

- 17) The method as claimed in claim 1 or 2, wherein the first analyte binding domain and said second analyte binding domain are capable of specifically binding to the same analyte.
- 18) The method as claimed in claim 1 or 2, wherein the first analyte binding domain and said second analyte binding domain are capable of specifically binding to different analytes.
- 5 19) The method as claimed in claim 1 or 2, wherein the ligating step comprises an enzymatic ligation reaction.
- 20) The method as claimed in claim 19, wherein said enzymatic ligation reaction comprises a ligase.
- 21) The method as claimed in claim 1 or 2, wherein the ligated nucleic acid template is
10 denatured prior to amplification.
- 22) The method as claimed in claim 21, wherein the denaturation comprises heat treatment.
- 23) The method as claimed in claim 1 or 2, wherein the amplification comprises a polymerase chain reaction.
- 24) The method as claimed in claim 1 or 2, wherein detection of the amplified nucleic acid
15 template is by quantitative PCR (qPCR).
- 25) The method as claimed in claim 1 or 2, wherein the amplified target nucleic acid template is detected with nucleic acid dye.
- 26) The method as claimed in claim 2, wherein said first and third nucleic acids are located on said first probe and said second and fourth nucleic acids are located on said second
20 probe.
- 27) A kit for determining binding of an analyte to a target nucleic acid in a sample comprising:
- a) a first container comprising a first probe, wherein said first probe comprises a first nucleic acid and a first analyte binding domain;
- 25 b) a second container comprising a second probe, wherein said second probe comprises a second nucleic acid and second analyte binding domain; and
- c) instructions for using the first and second nucleic acid probes to detect an analyte in a sample.
- 28) A kit for determining binding of an analyte to a target nucleic acid in a sample
30 comprising:
- a) a first container comprising a first probe comprising a first and second nucleic acid and a first analyte binding domain;

- b) a second container comprising a second probe comprising a third and fourth nucleic acid and a second analyte binding domain; and
- c) instructions for using the first and second nucleic acid probes to detect an analyte in a sample.

5 29) The kit as claimed in claim 27 or 28 further comprising a third container comprising a ligating agent.

30) The kit as claimed in claim 28, wherein said first and third nucleic acids are located on said first probe and said second and fourth nucleic acids are located on said second probe.

31) A probe comprising:

- 10 a) an analyte binding domain; and
- b) an oligo tag, wherein the oligo tag comprises a linker compatible region.

32) A probe comprising:

- a) an analyte binding domain; and
- b) an oligo tag, wherein the oligo tag comprises a primer binding site.

15 33) The probe of any of claims 31-32, wherein the analyte binding domain is an antibody.

34) The probe of any of claims 31-32, wherein the oligo tag further comprises a unique ID sequence.

35) The probe of claim 34, wherein the unique ID sequence is attached to the oligo tag by a stochastic method.

20 36) A pool of probes, wherein each probe comprises:

- a) an analyte binding domain; and
- b) an oligo tag, wherein the oligo tag comprises a linker compatible region.

37) A pool of probes, wherein each probe comprises:

- 25 a) an analyte binding domain; and
- b) an oligo tag, wherein the oligo tag comprises a primer binding site.

38) The pool of probes of any of claims 36-37, wherein the analyte binding domain is an antibody.

39) The pool of probes of any of claims 36-37, wherein the oligo tag further comprises a unique ID sequence.

30 40) The pool of probes of claim 39, wherein the unique ID sequence is attached to the oligo tag by a stochastic method.

