We claim:

1. A binding protein comprising an antigen binding domain, said binding protein capable of binding prostaglandin E_2, said antigen binding domain comprising CDR sequences: GYTFTKYWLG (SEQ ID NO: 54), DIYPGYDYTHYNEKFKD (SEQ ID NO: 55), SDGSSTY (SEQ ID NO: 56), TSSQNIVHSNGNTYLE (SEQ ID NO: 57), KVSNRFSG (SEQ ID NO: 58), and FQVSHVPYT (SEQ ID NO: 59), wherein the binding protein is not antibody 2B5.

2. The binding protein of claim 1, wherein the binding protein is capable of modulating a biological function of prostaglandin E_2.

3. The binding protein of claim 1, wherein the binding protein is capable of neutralizing prostaglandin E_2.

4. The binding protein of claim 1, wherein the binding protein is capable of preventing the binding of prostaglandin E_2 to EP1 receptors.

5. The binding protein of claim 1, wherein the binding protein is capable of preventing the binding of prostaglandin E_2 to EP1, EP2, EP3, or EP4 receptors.

6. The binding protein of claim 1, wherein the binding protein binds prostaglandin E_2 with an EC_{50} of about $1x10^{-6}$ to about $1x10^{-7}$ M, about $1x10^{-7}$ to about $1x10^{-8}$ M, about $1x10^{-8}$ to about $1x10^{-9}$ M, about 10^{-9} to about $1x10^{-10}$ M, about $1x10^{-10}$ to about $1x10^{-11}$ M, or about $1x10^{-11}$ to about $1x10^{-12}$ M, as measured in an ELISA assay.

7. The binding protein of claim 1, wherein the binding protein inhibits calcium influx induced by prostaglandin E_2 binding EP4 receptors with an IC_{50} of about $1x10^{-6}$ to about $1x10^{-7}$ M, about $1x10^{-7}$ to about $1x10^{-8}$ M, about $1x10^{-8}$ to about $1x10^{-9}$ M, about 10^{-9} to about $1x10^{-10}$ M, about $1x10^{-10}$ to about $1x10^{-11}$ M, or about $1x10^{-11}$ to about $1x10^{-12}$ M, as measured in an EP4 receptor mediated FLIPR assay.

8. The binding protein of claim 1, wherein the binding protein has been affinity maturated.

9. A binding protein comprising an antigen binding domain, the binding protein capable of binding prostaglandin E_2, the antigen binding domain comprising CDR sequences selected from the group consisting of:

a) SEQ ID NOs: 6, 7, 8, 10, 11, and 12;

b) SEQ ID NOs: 14, 15, 16, 18, 19, and 20;

c) SEQ ID NOs: 14, 22, 23, 10, 11, and 12;

d) SEQ ID NOs: 26, 27, 28, 30, 31, and 32; and

e) SEQ ID NOs: 26, 34, 35, 37, 38, and 39.

10. A binding protein comprising an antigen binding domain, the binding protein capable of binding prostaglandin E_2, the antigen binding domain comprising VH and VL regions selected from the group consisting of:

a) SEQ ID NOs: 5 and 9;

b) SEQ ID NOs: 13 and 17;

c) SEQ ID NOs: 21 and 24;

d) SEQ ID NOs: 25 and 29; and

e) SEQ ID NOs: 33 and 36.

11. A binding protein comprising an antigen binding domain, the binding protein capable of binding prostaglandin E_2, the antigen binding domain comprising VH and VL regions selected from the group consisting of:

a) SEQ ID NOs: 40 and 41;

b) SEQ ID NOs: 42 and 43; and

c) SEQ ID NOs: 44 and 45.

12. A humanized binding protein comprising an antigen binding domain, the binding protein capable of binding prostaglandin E_2, and the antigen binding domain comprising CDR sequences SEQ ID NOs: 54, 55, 56, 57, 58, and 59.

13. A humanized binding protein, or fragment thereof, that binds to prostaglandin E_2, the humanized binding protein comprising VH and VL regions selected from the group consisting of:

a) SEQ ID NOs: 60 and 61;

b) SEQ ID NOs: 62 and 63;

c) SEQ ID NOs: 64 and 65;

d) SEQ ID NOs: 66 and 67;

e) SEQ ID NOs: 68 and 69;

f) SEQ ID NOs: 70 and 71;

g) SEQ ID NOs: 72 and 73;

h) SEQ ID NOs: 74 and 75;

i) SEQ ID NOs: 76 and 77;

j) SEQ ID NOs: 78 and 79;

k) SEQ ID NOs: 78 and 81;

l) SEQ ID NOs: 80 and 79; and

m) SEQ ID NOs: 80 and 81;

n) the VH and VL regions comprise human acceptor framework sequences that are at least 65% identical to any one of a) through m);

o) the VH and VL regions comprise human acceptor framework sequences that are at least 85% identical to any one of a) through m); or

p) the VH and VL regions comprise human acceptor framework sequences that are at least 95% identical to any one of a) through m).

