

Claims

1. A method for lowering autophagy, comprising targeting cells having an elastin receptor complex associated with their surface with a molecule specifically recognizing said complex, whereby said molecule is provided with a source of autophagy inhibiting amino acids, selected from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine (R).
2. A method for modifying vascular permeability, comprising targeting cells having an elastin receptor complex associated with their surface with a molecule specifically recognizing said complex, whereby said molecule is provided with a source of autophagy inhibiting amino acids, selected from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine (R).
3. A method for improving tissue repair, comprising targeting cells having an elastin receptor complex associated with their surface with a molecule specifically recognizing said complex, whereby said molecule is provided with a source of autophagy inhibiting amino acids, selected from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine (R).
4. A method for modulating an immune response, comprising targeting cells having an elastin receptor complex associated with their surface with a molecule specifically recognizing said complex, whereby said molecule is provided with a source of autophagy inhibiting amino acids, selected from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine (R).
5. A method according to any one of claims 1-4, wherein said molecule recognizing said complex has an elastin peptide motif represented by xGxxPG, wherein x represents a naturally occurring amino acid.

6. A method according to any one of claims 1- 5, wherein said source of autophagy inhibiting amino acids is a peptide comprising said autophagy inhibiting amino acids.
7. A method according to claim 6, wherein said peptide comprising said autophagy inhibiting amino acids comprises a dipeptide selected from the group AQ, LQ, PQ, VQ, GQ, a tripeptide selected from the group AQL, LQL, PQL, VQL, GQL, PLQ, LQG, PQV, VGQ, LQP, LQV, AQG, QPL, PQV, VGQ, GQG or a tetrapeptide selected from the group SEQ ID NO: 1 (LQGV) and SEQ ID NO: 2 (AQGV).
8. A method according to claim 6 or 7, wherein xGxxPG is connected to said peptide comprising said autophagy inhibiting amino acids by a peptide bond.
9. A method according to any one of claims 1-4, wherein said molecule recognizing said complex is an antibody-like molecule, preferably selected from IgG, IgM, single chain antibodies, FAB- or FAB'2-fragments.
10. A method according to claim 9 wherein said source of autophagy inhibiting amino acids is a peptide comprising a dipeptide selected from the group AQ, LQ, PQ, VQ, GQ, a tripeptide selected from the group AQL, LQL, PQL, VQL, GQL, PLQ, LQG, PQV, VGQ, LQP, LQV, AQG, QPL, PQV, VGQ, GQG or a tetrapeptide selected from the group SEQ ID NO: 1 (LQGV) and SEQ ID NO: 2 (AQGV), connected to said antibody-like molecule through a peptide bond.
11. A method according to claim 9, wherein said antibody-like molecule is conjugated to said source of autophagy inhibiting amino acids.
12. A method according to claim 9, wherein said source of autophagy inhibiting amino acids is a lipid vesicle such as a liposome.
13. A method according to claim 12, wherein said liposome comprises a dipeptide selected from the group AQ, LQ, PQ, VQ, GQ, a tripeptide selected from the group AQL, LQL, PQL, VQL, GQL, PLQ, LQG, PQV, VGQ, LQP, LQV, AQG, QPL, PQV, VGQ, GQG or a

tetrapeptide selected from the group SEQ ID NO: 1 (LQGV) and SEQ ID NO: 2 (AQGV).

14. A molecule specifically recognizing an elastin receptor complex for use in lowering autophagy, said molecule comprising a source of autophagy inhibiting amino acids, selected
5 from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine.

15. A molecule specifically recognizing an elastin receptor complex for use in the modulation of an immune response, said molecule comprising a source of autophagy
10 inhibiting amino acids, selected from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine (R).

16. A molecule specifically recognizing an elastin receptor complex for use in improving tissue repair, said molecule comprising a source of autophagy inhibiting amino acids,
15 selected from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine (R).

