SEQUENCE LISTING

<110> The University of Tokyo
Osaka University

<120> A highly versatile method for presenting cyclic peptides on protein scaffolds

<130> T0529AJP0001

<160> 68

<170> PatentIn version 3.5

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<400> 1

Arg Pro Arg Val Ala Arg Trp Thr Gly Gln Ile Ile Tyr
1 5 10

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<400> 2

Arg Pro Tyr Ile Glu Arg Trp Thr Gly Arg Leu Ile Val
1 5 10

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<400> 3

Asn Ser Asn Val Leu Ser Trp Gln Thr Tyr Ser Trp Tyr
1 5 10

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<400> 4

Arg Gln Phe Asn Arg Arg Thr His Glu Val Trp Asn Leu Asp
1 5 10

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<400> 5

Trp Tyr Tyr Ala Trp Asp Gln Thr Tyr Lys Ala Phe Pro
1 5 10

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<400> 6

Tyr Ile Ser Trp Asn Glu Phe Asn Ser Pro Asn Trp Arg Phe Ile Thr
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Ala Ser Phe Pro Glu Glu Leu Asp Glu Trp Tyr Val Ala Tyr Gly
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<400> 8

Arg Gln Ala Ser Pro Lys Phe Thr Phe Trp Ser
1 5 10

<210> 9
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<213> Homo sapiens

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Thr Val Tyr Ala Val Thr Gly Arg Gly Asp Ser Pro Ala Ser Ser Lys
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Pro Ile Ser Ile Asn Tyr Arg
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Thr Val Tyr Ala Val Thr Gly Arg Trp Arg Pro Arg Val Ala Arg Trp
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Thr Gly Gln Ile Ile Tyr Ser Pro Ala Ser Ser Lys Pro Ile Ser Ile
20 25 30

Asn Tyr Arg
35

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<400> 11

Thr Val Tyr Ala Val Thr Gly Arg Trp Arg Pro Tyr Ile Glu Arg Trp
1 5 10 15

Thr Gly Arg Leu Ile Val Ser Pro Ala Ser Ser Lys Pro Ile Ser Ile
20 25 30

Asn Tyr Arg
35

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<400> 12

Thr Val Tyr Ala Val Thr Gly Arg Gly Gly Ser Gly Cys Asn Ser Asn
1 5 10 15

Val Leu Ser Trp Gln Thr Tyr Ser Trp Tyr Cys Gly Gly Ser Ser Pro
20 25 30

Ala Ser Ser Lys Pro Ile Ser Ile Asn Tyr Arg

35 40

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<400> 13

Thr Val Tyr Ala Val Thr Gly Arg Gly Gly Tyr Arg Gln Phe Asn Arg
1 5 10 15

Arg Thr His Glu Val Trp Asn Leu Asp Gly Ser Pro Ala Ser Ser Lys
20 25 30

Pro Ile Ser Ile Asn Tyr Arg
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1 5 10 15

Asp Gln Thr Tyr Lys Ala Phe Pro Gly Ser Ser Pro Ala Ser Ser Lys
20 25 30

Pro Ile Ser Ile Asn Tyr Arg
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<400> 15

Thr Val Tyr Ala Val Thr Gly Arg Gly Gly Tyr Ile Ser Trp Asn Glu
1 5 10 15

Phe Asn Ser Pro Asn Trp Arg Phe Ile Thr Gly Ser Pro Ala Ser Ser
20 25 30

Lys Pro Ile Ser Ile Asn Tyr Arg
35 40

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Thr Val Tyr Ala Val Thr Gly Arg Gly Gly Ser Tyr Ala Ser Phe Pro
1 5 10 15

Glu Glu Leu Asp Glu Trp Tyr Val Ala Tyr Gly Gly Ser Pro Ala Ser
20 25 30

Ser Lys Pro Ile Ser Ile Asn Tyr Arg
35 40

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Thr Val Tyr Ala Val Thr Gly Arg Gly Gly Ser Tyr Arg Gln Ala Ser
1 5 10 15

Pro Lys Phe Thr Phe Trp Ser Gly Gly Ser Pro Ala Ser Ser Lys Pro
20 25 30

Ile Ser Ile Asn Tyr Arg
35

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<213> Homo sapiens

<400> 18

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn
1 5 10

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<400> 19

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1 5 10 15

Gly Arg Leu Ile Val Gly Gly Asp Pro Glu Val Lys Phe Asn
20 25 30

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Val Val Asp Val Ser His Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr
1 5 10 15

