

**Supplementary Table 1**

**Syntenic Relationships Among *hsp70* Genes in *C. elegans* and *C. briggsae***

Gene name	Linkage Group in <i>C. elegans</i>	40-kb region in <i>C. briggsae</i>	5-Mb region in <i>C. briggsae</i>
<i>hsp70-1</i>	IV	48	IV
<i>hsp70-7</i>	II	-	III
<i>hsp70-8</i>	II	-	III
<i>hsp70-12~hsp70-15</i>	II	-	III
<i>hsp70-21</i>	II	-	III/X
<i>hsp70-9</i>	I	47	I
<i>hsp70-9, hsp70-16~20</i>	I	48	I
<i>hsp70-3</i>	X	90	X
<i>hsp70-4</i>	II	82	II
<i>hsp70-6</i>	V	61	V
<i>hsp70-10</i>	III	-	II
<i>hsp70-11</i>	II	76	II
<i>hsp110-1</i>	III	80	III
<i>hsp110-2</i>	II	82	II
<i>hsp110-3</i>	X	62	X

NOTE.—The third column shows the percentage of shared orthologous genes between *C. elegans* and *C. briggsae* for a 40-kb genomic region surrounding each Hsp70 gene. The fourth column shows a homologous genomic region of 5Mb (data from Wormbase; Harris et al. 2003); dash (-), clones are on different chromosomes.

**Supplementary Table 2**

**Putative Regulatory Elements in the Promoter Regions of Some *hsp70* Gene Pairs**

**Between *C. elegans* and *C. briggsae***

Gene pairs	Identity (%)	GC (%)	nGAAn motifs		ERSEs motifs	
			2 <sup>a</sup>	3 <sup>b</sup>	I	II
<i>hsp70-1/hsp70-1</i>	58	37/38	1/2	1/1	–	–
<i>hsp70-3/hsp70-3</i>	67	51/44	–	–	3/3	–
<i>hsp70-4/hsp70-4</i>	53	42/40	0/1	1/0	–	2/2
<i>hsp70-7~8/hsp70-7~8</i>	45	44/41	2/4	3/4	–	–
<i>hsp70-9/hsp70-9</i>	30	35/44	1/0	1/3	–	–
<i>hsp110-1/hsp110-1</i>	71	33/36	–	2/2	–	–
<i>hsp110-2/hsp110-2</i>	51	34/35	–	1/1	2/1	0/1
<i>hsp110-3/hsp110-3</i>	36	32/35	–	–	2/0	–
<i>hsp70-7-8/hsp70-16</i>	45	44/41	2/5	3/3	–	–
<i>hsp70-7-8/hsp70-14</i>	47	44/42	2/2	3/3	–	–

NOTE.—First number is for *C. elegans* and second for *C. briggsae*. <sup>a</sup> Two inverted repeats nGAAn motif (unit of heat shock element-HSE), and <sup>b</sup> three repeats. ERSE, endoplasmic reticulum stress elements type I and type II. Dash (–) indicates that no putative HSE or ERSE was found.



