

Supplementary material

Heat shock protein 70 (Hsp70) and heat shock transcription factor (Hsf) gene families in *Cynoglossus semilaevis*: genome-wide identification and correlation analysis in response to low salinity stress

Zhaochao Deng^A, Hui Liu^B, Caoke He^A, Chenyan Shou^A and Zhiqiang Han^{A,C}

^AFishery College, Zhejiang Ocean University, 1 Haida South Road, Zhoushan, Zhejiang, 316002, PR China.

^BShengzhou Bureau of Agriculture and Rural Affairs, 47 Yuexiu North Road, Shaoxing, Zhejiang, 312400, PR China.

^CCorresponding author. Email: d6339124@163.com

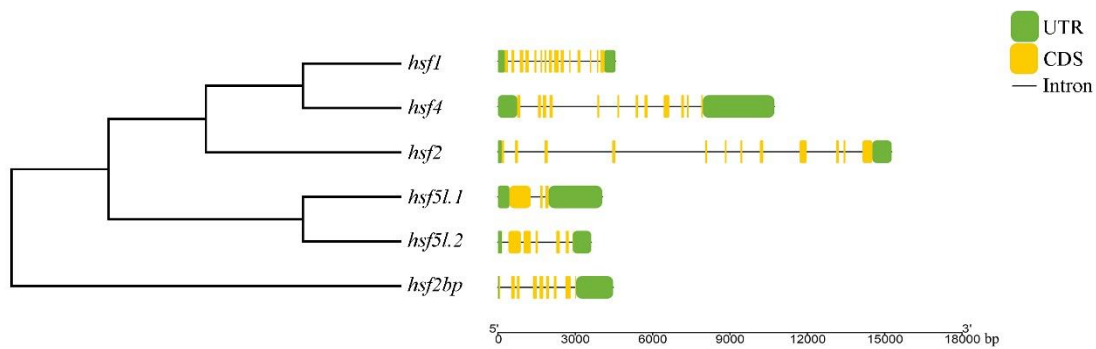


Fig. S1. Gene structure analyses of the Hsf gene family in *C. semilaevis* according to phylogenetic relationship.

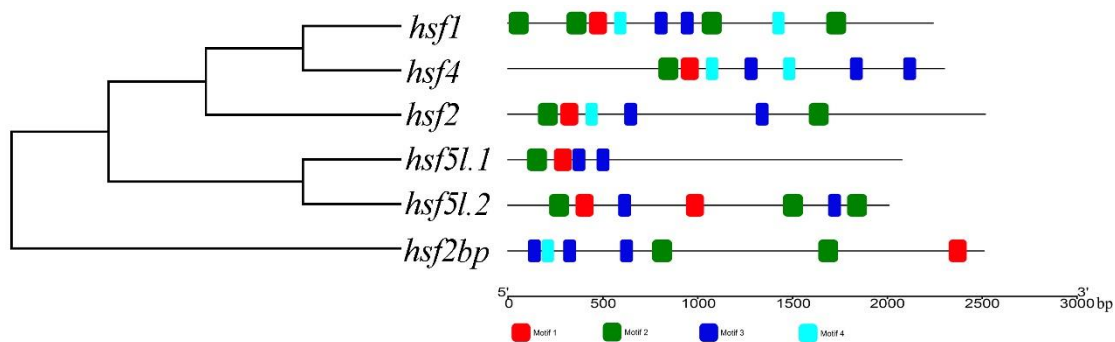


Fig. S2. Analysis of the conserved motifs in *C. semilaevis* Hsfs

Table S1. Species accession numbers of Hsp70 genes in the study

Most of the accession numbers of *Hsp70* genes were obtained from Song *et al.* 2016

Associated gene name	NCBI/ Ensemble/UniProtKB Protein ID	Scientific name	
Human_HSPA1A	NP_005336.3	<i>Homo sapiens</i>	
Human_HSPA1B	NP_005337.2		
Human_HSPA1L	NP_005518.3		
Human_HSPA2	NP_068814.2		
Human_HSPA4	NP_002145.3		
Human_HSPA4L	NP_055093.2		
Human_HSPA5	NP_005338.1		
Human_HSPA6	NP_002146.2		
Human_HSPA7	UniProtKB: P48741-2		
Human_HSPA8	NP_006588.1		
Human_HSPA9	NP_004125.3		
Human_HSPA12A	NP_079291.2		
Human_HSPA12B	NP_443202.3		
Human_HSPA13	NP_008879.3		
Human_HSPA14	NP_057383.2		
Human_HSPH1	NP_006635.2		
Human_HYOU1	NP_001124463.1		
Mouse_HSPA1A	NP_034609.2		<i>Mus musculus</i>
Mouse_HSPA1B	NP_034608.2		
Mouse_HSPA1L	NP_038586.2		
Mouse_HSPA2	NP_001002012.1		
Mouse_HSPA4	NP_032326.3		
Mouse_HSPA4L	NP_035150.3		
Mouse_HSPA5	NP_001156906.1		
Mouse_Hspa8	NP_112442.2		
Mouse_HSPA9	NP_034611.2		
Mouse_HSPA12A	NP_780408.1		
Mouse_HSPA12B	NP_082582.1		
Mouse_HSPA13	NP_084477.1		
Mouse_HSPA14	NP_056580.2		
Mouse_HSPH1	NP_038587.2		
Mouse_HYOU1	NP_067370.3		
Medaka_Hsp70	XP_004071143.1	<i>Oryzias latipes</i>	
Medaka_Hspa1b	NP_001098384.1		
Medaka_Hsc70	NP_001098385.1		
Medaka_Hspa8b	XP_004075396.1		
Medaka_Hspa8a	UniProtKB: Q9W6Y1-1		
Medaka_Hspa4a	ENSORLP00000001795		
Medaka_Hspa4b	ENSORLP00000007499		
Medaka_Hspa4l	XP_004082341.1		
Medaka_Hspa5l	XP_004074796.1		
Medaka_Hspa9	ENSORLP00000013340		

