

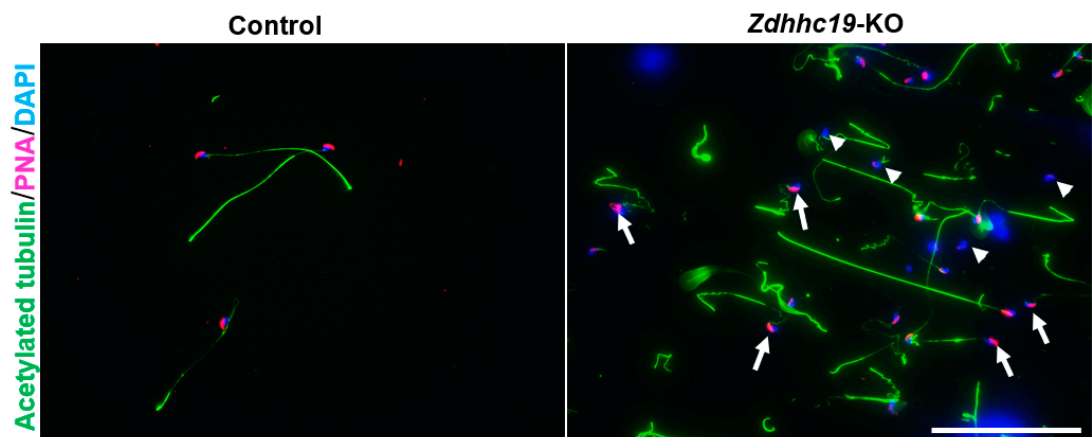
Supplementary Materials

Supplementary Table S1. Primers used in genotyping.

Gene Name	Forward Primers	Reverse Primers	Amplicon Size
<i>Zdhhc19</i>	GTGTTT- GCTGCCTTCAATGTA ACG	CTCCAGCAGTCAG- CAAGATCGAAG GTAAA- GAAGTCCTGATGTGC GAG	Homozygous:536bp Wildtype:617bp

Supplementary Table S2. Primers used in real-time PCR.

Gene Name	Forward Primers	Reverse Primers
<i>Zdhhc19</i>	TGTGACACTTGTGAAGGAACC	AAAAACAGCAGCAGCGTTACA
<i>Gapdh</i>	AGGTCGGTGTGAACGGATTG	TGTAGACCATGTAGTTGAGGTCA



Supplementary Figure S1. *Zdhhc19* deletion caused abnormal sperm flagella. Immunofluorescence analyses of acetylated-TUBULIN and PNA in spermatozoa from adult KO and control littermates, counter-stained with DAPI. White arrows indicate intact acrosomes with abnormal sperm tails, while arrowhead point to the acrosome-reacted sperm that had abnormal tails. Scale bar, 200 μ m.