Cel-hsp70-1 AAC GCT GTT GGA ATC GAT TTG GGA ACT ACC TAC TCC TGC GTG GGA GTT TTC ATG CAC GGA AAG --- --- GTA GAA ATC  
Cbr-hsp70-1 ... ..A ... ..C ..T ... ..T ..C ... ..T CAA ... ..G --- --- ..C ..G ...  
Cel-hsp70-2 T.. ..A ..A ... ..A ... ..G ... ..A... ..G ... ..G --- --- ... ..  
Cel-hsp70-3 .C. AT. A.. ..T ... ..C.C ... ..C ... ..G ..T ..C ... ..A ..A ..A ... ..CGT --- --- ..T ... ..  
Cbr-hsp70-3 .C. ATC A.C ..T ... ..C.C ... ..C ... ..T ... ..T ..T ... ..C ..A ..A ..A ... ..CGT --- --- ..T ... ..  
Cel-hsp70-4 .CA ATC A.. ..T ... ..C.C ... ..A ... ..G ... ..T ... ..C ... ..A ..A ..T ..G CGA --- --- ..T ... ..  
Cbr-hsp70-4 .C. ATC A.C ..T ... ..C.C ... ..C ..T ... ..G ... ..T ... ..C ... ..A ..A ... ..CGT --- --- ..T ..G ..T  
Cel-hsp70-6 C.T .T. A.C ... ..T ... ..C.T ... ..C ..A A.. ... ..T ..C A.T A.C A.G GAA GGA AAG .CT --- --- CC. A.. G.T  
Cbr-hsp70-6 C.T .T. A.C ... ..C ..T ... ..C ..A A.. ..T ... ..C A.T A.C A.G GAA GGA AA. .CT --- --- CC. A.G G.T  
Cel-hsp70-7 ..A ... A.. ..T ... ..C.C.C ..T ... ..G ... ..G ..T ..T ... A.C .AT CA. A.T ... ..G --- --- ..T ..G ...  
Cel-hsp70-8 ..A ... A.. ..T ... ..C.C.C ..T ... ..G ... ..G ..T ..T ... A.C .AT CA. A.T ... ..G --- --- ..T ..G ...  
Cbr-hsp70-7 ..A ... A.. ... ..C.C.C ..T ..G ..A ..T ..A ..T ..T ... ..C ..A ..CA. A.T ... ..G --- --- ..T ... ..T  
Cbr-hsp70-8 ..A ... A.. ... ..C.C.C ..T ..G ..A ..T ..A ..T ..T ... ..C ..A ..CA. A.T ... ..G --- --- ..T ... ..  
Cbr-hsp70-14 ..A ... A.. ... ..C.C.C ..T ..G ..A ..T ..A ..T ..T ... ..C ..A ..CA. A.T ... ..G --- --- ..T ... ..T  
Cel-hsp70-9 ..A ..G A.. ... ..C ... ..T ... ..G ... ..A ..T ..C ..T A.. .AT CAA A.T ... ..G --- --- ..T ... ..  
Cbr-hsp70-9 ..A ..G A.. ... ..C ... ..T ..C ... ..G ... ..G ... ..C ..T A.C .AT CA. T.T ... ..G --- --- ..C ... ..  
Cel-hsp70-10 --- AG. A.. ..T ..T ... ..G ... ..T ..T ..T ..T ..A ..CT TA. .AT CAA A.T ... C.A --- --- ..G A.T ..A  
