

Table S1. The Primer used in the research

Purpose	Primer name	Primer sequence(5' → 3')	Tm	Product length
qPCR	RPL9-F	TGTGTGACCACCGAGAACAACCTCA	65.0°C	142
	RPL9-R	ACGATGAGCTCGTCCTTCTGCTTT	65.8°C	
	qUSP-F	CATCACTCATGGGGACGAGG	60.6°C	176
	qUSP-R	GTCCGGCTTCATTTCACACG	62.7°C	
	qKr-h1-F	GTCGCCTGTGCCTTCTAGTT	57.0°C	165
	qKr-h1-R	AGCGGATGCACCTGATACTG	58.3°C	
	qEcR-F	GCCCAGTCAGCTCATCCAAT	59.7°C	118
	qEcR-R	CTGGGGTAGCTCGGGATTTC	61.0°C	
	qPOU-F	GACAGTGGCACAATCCAAGC	58.5°C	139
	qPOU-R	GCCCTGTGAATAGGTCACCC	59.0°C	
	qPDZ-F	TGGCGTTGTTCTACACGGAA	59.8°C	117
	qPDZ-R	GCGAGATCTTCCAAGCCAGT	59.2°C	
	qDpp-F	AGCTCCGGTGGAACAATCT	58.6°C	163
	qDpp-R	TGGCGCCTTTCTGCTTTTTC	62.9°C	
	qTbox6-F	ATACATCCACCCCGATTTCGC	61.9°C	90
	qTbox6-R	AGCGTGTGATTGGTGAGCTT	57.9°C	
	qVg-F	TTATCGCAGTTGCCGGAGTT	60.8°C	129
	qVg-R	TACCCACCATCTGGGGTGAT	59.5°C	
	qVgR-F	ACTTTACCGGATGGCGGATG	62.2°C	148
	qVgR-R	CCGGCTCCAGACAGAAGTTT	59.2°C	
	qChi8-F	GGCCTTGACTTGATTGGGA	62.0°C	134
	qChi8-R	CCTATGGCAGCCGTCAGAAT	60.1°C	
	qGPCR A22-F	GACTGGACAGCTCTCGCTTT	56.9°C	175
	qGPCR A22-R	CCGCATCCGCTGTAGATGAA	61.8°C	
	qGPCR A39-F	CATATCGGTGTCAGCCGGAA	61.5°C	118
	qGPCR A39-R	GATGACGGAGGCCACACTAC	57.4°C	
PCR	SfUSP-F	AGAAACCGATGATGTCTGTGAC	56.4°C	1263
	SfUSP-R	TTAGGGATCTGTGGGCGCTT	62.0°C	

RNAi	SfKr-h1-F	TCACCAGACACTATCGCACG	57.4°C	1115
	SfKr-h1-R	CAGCGGATGCACCTGATACT	58.3°C	
	dsUSP-F	<u>TAATACGACTCACTATAGGCCAGTG</u>	77.8°C	500
		GCAAGCACTATGGA		
	dsUSP-R	<u>TAATACGACTCACTATAGGAACTGA</u>	76.5°C	
		CCGGTGCGGAGAAC		
	dsKr-h1-F	<u>TAATACGACTCACTATAGGTCAAAGT</u>	77.0°C	500
		GCACAGTCGGACG		
	dsKr-h1-R	<u>TAATACGACTCACTATAGGCTGCGGT</u>	77.7°C	
		GAGCGAGGATAC		
	dsGFP-F	<u>TAATACGACTCACTATAGGGAAGGG</u>	82.7°C	700
		CGAGGAGCTGTTCAACG		
	dsGFP-R	<u>TAATACGACTCACTATAGGGCAGCA</u>	84.4°C	
		GGACCATGTGATCGCGC		

