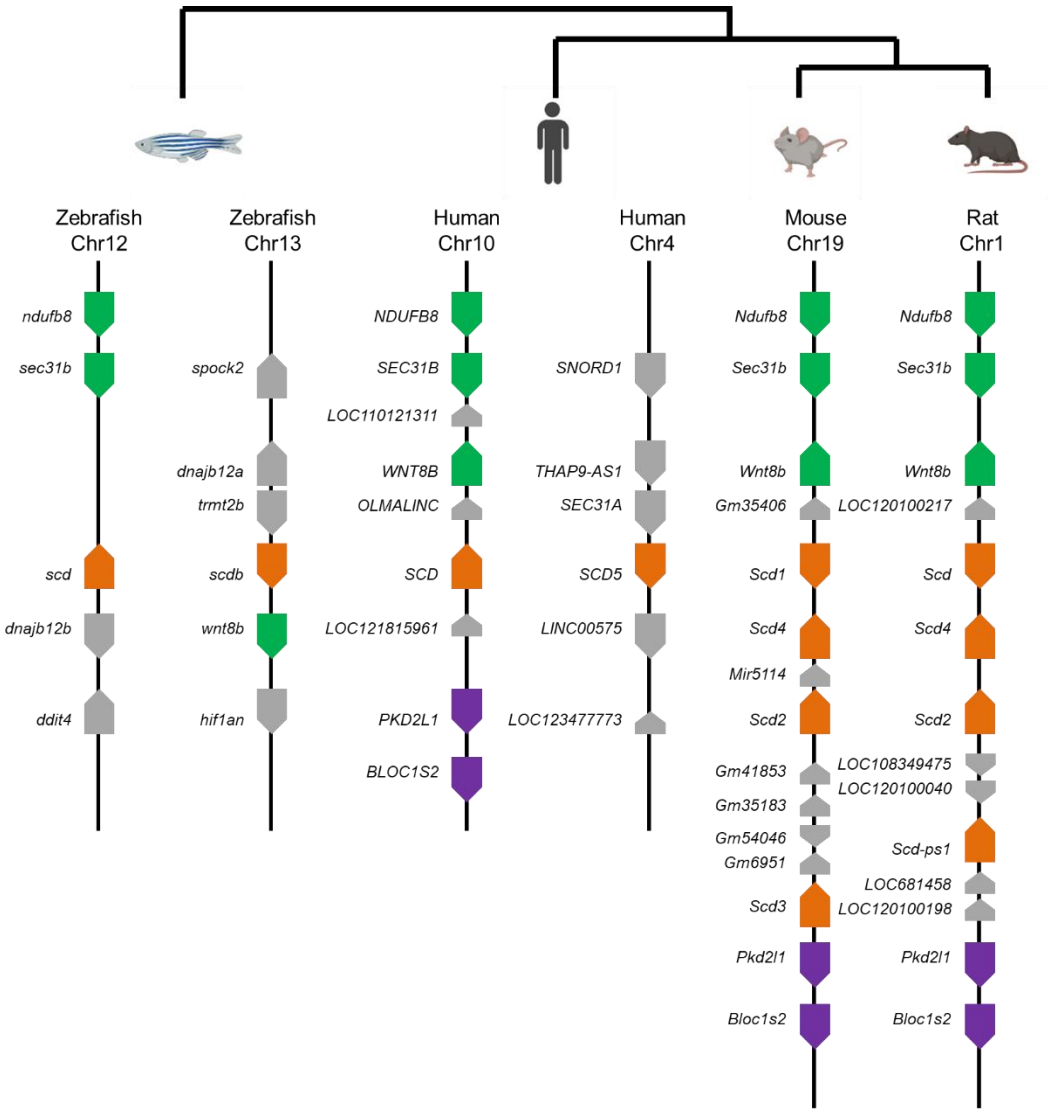
Supplementary Materials



Supplementary Figure S1 Evolutionary distribution of *SCD* gene in humans, rats, mice, and zebrafish

All genes are indicated with arrows pointing in the direction of transcription. Orange represents *SCD* family genes. There are two *SCD* homologous genes in the zebrafish genome (*scd1* and *scdb*), two in the human genome, and four in the mouse and rat genomes.