Cbr-hsp70-10 --- AG. A.. ..T ... ..C ..T ..T ..G ..T ..T ..C. TA. .AT CA. A.T ... C.A --- --- ..G A.T G.G  
Cel-hsp70-11 ..A ATA .CA ... ..T ... ..A ..T ..A ..T ..T ..G ..CA A.A ..T A.C ..A. CAT GCT .T. .CT GGT GAA ACG ATC ..T  
Cbr-hsp70-11 ..A ATC .CC ..T ... ..A ..C ..C ..T ..T ..G ..CA A.T ..C A.. .AT CAC GCT .T. .CT GGG GAA ACT ATT ..T  
Cel-hsp110-1 TCG .T. C.C ... T.. ..A.C ..T ..AC CT. A.. ..G ..A. A.T ..T ... GCA CGT ..A ... GGC --- --- A.T ... G.T  
Cbr-hsp110-1 TCG .T. C.C ... T.. ..A.C ..T ..AC CT. A.. ..G ..A. A.T ..T ... GCA CGC ..A ... GGT --- --- A.T ..G G.T  
Cel-hsp110-2 GC. ATG ACA ATT GA. CTC GG. ACT CAA TT. CTT AAA ATT ..GA ATT ..A AAA CCT GGA ATT CCA ATG --- ..AC ATT GCT  
Cbr-hsp110-2 GCT ..A A.G AC. ..T ... C.T ..G ... CAG ..TT CT. AAA A.C ... A.C G.G .AA .CT ..T .TT CCT --- A.G ..C ..T  
Cel-hsp110-3 GCT ..A A.G TC. ... ..C.C ... ..G ..G ..CAG ..TT AT. AAG A.T ... T.G G.T ..A ..C. ..C GTT CCA --- A.G ..T ..T  
Cbr-hsp110-3 GCT ..G A.G TCC ..T ... C.T ..T ..G. CAA ..T. ATA AAA A.A ... C.C G.G ..A. .CT ..T GT. CCG --- A.G ..T ..T  
Cbr-hsp70-12 ..A ... A.. ... ..C.C.C ..T ..G ..A ..T ..A ..T ..T ... ..C ..A ..CA. A.T ... ..G --- --- ..T ... ..T  
Cbr-hsp70-13 ..A ... A.. ... ..C.C.C ..T ..G ..A ..T ..A ..T ..T ... ..C ..A ..CA. A.T ... ..G --- --- ..T ... ..T  
Cbr-hsp70-15 ---  
Cbr-hsp70-16 ---  
Cbr-hsp70-17 .GA T.G A.. ... ..A A.. ..A ..T ..T ..G ... ..AT CA. A.T ... ..G --- --- A.C ... ..  
Cbr-hsp70-18 .GA T.G A.. ... ..A A.. ..A ..T ..T ..G ... ..AT CA. A.T ... ..G --- --- A.C ... ..  
Cbr-hsp70-19 .GA T.G A.. ... ..A A.. ..A ..T ..T ..G ... ..AT CA. A.T ... ..G --- --- ..G TGT ...  
Cbr-hsp70-20 .GA T.G A.. ... ..A A.. ..A ..T ..T ..G ... ..AT CA. A.T ... ..G --- --- ..G TGT ...  
Cbr-hsp70-21 ..A ... A.C ..T ... ..C.C.C ..T ..C ..A ..T ... ..T ..T ... ..C ..A. CAA A.T ... ..G --- --- ..T ..G ..T

