

SEQUENCE LISTING

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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
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 <212> PRT
 <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
 <212> PRT
 <213> *Borrelia* sp.

<400> 8
 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
 <211> 25
 <212> PRT
 <213> *Borrelia* sp.

<400> 9
 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
 <211> 25
 <212> PRT
 <213> *Borrelia* sp.

<400> 10
 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.

<400> 11
 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
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 <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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 <212> PRT
 <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

<211> 20

<212> PRT

<213> *Borrelia* sp.

<400> 22

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.

<400> 23

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

<211> 20

<212> PRT

<213> *Borrelia* sp.

<400> 24

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.

<400> 25

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

Glu Lys Glu Ser

1 5 10 15
 20

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

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<210> 32
<211> 15
<212> PRT
<213> Borrelia sp.
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<400> 32
Lys Glu Met Leu Ala Asn Ser Val Lys Glu Leu Thr Ser Pro Ile
1 5 10 15

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

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