

SEQUENCE LISTING

<110> Qiagen Sciences LLC
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<120> COMPOSITIONS AND METHODS FOR DIAGNOSING
 LYME DISEASE AND FOR PREDICTING LYME DISEASE SPIROCHETE
 ELIMINATION AFTER TREATMENT

<130> 770025.466W0

<140> PCT

<141> 2016-09-15

<150> US 62/233,192

<151> 2015-09-25

<160> 40

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 25

<212> PRT

<213> Borrelia sp.

<400> 1

Asn	Val	Arg	Thr	Ala	Glu	Glu	Leu	Gly	Met	Gln	Pro	Ala	Lys	Ile	Asn
1				5					10					15	
Thr	Pro	Ala	Ser	Leu	Ser	Gly	Ser	Gln							
			20					25							

<210> 2

<211> 20

<212> PRT

<213> Borrelia sp.

<400> 2

Asn	Thr	Pro	Ala	Ser	Leu	Ser	Gly	Ser	Gln	Ala	Ser	Trp	Thr	Leu	Arg
1				5					10					15	
Val	His	Val	Gly												
			20												

<210> 3

<211> 20
<212> PRT
<213> Borrelia sp.

<400> 3
Leu Ser Gly Ser Gln Ala Ser Trp Thr Leu Arg Val His Val Gly Ala
1 5 10 15
Asn Gln Asp Glu
20

<210> 4
<211> 20
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<213> Borrelia sp.

<400> 4
Gln Asp Glu Ala Ile Ala Val Asn Ile Tyr Ala Ala Asn Val Ala Asn
1 5 10 15
Leu Phe Ser Gly
20

<210> 5
<211> 19
<212> PRT
<213> Borrelia sp.

<400> 5
Ser Leu Ala Lys Ile Glu Asn Ala Ile Arg Met Ile Ser Asp Gln Arg
1 5 10 15
Ala Asn Leu

<210> 6
<211> 20
<212> PRT
<213> Borrelia sp.

<400> 6
Ser Ile Val Met Val Leu Phe Phe Asp Leu Leu Val Ala Cys Ser Ile
1 5 10 15
Gly Leu Val Glu
20

<210> 7
<211> 20
<212> PRT
<213> Borrelia sp.

<400> 7

Leu	Phe	Phe	Asp	Leu	Leu	Val	Ala	Cys	Ser	Ile	Gly	Leu	Val	Glu	Arg
1				5					10					15	
Thr	Asn	Ala	Ala												
			20												

<210> 8
 <211> 25
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 <213> Borrelia sp.

Ile	Gly	Leu	Val	Glu	Arg	Thr	Asn	Ala	Ala	Leu	Glu	Ser	Ser	Ser	Lys
1				5					10					15	
Asp	Leu	Lys	Asn	Lys	Ile	Leu	Lys	Ile							
			20					25							

<210> 9
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 <213> Borrelia sp.

Lys	Asp	Leu	Lys	Asn	Lys	Ile	Leu	Lys	Ile	Lys	Lys	Glu	Ala	Thr	Gly
1				5					10					15	
Lys	Gly	Val	Leu	Phe	Glu	Ala	Phe	Thr							
			20					25							

<210> 10
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 <212> PRT
 <213> Borrelia sp.

Gly	Lys	Gly	Val	Leu	Phe	Glu	Ala	Phe	Thr	Gly	Leu	Lys	Thr	Gly	Ser
1				5					10					15	
Lys	Val	Thr	Ser	Gly	Gly	Leu	Ala	Leu							
			20					25							

<210> 11
 <211> 25
 <212> PRT
 <213> Borrelia sp.

Ser	Lys	Val	Thr	Ser	Gly	Gly	Leu	Ala	Leu	Arg	Glu	Ala	Lys	Val	Gln
1				5					10					15	
Ala	Ile	Val	Glu	Thr	Gly	Lys	Phe	Leu							
			20					25							

<210> 12
 <211> 25
 <212> PRT

<213> Borrelia sp.

<400> 12

Gln	Ala	Ile	Val	Glu	Thr	Gly	Lys	Phe	Leu	Lys	Ile	Ile	Glu	Glu	Glu
1				5					10					15	
Ala	Leu	Lys	Leu	Lys	Glu	Thr	Gly	Asn							
			20					25							

<210> 13

<211> 25

<212> PRT

<213> Borrelia sp.

