

// ( )  
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*Chaperone (HSPs Heat Shock Proteins)* :

*HSP60*

DNA .

*PCR HSP60 (highly conserved)*  
*(template) DNA*

*HSP60* :

*McHSP60*

*C.immitis* % *HSP60*  
*HSP60 S.cerevisiae* % *Aspergillus fumigatus* %

*McHSP60*

*HSP PCR* :

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( )

( )

( ) *HSP*

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*ajahangirnejad@yahoo.com* :

DNA ( )

EDTA (PH : ) Tris-HCl

K % - β % SDS (Chaperone) HSP

( mg/ml) ( )

oC

× g ( )

RNase-H HSP

RNA ( mg/ml)

ATP

HSP ( )

( : ) ( : : ) ( )

DNA

× g

% ( )

**PCR** •

( )

( )

Gene Runner

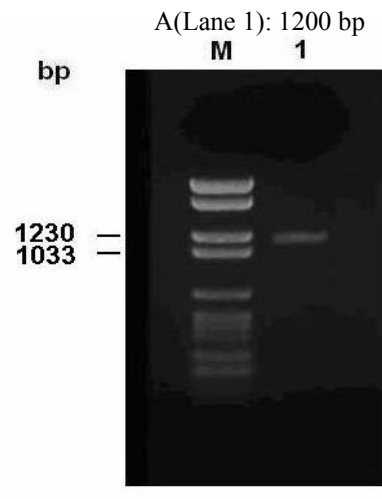
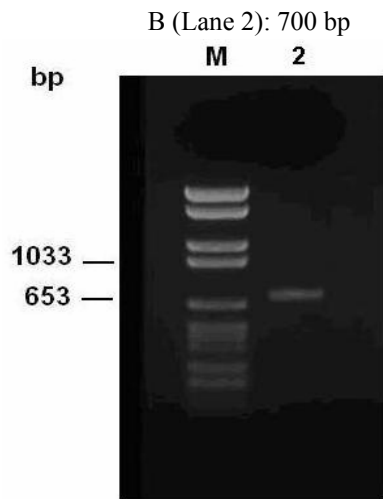
MWG-Biotech

10X PCR Buffer :DNA •

DNA MgCl<sub>2</sub> dNTPmix

/ 40ng/μl DNA Choi

( ) ( ) / (10pmol) 10ng/μl ( )  
 ( ) / Taq  
 PCR  
 % ( ) PCR  
 ( )  
 : PCR • ( )  
 PCR ( )  
 Qiagen ( )  
 DNA ( )  
 Dye Terminator Cycle PCR :  
 ( MWG ) 10X PCR Buffer  
 (NCBI - NIH) DNA MgCl<sub>2</sub> dNTPmix  
 / 40ng/μl  
 (10pmol) 10ng/μl ( )  
 Taq  
 PCR  
 (A) (B) : PCR  
 VI ( ) McHSP60 ( )  
 Roche ( )



