hwa$^{tsu01sm/+}$（CZRC catalog ID：CZ1227）

Nature of the mutation

The *hwa* mutant line M*hwa*^{tsu01sm}, the uncharacterized locus *si:dkey-121h17.7* on chromosome 21 carries a 7313bp insertion element at the first exon. M*hwa*^{tsu01sm} mutant embryos form the body axis or are dorsalized by *hwa* overexpression. *hwa*$^{tsu01sm/tsu01sm}$ zygotic mutants from *hwa*^{tsu01sm} heterozygous fish crosses undergo normal development and grow to adulthood. When Z*hwa* mutant adult females mate with wild-type or heterozygous male fish, all resultant embryos develop normally during cleavage and blastula stages but lack the embryonic shield at the shield stage.

Genotyping assay

Primers:

CZ1227_F1: 5’- TAGCCAACACAAGTCCTCAT-3’

CZ1227_F2: 5’- CGTGCAATCGAGCGAACTTT-3’

CZ1227_R : 5’- CCAGCTGCGACATTTCATCACAA -3’

The PCR results

	-/-	+/-	+/+
CZ1227-F1/R	——	**382bp**	**382bp**
CZ1227-F2/R	**497bp**	**497bp**	——

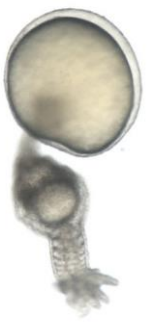

Fig. Calabash-like shape with the yolk splitting into two parts and a tail at the vegetal pole

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Reference：

Yan, L., Chen, J., Zhu, X., Sun, J., Wu, X., Shen, W., Zhang, W., Tao, Q., Meng, A. (2018) Maternal Huluwa dictates the embryonic body axis through β-catenin in vertebrates. Science (New York, N.Y.). 362(6417)