

CLAIMS

1. A pharmaceutical composition comprising polypeptide HP or a polynucleotide sequence encoding polypeptide HP and a pharmaceutically acceptable excipient, carrier or diluent; wherein said polypeptide has at least 75% identity to SEQ ID NO 2, SEQ ID NO 4 or SEQ ID NO 6; and wherein said polynucleotide sequence encodes a polypeptide which has at least 75% identity to SEQ ID NO 2, SEQ ID NO 4 or SEQ ID NO 6 and/or wherein said polynucleotide sequence has at least 75% identity to SEQ ID NO 1, SEQ ID NO 3 or SEQ ID NO 5.
2. The pharmaceutical composition according to claim 1, wherein said polypeptide or polynucleotide sequence is encapsulated.
3. The pharmaceutical composition according to claim 1 or 2, wherein said polypeptide is a recombinant polypeptide.
4. The pharmaceutical composition according to claim 1 or 2, wherein an expression vector comprises said polynucleotide sequence.
5. A process for producing a pharmaceutical composition according to any one of claims 1 to 4, said process comprising admixing said polypeptide or polynucleotide sequence with a pharmaceutically acceptable excipient, carrier or diluent; optionally said polypeptide or polynucleotide sequence is encapsulated in said process; wherein said polypeptide has at least 75% identity to SEQ ID NO 2, SEQ ID NO 4 or SEQ ID NO 6; and wherein said polynucleotide sequence encodes a polypeptide which has at least 75% identity to SEQ ID NO 2, SEQ ID NO 4 or SEQ ID NO 6 and/or wherein said polynucleotide sequence has at least 75% identity to SEQ ID NO 1, SEQ ID NO 3 or SEQ ID NO 5.
6. Use of polypeptide HP or a polynucleotide sequence encoding polypeptide HP in the manufacture of a pharmaceutical composition according to any one of claims 1-4 for the treatment and/or prevention of a disorder, wherein the disorder is an inflammatory disorder and/or an autoimmune disorder.
7. The use of claim 6, wherein the disorder affects the alimentary canal, a section of the alimentary canal, the liver, liver cells, epithelial cells, epidermal cells, neuronal cells, kidneys, spleen, lungs, heart, the pancreas, and/or pancreatic cells.
8. The use of claim 6, wherein the disorder is selected from the group consisting of inflammatory bowel disorder (IBD), colitis, rheumatoid arthritis, psoriasis, multiple sclerosis, type I diabetes, coeliac disease, atopic dermatitis, rhinitis, irritable bowel syndrome (IBS), ulcerative colitis, pouchitis, Crohn's disease, functional dyspepsia, atopic diseases, necrotising enterocolitis, non-alcoholic fatty liver disease, gastrointestinal infection, Lupus, nephritis/glomerulonephritis, asthma, COPD, myocarditis and combinations thereof.
9. The use of claim 6, wherein the disorder is an inflammatory bowel disorder (IBD).
10. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises reducing the inflammation of a cell, a tissue or an organ in a subject.

11. The use of claim 10, wherein the cell, tissue or organ is the alimentary canal, a section of the alimentary canal, the liver, liver cells, epithelial cells, epidermal cells, neuronal cells, kidneys, spleen, lungs, heart, the pancreas, and/or pancreatic cells.
12. The use of claim 10 or claim 11, wherein the treatment and/or prevention comprises reducing the inflammation by epithelial cells of the tissue or the organ. (corresponds to deleted EP claim 6)
13. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises improving intestine barrier integrity in a subject.
14. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises modifying the bacterial composition in a tissue or organ to provide a beneficial microbiota, preferably wherein the treatment and/or prevention comprises reducing the level of one or more types of lactose fermenting bacteria in a tissue or an organ in a subject and/or reducing the level of one or more types of non-lactose fermenting bacteria in a tissue or an organ in a subject, optionally wherein said tissue or organ is selected from the group consisting of mesenteric lymph nodes, liver, pancreas, spleen, kidneys, heart, lung and combinations thereof.
15. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises maintaining the length of the large intestine and/or small intestine of a subject, such as preventing a reduction in the length of large intestine and/or preventing an increase in the length of the small intestine.
16. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises reducing disruption to the intestine of a subject, such as reducing or preventing disruption to the integrity of the mucosal epithelium and/or reducing or preventing a reduction in the number of goblet cells in the epithelium and/or reducing or preventing the infiltration of immune cells into the lamina propria.
17. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises regulating the expression of one or more pro-inflammatory genes and/or one or more barrier integrity genes in a cell or cells of a subject.
18. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises regulating the expression in a cell or cells of a subject of one or more genes selected from the group consisting of regenerating islet-derived 3 beta gene (Reg3b), resistin-like gamma resistin like beta gene (Retnlgl|Retnlb) sucrase-isomaltase (alphaglucosidase) gene (Si), defensin alpha 24 gene (Defa24), hydroxysteroid 11-beta dehydrogenase 2 gene (Hsd11b2), hydroxysteroid (17-beta) dehydrogenase 2 gene (Hsd17b2), resistin-Like Molecule-beta (RELMb), and nuclear receptor 1D1 thyroid hormone receptor alpha gene (Nr1d1|Thra), such as decreasing the expression of one or more genes selected from the group consisting of regenerating islet-derived 3 beta gene (Reg3b); resistin-like gamma resistin like beta gene (Retnlgl|Retnlb); resistin-Like Molecule-beta (RELMb), sucrase-isomaltase (alpha-glucosidase) gene (Si); and defensin alpha 24 gene (Defa24), or increasing the expression of one or more genes selected from the group consisting of hydroxysteroid 11-beta dehydrogenase 2 gene (Hsd11b2); hydroxysteroid (17-beta) dehydrogenase 2 gene (Hsd17b2); and nuclear receptor 1D1 thyroid hormone receptor alpha gene (Nr1d1|Thra).
19. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises reducing the activation of pro-inflammatory pathways in a cell or cells of a subject.

20. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises reducing the activity and/or expression of NF- κ B in a cell or cells of a subject.
21. The use of any one of claims 6-9, wherein the treatment and/or prevention comprises improving alimentary canal health in a subject.