

CLAIMS:

1. A pharmaceutical composition comprising as an active ingredient a peptide according to Formula I: pGlu-X₁-X₂-X₃-OH, or a pharmaceutically acceptable salt or derivative thereof, wherein X₁ is selected from Asn and Thr; X₂ is selected from Trp, Phe and Tyr; and X₃ is selected from Lys, Lys derivative and Thr, and a pharmaceutically acceptable carrier, for use in reducing the release or inhibiting the activity of at least one inflammatory cytokine.
2. The pharmaceutical composition for use according to claim 1, wherein the at least one inflammatory cytokine is selected from the group consisting of: interferon gamma (IFN gamma), interleukin 1 beta (IL-1 beta), interleukin 10 (IL-10), tumor necrosis factor alpha (TNF alpha), and interleukin 6 (IL-6).
3. The pharmaceutical composition for use according to claim 1, wherein the at least one inflammatory cytokine is selected from the group consisting of: TNF alpha, IL-1-beta and IL-6.
4. A pharmaceutical composition comprising as an active ingredient a peptide according to Formula I: pGlu-X₁-X₂-X₃-OH, or a pharmaceutically acceptable salt or derivative thereof, wherein X₁ is selected from Asn and Thr; X₂ is selected from Trp, Phe and Tyr; and X₃ is selected from Lys, Lys derivative and Thr, and a pharmaceutically acceptable carrier, for use in reducing the release of at least one inflammatory mediator or chemokine.
5. The pharmaceutical composition for use according to claim 4, wherein the at least one inflammatory mediator or chemokine is selected from the group consisting of reactive oxygen species (ROS) and RANTES (Regulated upon activation normal T cell expressed and presumably secreted).
6. The pharmaceutical composition according to any one of claims 1 to 5, wherein the peptide derivative comprises an alkyl group attached to an amino group of a side chain or a terminal amino group of the peptide.
7. The pharmaceutical composition according to claim 6, wherein the alkyl group is attached by an amide linkage.
8. The pharmaceutical composition according to claim 6 or 7, wherein the alkyl is a C₄ to C₃₀ alkyl.

9. The pharmaceutical composition according to claim 8, wherein the alkyl is a C8 alkyl (octanoyl), attached to the side chain of a Lys residue via an amide linkage.
10. The pharmaceutical composition according to any one of claims 1 to 5, wherein the peptide is selected from the group consisting of pGlu-Asn-Trp-Lys(Octanoyl)-OH (SEQ ID NO: 1) and pGlu-Asn-Trp-Thr-OH (SEQ ID NO: 2), and pharmaceutically acceptable salts and derivatives thereof.
11. The pharmaceutical composition according to any one of claims 1 to 5, wherein said peptide has an amino acid sequence as set forth in SEQ ID NO: 1.
12. The pharmaceutical composition according to any one of claims 1 to 5, wherein said peptide has an amino acid sequence as set forth in SEQ ID NO: 2.
13. The pharmaceutical composition according to any one of the preceding claims having a pH in the range of about 4 to about 8.
14. The pharmaceutical composition according to any one of the preceding claims, being formulated for an administration route selected from the group consisting of: topical administration, ophthalmic administration, oral administration, nasal administration, and parenteral administration.
15. The pharmaceutical composition according to claim 14, for topical administration, wherein the composition is formulated as a cream, an ointment, a paste, a lotion, a gel or in the form of eyedrops.
16. The pharmaceutical composition according to claim 15, formulated as a cream comprising 0.1-5% w/w of said peptide, derivative or pharmaceutically acceptable salt.
17. The pharmaceutical composition according to claim 15, for administration to a subject having a disease or injury of the eye.
18. The pharmaceutical composition according to claim 17, formulated in a form selected from the group consisting of a liquid solution or suspension for use as eyedrops, an emulsion, a cream, an ointment, a spray, a gel and an intravitreal injection.
19. The pharmaceutical composition according to claim 17 or 18, wherein the disease or injury of the eye is an inflammatory disease or disorder selected from the group consisting of: uveitis, dry eye syndrome, inflammatory symptoms associated with an infectious eye disease, an allergic eye disease, keratitis, conjunctivitis, meibomian gland dysfunction, and ocular symptoms associated with Sjogren syndrome.

