Claims

1. A peptide pair consisting of a peptide tag and a binding partner, wherein the peptide tag and the binding partner can bind to one another via the spontaneous formation of an isopeptide bond between one reactive residue comprised within said binding partner and another reactive residue comprised within said peptide tag, wherein the peptide pair is selected from:
   a) the binding partner of SEQ ID NO: 39 (MoonCake) and a peptide tag selected from SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag); or variants thereof having at least 70% homology or identity thereto;
   b) the binding partner of SEQ ID NO: 41 (KatI) and a peptide tag selected from SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag); or variants thereof having at least 70% homology or identity thereto; and
   c) the binding partner of SEQ ID NO: 37 (QueenCatcher) and a peptide tag selected from SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag), SEQ ID NO: 12 (Bac5Tag) and SEQ ID NO: 76 (Clib9)~~.~~, optionally

~~2. The peptide pair according to claim 1,~~ wherein the peptide pair is selected from:

a) the binding partner of SEQ ID NO: 39 (MoonCake) and the peptide tag of SEQ ID NO: 47 (RumTrunkD9NTag); or variants thereof having at least 70% homology or identity thereto;
b) the binding partner of SEQ ID NO: 41 (KatI) and the peptide tag of SEQ ID NO: 47 (RumTrunkD9NTag); or variants thereof having at least 70% homology or identity thereto;
c) the binding partner of SEQ ID NO: 39 (MoonCake) and the peptide tag of SEQ ID NO: 46 (RumTag); or variants thereof having at least 70% homology or identity thereto; and
d) the binding partner of SEQ ID NO: 41 (KatI) and the peptide tag of SEQ ID NO: 46 (RumTag); or variants thereof having at least 70% homology or identity thereto.

2. The peptide pair according to any one of claims 1-2, wherein the peptide tag is:
a) SEQ ID NO: 47 (RumTrunkD9NTag) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 47 is not modified; or
b) SEQ ID NO: 46 (RumTag) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 12 in SEQ ID NO: 46 is not modified; or
c) SEQ ID NO: 71 (RumTrunkTag) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 71 is not modified,

optionally, wherein the peptide tag is:
a) SEQ ID NO: 47 (RumTrunkD9NTag) or a fragment or a homologue of SEQ ID NO: 47 having at least 70% homology or identity to SEQ ID NO: 47, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 47 is not modified, wherein the binding partner is selected from SEQ ID NO: 37 (QueenCatcher), SEQ ID NO: 39 (MoonCake) and SEQ ID NO: 41 (KatI); or
b) SEQ ID NO: 46 (RumTag) or a fragment or a homologue of SEQ ID NO: 46 having at least 70% homology or identity to SEQ ID NO: 46, with the proviso that the residue corresponding to residue 12 in SEQ ID NO: 46 is not modified, and can bind to a binding partner via an isopeptide bond, wherein the binding partner is

selected from SEQ ID NO: 37 (QueenCatcher), SEQ ID NO: 39 (MoonCake) and SEQ ID NO: 41 (KatI); or

c) SEQ ID NO: 71 (RumTrunkTag) or a fragment or a homologue of SEQ ID NO: 71 having at least 70% homology or identity to SEQ ID NO: 71, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 71 is not modified, wherein the binding partner is selected from SEQ ID NO: 37 (QueenCatcher), SEQ ID NO: 39 (MoonCake) and SEQ ID NO: 41 (KatI).

~~3. A binding partner capable of binding to a peptide tag via the spontaneous formation of an isopeptide bond between one reactive residue comprised within said binding partner and another reactive residue comprised within said peptide tag, wherein the binding partner is selected from:~~

~~a) SEQ ID NO: 39 (MoonCake);~~

~~b) SEQ ID NO: 41 (KatI); and~~

~~c) SEQ ID NO: 37 (QueenCatcher);~~

~~or fragments or homologues thereof having at least 70% homology or identity thereto, such as at least 75%, such as at least 80%, such as at least 81%, such as at least 82%, such as at least 83%, such as at least 84%, such as at least 85%, such as at least 86%, such as at least 87%, such as at least 88%, such as at least 89%, such as at least 90%, such as at least 91%, such as at least 92%, such as at least 93%, such as at least 94%, such as at least 95%, such as at least 96%, such as at least 97%, such as at least 98%, such as at least 99% homology or identity thereto, with the proviso that said fragments or homologues comprise the reactive residue involved in the formation of the isopeptide bond.~~

