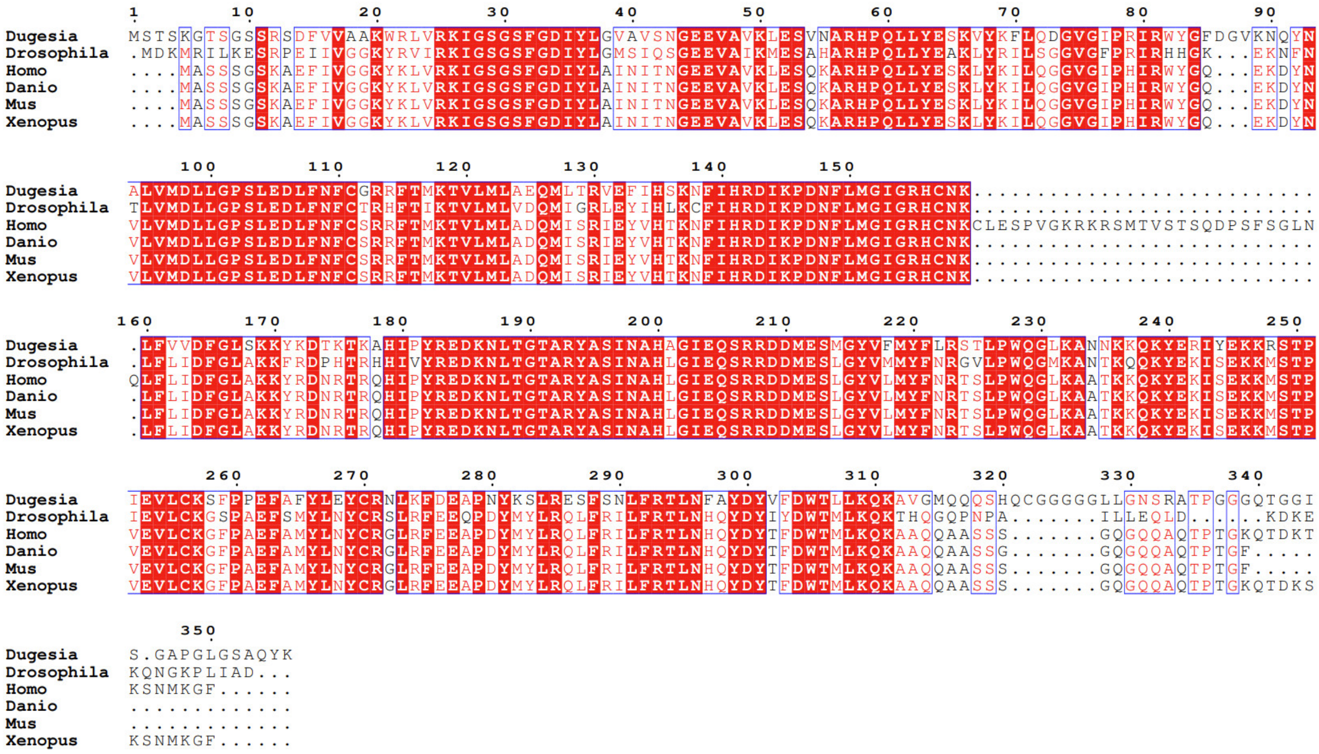

Figure S1. Multiple sequence alignment of Djck1α from *Dugesia japonica*, *Homo sapiens*, *Mus musculus, Drosophila serrata, Xenopus laevis*, and *Danio rerio.* Absolutely conserved residues are in red shaded boxes, and highly conserved residues are colored red and are boxed.