14. The binding protein according to claim 1, further comprising a human acceptor framework.

15. The binding protein of claim 13, wherein the human acceptor framework comprises at least one framework region amino acid substitution:

i) in the heavy chain variable region:

a) at position 48, from the human residue to murine residue isoleucine;

b) at position 68, from the human residue to murine residue alanine;

c) at position 70, from the human residue to murine residue leucine; and/or

d) at position 72, from the human residue to murine residue valine; and/or

ii) in the light chain variable region:

a) at position 2, from the human residue to murine residue valine; and/or

b) at position 3, from the human residue to murine residue leucine.

16. The binding protein of claim 1, wherein the binding protein is a CDR-grafted binding protein.

17. The humanized binding protein of claim 13, wherein the human acceptor framework comprises at least one framework amino acid substitution at a residue adjacent to a CDR, a glycosylation site residue, a rare residue, a residue capable of interacting with prostaglandin E_2, a residue capable of interacting with a CDR, a canonical residue, a contact residue between heavy

chain variable region and light chain variable region, a residue within a Vernier zone, or a residue in a region that overlaps between a Chothia-defined variable heavy chain CDR1 and a Kabat-defined first heavy chain framework.

18. An antibody construct comprising the binding protein of claim 1, the antibody construct further comprising a linker polypeptide and/or an immunoglobulin constant domain.

19. The antibody construct of claim 17, wherein the antibody construct comprises an immunoglobulin molecule, a disulfide linked Fv, a monoclonal antibody, a scFv, a chimeric antibody, a single domain antibody, a CDR-grafted antibody, a diabody, a humanized antibody, a multispecific antibody, a Fab, a dual specific antibody, a Fab', a bispecific antibody, a F(ab')2, and/or a Fv.

20. The antibody construct of claim 17, wherein the antibody construct comprises a human IgM heavy chain constant domain, a human IgG4 heavy chain constant domain, a human IgG1 heavy chain constant domain, a human IgE heavy chain constant domain, a human IgG2 heavy chain constant domain, a human IgG3 heavy chain constant domain, and/or a human IgA heavy chain constant domain.

21. The antibody construct of claim 17, wherein the antibody construct comprises an immunoglobulin constant domain of SEQ ID NOs: 1, 2, 3, or 4.

22. The antibody construct of claim 17, wherein the antibody construct possesses a human glycosylation pattern.

23. A humanized antibody construct capable of binding prostaglandin E_2, comprising CDR sequences at least about 95% or at least about 98% homologous to SEQ ID NOs: 54, 55, 56, 57, 58, and 59.

24. The antibody construct of claim 17, wherein said antibody construct is a crystallized antibody construct.

25. The antibody construct of claim 23, wherein said crystallized antibody construct is a carrier-free pharmaceutical controlled release crystallized antibody construct.

26. The antibody construct of claim 24, wherein said antibody construct has a greater half-life in vivo than a soluble counterpart of said antibody construct.

27. The antibody construct of claim 24, wherein said antibody construct retains biological activity.

28. An antibody conjugate comprising the antibody construct of claim 17, the antibody conjugate further comprising an immunoadhension molecule, an imaging agent, a therapeutic agent, or a cytotoxic agent.

29. The antibody conjugate of claim 27, wherein the imaging agent is a radiolabel, an enzyme, a fluorescent label, a luminescent label, a bioluminescent label, a magnetic label, or biotin.

30. The antibody conjugate of claim 27, wherein the radiolabel is ^{3}H, ^{14}C, ^{35}S, ^{90}Y, ^{99}Tc, ^{111}In, ^{125}I, ^{131}I, ^{177}Lu, ^{166}Ho, or ^{153}Sm.

31. The antibody conjugate of claim 27, wherein the therapeutic or cytotoxic agent is an anti-metabolite, an alkylating agent, an antibiotic, a growth factor, a cytokine, an anti-angiogenic agent, an anti-mitotic agent, an anthracycline, a toxin, or an apoptotic agent.