<400> 13

Glu	Ala	Leu	Lys	Leu	Lys	Glu	Thr	Gly	Asn	Ser	Gly	Gln	Phe	Leu	Ala
1				5					10					15	
Met	Phe	Asp	Leu	Met	Leu	Glu	Val	Val							
			20					25							

<210> 14

<211> 25

<212> PRT

<213> Borrelia sp.

<400> 14

Ala	Met	Phe	Asp	Leu	Met	Leu	Glu	Val	Val	Glu	Ser	Leu	Glu	Asp	Val
1				5					10					15	
Gly	Ile	Ile	Gly	Leu	Lys	Ala	Arg	Val							
			20					25							

<210> 15

<211> 25

<212> PRT

<213> Borrelia sp.

<400> 15

Val	Gly	Ile	Ile	Gly	Leu	Lys	Ala	Arg	Val	Leu	Glu	Glu	Ser	Lys	Asn
1				5					10					15	
Asn	Pro	Ile	Asn	Thr	Ala	Glu	Arg	Leu							
			20					25							

<210> 16

<211> 25

<212> PRT

<213> Borrelia sp.

<400> 16

Asn	Asn	Pro	Ile	Asn	Thr	Ala	Glu	Arg	Leu	Leu	Ala	Ala	Lys	Ala	Gln
1				5					10					15	
Ile	Glu	Asn	Gln	Leu	Lys	Val	Val	Lys							
			20					25							

<210> 17
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<213> Borrelia sp.

<400> 17
Gln Ile Glu Asn Gln Leu Lys Val Val Lys Glu Lys Gln Asn Ile Glu
1 5 10 15
Asn Gly Gly Glu Lys Lys Asn Asn Lys
20 25

<210> 18
<211> 25
<212> PRT
<213> Borrelia sp.

<400> 18
Leu Lys Val Val Lys Glu Lys Gln Asn Ile Glu Asn Gly Gly Glu Lys
1 5 10 15
Lys Asn Asn Lys Ser Lys Lys Lys Lys
20 25

<210> 19
<211> 25
<212> PRT
<213> Borrelia sp.

<400> 19
Phe Gly Leu Ser Gly Ala Tyr Gly Asn Glu Thr Phe Asn Asn Ser Ser
1 5 10 15
Ile Thr Tyr Ser Leu Lys Asp Lys Ser
20 25

<210> 20
<211> 25
<212> PRT
<213> Borrelia sp.

<400> 20
Ser Ile Thr Tyr Ser Leu Lys Asp Lys Ser Val Val Gly Asn Asp Leu
1 5 10 15
Leu Ser Pro Thr Leu Ser Asn Ser Ala
20 25

<210> 21
<211> 25
<212> PRT
<213> Borrelia sp.

<400> 21

Leu	Leu	Ser	Pro	Thr	Leu	Ser	Asn	Ser	Ala	Ile	Leu	Ala	Ser	Phe	Gly
1				5					10					15	
Ala	Lys	Tyr	Lys	Leu	Gly	Leu	Thr	Lys							
			20					25							

<210> 22
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 <212> PRT
 <213> Borrelia sp.

Gly	Ala	Lys	Tyr	Lys	Leu	Gly	Leu	Thr	Lys	Ile	Asn	Asp	Lys	Asn	Thr
1				5					10					15	
Tyr	Leu	Ile	Leu												
			20												

<210> 23
 <211> 20
 <212> PRT
 <213> Borrelia sp.

Leu	Gly	Leu	Thr	Lys	Ile	Asn	Asp	Lys	Asn	Thr	Tyr	Leu	Ile	Leu	Gln
1				5					10					15	
Met	Gly	Thr	Asp												
			20												

<210> 24
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 <212> PRT
 <213> Borrelia sp.

Thr	Tyr	Leu	Ile	Leu	Gln	Met	Gly	Thr	Asp	Phe	Gly	Ile	Asp	Pro	Phe
1				5					10					15	
Ala	Ser	Asp	Phe												
			20												

<210> 25
 <211> 20
 <212> PRT
 <213> Borrelia sp.