Cel-hsp70-1 ATT GCC AAC GAT CAA GGA AAC CGT ACA ACT CCA TCA TAT GTG GCT TTC ACC GAC ACC --- --- GAG CGT CTC ATC GGA  
Cbr-hsp70-1 ... ..T ... ..A.A ..C ... ..G ..C ..T ... ..T ... ..T ... ..T --- --- ..A ... ..  
Cel-hsp70-2 ... ..G ... ..G ... ..T ... ..G ... ..T ... ..G ... ..T ... ..G --- --- ..T ... ..  
Cel-hsp70-3 ... ..C ... ..C ... ..TC ..C ... ..C ..C ..T ... ..T.T ..GA GAT CAA GGA ..T ... ..G ... ..  
Cbr-hsp70-3 ..C ..T ... ..C ... ..TC ..C ... ..G ..C ..T ..C ... ..T.T ..GA GAG CAA GGA ..C ... ..T ... ..  
Cel-hsp70-4 ..C ... ..A.A ..TC ... ..C ..T ..G ..T ..T ..GA GAT CAA GGA ... ..A ..T ..T ...  
Cbr-hsp70-4 ..C ... ..T ..C ... ..A.A ..TC ... ..T ..T ... ..T.T ..GA GAG CAA GGA ..A ..G ... ..  
Cel-hsp70-6 ..C .AG ... ..CA G.. ... GT. A.A ..C ... ..G ACG ..T ... ..T ..CT GA. --- GGT ... ..T G.T ...  
Cbr-hsp70-6 ... ..AG ... ..CC G.. ... GT. A.A ..C ..C ..C AC. ..C ... ..C ..G A. --- GGC ..A ... ..T G.. ..T  
Cel-hsp70-7 C.C ... ..TCG G.. ... ..T AAG ... ..C ... ..A ... ..A ..T ..G --- --- ..A A.A T.G G.T ...  
Cel-hsp70-8 C.C ... ..TCG G.. ... ..T AAG ... ..C ... ..A ... ..A ..T ..G --- --- ..A A.A T.G G.T ...  
Cbr-hsp70-7 C.. ... ..TCA G.. ... ..AAA ... ..G ..T ... ..T ..A ... ..T ..T ..A --- --- ..A ..A T.G G.T ...  
Cbr-hsp70-8 C.. ... ..TCC G.. ... ..AAA ... ..G ..T ... ..T ..A ... ..T ..T ..A --- --- ..A ..A T.G G.T ...  
Cel-hsp70-14 C.. ... ..TCA G.. ... ..AAA ... ..G ..T ... ..T ..A ... ..T ..T ..A --- --- ..A ..A T.G G.T ...  
Cel-hsp70-9 C.C ..G ... ..TCC G.. ..G ... AAG ..T ..G ..T ..C ..C ... ..T ..A ..T ..A --- --- ... A.A ... G.T ..T  
Cbr-hsp70-9 C.C ... ..T TCC G.T ... ..AAA ..C ... ..C ... ..C ..C ... ..A ... ..T ..T ..T --- --- ..A ... ..G.A ..T  
Cel-hsp70-10 T.G .AA ..T ..G A.T ..T TG. A.A ... ..G ..G ..G GTC C.A ... G.T GGT ..G GAT --- GGA ..T TTA ... ..A ..T  
Cbr-hsp70-10 T.G .AG ..T ..A A.T ..G TGT ..A ... ..G ..G ..T GTG T.. ... A.G ..T ..A GAT --- GGG ..T T.. ..T ..A ...  
Cel-hsp70-11 T.A C.T G.T ..C ..T. ..C ..G AAA T.. GTA ..G AGT GTC ..T ... ..TTA CCA ..AT --- GGT ACC GTA T.A ..A ...  
Cbr-hsp70-11 C.A ..T G.T ..C TTG ..C ..G AAA T.G ..T. ..C --- --- --- --- --- --- --- --- --- --- --- --- --- ---  
Cel-hsp110-1 ..C A.. ..T ..C T.T TCT CTG A. G.C ... ..G.T ..GC ..A T.. ..T GGA CCA ..AA --- --- ..T ..A TCA ..G ..G  
Cbr-hsp110-1 ..C A.G ..T ... T.T TCC TTG ..A. G.C ... ..G.T ..GC ..T T.. ..T GGA CCA ..AG --- --- ..C ..A TCG ..G ...  
Cel-hsp110-2 C.G AAT .CG ..A TCG A.. ..GG AAG ... C.G AAT GTT GT. A.. AT. CAG GAT ..G. CA. --- --- CGA AC. T.. GCT ..AT  
Cbr-hsp110-2 GCC CTT ... ACC G.G TCG CGG A.A ..A. ... ..AAT GT. ... ATG A.. CAA ..T GGT --- --- C.C A.A ACG T.T ..CC  
Cel-hsp110-3 G.A CTG ... T A.G G.G TC. .GA A.A ..A. ..G ... ..AAC GT. A.C T.. ..T .AA A.T GA. --- --- ..A A.G T.T T.T ..CT  
Cbr-hsp110-3 G.A TTG ... A.G G.. TCC .GA ..C ..A. ... ..AAT GTC A.C T.C ... ..AG A.. GA. --- --- ... A.T T.T T.T ..CT  
Cbr-hsp70-12 C.. ... ..TCA G.. ... ..AAA ... ..G ..T ... ..T ..A ... ..T ..T ..A --- --- ..A ..A T.G G.T ...  
Cbr-hsp70-13 C.. ... ..TCA G.. ... ..AAA ... ..G ..T ... ..T ..A ... ..T ..T ..A --- --- ..A ..A T.G G.T ...  
Cbr-hsp70-15 ---  
Cbr-hsp70-16 ---  
Cbr-hsp70-17 ... ..A ..T TTC G.. ... ..A ..C ..A ... ..C ... ..A ... ..AT ..A ..T --- --- ..A ..A ..T ..T ..T  
Cbr-hsp70-18 ... ..A ..T TTC G.. ... ..A ..C ..A ... ..C ... ..A ... ..AT ..A ..T --- --- ..A ..A ..T ..T ..T  
Cbr-hsp70-19 ... ..A ..T TTC G.. ... ..A ..C ..A ... ..C ... ..A ... ..AT ..A ..T --- --- ..A ..A ..T ..T ..T  
Cbr-hsp70-20 ... ..A ..T TTC G.. ... ..A ..C ..A ... ..C ... ..A ... ..AT ..A ..T --- --- ..A ..A ..T ..T ..T  
Cbr-hsp70-21 C.. ... ..TCG G.. ... ..AAA ..C ..A ... ..C ... ..T ..A ... ..G ... ..A --- --- ... A.A ... G.T ...







