His Glu Val Trp Asn Leu Asp Gly Gly Asp Pro Glu Val Lys Phe Asn
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Val Val Asp Val Ser His Gly Ser Tyr Trp Tyr Tyr Ala Trp Asp Gln
1 5 10 15

Thr Tyr Lys Ala Phe Pro Gly Ser Asp Pro Glu Val Lys Phe Asn
20 25 30

<210> 22
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<400> 22

Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
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<400> 23

Arg Glu Glu Gln Tyr Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr Gly
1 5 10 15

Arg Leu Ile Val Gly Asn Ser Thr Tyr Arg Val Val

20 25

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<400> 24

Arg Glu Glu Gln Tyr Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr His
1 5 10 15

Glu Val Trp Asn Leu Asp Gly Ser Asn Ser Thr Tyr Arg Val Val
20 25 30

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<400> 25

Arg Glu Glu Gln Tyr Gly Ser Tyr Trp Tyr Tyr Ala Trp Asp Gln Thr
1 5 10 15

Tyr Lys Ala Phe Pro Gly Ser Asn Ser Thr Tyr Arg Val Val
20 25 30

<210> 26
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<400> 26

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

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<400> 27

Ser Asn Lys Ala Leu Pro Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr
1 5 10 15

Gly Arg Leu Ile Val Gly Pro Ile Glu Lys Thr Ile
20 25

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<400> 28

Ser Asn Lys Ala Leu Pro Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr
1 5 10 15

His Glu Val Trp Asn Leu Asp Gly Ser Pro Ile Glu Lys Thr Ile
20 25 30

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Ser Asn Lys Ala Leu Pro Gly Ser Tyr Trp Tyr Tyr Ala Trp Asp Gln
1 5 10 15

Thr Tyr Lys Ala Phe Pro Gly Ser Pro Ile Glu Lys Thr Ile
20 25 30

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<400> 30

Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
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Asp Glu Leu Thr Lys Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr Gly
1 5 10 15

Arg Leu Ile Val Gly Gly Gln Val Ser Leu Thr Cys
20 25

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Asp Glu Leu Thr Lys Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr His
1 5 10 15

Glu Val Trp Asn Leu Asp Gly Gly Gln Val Ser Leu Thr Cys
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Asp Glu Leu Thr Lys Ser Gly Gly Tyr Trp Tyr Tyr Ala Trp Asp Gln
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Thr Tyr Lys Ala Phe Pro Gly Gly Ser Gln Val Ser Leu Thr Cys
20 25 30

<210> 34
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<400> 34

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
1 5 10

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<400> 35

Val Glu Trp Glu Ser Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr Gly
1 5 10 15

Arg Leu Ile Val Gly Gly Gly Gln Pro Glu Asn Asn Tyr
20 25

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Val Glu Trp Glu Ser Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr His
1 5 10 15

Glu Val Trp Asn Leu Asp Gly Gly Gly Gln Pro Glu Asn Asn Tyr
20 25 30

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Val Glu Trp Glu Ser Ser Gly Gly Tyr Trp Tyr Tyr Ala Trp Asp Gln
1 5 10 15

Thr Tyr Lys Ala Phe Pro Gly Gly Ser Gly Gln Pro Glu Asn Asn Tyr
20 25 30

<210> 38
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<400> 38

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
1 5 10

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<400> 39

Ser Arg Trp Gln Gln Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr Gly
1 5 10 15

Arg Leu Ile Val Gly Gly Asn Val Phe Ser Cys Ser
20 25

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Ser Arg Trp Gln Gln Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr His
1 5 10 15

Glu Val Trp Asn Leu Asp Gly Gly Asn Val Phe Ser Cys Ser
20 25 30

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Ser Arg Trp Gln Gln Gly Ser Gly Tyr Trp Tyr Tyr Ala Trp Asp Gln
1 5 10 15

Thr Tyr Lys Ala Phe Pro Gly Ser Gly Asn Val Phe Ser Cys Ser
20 25 30

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<400> 42

Ser Lys Ser Lys Gly Gln Pro Arg Glu Pro Gln Val
1 5 10

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<400> 43

Ser Lys Ser Lys Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr Gly Arg
1 5 10 15

Leu Ile Val Gly Gly Gln Pro Arg Glu Pro Gln Val
20 25

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<400> 44

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
1 5 10

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Pro Val Leu Asp Ser Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr Gly
1 5 10 15

Arg Leu Ile Val Gly Gly Gly Ser Phe Phe Leu Tyr
20 25

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<400> 46

Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys
1 5 10

<210> 47
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<400> 47

Thr Cys Val Ala Asp Glu Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr
1 5 10 15