~~4.~~3. The ~~binding partner~~peptide pair according to any one of claims 0 to 4, wherein the binding partner is:

a) SEQ ID NO: 39 or a fragment or a homologue of SEQ ID NO: 39 having at least 70% homology or identity to SEQ ID NO: 39, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified; or

b) SEQ ID NO: 37 or a fragment or a homologue of SEQ ID NO: 37 having at least 70% homology or identity to SEQ ID NO: 37, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 37 is not modified; or

c) SEQ ID NO: 41 or a fragment or a homologue of SEQ ID NO: 41 having at least 70% homology or identity to SEQ ID NO: 41, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified.~~,~~

optionally

~~5.~~ ~~The binding partner according to any one of claims 2 to 4,~~ wherein:

a) the binding partner is SEQ ID NO: 39 (MoonCake) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag); or

b) the binding partner SEQ ID NO: 41 (KatI) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 41 is not modified, and can bind via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag); or

c) the binding partner is SEQ ID NO: 37 (QueenCatcher) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 37 is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54

(Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag), SEQ ID NO: 12 (Bac5Tag) and SEQ ID NO: 76 (Clib9)~~.~~.

or optionally

~~6. The binding partner according to any one of claims 2 to 5,~~ wherein:

a) the binding partner is SEQ ID NO: 39 (MoonCake) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 46 (RumTag) and SEQ ID NO: 47 (RumTrunkD9NTag); or

b) the binding partner is SEQ ID NO: 41 (KatI) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 41 is not modified, and can bind via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 46 (RumTag) and SEQ ID NO: 47 (RumTrunkD9NTag); or

c) the binding partner is SEQ ID NO: 37 (QueenCatcher) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 37 is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 71 (RumTrunkTag) and SEQ ID NO: 75 (Clib9).

4. A binding partner capable of binding to a peptide tag via the spontaneous formation of an isopeptide bond between one reactive residue comprised within said binding partner and another reactive residue comprised within said peptide tag, wherein the binding partner is selected from:

a) SEQ ID NO: 39 (MoonCake);

b) SEQ ID NO: 41 (KatI); and

c) SEQ ID NO: 37 (QueenCatcher);

or fragments or homologues thereof having at least 70% homology or identity thereto, with the proviso that said fragments or homologues comprise the reactive residue involved in the formation of the isopeptide bond, or wherein where the reactive residue is an Aspartic acid (D), the reactive residue is mutated to an Asparagine (N).

5. The binding partner according to claim 4, wherein the binding partner is:

a) SEQ ID NO: 39 or a fragment or a homologue of SEQ ID NO: 39 having at least 70% homology or identity to SEQ ID NO: 39, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified; or

b) SEQ ID NO: 37 or a fragment or a homologue of SEQ ID NO: 37 having at least 70% homology or identity to SEQ ID NO: 37, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 37 is not modified; or

c) SEQ ID NO: 41 or a fragment or a homologue of SEQ ID NO: 41 having at least 70% homology or identity to SEQ ID NO: 41, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified,

optionally, wherein:

a) the binding partner is SEQ ID NO: 39 (MoonCake) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag); or

b) the binding partner SEQ ID NO: 41 (KatI) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 41 is not modified, and can bind via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ

ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag); or

c) the binding partner is SEQ ID NO: 37 (QueenCatcher) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 37 is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag), SEQ ID NO: 12 (Bac5Tag) and SEQ ID NO: 76 (Clib9),

optionally wherein:

a) the binding partner is SEQ ID NO: 39 (MoonCake) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 39 is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 46 (RumTag) and SEQ ID NO: 47 (RumTrunkD9NTag); or

b) the binding partner is SEQ ID NO: 41 (KatI) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 41 is not modified, and can bind via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 46 (RumTag) and SEQ ID NO: 47 (RumTrunkD9NTag); or

c) the binding partner is SEQ ID NO: 37 (QueenCatcher) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 31 in SEQ ID NO: 37

is not modified, and can bind to a peptide tag via an isopeptide bond, wherein the peptide tag is selected from SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 71 (RumTrunkTag) and SEQ ID NO: 75 (Clib9).