- 41) The pool of probes of any of claims 36-37, wherein the analyte binding domain of the probes are capable of binding to the same analyte.
- 42) The pool of probes of any of claims 36-37, wherein the analyte binding domain of the probes are capable of binding to two or more different analytes.
- 5 43) An amplified polynucleotide comprising:
- a) an amplified product of a genomic region associated with an analyte;
 - b) unique ID sequence or an amplified product thereof, wherein the unique ID sequence is associated with the identity of the analyte; and
 - c) an amplified product of a linker compatible region.
- 10 44) The amplified polynucleotide of claim 43, wherein the unique ID sequence is associated with the identity of the analyte after the polynucleotide is amplified.
- 45) An amplified polynucleotide comprising:
- a) an amplified product of a genomic region associated with an analyte, wherein the analyte is bound by the probe of any of claims 31-32;
- 15 46) A pool of amplified polynucleotides, wherein each amplified polynucleotide comprises:
- a) an amplified product of a genomic region associated with an analyte;
 - b) unique ID sequence or an amplified product thereof, wherein the unique ID sequence is associated with the identity of the analyte; and
 - c) an amplified product of a linker compatible region.
- 20 47) A kit comprising
- a) a probe comprising an analyte binding domain; and
 - b) a linker, wherein the linker is capable of attaching to an analyte-bound nucleic acid.
- 48) A kit comprising
- a) a probe comprising an oligo tag, wherein the oligo tag comprises a linker compatible region; and
 - b) a linker, wherein the linker is capable of attaching to an analyte-bound nucleic acid.
- 25 49) The kits of any of claims 47-48, further comprising a unique ID sequence.
- 50) The kits of any of claims 47-48, further comprising a ligation agent.
- 51) The kits of any of claims 47-48, wherein the probe further comprises a unique ID sequence.
- 30 52) The kit of claim 47, wherein the probe further comprises an oligo tag and the oligo tag comprises a linker compatible region.

53) The kit of claim 48, wherein the probe further comprises an analyte binding domain.

54) A method comprising:

- a) contacting a sample comprising a protein and a nucleic acid molecule with a first probe comprising an first analyte binding domain and a first oligo tag, wherein the first oligo tag comprises a linker compatible region;
- b) attaching the first oligo tag to a first target nucleic acid, wherein attachment of the oligo tag to the target nucleic acid forms a probe-nucleic acid complex;
- c) amplifying the probe-nucleic acid complex to form an amplified probe-nucleic acid product; and
- d) detecting the amplified probe-nucleic acid product.

55) A method comprising:

- a) contacting a sample comprising a protein and a nucleic acid molecule with a first probe comprising an first analyte binding domain and a first oligo tag, wherein the first oligo tag comprises a unique ID sequence;
- b) attaching the first oligo tag to a first target nucleic acid, wherein attachment of the oligo tag to the target nucleic acid forms a probe-nucleic acid complex;
- c) amplifying the probe-nucleic acid complex to form an amplified probe-nucleic acid product; and
- d) detecting the amplified probe-nucleic acid product.

56) The method of claim 55, wherein the oligo tag comprises a linker compatible region.

57) The method of claim 54, wherein the oligo tag comprises a unique ID sequence.

58) The method of any of claims 54-55, wherein the analyte binding domain is an antibody.

59) The method of any of claims 54-55, wherein the attaching step comprises ligating the first oligo tag and/or second oligo tag to the target nucleic acid.

60) The method of any of claims 54-55, further comprising attaching a linker to the target nucleic acid.

61) The method of any of claims 54-55, wherein the attaching step comprises ligating the first oligo tag and/or second oligo tag to the linker.

62) The method of any of claims 54-55, wherein the probe is directly attached to the analyte.

63) The method of any of claims 54-55, wherein the probe is indirectly attached to the analyte.

- 17) The method as claimed in claim 1 or 2, wherein the first analyte binding domain and said second analyte binding domain are capable of specifically binding to the same analyte.
- 18) The method as claimed in claim 1 or 2, wherein the first analyte binding domain and said second analyte binding domain are capable of specifically binding to different analytes.
- 5 19) The method as claimed in claim 1 or 2, wherein the ligating step comprises an enzymatic ligation reaction.
- 20) The method as claimed in claim 19, wherein said enzymatic ligation reaction comprises a ligase.
- 21) The method as claimed in claim 1 or 2, wherein the ligated nucleic acid template is
10 denatured prior to amplification.
- 22) The method as claimed in claim 21, wherein the denaturation comprises heat treatment.
- 23) The method as claimed in claim 1 or 2, wherein the amplification comprises a polymerase chain reaction.
- 24) The method as claimed in claim 1 or 2, wherein detection of the amplified nucleic acid
15 template is by quantitative PCR (qPCR).
- 25) The method as claimed in claim 1 or 2, wherein the amplified target nucleic acid template is detected with nucleic acid dye.
- 26) The method as claimed in claim 2, wherein said first and third nucleic acids are located on said first probe and said second and fourth nucleic acids are located on said second
20 probe.
- 27) A kit for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample comprising:
- a) a first container comprising a first probe, wherein said first probe comprises a first nucleic acid and a first analyte binding domain;
- 25 b) a second container comprising a second probe, wherein said second probe comprises a second nucleic acid and second analyte binding domain; and
- c) instructions for using the first and second nucleic acid probes to detect an analyte in a sample.
- 28) A kit for use according to the method of claims 1-26, for determining binding of an
30 analyte to a target nucleic acid in a sample comprising:
- a) a first container comprising a first probe comprising a first and second nucleic acid and a first analyte binding domain;

- b) a second container comprising a second probe comprising a third and fourth nucleic acid and a second analyte binding domain; and
- c) instructions for using the first and second nucleic acid probes to detect an analyte in a sample.