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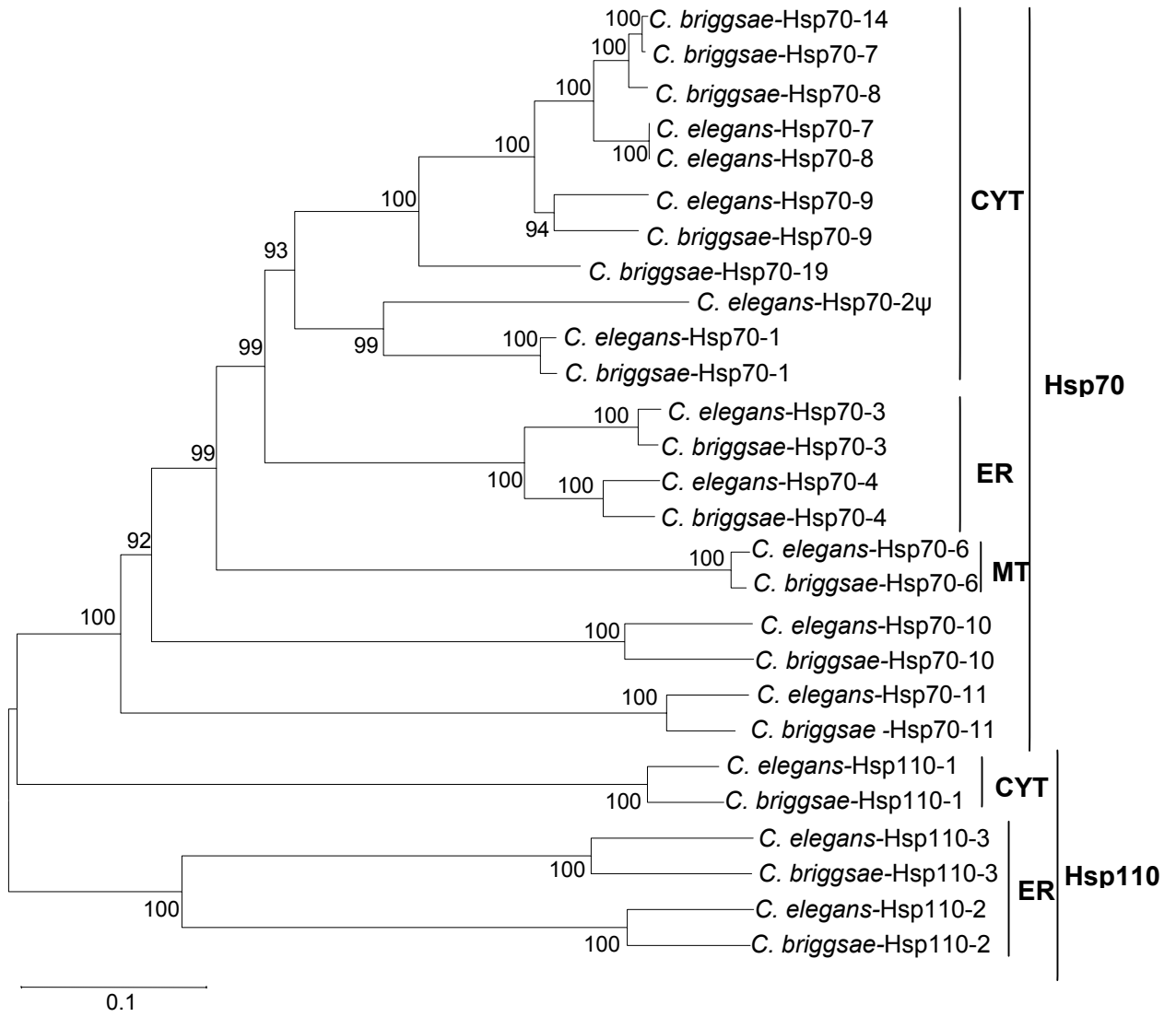
Cel-hsp70-1  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-1  --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-2  --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-3  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-3  --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-4  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-4  --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-6  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-6  --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-7  --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-8  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-7  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-8  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-14 --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-9  --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-9  --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-10 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-10 --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp70-11 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-11 --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp110-1 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp110-1 --- --- --- --- --- --- --- --- --- --- ---
Cel-hsp110-2 ATA AAG ACC GAG CTT T-- --- --- --- --- ---
Cbr-hsp110-2 ATG AAA ACC GAG CTT --- --- --- --- --- ---
Cel-hsp110-3 GAG CCG AAG AAA GAC ACT GAA CAC GAT GCA TCG GAA CTG
Cbr-hsp110-3 GAG CCG AAG AAA GAA GCT GAA CAC GAC GCG TCG GAA CTG
Cbr-hsp70-12 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-13 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-15 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-16 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-17 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-18 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-19 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-20 --- --- --- --- --- --- --- --- --- --- ---
Cbr-hsp70-21 --- --- --- --- --- --- --- --- --- --- ---