~~7.~~6. A peptide tag capable of binding to a binding partner via the spontaneous formation of an isopeptide bond between one reactive residue comprised within said binding partner and another reactive residue comprised within said peptide tag, wherein the peptide tag is selected from:

a) SEQ ID NO: 47 (RumTrunkD9NTag);
b) SEQ ID NO: 46 (RumTag);
c) SEQ ID NO: 71 (RumTrunkTag);
d) SEQ ID NO: 58 (Rum2Tag);
e) SEQ ID NO: 56 (Rum3Tag);
f) SEQ ID NO: 60 (Rum4Tag);
g) SEQ ID NO: 62 (Rum5Tag);
h) SEQ ID NO: 64 (Rum6Tag);
i) SEQ ID NO: 54 (Rum7Tag);
j) SEQ ID NO: 66 (BacTag);
k) SEQ ID NO: 68 (Bac2Tag);
l) SEQ ID NO: 35 (Bac3Tag);
m) SEQ ID NO: 22 (Bac4Tag);
n) SEQ ID NO: 12 (Bac5Tag);
o) SEQ ID NO: 50 (PhoTag); and
p) SEQ ID NO: 52 (EntTag);

or a fragment or a homologue thereof having at least 70% homology or identity thereto, such as at least 75%, such as at least 80%, such as at least 81%, such as at least 82%, such as at least 83%, such as at least 84%, such as at least 85%, such as at least 86%, such as at least 87%, such as at least 88%, such as at least 89%, such as at least 90%, such as at least 91%, such as at least 92%, such as at least 93%, such as at least 94%, such as at least 95%, such as at least 96%, such as at least 97%, such as at least 98%, such as at least 99% homology or identity thereto, with the proviso that said fragments or

homologues comprise the reactive residue involved in the formation of the isopeptide bond, or wherein where the reactive residue is an Aspartic acid (D), the reactive residue is mutated to an Asparagine (N).

~~8.~~7. The peptide tag according to claim ~~7~~6, wherein the peptide tag is:

a) SEQ ID NO: 47 (RumTrunkD9NTag) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 47 is not modified; or
b) SEQ ID NO: 46 (RumTag) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 12 in SEQ ID NO: 46 is not modified;
c) SEQ ID NO: 71 (RumTrunkTag) or a fragment or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 71 is not modified~~.~~,

optionally

~~9. The peptide tag according to any one of claims 7 to 8~~, wherein the peptide tag is:

a) SEQ ID NO: 47 (RumTrunkD9NTag) or a fragment or a homologue of SEQ ID NO: 47 having at least 70% homology or identity to SEQ ID NO: 47, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 47 is not modified, wherein the binding partner is selected from SEQ ID NO: 37 (QueenCatcher), SEQ ID NO: 39 (MoonCake) and SEQ ID NO: 41 (KatI); or
b) SEQ ID NO: 46 (RumTag) or a fragment or a homologue of SEQ ID NO: 46 having at least 70% homology or identity to SEQ ID NO: 46, with the proviso that the residue corresponding to residue 12 in SEQ ID NO: 46 is not modified, and can bind to a binding partner via an isopeptide bond, wherein the binding partner is selected from SEQ ID NO: 37 (QueenCatcher), SEQ ID NO: 39 (MoonCake) and SEQ ID NO: 41 (KatI); or
c) SEQ ID NO: 71 (RumTrunkTag) or a fragment or a homologue of SEQ ID NO: 71 having at least 70% homology or identity to SEQ ID NO: 71, with the proviso that the residue corresponding to residue 9 in SEQ ID NO: 71 is not modified, wherein the binding partner is selected from SEQ ID NO: 37 (QueenCatcher), SEQ ID NO: 39 (MoonCake) and SEQ ID NO: 41 (KatI).

~~10.~~8. A polynucleotide encoding the binding partner according to any one of claims ~~3~~ 4 to ~~6~~ 5 or the peptide tag according to any one of claims ~~7~~ 6 to ~~9~~7.

~~11.~~9. The polynucleotide according to claim ~~10~~8, wherein the polynucleotide encodes a binding partner selected from:

a) SEQ ID NO: 39 (MoonCake);
b) SEQ ID NO: 41 (KatI); and
c) SEQ ID NO: 37 (QueenCatcher);

or fragments or homologues thereof having at least 70% homology or identity thereto, such as at least 75%, such as at least 80%, such as at least 81%, such as at least 82%, such as at least 83%, such as at least 84%, such as at least 85%, such as at least 86%, such as at least 87%, such as at least 88%, such as at least 89%, such as at least 90%, such as at least 91%, such as at least 92%, such as at least 93%, such as at least 94%, such as at least 95%, such as at least 96%, such as at least 97%, such as at least 98%, such as at least 99% homology or identity thereto, with the proviso that said fragments or homologues comprise the reactive residue involved in the formation of the isopeptide bond, or wherein where the reactive residue is an Aspartic acid (D), the reactive residue is mutated to an Asparagine (N), optionally

~~12. The polynucleotide according to any one of claims 10 to 11~~, wherein the polynucleotide is selected from:

a) SEQ ID NO: 40 (MoonCake) or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the codon at position 91 to 93 of SEQ ID NO: 40 encodes a lysine; or
b) SEQ ID NO: 42 (KatI) or a homologue thereof having at least 70% homology or identity thereto, wherein the proviso that the codon at position 91 to 93 of SEQ ID NO: 42 encodes a lysine; or
c) SEQ ID NO: 38 (QueenCatcher) or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the codon at position 91 to 93 of SEQ ID NO: 38 encodes a lysine.