- 5 29) The kit as claimed in claim 27 or 28 further comprising a third container comprising a ligating agent.
- 30) The kit as claimed in claim 28, wherein said first and third nucleic acids are located on said first probe and said second and fourth nucleic acids are located on said second probe.
- 31) A probe for use according to the method of claims 1-26, for determining binding of an
10 analyte to a target nucleic acid in a sample comprising:
 - a) an analyte binding domain; and
 - b) an oligo tag, wherein the oligo tag comprises a linker compatible region.
- 32) A probe for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample comprising:
 - 15 a) an analyte binding domain; and
 - b) an oligo tag, wherein the oligo tag comprises a primer binding site.
- 33) The probe of any of claims 31-32, wherein the analyte binding domain is an antibody.
- 34) The probe of any of claims 31-32, wherein the oligo tag further comprises a unique ID sequence.
- 20 35) The probe of claim 34, wherein the unique ID sequence is attached to the oligo tag by a stochastic method.
- 36) A pool of probes for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample, wherein each probe comprises:
 - a) an analyte binding domain; and
 - 25 b) an oligo tag, wherein the oligo tag comprises a linker compatible region.
- 37) A pool of probes for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample, wherein each probe comprises:
 - a) an analyte binding domain; and
 - b) an oligo tag, wherein the oligo tag comprises a primer binding site.
- 30 38) The pool of probes of any of claims 36-37, wherein the analyte binding domain is an antibody.

39) The pool of probes of any of claims 36-37, wherein the oligo tag further comprises a unique ID sequence.

40) The pool of probes of claim 39, wherein the unique ID sequence is attached to the oligo tag by a stochastic method.

5 41) The pool of probes of any of claims 36-37, wherein the analyte binding domain of the probes are capable of binding to the same analyte.

42) The pool of probes of any of claims 36-37, wherein the analyte binding domain of the probes are capable of binding to two or more different analytes.

10 43) An amplified polynucleotide for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample comprising:

- a) an amplified product of a genomic region associated with an analyte;
- b) unique ID sequence or an amplified product thereof, wherein the unique ID sequence is associated with the identity of the analyte; and
- c) an amplified product of a linker compatible region.

15 44) The amplified polynucleotide of claim 43, wherein the unique ID sequence is associated with the identity of the analyte after the polynucleotide is amplified.

45) An amplified polynucleotide for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample comprising:

20 a) an amplified product of a genomic region associated with an analyte, wherein the analyte is bound by the probe of any of claims 31-32;

46) A pool of amplified polynucleotides for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample, wherein each amplified polynucleotide comprises:

- 25
- a) an amplified product of a genomic region associated with an analyte;
 - b) unique ID sequence or an amplified product thereof, wherein the unique ID sequence is associated with the identity of the analyte; and
 - c) an amplified product of a linker compatible region.

47) A kit for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample, comprising

- 30
- a) a probe comprising an analyte binding domain; and
 - b) a linker, wherein the linker is capable of attaching to an analyte-bound nucleic acid.

- 48) A kit for use according to the method of claims 1-26, for determining binding of an analyte to a target nucleic acid in a sample, comprising
- a) a probe comprising an oligo tag, wherein the oligo tag comprises a linker compatible region; and
 - 5 b) a linker, wherein the linker is capable of attaching to an analyte-bound nucleic acid.
- 49) The kits of any of claims 47-48, further comprising a unique ID sequence.
- 50) The kits of any of claims 47-48, further comprising a ligation agent.
- 51) The kits of any of claims 47-48, wherein the probe further comprises a unique ID sequence.
- 10 52) The kit of claim 47, wherein the probe further comprises an oligo tag and the oligo tag comprises a linker compatible region.
- 53) The kit of claim 48, wherein the probe further comprises an analyte binding domain.