**B** (Roch, Germany) VI: HSP 60 (B) (A) PCR  
 M

1	K	G	R	N	V	L	I	E	S	S	Y	G	S	P	K	I	T	K	18		
1	aag	gga	agg	aat	ggt	ttg	att	gag	tct	tca	tac	ggc	tcc	cca	aaa	att	act	aaa	g	55	
56	gtagcgctcaattttgcgcgatactctcacttacggcggatagctaactccaatatag																		114		
19	D	G	V	T	V	A	K	A	I	S	L	Q	D	K	F	E	N	L	G	A	38
115	ac	ggt	gtc	acg	ggt	gcc	aaa	gct	atc	tca	ttg	caa	gac	aaa	ttc	gag	aat	ctc	ggc	gcc	173
39	R	L	L	Q	D	V	A	S	K	T	N	E	V	A	G	D	G	T	T	T	58
174	cgt	ctt	ctc	caa	gac	ggt	gct	tcc	aag	aca	aac	gag	gtc	gcc	ggt	gac	ggt	acc	aca	acg	233
59	A	T	V	L	A	R	A	I	F	S	E	T	V	K	N	V	A	A	G	C	78
234	gcg	acc	gtg	ctt	gca	cgt	gct	atc	ttt	tcc	gag	acc	gtc	aag	aat	ggt	gct	gct	ggc	tgc	293
79	N	P	M	D	L	R	R	G	I	Q	A	A	V	D	S	V	V	E	Y	L	98
294	aac	cca	atg	gac	ttg	aga	aga	ggc	att	cag	gcc	gcc	ggt	gac	tcc	gtc	gtc	gaa	tat	ctt	353
99	Q	A	N	K	R	E	I	T	T	S	E	E	I	A	Q	V	A	T	I	S	118
354	caa	gca	aat	aag	aga	gag	atc	acc	acc	agc	gaa	gag	att	gcg	cag	gtg	gct	acg	atc	tct	413
119	A	N	G	D	T	H	I	G	K	L	I	S	N	A	M	E	R	V	G	K	138
414	gct	aac	ggg	gac	acc	cat	atc	gga	aag	ttg	atc	tcc	aac	gca	atg	gaa	aga	ggt	gga	aag	473
139	E	G	V	I	T	V	K	D	G	K	T	I	E	D	E	L	E	V	T	E	158
474	gaa	ggt	gtg	att	acg	ggt	aag	gac	gga	aag	acc	att	gaa	gac	gag	ctt	gag	ggt	acc	gag	533
159	G	M	R	F	D	R	G	Y	V	S	P	Y	F	I	T	D	P	K	T	Q	178
534	ggc	atg	cga	ttt	gac	cgc	ggc	tat	ggt	tcc	cct	tac	ttt	atc	acc	gac	ccc	aaa	act	cag	593
179	K	V	E	F	E	K	P	L	I	L	L	S	E	K	K	I	S	A	V	Q	198
594	aag	ggt	gag	ttt	gaa	aag	cct	ctt	att	ctc	ctc	tct	gag	aag	aag	atc	tct	gcc	gtc	cag	563
199	D	I	I	P	A	L	E	A	S	T	T	L	R	R	P	L	V	I	I	A	218
654	gat	att	atc	ccc	gcc	ctt	gag	gcc	tct	acc	acc	ctc	cgc	cga	cca	cta	ggt	atc	att	gct	713
219	E	D	I	E	G	E	A	L	A	V	C	I	L	N	K	L	R	G	Q	L	238
714	gag	gat	att	gag	ggc	gag	gct	ctc	gca	gtc	tgc	att	ctc	aat	aaa	ctg	cgt	ggc	caa	ctt	773
239	Q	V	A	A	V	K	A	P	G	F	G	D	N	R	K	S	I	L	G	D	258
774	caa	gtc	gct	gcc	gtc	aag	gct	cct	ggc	ttc	ggt	gat	aac	cgc	aag	agc	atc	ctt	ggt	gac	833
259	I	A	V	L	T	N	G	T	V	F	T	D	E	L	D	M	K	L	D	K	278
834	att	gcc	gtc	ttg	acc	aat	ggt	acc	gtg	ttc	aca	gat	gag	ctt	gat	atg	aag	ctt	gac	aag	893
279	A	T	P	D	M	L	G	S	T	G	S	I	T	I	T	K	E	D	T	I	298
894	gct	acc	cca	gat	atg	ctc	ggc	tcc	acg	ggc	tcc	atc	acc	atc	acc	aag	gag	gac	act	att	953
299	I	L	N	G	E	G	S	K	D	A	I	A	Q	R	C	E	Q	I	S	G	318
954	atc	ctg	aac	ggt	gag	ggc	tcc	aag	gat	gcc	att	gct	cag	agg	tgc	gag	caa	att	agc	ggc	1013
319	I	I	A	D	P	A	T	S	E	Y	E	K	E	K	L	Q	E	R	L	A	338
1014	atc	att	gct	gat	cct	gcc	acc	tcc	gaa	tac	gag	aag	gag	aag	ctt	cag	gag	cgt	cta	gct	1073
339	K	L	S	G	G	V	A	V	I	K	V	G	G	A	S	E	V	E	V	G	358
1074	aaa	ctc	tct	ggt	ggt	ggt	gct	gtc	atc	aag	gtc	ggc	ggt	gct	tct	gaa	ggt	gaa	ggt	gga	1133
359	E	K	K	D	R	V	V	D	A	L	N	A	T	R	A	A	V	E	E	G	378
1134	gag	aag	aag	gac	cgt	ggt	ggt	gat	gcc	ctg	aac	gct	acc	cgc	gct	gct	ggt	gag	gag	ggt	1193
379	I	L	P	G	G	G	T	A	L	L	K	A	S	A	N	G	L	K	D	V	398
1194	att	ctc	ccc	ggc	ggt	ggt	acc	gcc	ttg	ctc	aag	gct	tcc	gcc	aat	ggt	ttg	aaa	gac	gtc	1253
399	K	P	A	N	F	D	Q	Q	L	G	V	S	I	V	K	N	A	I	Q	R	418
1254	aag	cca	gcc	aac	ttt	gac	cag	cag	ctg	ggt	gtc	agc	att	ggt	aag	aac	gcc	atc	cag	aga	1313
419	P	A	R	T	I	V	E	N	A	G	L	E	G	S	V	I	V	G	K	L	438
1314	cct	gct	cgt	act	att	ggt	gag	aat	gct	ggg	ttg	gag	ggt	agc	gtc	att	gtg	ggc	aag	ctt	1373
439	T	D	E	F	A	D	D	F	N	R	G	F	D	S	A	K	G	E	Y	V	458
1374	aca	gat	gaa	ttt	gcg	gac	gat	ttc	aat	aga	ggc	ttc	gat	agc	gcc	aag	gga	gag	tac	ggt	1433
459	D	M	I	Q	A	G	I	V	D	P	L	K	V	V	R	T	A	L	V	D	478
1434	gat	atg	atc	cag	gct	gga	att	gtc	gac	cca	ttg	aag	ggt	ggt	cgc	acc	gct	ctc	gtc	gat	1493
479	A	S	G	V	A	S	L	L	G	T	T	E	V	A	I	V	E	A	P	497	
1494	gcc	agt	ggt	ggt	gca	tcc	cta	ctc	ggt	acc	acc	gag	ggt	gca	atc	ggt	gaa	gct	ccc	1550	

McHSP60

( )

HSP

Genbank

HSP

%

%

Coccidioides immitis

Aspergillus fumigatus

( )

HSP

( )

McHSP60

HSP60

( )

DNA

HSP60

HSP60

( )

HSP 60

Paracoccidioides brasiliensis

(NCBI)

DQ981834

( )

HSP60

Roska

T.mentagrophytes

(NCBI , NIH : AF199024)

Epidermophyton Microsporium Trichophyton

McHSP60

M.canis

( )

PCR

HSP60

II

DNA

PCR-RFLP

%

PCR

( )

%

Coccidioides immitis

(Inter-single-sequence-repeat-PCR) ISSR-PCR

Aspergillus nidulans

( )

M.canis

HSP

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