~~13.~~10. The polynucleotide according to claim ~~10~~8, wherein the polynucleotide encodes a peptide tag selected from:

a) SEQ ID NO: 47 (RumTrunkD9NTag);
b) SEQ ID NO: 46 (RumTag);
c) SEQ ID NO: 71 (RumTrunkTag);
d) SEQ ID NO: 58 (Rum2Tag);
e) SEQ ID NO: 56 (Rum3Tag);
f) SEQ ID NO: 60 (Rum4Tag);
g) SEQ ID NO: 62 (Rum5Tag);
h) SEQ ID NO: 64 (Rum6Tag);
i) SEQ ID NO: 54 (Rum7Tag);
j) SEQ ID NO: 66 (BacTag);
k) SEQ ID NO: 68 (Bac2Tag);
l) SEQ ID NO: 35 (Bac3Tag);
m) SEQ ID NO: 22 (Bac4Tag); and
n) SEQ ID NO: 12 (Bac5Tag);

or a fragment or a homologue thereof having at least 70% homology or identity thereto, such as at least 75%, such as at least 80%, such as at least 81%, such as at least 82%, such as at least 83%, such as at least 84%, such as at least 85%, such as at least 86%, such as at least 87%, such as at least 88%, such as at least 89%, such as at least 90%, such as at least 91%, such as at least 92%, such as at least 93%, such as at least 94%, such as at least 95%, such as at least 96%, such as at least 97%, such as at least 98%, such as at least 99% homology or identity thereto, with the proviso that said fragments or homologues comprise the reactive residue involved in the formation of the isopeptide bond~~.~~, optionally

~~14. The polynucleotide according to claim 13,~~ wherein the polynucleotide is selected from:

a) SEQ ID NO: 48 (RumTrunkD9NTag), or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the codon at position 25 to 27 of SEQ ID NO: 48 encodes an asparagine;
b) SEQ ID NO: 45 (RumTag), or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the codon at position 37 to 39 of SEQ ID NO: 45 encodes an aspartic acid;

c) SEQ ID NO: 72 (RumTrunkTag), or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the codon at position 25 to 27 of SEQ ID NO: 72 encodes an aspartic acid;
d) SEQ ID NO: 57 (Rum2Tag) or a homologue thereof having at least 70% homology or identity thereto;
e) SEQ ID NO: 55 (Rum3Tag) or a homologue thereof having at least 70% homology or identity thereto;
f) SEQ ID NO: 59 (Rum4Tag) or a homologue thereof having at least 70% homology or identity thereto;
g) SEQ ID NO: 61 (Rum5Tag) or a homologue thereof having at least 70% homology or identity thereto;
h) SEQ ID NO: 63 (Rum6Tag) or a homologue thereof having at least 70% homology or identity thereto;
i) SEQ ID NO: 53 (Rum7Tag) or a homologue thereof having at least 70% homology or identity thereto;
j) SEQ ID NO: 65 (BacTag) or a homologue thereof having at least 70% homology or identity thereto;
k) SEQ ID NO: 67 (Bac2Tag) or a homologue thereof having at least 70% homology or identity thereto, with the proviso that the codon at position 37 to 39 encodes an aspartic acid;
l) SEQ ID NO: 36 (Bac3Tag) or a homologue thereof having at least 70% homology or identity thereto;
m) SEQ ID NO: 21 (Bac4Tag) or a homologue thereof having at least 70% homology or identity thereto; and
n) SEQ ID NO: 11 (Bac5Tag) or a homologue thereof having at least 70% homology or identity thereto;

or a fragment or a homologue thereof having at least 70% homology or identity thereto, such as at least 75%, such as at least 80%, such as at least 81%, such as at least 82%, such as at least 83%, such as at least 84%, such as at least 85%, such as at least 86%, such as at least 87%, such as at least 88%, such as at least 89%, such as at least 90%, such as at least 91%, such as at least 92%, such as at least 93%, such as at least 94%, such as at least 95%, such as at least 96%, such as at least 97%, such as at least 98%,

such as at least 99% homology or identity thereto, with the proviso that said fragments or homologues comprise the reactive residue involved in the formation of the isopeptide bond.