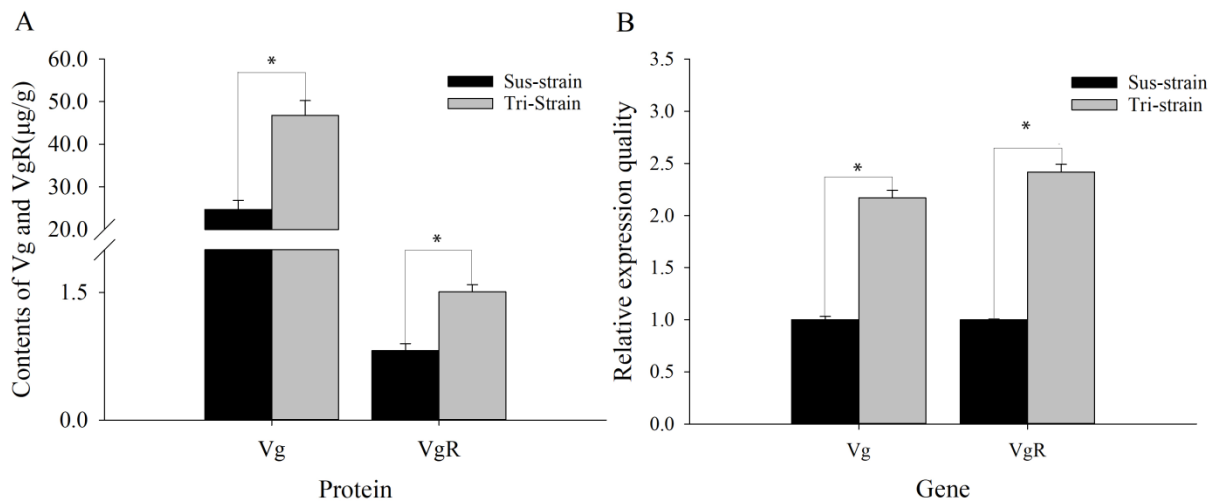


Figure S1 Content of *Vg* and *VgR*, A, The protein contents of *Vg* and *VgR* in the female adults of Sus- and Tri-strain. B, The relative expression qualities of *Vg* and *VgR* genes in the female adults of Sus- and Tri-strain.

* showed significance at 0.05 levels with tukey's post-hoc tests, respectively.

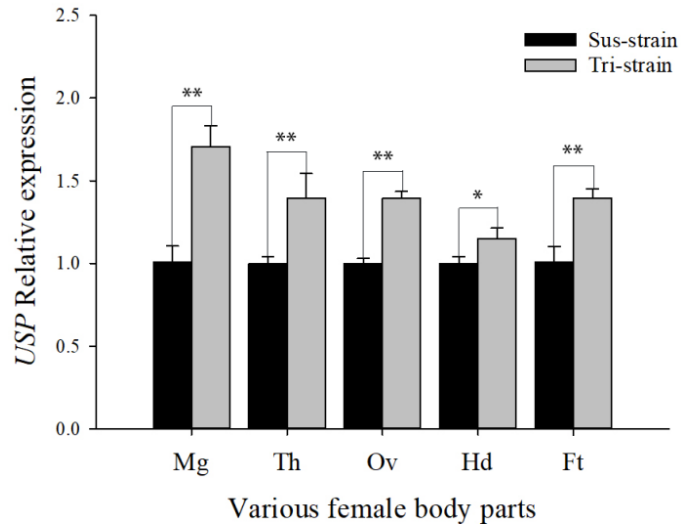


Figure S2 The relative expression levels of USP in Tri-strain various parts of the female adult compared with Sus-strain. Mg, midgut. Th, thorax. Ov, ovarian. Hd, head. Ft, feet. * and ** showed significance at 0.05 and 0.01 levels with tukey's post-hoc tests, respectively.

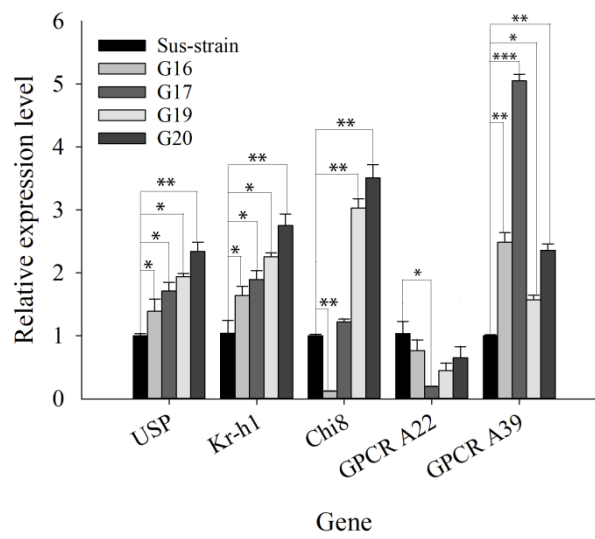


Figure S3 Relative expression levels of growth and reproduction-related genes in the third instar nymph. *, **, and *** showed significance at 0.05, 0.01 and 0.001 levels with tukey's post-hoc tests, respectively.