32. The binding protein of claim 1, wherein the binding protein is a crystallized binding protein.

33. The binding protein of claim 31, wherein the crystallized binding protein is a carrier-free pharmaceutical controlled release crystallized binding protein.

34. The binding protein of any one of claims 1-16, or the antibody construct of any one of claims 17-26 wherein the binding protein or antibody construct binds to prostaglandin E_2 and inhibits the binding of the prostaglandin E_2 to E1, E2, E3, or E4 receptors:

a) with an IC_{50} of about $1x10^{-6}$ to $1x10^{-7}$ M, $1x10^{-7}$ to $1x10^{-8}$ M, $1x10^{-8}$ to $1x10^{-9}$ M, $1x10^{-9}$ to $1x10^{-10}$ M, $1x10^{-10}$ to $1x10^{-11}$ M, or $1x10^{-11}$ to $1x10^{-12}$ M, as measured in a cell surface-based receptor binding assay; or

b) with an IC_{50} of about $1x10^{-6}$ to $1x10^{-7}$ M, $1x10^{-7}$ to $1x10^{-8}$ M, $1x10^{-8}$ to $1x10^{-9}$ M, $1x10^{-9}$ to $1x10^{-10}$ M, $1x10^{-10}$ to $1x10^{-11}$ M, or $1x10^{-11}$ to $1x10^{-12}$ M, as measured in an ELISA-based receptor binding assay.

35. The binding protein of any one of claims 1-16, or the antibody construct of any one of claims 17-26 wherein the binding protein or antibody construct binds prostaglandin E_2 and inhibits prostaglandin E_2 activity by about 50% as measured in a carrigeenan induced paw edema model, a carrigeenan induced hyperalgesia model, a collagen induced arthritis model, or an adjuvant induced arthritis model.

36. The binding protein or antibody construct of claim 34, wherein the binding protein or antibody construct inhibits prostaglandin E_2 activity by about 70% as measured in a carrigeenan

induced paw edema model, a carrigeenan induced hyperalgesia model, a collagen induced arthritis model, or an adjuvant induced arthritis model.

37. The binding protein or antibody construct of claim 34, wherein the binding protein or antibody construct binds prostaglandin E_2 and inhibits inflammation by about 90% as measured in a carrigeenan induced paw edema model, a carrigeenan induced hyperalgesia model, a collagen induced arthritis model, or an adjuvant induced arthritis model.

38. The binding protein of any one of claims 1-16 or the antibody construct of any one of claims 17-26, wherein the binding protein or antibody construct binds prostaglandin E_2 and inhibits the binding of prostaglandin E_2 to E1, E2, E3, or E4 receptors by about 70-100% at a concentration of about 100nM, as measured in a cell surface-based receptor binding assay or an ELISA-based receptor binding assay.

39. The binding protein or antibody construct of claim 37, wherein the binding protein or antibody construct is capable of modulating a biological function of prostaglandin E_2.

40. The binding protein or antibody construct of claim 37, wherein the binding protein or antibody construct is capable of neutralizing prostaglandin E_2.

41. An isolated nucleic acid encoding the binding protein of any one of claims 1-16 or the antibody construct of any one of claims 17-22.

42. A vector comprising an isolated nucleic acid according to claim 40.

43. The vector of claim 41, wherein the vector is pcDNA, pTT, pTT3, pEFBOS, pBV, pJV, pBJ, or pA2.

44. A host cell comprising the vector of claim 42.

45. The host cell of claim 43, wherein the host cell is a prokaryotic cell.

46. The host cell of claim 43, wherein the host cell is *Escherichia coli*.

47. The host cell of claim 43, wherein the host cell is a eukaryotic cell.

48. The host cell of claim 46, wherein the eukaryotic cell is a protist cell, an animal cell, a plant cell, or a fungal cell.

49. The host cell of claim 46, wherein the eukaryotic cell is a mammalian cell, an avian cell, or an insect cell.

50. The host cell of claim 43, wherein the host cell is a CHO cell.

51. The host cell of claim 43, wherein the host cell is a COS cell or a HEK293 cell.

52. The host cell of claim 43, wherein the host cell is a yeast cell.

53. The host cell of claim 51, wherein the yeast cell is *Saccharomyces cerevisiae*.

54. The host cell of claim 48, wherein the host cell is an insect Sf9 cell.

55. A method of producing a protein capable of binding prostaglandin E_2, the method comprising the step of culturing the host cell of claim 43 in culture medium under conditions sufficient to produce a binding protein capable of binding prostaglandin E_2.