17. A molecule specifically recognizing an elastin receptor complex for use in modifying vascular permeability, said molecule comprising a source of autophagy inhibiting amino
20 acids, selected from the group of alanine (in one letter code: A), glutamine (Q), glycine (G), valine (V), leucine (L), isoleucine (I), proline (P) and arginine (R).

18. A molecule for a use according to any one of claims 14-17, wherein said molecule comprises an elastin peptide motif represented by xGxxPG, wherein x represents a naturally
25 occurring amino acid.

19. A molecule for use according to any one of claims 14-17, wherein said molecule comprises an antibody-like molecule, selected from IgG, IgM, single chain antibodies, FAB-
or FAB'2-fragments.

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20. A molecule for use according to any one of claims 14-19, wherein said source of autophagy inhibiting amino acids is a peptide comprising a dipeptide selected from the

group AQ, LQ, PQ, VQ, GQ, a tripeptide selected from the group AQL, LQL, PQL, VQL, GQL, PLQ, LQG, PQV, VGQ, LQP, LQV, AQG, QPL, PQV, VGQ, GQG or a tetrapeptide selected from the group SEQ ID NO: 1 (LQGV) and SEQ ID NO: 2 (AQGV).

5 21. A molecule for use according to claim 20, wherein said molecule is connected to said peptide through a peptide bond.

22. A peptide comprising xGxxPG and a peptide selected from a dipeptide comprising dipeptide selected from the group AQ, LQ, PQ, VQ, GQ, a tripeptide selected from the group
10 AQL, LQL, PQL, VQL, GQL, PLQ, LQG, PQV, VGQ, LQP, LQV, AQG, QPL, PQV, VGQ, GQG or a tetrapeptide selected from the group SEQ ID NO: 1 (LQGV) and SEQ ID NO: 2 (AQGV), for use in lowering autophagy, wherein x represents a naturally occurring amino acid.

23. A peptide comprising at least 7 amino acids and at most 30 amino acids comprising a
15 sequence of the formula φ_n xGxxPG, or xGxxPG φ_n , or φ_n xGxxPG φ_m wherein x is a naturally occurring amino acid, φ is an autophagy inhibiting amino acid and n = an integer from 1 to 24 and m is an integer from 1-23, whereby n+m is no greater than 24.

24. A peptide according to claim 23 wherein φ_n and/or φ_m comprise(s) a dipeptide
20 selected from the group AQ, LQ, PQ, VQ, GQ, a tripeptide selected from the group AQL, LQL, PQL, VQL, GQL, PLQ, LQG, PQV, VGQ, LQP, LQV, AQG, QPL, PQV, VGQ, GQG or a tetrapeptide selected from the group SEQ ID NO: 1 (LQGV) and SEQ ID NO: 2 (AQGV).

25. A pharmaceutical formulation comprising a peptide comprising xGxxPG and a
25 peptide selected from a dipeptide selected from the group AQ, LQ, PQ, VQ, GQ, a tripeptide selected from the group AQL, LQL, PQL, VQL, GQL, PLQ, LQG, PQV, VGQ, LQP, LQV, AQG, QPL, PQV, VGQ, GQG or a tetrapeptide selected from the group SEQ ID NO: 1 (LQGV) and SEQ ID NO: 2 (AQGV), for use in lowering autophagy, wherein x represents a naturally occurring amino acid and at least one pharmaceutically acceptable excipient.

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26. A pharmaceutical formulation comprising a peptide according to claim 23 or 24 and at least one pharmaceutically acceptable excipient.

27. A pharmaceutical formulation according to claim 25 or 26 further comprising insulin.

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28. A pharmaceutical formulation according to claim 27 for use in the treatment of impairment of pancreatic beta-cell function.

29. A method for producing a peptide according to claim 23 or 24 comprising
10 synthesizing said peptide with an automated peptide synthesizer.

30. A peptide according to claim 23 or 24 obtainable with a method according to claim 29 for use according to any one of claims 14-17.

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