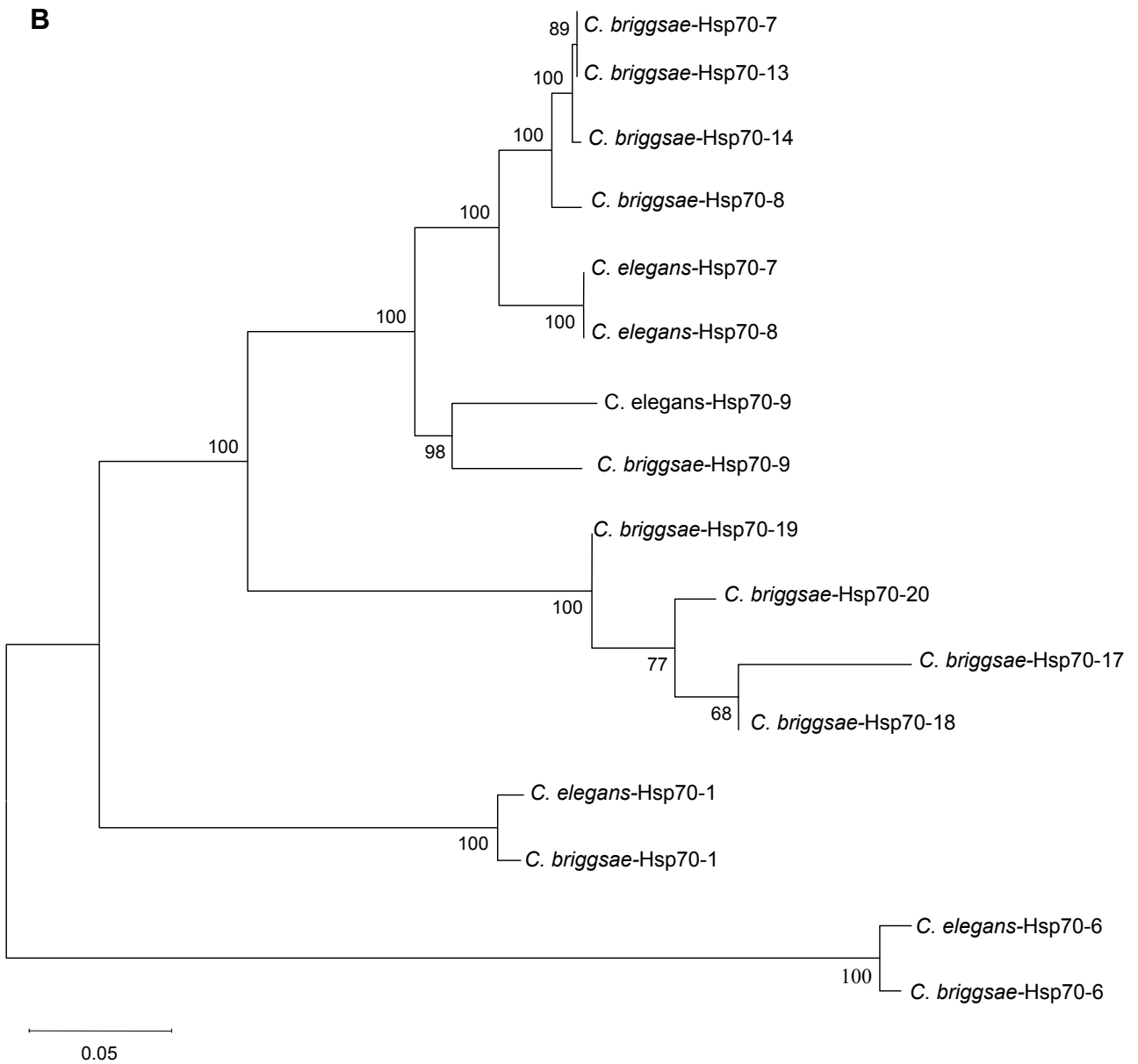
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Supplementary FIG. 1. –Nucleotide alignment of the *hsp70* gene sequences from

*Caenorhabditis elegans* (*Cel*) and *C. briggsae* (*Cbr*). Nucleotides identical to the first sequence are indicated by dots (.). Alignment gaps are indicated by dashes (-). Note that the sequences for the *C. briggsae* genes *hsp70-12*, *-13*, *-15*, and *hsp70-16~21* are truncated.

**A**





Supplementary FIG. 2. –A, Phylogenetic relationships of the Hsp70 and the Hsp110 proteins from *Caenorhabditis elegans* and *C. briggsae*. The alignment gaps were completely eliminated from the analysis, and the amino acids used to construct the tree were 201. B, Phylogenetic relationships of the Hsp70 proteins including the truncated sequences of *C. briggsae*. The number of amino acid sites after pairwise deletion of the gaps was 1070. The numbers for interior branches represent bootstrap values. CYT, cytoplasmic; ER, endoplasmic reticulum; MT, mitochondrion.