A

B

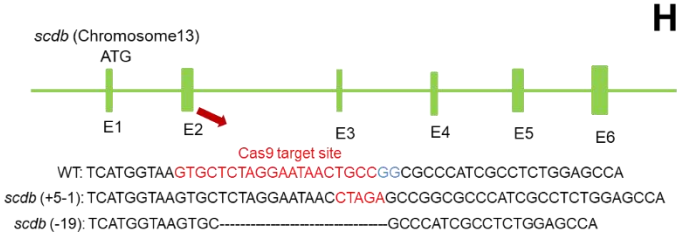
C

	Carp	milkfish	Sparus aurata	zebrafish
Carp	100%			
milkfish	79.22%	100%		
Sparus aurata	76.42%	80.36%	100%	
zebrafish	74.54%	73.19%	69.85%	100%

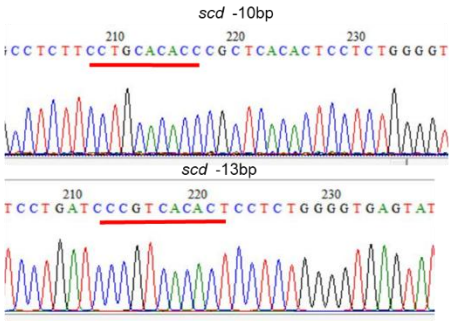
D

	Human-SCD	mouse-SCD	zebrafish-SCD
Human-SCD	100%		
mouse-SCD	84.12%	100%	
zebrafish-SCD	57.94%	56.62%	100%

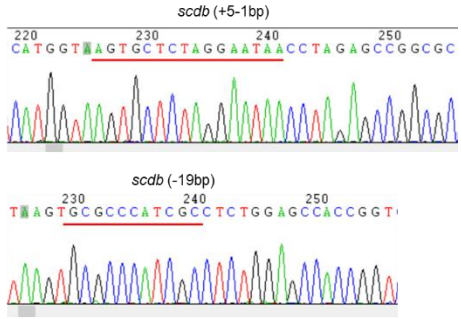
E



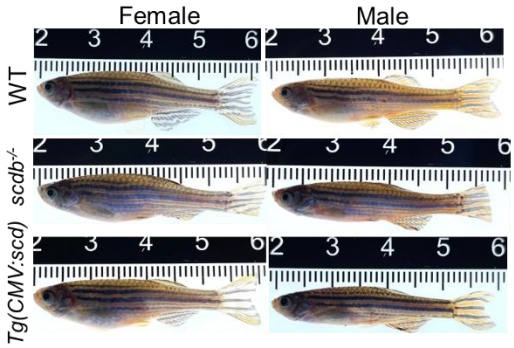
F



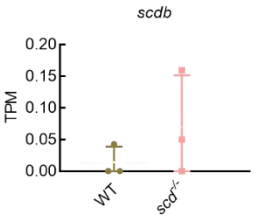
G



H



I



nvl	3.91536566141136	10.087944073784	6.20972571558188	11.9182730442823	7.82466580878373	8.65724148078097
pimr155	0	0	0	0	0	
scdb	0	0.0499675320989866	0.159217720817116	0	0	0.042719171253063
si:dkey-174i8.1	0.0204717115732756	0	0.00763950666601693	0	0	0
pimr152	0	0	0	0	0	
si:dkey-112g5.12	0	0	0	0.0288592879778482	0	
slka	1.71884368341244	3.3306020325431	7.05570196380324	2.21255988914643	1.9041156369264	2.12777245205706
esr2b	68.6159245834136	73.4317591986486	26.8777948475386	124.484987575416	132.41765317558	76.1990851150622
iqcc	0.748093514136029	0.262835971209872	2.28918505491041	0.614070349179038	0.145856401401557	0
got1	43.8901279937075	32.0399651241183	87.9232805151874	61.093919838867	53.83400922225	79.2131235690007

Supplementary Figure S2 Generation, identification, and characterization of *scdb* mutant

A: Sequence analysis of zebrafish SCD protein. Alignment analysis of amino acid sequence of zebrafish SCD protein and homologous sequences in aquatic organisms. **B:** Comparative analysis of amino acid sequences of zebrafish, human, and mouse SCD. **C and D:** Homology comparison of amino acid sequences of different types of SCD proteins. **E:** Schematic of zebrafish *scdb* genome locus and gRNA target information. gRNA target sequences are highlighted in red. bp, base pairs; *scdb* -19, homozygous mutant line (*scdb*$^{-/-}$) with 19 bp (TCTAGGAATAACTGCCGGC) deletion in exon 2 of *scdb* gene; *scdb* +5-1, homozygous mutant line with +5-1 bp (CTAGA) insertion in exon 2. **F:** Sequencing peak graphs of *scd* homozygous mutants with deletions of 13 and 10 bases. **G:** Sequencing peak graphs of *scdb* homozygous mutants with deletion of 19 and insertion of +5-1 bases. **H:** According to morphological analysis, WT females were silver and black, with a round body. WT males were orange and black, with a slender body. However, *scd* transgenic zebrafish and *scdb*-deficient zebrafish showed similar morphological features, with no significant difference in appearance. **I:** Transcriptome sequencing of *scd* mutant zebrafish liver revealed no significant up-regulation in *scdb* gene expression and thus no compensatory effect.