Associated gene name	NCBI/ Ensemble/UniProtKB Protein ID	Scientific name
Medaka_Hspa12a	ENSORLP00000001447	
Medaka_Hspa12b	ENSORLP00000007349	
Medaka_Hspa13l	XP_004075919.1	
Medaka_Hspa14	ENSORLP000000015785	
Medaka_Hyou1l	XP_004084567.1	
Mudskipper_Hspa1al.5	XP_020788915.1	<i>Boleophthalmus</i>
Mudskipper_Hspa1al.4	XP_020788916.1	<i>pectinirostris</i>
Mudskipper_Hspa1al.1	XP_020788914.1	
Mudskipper_Hspa1al.2	XP_020788912.1	
Mudskipper_Hspa1al.3	XP_020788913.1	
Mudskipper_Hspa1a.1	XP_020788572.1	
Mudskipper_Hspa1a.2	XP_020788669.1	
Mudskipper_Hspa1b	XP_020785601.1	
Mudskipper_Hspa8	XP_020793252.1	
Mudskipper_Hspa8a.1	XP_020790265.1	
Mudskipper_Hspa8a.2	XP_020790269.1	
Mudskipper_Hspa5	XP_020780745.1	
Mudskipper_Hspa9	XP_020784682.1	
Mudskipper_Hspa13	XP_020782437.1	
Mudskipper_Hspa14	XP_020795949.1	
Mudskipper_Hsph2a	XP_020780692.1	
Mudskipper_Hsph2b	XP_020783474.1	
Mudskipper_Hsph4	XP_020790242.1	
Mudskipper_Hspa12b	XP_020776113.1	
Mudskipper_Hspa12a	XP_020793384.1	
Zebrafish_Hsp70.3	NP_571472.1	<i>Danio rerio</i>
Zebrafish_Hsp70.2	XP_003198158.1	
Zebrafish_Hsp70.1	NP_001349288.1	
Zebrafish_Hspa1b	NP_001093532.1	
Zebrafish_Hsp70l	NP_001107061.1	
Zebrafish_Hspa4a	NP_999881.1	
Zebrafish_Hspa4b	NP_956151.1	
Zebrafish_Hspa4l	XP_690505.2	
Zebrafish_Hspa5	NP_998223.1	
Zebrafish_Hspa8a	NP_001103873.1	
Zebrafish_Hspa8b	NP_001186941.1	
Zebrafish_Hsc70	NP_956908.1	
Zebrafish_Hspa9	NP_958483.2	
Zebrafish_Hspa12a.1	NP_001038342.1	
Zebrafish_Hspa12a.2	XP_003198604.1	
Zebrafish_Hspa12a.3	NP_001038346.2	
Zebrafish_Hspa13	NP_001082948.1	
Zebrafish_Hspa14	NP_001038541.1	
Zebrafish_Hsph1	XP_001919957.1	
Zebrafish_Hyou1	NP_997868.1	
Nile tilapia_Hsp70	XP_003442504.1	

Associated gene name	NCBI/ Ensemble/UniProtKB Protein ID	Scientific name
Nile tilapia_Hspa1b	XP_003444871.1	<i>Oreochromis</i>
Nile tilapia_Hspa8a	XP_003448938.1	<i>niloticus</i>
Nile tilapia_Hsc70	XP_003454400.1	
Nile tilapia_Hspa8b	XP_003455104.1	
Nile tilapia_Hspa4l	XP_003453147.1	
Nile tilapia_Hspa5a	XP_005470418.1	
Nile tilapia_Hspa5b	XP_003459659.1	
Nile tilapia_Hspa9	XP_003459471.1	
Nile tilapia_Hspa12a	XP_003457416.1	
Nile tilapia_Hspa12b	XP_003452414.1	
Nile tilapia_Hspa13	XP_003441638.1	
Nile tilapia_Hspa14	XP_003455685.1	
Nile tilapia_Hyou1	XP_003448981.1	
Stickleback_Hspa4a	ENSGACP00000027410	<i>Gasterosteus</i>
Stickleback_Hspa4b	ENSGACP00000024055	<i>aculeatus</i>
Stickleback_Hspa4l	ENSGACP00000010866	
Stickleback_Hspa5	ENSGACP00000021969	
Stickleback_HSPA8b	ENSGACP00000013930	
Stickleback_Hspa8a	ENSGACP00000026579	
Stickleback_Hspa9	ENSGACP00000025843	
Stickleback_Hspa12a	ENSGACP00000019311	
Stickleback_Hspa12b	ENSGACP00000026246	
Stickleback_Hspa13	ENSGACP00000008388	
Stickleback_Hspa14	ENSGACP00000025513	
Stickleback_Hyou1	ENSGACP00000026575	