56. A composition for the release of a binding protein, the composition comprising:

(a) a formulation, wherein the formulation comprises the crystallized binding protein of claim 31 or the crystallized antibody construct of claim 23;

(b) an ingredient; and

(c) at least one polymeric carrier.

57. The composition of claim 55, wherein the polymeric carrier is a poly (acrylic acid), a poly (cyanoacrylate), a poly (amino acid), a poly (anhydride), a poly (depsipeptide), a poly (ester), a poly (lactic acid), a poly (lactic-co-glycolic acid) or PLGA, a poly (b-hydroxybutryate), a poly (caprolactone), a poly (dioxanone); a poly (ethylene glycol), a poly ((hydroxypropyl) methacrylamide), a poly ((organo) phosphazene), a poly (ortho ester), a poly (vinyl alcohol), a poly (vinylpyrrolidone), a maleic anhydride- alkyl vinyl ether copolymer, a pluronic polyol, albumin, alginate, cellulose, a cellulose derivative, collagen, fibrin, gelatin, hyaluronic acid, an oligosaccharide, a glycaminoglycan, a sulfated polysaccharide, or a blend and/or a copolymer thereof.

58. The composition of claim 55, wherein the ingredient is albumin, sucrose, trehalose, lactitol, gelatin, hydroxypropyl-β-cyclodextrin, methoxypolyethylene glycol, or polyethylene glycol.

59. The use of the composition of claim 55 in the manufacture of a medicament for treating a mammal with a disorder in which prostaglandin E_2 activity is detrimental.

60. A pharmaceutical composition comprising the binding protein or antibody construct of any one of claims 1-31, and a pharmaceutically acceptable carrier.

61. The pharmaceutical composition of claim 59, wherein the pharmaceutically acceptable carrier functions as an adjuvant useful to increase absorption or dispersion.

62. The pharmaceutical composition of claim 60, wherein the adjuvant is hyaluronidase.

63. The pharmaceutical composition of claim 59, further comprising at least one additional therapeutic agent for treating a disorder in which prostaglandin E_2 activity is detrimental.

64. The pharmaceutical composition of claim 62, wherein the additional agent is a therapeutic agent, an imaging agent, a cytotoxic agent, an angiogenesis inhibitor, a kinase inhibitor, a co-stimulation molecule blocker, an adhesion molecule blocker, an anti-cytokine antibody or functional fragment thereof, methotrexate, cyclosporine, rapamycin, FK506, a detectable label or reporter, a TNF antagonist, an anti-rheumatic, a muscle relaxant, a narcotic, a non-steroid anti-inflammatory drug (NSAID), an analgesic, an anesthetic, a sedative, a local anesthetic, a neuromuscular blocker, an antimicrobial, an antipsoriatic, a corticosteriod, an anabolic steroid, an erythropoietin, an immunization, an immunoglobulin, an immunosuppressive, a growth hormone, a hormone replacement drug, a radiopharmaceutical, an antidepressant, an antipsychotic, a stimulant, an asthma medication, a beta agonist, an inhaled steroid, an oral steroid, an epinephrine or analog thereof, a cytokine, or a cytokine antagonist.

65. The use of the pharmaceutical composition according to claim 63 for reducing prostaglandin E_2 activity in a human subject suffering from a disorder in which prostaglandin E_2 activity is detrimental.

66. The use of the binding protein or the antibody construct of any one of claims 1-31 in the manufacture of a medicament for treating a subject for at least one disease or disorder in which prostaglandin E_2 activity is detrimental.

67. The use of claim 65, wherein the disease or disorder is an autoimmune disease, an inflammatory disease, a tumor, rheumatoid arthritis, allergic arthritis, infectious mononucleosis, a viral lymphadenopathy, a herpes virus infection, multiple sclerosis, a demyelinating disease, a hematological disorder, hemolytic anemia, thrombocytopenia, an endocrinologic disorder, diabetes mellitus, Addison's disease, idiopathic hypoparathyroidism, chronic lymphocytic thyroiditis, a collagen disorder, systemic lupus erythematosus, a reproductive disorder, amenorrhea, infertility, recurrent abortion, eclampsia, a head tumor, a neck tumor, lung cancer, gastric cancer, prostate cancer, pancreatic cancer, a gastrointestinal organ disease, inflammatory bowel disease, ulcerative colitis, Crohn's disease, pain, pain related with osteoarthritis, an ocular disorder, or age-related macular degeneration.