20. The pharmaceutical composition according to claim 14, for administration to a subject having an inflammatory autoimmune disease or disorder.
21. The pharmaceutical composition of claim 20, wherein said autoimmune disease or disorder is selected from the group consisting of rheumatoid arthritis, osteoarthritis,
5 psoriatic arthritis, ankylosing spondylitis, juvenile idiopathic arthritis and lupus.
22. The pharmaceutical composition of claim 14, for administration to a subject having an inflammatory bowel disease.
23. The pharmaceutical composition of claim 22, wherein said inflammatory bowel disease is selected from the group consisting of Crohn's disease and ulcerative colitis.
- 10 24. The pharmaceutical composition of claim 14, for administration to a subject having an inflammatory disease or disorder of the lung.
25. The pharmaceutical composition of claim 24, wherein said inflammatory disease or disorder of the lung is selected from the group consisting of asthma, bronchitis, pleurisy, alveolitis, vasculitis, pneumonia, chronic bronchitis, bronchiectasis, diffuse
15 panbronchiolitis, hypersensitivity pneumonitis, idiopathic pulmonary fibrosis and cystic fibrosis.
26. The pharmaceutical composition of claim 14, for administration to a subject having an inflammatory disease or disorder of the ear.
27. The pharmaceutical composition of claim 26, wherein said inflammatory disease or
20 disorder of the ear is selected from the group consisting of inflammatory symptoms associated with ear infection, otitis media, otitis externa, mastoiditis and otomastoiditis.
28. A method of reducing the release or inhibiting the activity of at least one inflammatory or pro-inflammatory cytokine, the method comprising administering to a subject in
25 need thereof a therapeutically effective amount of a peptide according to Formula I: pGlu-X₁-X₂-X₃-OH, or a pharmaceutically acceptable salt or derivative thereof, wherein is selected from Asn and Thr; X₂ is selected from Trp, Phe and Tyr; and X₃ is selected from Lys, Lys derivative and Thr.
29. The method of claim 28 wherein the at least one inflammatory cytokine is selected
30 from the group consisting of: interferon gamma (IFN gamma), interleukin 1 beta (IL-1 beta), interleukin 10 (IL-10), tumor necrosis factor alpha (TNF alpha), and interleukin 6 (IL-6).

30. A method of reducing the release of an inflammatory mediator or chemokine, the method comprising administering to a subject in need thereof a therapeutically effective amount of a peptide according to Formula I: pGlu-X₁-X₂-X₃-OH, or a pharmaceutically acceptable salt or derivative thereof, wherein is selected from Asn and Thr; X₂ is selected from Trp, Phe and Tyr; and X₃ is selected from Lys, Lys derivative and Thr.
31. The method of claim 30 wherein the inflammatory mediator or chemokine is selected from ROS and RANTES.
32. A method of treating an inflammatory disease or disorder selected from the group consisting of: an eye inflammatory disease or disorder, an ear inflammatory disease or disorder, a lung inflammatory disease or disorder, a bowel inflammatory disease or disorder, or an inflammatory autoimmune disease or disorder, the method comprising the step of administering to a subject in need thereof a therapeutically effective amount of a peptide according to Formula I: pGlu-X₁-X₂-X₃-OH, or a pharmaceutically acceptable salt or derivative thereof, wherein is selected from Asn and Thr; X₂ is selected from Trp, Phe and Tyr; and X₃ is selected from Lys, Lys derivative and Thr, thereby treating the inflammatory disease or disorder.
33. The method according to any one of claims 28 to 32, wherein administration is via a route selected from the group consisting of topical, ophthalmic, oral, nasal, and parenteral administration.
34. The method of claim 32, wherein the inflammatory disease or disorder of the eye is selected from the group consisting of uveitis, dry eye syndrome, inflammatory symptoms associated with an infectious eye disease, an allergic eye disease, keratitis, conjunctivitis, meibomian gland dysfunction and Sjogren syndrome.
35. The method of claim 32, wherein the inflammatory autoimmune disease or disorder is selected from the group consisting of rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, juvenile idiopathic arthritis, Sjogren syndrome and lupus.
36. The method of claim 32, wherein the bowel inflammatory disease or disorder is selected from the group consisting of Crohn's disease and ulcerative colitis.
37. The method of claim 32, wherein the inflammatory disease or disorder of the lung is selected from the group consisting of asthma, bronchitis, pleurisy, alveolitis,

vasculitis, pneumonia, chronic bronchitis, bronchiectasis, diffuse panbronchiolitis, hypersensitivity pneumonitis, idiopathic pulmonary fibrosis and cystic fibrosis.

38. The method of claim 32, wherein the inflammatory disease or disorder of the ear is selected from the group consisting of inflammatory symptoms associated with ear infection, otitis media, otitis externa, mastoiditis and otomastoiditis.
39. The method according to any one of claims 28 to 38, wherein the peptide derivative comprises an alkyl group attached via an amide bond to an amino group of a side chain or a terminal amine of the peptide.
40. The method according to claim 39, wherein the alkyl is a C4 to C30 alkyl.
41. The method according to claim 40, wherein the alkyl is a C8 alkyl (octanoyl), attached to the side chain of a Lys residue.
42. The method according to any one of claims 28 to 38, wherein said peptide is selected from a peptide of SEQ ID NO: 1, a peptide of SEQ ID NO: 2, and salts and derivatives thereof.