Gln	Met	Gly	Thr	Asp	Phe	Gly	Ile	Asp	Pro	Phe	Ala	Ser	Asp	Phe	Ser
1				5					10					15	
Ile	Phe	Gly	His												
			20												

<210> 26

<211> 25
<212> PRT
<213> Borrelia sp.

<400> 26
Phe Ala Ser Asp Phe Ser Ile Phe Gly His Ile Ser Lys Ala Ala Asn
1 5 10 15
Phe Lys Lys Glu Thr Pro Ser Asp Pro
20 25

<210> 27
<211> 25
<212> PRT
<213> Borrelia sp.

<400> 27
Asn Phe Lys Lys Glu Thr Pro Ser Asp Pro Asn Lys Lys Ala Glu Ile
1 5 10 15
Phe Asp Pro Asn Gly Asn Ala Leu Asn
20 25

<210> 28
<211> 25
<212> PRT
<213> Borrelia sp.

<400> 28
Ile Phe Asp Pro Asn Gly Asn Ala Leu Asn Phe Ser Lys Asn Thr Glu
1 5 10 15
Leu Gly Ile Ala Phe Ser Thr Gly Ala
20 25

<210> 29
<211> 20
<212> PRT
<213> Borrelia sp.

<400> 29
Glu Leu Gly Ile Ala Phe Ser Thr Gly Ala Ser Ile Gly Phe Ala Trp
1 5 10 15
Asn Lys Asp Thr
20

<210> 30
<211> 20
<212> PRT
<213> Borrelia sp.

<400> 30
Phe Ser Thr Gly Ala Ser Ile Gly Phe Ala Trp Asn Lys Asp Thr Gly

1	5	10	15
Glu Lys Glu Ser			
20			

<210> 31
 <211> 25
 <212> PRT
 <213> Borrelia sp.

<400> 31															
Phe	Ser	Thr	Gly	Ala	Ser	Ile	Gly	Phe	Ala	Trp	Asn	Lys	Asp	Thr	Gly
1				5					10					15	
Glu	Lys	Glu	Ser	Trp	Ala	Ile	Lys	Gly							
			20					25							

<210> 32
 <211> 15
 <212> PRT
 <213> Borrelia sp.

<400> 32															
Lys	Glu	Met	Leu	Ala	Asn	Ser	Val	Lys	Glu	Leu	Thr	Ser	Pro	Ile	
1				5					10					15	

<210> 33
 <211> 21
 <212> PRT
 <213> Borrelia sp.

<400> 33															
Ala	Thr	Lys	Ala	Ile	Gly	Lys	Lys	Ile	Gln	Gln	Asn	Gly	Gly	Leu	Ala
1				5					10					15	
Val	Glu	Ala	Gly	His											
			20												

<210> 34
 <211> 40
 <212> PRT
 <213> Borrelia burgdorferi

<400> 34															
Asn	Val	Arg	Thr	Ala	Glu	Glu	Leu	Gly	Met	Gln	Pro	Ala	Lys	Ile	Asn
1				5					10					15	
Thr	Pro	Ala	Ser	Leu	Ser	Gly	Ser	Gln	Ala	Ser	Trp	Thr	Leu	Arg	Val
			20					25					30		
His	Val	Gly	Ala	Asn	Gln	Asp	Glu								
		35					40								

<210> 35
 <211> 20
 <212> PRT

<213> Borrelia burgdorferi

<400> 35

Gln	Asp	Glu	Ala	Ile	Ala	Val	Asn	Ile	Tyr	Ala	Ala	Asn	Val	Ala	Asn
1				5					10					15	
Leu	Phe	Ser	Gly												
			20												

<210> 36

<211> 19

<212> PRT

<213> Borrelia burgdorferi

<400> 36

Ser	Leu	Ala	Lys	Ile	Glu	Asn	Ala	Ile	Arg	Met	Ile	Ser	Asp	Gln	Arg
1				5					10					15	
Ala	Asn	Leu													