Gly Arg Leu Ile Val Gly Gly Ala Glu Asn Cys Asp Lys
20 25

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Thr Cys Val Ala Asp Glu Ser Gly Tyr Arg Gln Phe Asn Arg Arg Thr
1 5 10 15

His Glu Val Trp Asn Leu Asp Gly Ser Ala Glu Asn Cys Asp Lys
20 25 30

<210> 49
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<400> 49

Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala Cys Leu Leu
1 5 10 15

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<400> 50

Phe Thr Glu Cys Cys Gln Ala Gly Trp Arg Pro Tyr Ile Glu Arg Trp
1 5 10 15

Thr Gly Arg Leu Ile Val Gly Gly Asp Lys Ala Ala Cys Leu Leu
20 25 30

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<400> 51

Phe Thr Glu Cys Cys Gln Ala Ala Gly Tyr Arg Gln Phe Asn Arg Arg
1 5 10 15

Thr His Glu Val Trp Asn Leu Asp Gly Ser Asp Lys Ala Ala Cys Leu
20 25 30

Leu

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<400> 52

Glu Lys Cys Cys Ala Ala Ala Asp Pro His Glu Cys Tyr Ala
1 5 10

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<400> 53

Glu Lys Cys Cys Ala Ala Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr
1 5 10 15

Gly Arg Leu Ile Val Gly Gly Asp Pro His Glu Cys Tyr Ala
20 25 30

<210> 54
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Glu Lys Cys Cys Ala Ala Ala Gly Tyr Arg Gln Phe Asn Arg Arg Thr
1 5 10 15

His Glu Val Trp Asn Leu Asp Gly Ser Asp Pro His Glu Cys Tyr Ala
20 25 30

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<400> 55

Lys Cys Cys Lys Ala Asp Asp Lys Glu Thr Cys Phe Ala
1 5 10

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Lys Cys Cys Lys Ala Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr Gly
1 5 10 15

Arg Leu Ile Val Gly Gly Asp Lys Glu Thr Cys Phe Ala
20 25

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Lys Cys Cys Lys Ala Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr His
1 5 10 15

Glu Val Trp Asn Leu Asp Gly Gly Asp Lys Glu Thr Cys Phe Ala
20 25 30

<210> 58
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<400> 58

Met Gly Arg Leu Glu Asp Gly Ser Pro Arg Thr Gln Ala
1 5 10

<210> 59
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<400> 59

Met Gly Arg Leu Glu Asp Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr
1 5 10 15

Gly Arg Leu Ile Val Gly Ser Pro Arg Thr Gln Ala
20 25

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<400> 60

Asp Ala Asn Ser His Asn Asp Asp Ala Leu Leu Lys Asn Tyr
1 5 10

<210> 61
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Asp Ala Asn Ser His Asn Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr
1 5 10 15

Gly Arg Leu Ile Val Gly Asp Ala Leu Leu Lys Asn Tyr
20 25

<210> 62
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<400> 62

Gly Arg Val Arg Leu Leu Asn Asn Trp Asp Val Cys Ala Asp
1 5 10

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<400> 63

Gly Arg Val Arg Leu Leu Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr
1 5 10 15

Gly Arg Leu Ile Val Gly Asn Asn Trp Asp Val Cys Ala Asp
20 25 30

<210> 64
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<212> PRT
<213> Homo sapiens

<400> 64

Lys Tyr Trp Gly Val Ala Ser Phe Leu Gln Lys Gly Asn Asp Asp
1 5 10 15

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<400> 65

Lys Tyr Trp Gly Val Ala Gly Trp Arg Pro Tyr Ile Glu Arg Trp Thr
1 5 10 15

Gly Arg Leu Ile Val Gly Ser Phe Leu Gln Lys Gly Asn Asp Asp
20 25 30

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<400> 66

Pro Gly Tyr Val Leu Lys Asp Gly Ala Arg Pro Asp Val Thr
1 5 10

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<400> 67

Pro Gly Tyr Val Leu Lys Gly Gly Trp Arg Pro Tyr Ile Glu Arg Trp
1 5 10 15

Thr Gly Arg Leu Ile Val Gly Gly Asp Gly Ala Arg Pro Asp Val Thr
20 25 30

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<400> 68

Pro Gly Tyr Val Leu Lys Gly Gly Tyr Arg Gln Phe Asn Arg Arg Thr
1 5 10 15

His Glu Val Trp Asn Leu Asp Gly Gly Asp Gly Ala Arg Pro Asp Val
20 25 30

Thr