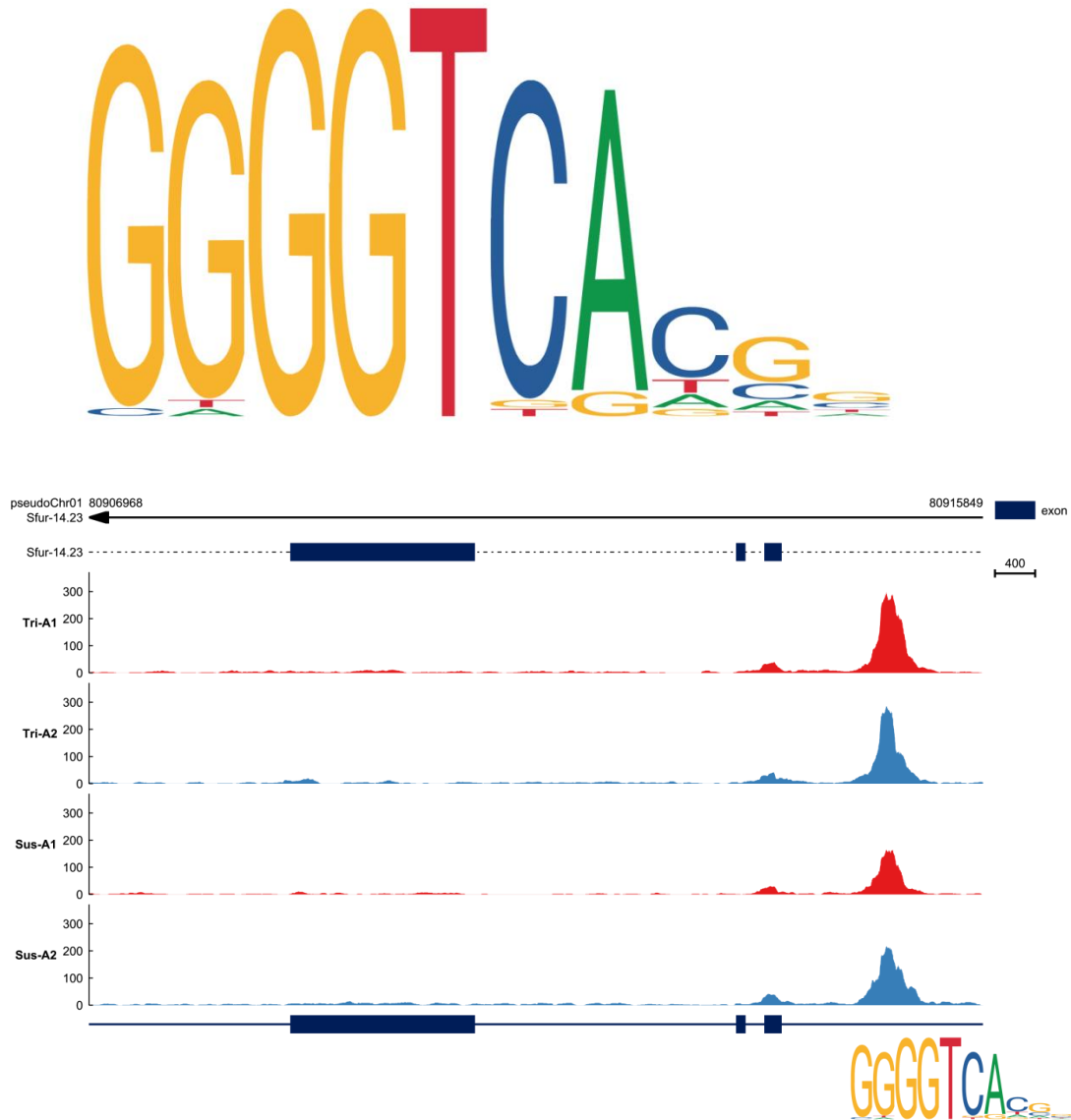
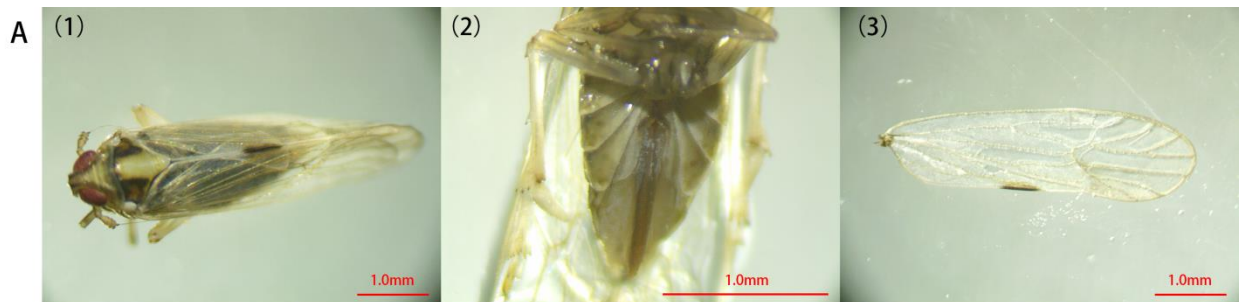