~~15.~~11. A system comprising a first polynucleotide and a second polynucleotide, wherein the first polynucleotide encodes a peptide tag and the second polynucleotide encodes a binding partner, wherein the peptide tag and the binding partner can bind to one another via the spontaneous formation of an isopeptide bond between one reactive residue comprised within said binding partner and another reactive residue comprised within said peptide tag, and wherein:

a) the first polynucleotide encodes a peptide tag selected from SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag), and the second polynucleotide encodes the binding partner of SEQ ID NO: 39 (MoonCake), or homologues thereof having at least 70% homology or identity thereto; or

b) the first polynucleotide encodes a peptide tag selected from SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22 (Bac4Tag) and SEQ ID NO: 12 (Bac5Tag), and the second polynucleotide encodes the binding partner of SEQ ID NO: 41 (KatI), or homologues thereof having at least 70% homology or identity thereto; or

c) the first polynucleotide encodes a peptide tag selected from SEQ ID NO: 47 (RumTrunkD9NTag), SEQ ID NO: 54 (Rum7Tag), SEQ ID NO: 56 (Rum3Tag), SEQ ID NO: 58 (Rum2Tag), SEQ ID NO: 60 (Rum4Tag), SEQ ID NO: 62 (Rum5Tag), SEQ ID NO: 64 (Rum6Tag), SEQ ID NO: 71 (RumTrunkTag), SEQ ID NO: 5 (SpyTag), SEQ ID NO: 7 (SdyTag), SEQ ID NO: 46 (RumTag), SEQ ID NO: 66 (BacTag); SEQ ID NO: 68 (Bac2Tag), SEQ ID NO: 35 (Bac3Tag), SEQ ID NO: 22

(Bac4Tag), SEQ ID NO: 12 (Bac5Tag) and SEQ ID NO: 76 (Clib9), and the second polynucleotide encodes the binding partner of SEQ ID NO: 37 (QueenCatcher), or homologues thereof having at least 70% homology or identity thereto.

16.12. The system according to claim 1511, wherein the peptide tag and/or the binding partner is as defined in any one of claims 1 to 914, optionally.

17. The system according to any one of claims 15 to 16, wherein the first polynucleotide and/or the second polynucleotide is a polynucleotide as defined in any one of claims 10 15 to 1420., or optionally

18. The system according to any one of claims 15 to 17, wherein the system consists of one or two vectors such as one or two plasmids.

19.13. A composition comprising:

i) a protein fused to a binding partner according to any one of claims 3 4 to 6 5 and a compound of interest such as a peptide, for example an antigen, fused to a peptide tag according to any one of claims 7 6 to 97; or

ii) a protein fused to a peptide tag according to any one of claims 7 6 to 9 7 and a compound of interest such as a peptide, for example an antigen, fused to a binding partner according to any one of claims 3 4 to 65;

wherein the binding partner and the peptide tag are capable of interacting by the spontaneous formation of an isopeptide bond, and

wherein the compound of interest and the protein are linked via an isopeptide bond between the binding partner and the peptide tag.

20.14. The composition according to claim 1913, wherein the protein is a particle-forming protein., optionally

21. The composition according to claim 20, wherein the particle-forming protein and the compound of interest form a particle displaying said compound of interest., optionally

~~22. The composition according to claim 21,~~ wherein the particle is a virus-like particle and the particle-forming protein is a virus capsid protein.

~~23.~~15. The composition according to any one of claims ~~19~~ 13 to ~~22~~14, wherein the peptide of interest is an antigen, preferably wherein the antigen is a peptide or an antigenic fragment thereof, such as a peptide or an antigenic fragment thereof which is associated with an abnormal physiological response, preferably wherein the abnormal physiological response is a disease such as a cardiovascular disease, an infectious disease and/or an allergic reaction/disease.