68. The use of claim 65, wherein the disease or disorder is rheumatoid arthritis, osteoarthritis, juvenile chronic arthritis, septic arthritis, Lyme arthritis, psoriatic arthritis, reactive arthritis, spondyloarthropathy, systemic lupus erythematosus, Crohn's disease, ulcerative colitis, inflammatory bowel disease, insulin dependent diabetes mellitus, thyroiditis, asthma, allergic diseases, psoriasis, dermatitis scleroderma, graft versus host disease, organ transplant rejection, acute or chronic immune disease associated with organ transplantation, sarcoidosis, atherosclerosis, disseminated intravascular coagulation, Kawasaki's disease, Grave's disease, nephrotic syndrome, chronic fatigue syndrome, Wegener's granulomatosis, Henoch-Schoenlein purpurea, microscopic vasculitis of the kidneys, chronic active hepatitis, uveitis, septic shock, toxic shock syndrome, sepsis syndrome, cachexia, infectious diseases, parasitic diseases, acute transverse myelitis, Huntington's chorea, Parkinson's disease, Alzheimer's disease, stroke, primary biliary cirrhosis, hemolytic anemia, malignancies, heart failure, myocardial infarction, Addison's disease, sporadic polyglandular deficiency type I and polyglandular deficiency type II, Schmidt's syndrome, adult (acute) respiratory distress syndrome, alopecia, alopecia areata, seronegative arthropathy, arthropathy, Reiter's disease, psoriatic arthropathy, ulcerative colitic arthropathy, enteropathic synovitis, chlamydia, yersinia and salmonella associated arthropathy, spondyloarthopathy, atheromatous disease/arteriosclerosis, atopic allergy, autoimmune bullous disease, pemphigus vulgaris, pemphigus foliaceus, pemphigoid, linear IgA disease, autoimmune haemolytic anaemia, Coombs positive haemolytic anaemia, acquired pernicious anaemia, juvenile pernicious anaemia, myalgic encephalitis/Royal Free Disease, chronic mucocutaneous candidiasis, giant cell arteritis, primary sclerosing hepatitis, cryptogenic autoimmune hepatitis, Acquired Immunodeficiency Disease Syndrome (AIDS), acquired immunodeficiency related diseases, hepatitis B, hepatitis C, common varied immunodeficiency (common variable hypogammaglobulinaemia), dilated cardiomyopathy, female infertility, ovarian failure, premature ovarian failure, fibrotic lung disease, cryptogenic fibrosing alveolitis, post-inflammatory interstitial lung disease, interstitial pneumonitis, connective tissue disease associated interstitial lung disease, mixed connective tissue disease associated lung disease, systemic sclerosis associated interstitial lung disease, rheumatoid arthritis associated interstitial lung disease, systemic lupus erythematosus associated lung disease, dermatomyositis/polymyositis associated lung disease, Sjögren's disease associated lung disease,