Figure S4 Binding sequence prediction of transcription factor USP association regulation related genes Kr-h1 of *S. furcifera*.



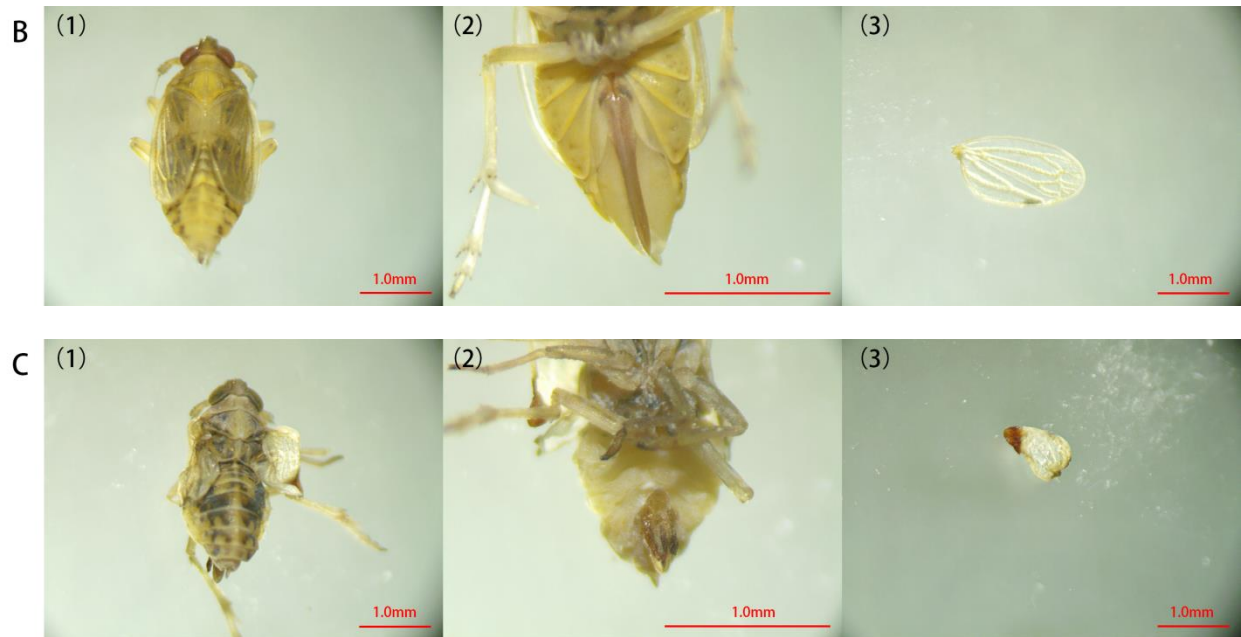


Figure S5 The phenotypes of female adults after *Kr-h1* RNAi. A, phenotypes of long-winged female adults treated with dsGFP. B, phenotypes of short-winged female adult treated with dsGFP. C, phenotypes of female adults treated with ds*Kr-h1*. (1), the appearance of the whole adult. (2), the phenotype of the female adult genitalia. (3), the wing type of the female adult. Scale bar, 1.0mm.