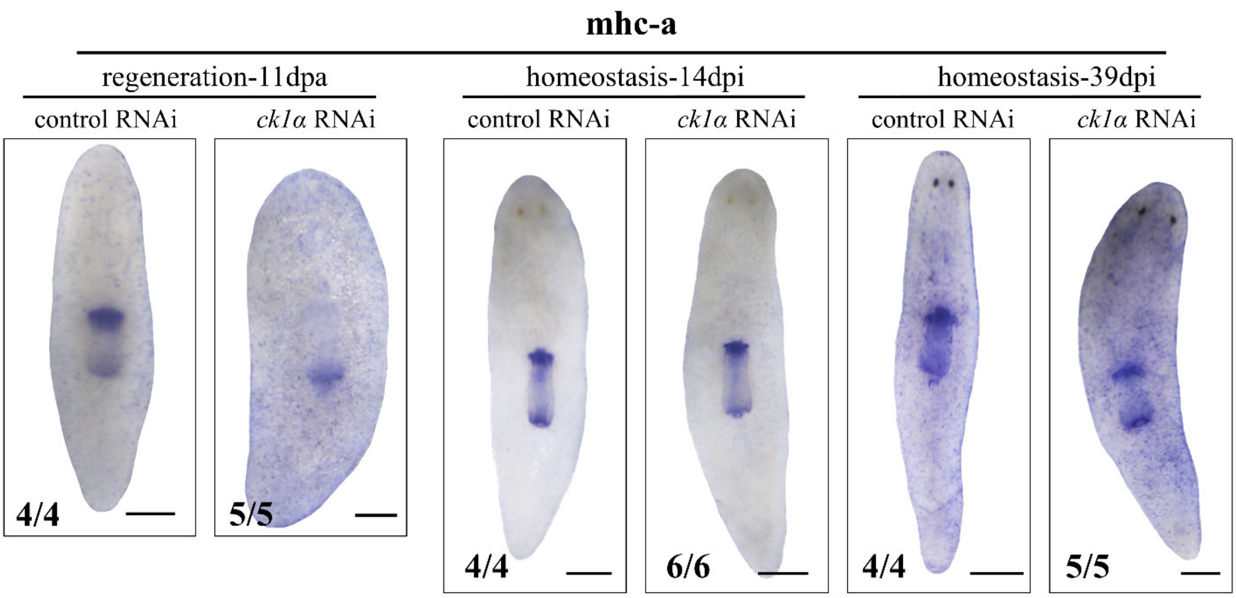

Figure S2. The WISH with Djmhc-a probes in *Djck1α* RNAi animals. Scale bars: 500 μm.

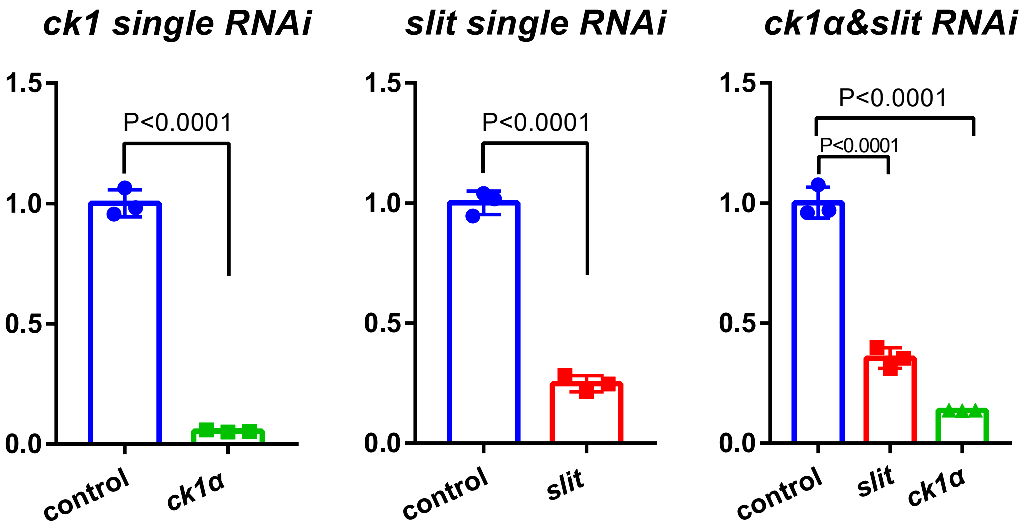

Figure S3. The down-regulation efficiency of *Djck1α* and *Djslit* in single and double RNAis animals. Left: the down-regulation efficiency of ck1α in *Djck1α* RNAi animals. Middle: the down-regulation efficiency of slit in *Djslit* RNAi animals. Right: the down-regulation efficiency of ck1α and slit in *Djck1α and Djslit* RNAi animals. unpaired Student's t-test, Mean ± SD. * $p < 0.05$.