~~24.~~16. The composition according to any one of claims ~~19~~ 13 to ~~23~~15, wherein the disease is cancer, such as breast cancer, gastric cancer, ovarian cancer and uterine serous carcinoma; a cardiovascular disease, such as dyslipidemia, atherosclerosis, and/or hypercholesterolemia; an immune-inflammatory disease or a chronic disease, such as eosinophilic asthma, allergy, nasal polyposis, atopic dermatitis, eosinophilic esophagitis, hypereosinophilic syndrome, and Churg-Strauss syndrome, a neurological disease such as Alzheimer's disease; an infectious disease, such as an infectious disease selected from the group consisting of diseases caused by a virus, such as a coronavirus, for example SARS-CoV-2, malaria, tuberculosis, HIV and influenza; a lipid disorder such as hyperlipidemia, type I, type II, type III, type IV, or type V hyperlipidemia, secondary hypertriglyceridemia, hypercholesterolemia, familial hypercholesterolemia, xanthomatosis, cholesterol acetyltransferase deficiency; an arteriosclerotic condition such as atherosclerosis; or a coronary artery disease.

~~25.~~17. The composition according to any one of claims ~~19~~ 13 to ~~24~~16, wherein the antigen is a protein, peptide and/or an antigenic fragment from the group consisting of cancer-specific polypeptides, polypeptides associated with cardiovascular diseases, polypeptides associated with asthma, polypeptides associated with nasal polyposis, polypeptides associated with atopic dermatitis, polypeptides associated with eosinophilic esophagitis, polypeptides associated with hypereosinophilic syndrome, polypeptides associated with Churg-Strauss syndrome and/or polypeptides associated with pathogenic organisms~~.~~, or

~~26. The composition according to any one of claims 19 to 25,~~ wherein the antigen is a SARS-CoV2 antigen.

~~27.~~18. The composition according to any one of claims ~~19~~ 13 to ~~26~~17, the polynucleotide according to any one of claims ~~10~~ 8 to ~~14~~10, or the system according to any one of claims ~~15~~ 11 to ~~18~~12, for use in the prophylaxis or treatment of a disease.

~~28.~~19. The composition, the polynucleotide or the system for the use according to claim ~~27~~18, wherein the disease is cancer, such as breast cancer, gastric cancer, ovarian cancer and uterine serous carcinoma; a cardiovascular disease, such as dyslipidemia, atherosclerosis, and/or hypercholesterolemia; an immune-inflammatory disease or a chronic disease, such as eosinophilic asthma, allergy, nasal polyposis, atopic dermatitis, eosinophilic esophagitis, hypereosinophilic syndrome, and Churg-Strauss syndrome, a neurological disease such as Alzheimer's disease; an infectious disease, such as an infectious disease selected from the group consisting of diseases caused by a virus, such as a coronavirus, for example SARS-CoV-2, or malaria, tuberculosis, HIV or influenza; a lipid disorder such as hyperlipidemia, type I, type II, type III, type IV, or type V hyperlipidemia, secondary hypertriglyceridemia, hypercholesterolemia, familial hypercholesterolemia, xanthomatosis, cholesterol acetyltransferase deficiency; an arteriosclerotic condition such as atherosclerosis; or a coronary artery disease.

~~29.~~20. The composition according to any one of claims ~~19~~ 13 to ~~26~~17, the polynucleotide according to any one of claims ~~10~~ 8 to ~~14~~10, or the system according to any one of claims ~~15~~ 11 to ~~18~~12, for use in a method for inducing an immune response in a subject, the method comprising the step of administering said composition, polynucleotide or system to said subject at least once.

~~30. A method of treatment or prophylaxis of a disease, said method comprising the step of administering to a subject in need thereof the composition according to any one of claims 19 to 26, the polynucleotide according to any one of claims 10 to 14.~~

~~31. The method according to claim 30, wherein the disease is as defined in any one of claims 24 or 27 to 29.~~

~~32.~~21. A method of manufacturing a composition according to any one of claims ~~19~~ 13 to ~~26~~17, comprising the steps of:

i) obtaining a fusion of a protein and a first polypeptide comprising or consisting of a binding partner as defined in any one of the preceding claims; and obtaining a fusion of compound of interest and a second polypeptide comprising or consisting of a peptide tag as defined in any one of the preceding claims; or
obtaining a fusion of a protein and a first polypeptide comprising or consisting of a peptide tag as defined in any one of the preceding claims and obtaining fusion of a compound of interest and a second polypeptide comprising or consisting of a binding partner according to any one of claims ~~3~~ 4 to ~~6~~5;

ii) contacting the first polypeptide and the second polypeptide, thereby allowing formation of an isopeptide bond between the peptide tag and the binding partner; and generating a pharmaceutical composition according to any one of claims ~~19~~ 13 to ~~27~~17.

~~33.~~22. The method according to claim ~~32~~21, wherein the protein is a particle-forming protein.