<210> 37

<211> 180

<212> PRT

<213> Borrelia burgdorferi

<400> 37

Ser	Ile	Val	Met	Val	Leu	Phe	Phe	Asp	Leu	Leu	Val	Ala	Cys	Ser	Ile
1				5					10					15	
Gly	Leu	Val	Glu	Arg	Thr	Asn	Ala	Ala	Leu	Glu	Ser	Ser	Ser	Lys	Asp
			20				25						30		
Leu	Lys	Asn	Lys	Ile	Leu	Lys	Ile	Lys	Lys	Glu	Ala	Thr	Gly	Lys	Gly
		35				40						45			
Val	Leu	Phe	Glu	Ala	Phe	Thr	Gly	Leu	Lys	Thr	Gly	Ser	Lys	Val	Thr
	50				55					60					
Ser	Gly	Gly	Leu	Ala	Leu	Arg	Glu	Ala	Lys	Val	Gln	Ala	Ile	Val	Glu
65					70					75				80	
Thr	Gly	Lys	Phe	Leu	Lys	Ile	Ile	Glu	Glu	Glu	Ala	Leu	Lys	Leu	Lys
				85					90					95	
Glu	Thr	Gly	Asn	Ser	Gly	Gln	Phe	Leu	Ala	Met	Phe	Asp	Leu	Met	Leu
			100					105					110		
Glu	Val	Val	Glu	Ser	Leu	Glu	Asp	Val	Gly	Ile	Ile	Gly	Leu	Lys	Ala
		115					120					125			
Arg	Val	Leu	Glu	Glu	Ser	Lys	Asn	Asn	Pro	Ile	Asn	Thr	Ala	Glu	Arg
		130				135						140			
Leu	Leu	Ala	Ala	Lys	Ala	Gln	Ile	Glu	Asn	Gln	Leu	Lys	Val	Val	Lys
145					150					155					160
Glu	Lys	Gln	Asn	Ile	Glu	Asn	Gly	Gly	Glu	Lys	Lys	Asn	Asn	Lys	Ser
				165					170					175	
Lys	Lys	Lys	Lys												
			180												

<210> 38

<211> 150

<212> PRT

<213> Borrelia burgdorferi

<400> 38

Phe	Gly	Leu	Ser	Gly	Ala	Tyr	Gly	Asn	Glu	Thr	Phe	Asn	Asn	Ser	Ser
1				5					10					15	
Ile	Thr	Tyr	Ser	Leu	Lys	Asp	Lys	Ser	Val	Val	Gly	Asn	Asp	Leu	Leu
			20					25					30		
Ser	Pro	Thr	Leu	Ser	Asn	Ser	Ala	Ile	Leu	Ala	Ser	Phe	Gly	Ala	Lys
		35					40					45			
Tyr	Lys	Leu	Gly	Leu	Thr	Lys	Ile	Asn	Asp	Lys	Asn	Thr	Tyr	Leu	Ile
	50					55					60				
Leu	Gln	Met	Gly	Thr	Asp	Phe	Gly	Ile	Asp	Pro	Phe	Ala	Ser	Asp	Phe
65					70				75					80	
Ser	Ile	Phe	Gly	His	Ile	Ser	Lys	Ala	Ala	Asn	Phe	Lys	Lys	Glu	Thr
				85					90					95	
Pro	Ser	Asp	Pro	Asn	Lys	Lys	Ala	Glu	Ile	Phe	Asp	Pro	Asn	Gly	Asn
			100					105					110		
Ala	Leu	Asn	Phe	Ser	Lys	Asn	Thr	Glu	Leu	Gly	Ile	Ala	Phe	Ser	Thr
		115					120					125			
Gly	Ala	Ser	Ile	Gly	Phe	Ala	Trp	Asn	Lys	Asp	Thr	Gly	Glu	Lys	Glu
	130					135						140			
Ser	Trp	Ala	Ile	Lys	Gly										
145					150										

<210> 39

<211> 21

<212> PRT

<213> *Borrelia burgdorferi*

<400> 39

Ala	Thr	Lys	Ala	Ile	Gly	Lys	Lys	Ile	Gln	Gln	Asn	Gly	Gly	Leu	Ala
1				5					10					15	
Val	Glu	Ala	Gly	His											
			20												

<210> 40

<211> 15

<212> PRT

<213> *Borrelia burgdorferi*

<400> 40

Lys	Glu	Met	Leu	Ala	Asn	Ser	Val	Lys	Glu	Leu	Thr	Ser	Pro	Ile	
1				5					10					15	