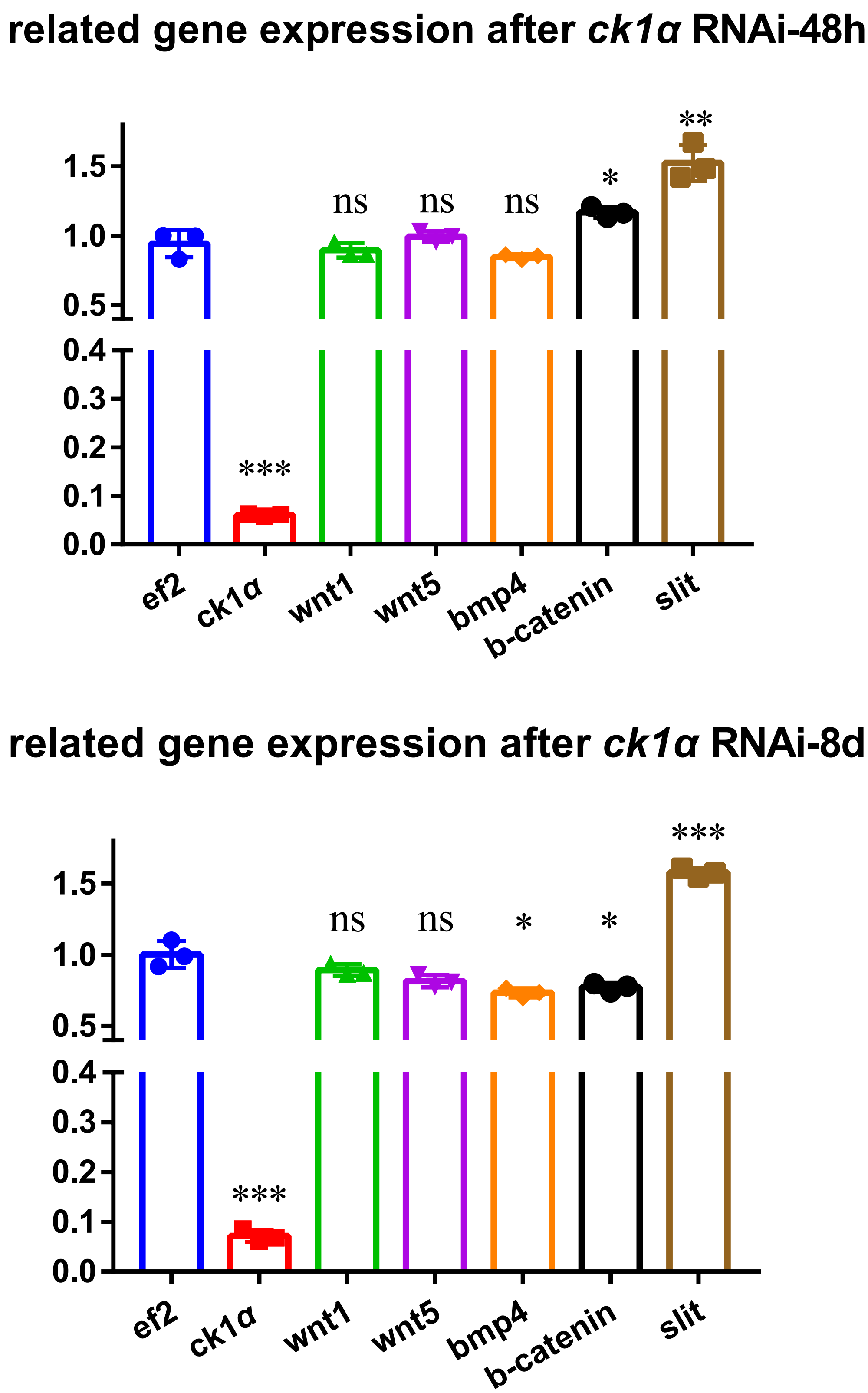

Figure S4. Related gene expression after *ck1α* RNAi. Upper: Related gene expression at 48h post the last injection. Below: Related gene expression at 8days post the last injection. unpaired Student's t-test, Mean ± SD. * $p < 0.05$.