Table S2. Species accession numbers of *Hsf* genes in the study

Associated gene name	NCBI/ UniProtKB Protein ID	Scientific name
<i>C. semilaevis</i> _Hsf1	XP_008329054.1	<i>Cynoglossus semilaevis</i>
<i>C. semilaevis</i> _Hsf2	XP_008310845.1	
<i>C. semilaevis</i> _Hsf2bp	XP_016893756.1	
<i>C. semilaevis</i> _Hsf4	XP_008309351.1	
<i>C. semilaevis</i> _Hsf51.1	XP_016897189.1	
<i>C. semilaevis</i> _Hsf51.2	XP_008331012.1	
Human_HSF1	Q00613	<i>Homo sapiens</i>
Human_HSF2	Q03933	
Human_HSF2BP	O75031	
Human_HSF4	Q9ULV5	
Human_HSF5	Q4G112	
Human_HSFX	Q9UBD0	
Human_HSFY	Q96LI6	
Lizard_HSF1	H9GJ46	<i>Anolis carolinensis</i>
Lizard_HSF2	G1K9B4	
Lizard_HSF2BP	G1KUF0	
Lizard_HSF4	G1KN88	
Lizard_HSF5	H9G419	
Mouse_HSF1	NP_001318082.1	<i>Mus musculus</i>
Mouse_HSF2	XP_006512627.1	
Mouse_HSF2BP	XP_006525094.1	
Mouse_HSF3	NP_001297683.1	
Mouse_HSF4	NP_001242971.1	
Mouse_HSF5	NP_001038992.1	
Mouse_HSFY	NP_081937.1	
Mudskipper_Hsf1	XP_020793876.1	<i>Boleophthalmus</i>
Mudskipper_Hsf2	XP_020792520.1	<i>pectinirostris</i>
Mudskipper_Hsf2bp	XP_020797502.1	
Mudskipper_Hsf4	XP_020790971.1	
Zebrafish_Hsf1	XP_009292229.1	<i>Danio rerio</i>
Zebrafish_Hsf11	XP_021335081.1	
Zebrafish_Hsf2	NP_571942.1	
Zebrafish_Hsf2bp	XP_021331585.1	
Zebrafish_Hsf4	NP_001315137.1	
Zebrafish_Hsf5	NP_001082945.1	
Medaka_Hsf1	XP_023815376.1	<i>Oryzias latipes</i>
Medaka_Hsf2	XP_011489975.1	
Medaka_Hsf2bp	XP_020557033.1	
Medaka_Hsf4	XP_011474681.1	
Medaka_Hsf5	XP_004076647.1	
Nile tilapia_Hsf1	XP_013122740.1	<i>Oreochromis niloticus</i>
Nile tilapia_Hsf2	XP_005475184.1	
Nile tilapia_Hsf2bp	XP_005459275.1	
Nile tilapia_Hsf4	XP_019217511.1	
Frog_HSF1	F6TGN0	<i>Xenopus tropicalis</i>

Associated gene name	NCBI/ UniProtKB Protein ID	Scientific name
Frog_HSF2	F6UAI0	
Frog_HSF2BP	F6R0G5	
Frog_HSF3	F7EGP3	
Frog_HSF4	F7ECP7	
Frog_HSF5	F7BDS9	
Chicken_HSF1	NP_001292185.1	<i>Gallus gallus</i>
Chicken_HSF2	A0A1D5P919.1	
Chicken_HSF2BP	F1NKF0	
Chicken_HSF3	A0A1D5PS43	
Chicken_HSF4	F1NNK6	
Chicken_HSF5	F1NVX9	
Stickleback_Hsf1	G3P880	<i>Gasterosteus aculeatus</i>
Stickleback_Hsf2	G3NJ44	
Stickleback_Hsf2bp	G3PRI9	
Stickleback_Hsf4	G3PLJ3	

Reference

Song, L., Li, C., Xie, Y., Liu, S., Zhang, J., Yao, J., Jiang, C., Li, Y., and Liu, Z. (2016). Genome-wide identification of *Hsp70* genes in channel catfish and their regulated expression after bacterial infection. *Fish & Shellfish Immunology* **49**, 154–162. [doi:10.1016/j.fsi.2015.12.009](https://doi.org/10.1016/j.fsi.2015.12.009)