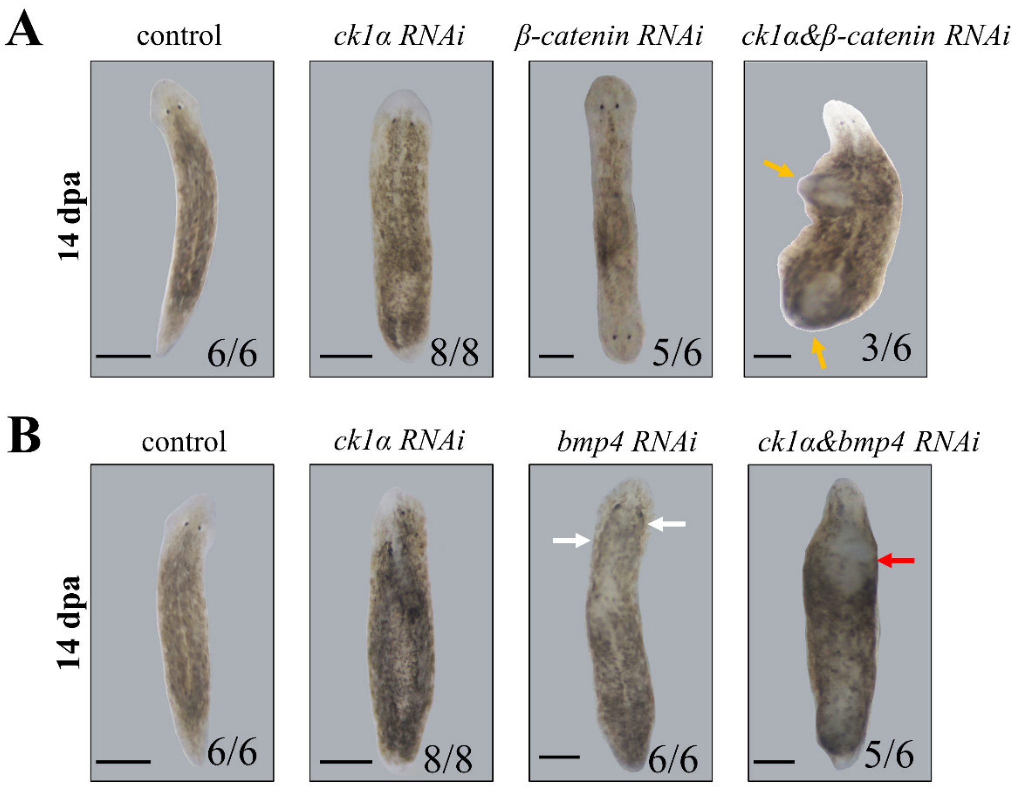

Figure S5. Regeneration defects induced by the double RNAis. Regeneration defects induced by *ck1α&β-catenin* RNAi. Orange arrows: 'outgrowth' in the *ck1α&β-catenin* RNAi animals at 14dpa. (B) Regeneration defects induced by *ck1α&bmp4* RNAi. White arrows: the body appears thicker in *bmp4* RNAi animals. Red arrow: in *ck1α&bmp4* RNAi animals, the body became thicher than *bmp4* RNAi animals. Scale bars: 500 μm.

Table S1. PCR primers used in this study.

Djck1αF	ACAAGTGGTAGCAGTAGGTCA
Djck1αR	GCCTTAGTCTTCGTATCCTT
T7-Djck1αF	TAATACGACTCACTATAGGACAAGTGGTAGCAGTAGGTCA
T7-Djck1αR	TAATACGACTCACTATAGGGCCTTAGTCTTCGTATCCTT
DjslitF	TCCAGTGTGCAAGTGAAGACA
DjslitR	CACACCCTCAAAAGCATCAGC
T7-DjslitF	TAATACGACTCACTATAGGTCCAGTGTGCAAGTGAAGACA
T7-DjslitR	TAATACGACTCACTATAGGCACACCCTCAAAAGCATCAGC
Djβ-cateninF	GCAATATCAACATATGCATCAG
Djβ-cateninR	GACATTTGATGAGGTGTAGG
T7-Djβ-cateninF	TAATACGACTCACTATAGGGCAATATCAACATATGCATCAG
T7-Djβ-cateninR	TAATACGACTCACTATAGGGACATTTGATGAGGTGTAGG
Djbmp4F	AATCGACAATTTCCGACACG
Djbmp4R	CGTCAACGACAAGAACAACT
T7- Djbmp4F	TAATACGACTCACTATAGGAATCGACAATTTCCGACACG
T7-Djbmp4R	TAATACGACTCACTATAGGCGTCAACGACAAGAACAACT
qPCR- Djck1αF	ACAAGAATCTGACCGGCACC
qPCR- Djck1αR	TGAACACGTAGCCCATCGAC
qPCR-DjslitF	ACGGGTTTGAGCTCTCTTCC
qPCR-DjslitR	TGGTGCTTCGTGAACGGAAT
qPCR-piwiF	GAATGAGAGAAGGTCCCAGTTT
qPCR-piwiR	GAAGCCGTTCCATCATCATTTG
qPCR-wnt1F	GGACGCAGATTTGCGAGAAA
qPCR-wnt1R	AACCGCTTGTTCCTTGGCAT
qPCR-wnt5F	GGAGGTACTGCCGTGGAAAA
qPCR-wnt5R	TTGACACTCCTCGATTCCGA
qPCR-β-cateninF	AAGCATGGAGGCCCATTACAT
qPCR-β-cateninR	AGCCTCTGGCTAAAATGCGG
qPCR-bmp4F	GCACCCCAAAACTATAATGCC
qPCR-bmp4R	TAAGGCACACAGCACGGTTT