ankylosing spondylitis associated lung disease, vasculitic diffuse lung disease, haemosiderosis associated lung disease, drug-induced interstitial lung disease, fibrosis, radiation fibrosis, bronchiolitis obliterans, chronic eosinophilic pneumonia, lymphocytic infiltrative lung disease, post-infectious interstitial lung disease, gouty arthritis, autoimmune hepatitis, type-1 autoimmune hepatitis (classical autoimmune or lupoid hepatitis), type-2 autoimmune hepatitis (anti-LKM antibody hepatitis), autoimmune mediated hypoglycaemia, type B insulin resistance with acanthosis nigricans, hypoparathyroidism, acute immune disease associated with organ transplantation, chronic immune disease associated with organ transplantation, osteoarthrosis, primary sclerosing cholangitis, psoriasis type 1, psoriasis type 2, idiopathic leucopaenia, autoimmune neutropaenia, renal disease NOS, glomerulonephritides, microscopic vasculitis of the kidneys, Lyme disease, discoid lupus erythematosus, male infertility idiopathic or NOS, sperm autoimmunity, multiple sclerosis (all subtypes), sympathetic ophthalmia, pulmonary hypertension secondary to connective tissue disease, Goodpasture's syndrome, pulmonary manifestation of polyarteritis nodosa, acute rheumatic fever, rheumatoid spondylitis, Still's disease, systemic sclerosis, Sjörgren's syndrome, Takayasu's disease/arteritis, autoimmune thrombocytopaenia, idiopathic thrombocytopaenia, autoimmune thyroid disease, hyperthyroidism, goitrous autoimmune hypothyroidism (Hashimoto's disease), atrophic autoimmune hypothyroidism, primary myxoedema, phacogenic uveitis, primary vasculitis, vitiligo acute liver disease, chronic liver diseases, alcoholic cirrhosis, alcohol-induced liver injury, cholestasis, idiosyncratic liver disease, drug-induced hepatitis, non-alcoholic steatohepatitis, allergy and asthma, group B streptococci (GBS) infection, mental disorders, depression, schizophrenia, Th2 Type mediated diseases, Th1 Type mediated diseases, acute and/or chronic pain, cancers, lung cancer, breast cancer, stomach cancer, bladder cancer, colon cancer, pancreas cancer, ovarian cancer, prostate cancer, rectal cancer, hematopoietic malignancies, leukemia, lymphoma, abetalipoprotemia, acrocyanosis, acute and/or chronic parasitic or infectious processes, acute leukemia, acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute and/or chronic bacterial infection, acute pancreatitis, acute renal failure, adenocarcinomas, aerial ectopic beats, AIDS dementia complex, alcohol-induced hepatitis, allergic conjunctivitis, allergic contact dermatitis, allergic rhinitis, allograft rejection, alpha-l antitrypsin deficiency, amyotrophic lateral sclerosis, anemia, angina pectoris, anterior

horn cell degeneration, anti cd3 therapy, anti-phospholipid syndrome, anti-receptor hypersensitivity reactions, aortic and/or peripheral aneuryisms, aortic dissection, arterial hypertension, arteriosclerosis, arteriovenous fistula, ataxia, atrial fibrillation (sustained or paroxysmal), atrial flutter, atrioventricular block, B cell lymphoma, bone graft rejection, bone marrow transplant (BMT) rejection, bundle branch block, Burkitt's lymphoma, burns, cardiac arrhythmias, cardiac stun syndrome, cardiac tumors, cardiomyopathy, cardiopulmonary bypass inflammation response, cartilage transplant rejection, cerebellar cortical degenerations, cerebellar disorders, chaotic or multifocal atrial tachycardia, chemotherapy associated disorders, chronic myelocytic leukemia (CML), chronic alcoholism, chronic inflammatory pathologies, chronic lymphocytic leukemia (CLL), chronic obstructive pulmonary disease (COPD), chronic salicylate intoxication, colorectal carcinoma, congestive heart failure, conjunctivitis, contact dermatitis, cor pulmonale, coronary artery disease, Creutzfeldt-Jakob disease, culture negative sepsis, cystic fibrosis, cytokine therapy associated disorders, dementia pugilistica, demyelinating diseases, dengue hemorrhagic fever, dermatitis, dermatologic conditions, diabetes, diabetes mellitus, diabetic arteriosclerotic disease, diffuse Lewy body disease, dilated congestive cardiomyopathy, disorders of the basal ganglia, Down's syndrome in middle age, drug-induced movement disorders induced by drugs which block CNS dopamine receptors, drug sensitivity, eczema, encephalomyelitis, endocarditis, endocrinopathy, epiglottitis, Epstein-Barr virus infection, erythromelalgia, extrapyramidal and/or cerebellar disorders, familial hematophagocytic lymphohistiocytosis, fetal thymus implant rejection, Friedreich's ataxia, functional peripheral arterial disorders, fungal sepsis, gas gangrene, gastric ulcer, glomerular nephritis, graft rejection of any organ or tissue, gram negative sepsis, gram positive sepsis, granulomas due to intracellular organisms, hairy cell leukemia, Hallerrorden-Spatz disease, Hashimoto's thyroiditis, hay fever, heart transplant rejection, hemachromatosis, hemodialysis, hemolytic uremic syndrome/thrombolytic thrombocytopenic purpura, hemorrhage, hepatitis A, His bundle arrythmias, HIV infection/HIV neuropathy, Hodgkin's disease, hyperkinetic movement disorders, hypersensitity reactions, hypersensitivity pneumonitis, hypertension, hypokinetic movement disorders, hypothalamic-pituitary-adrenal axis evaluation, idiopathic Addison's disease, idiopathic pulmonary fibrosis, antibody mediated cytotoxicity, Asthenia, infantile spinal muscular atrophy, inflammation of the aorta, influenza a, ionizing radiation exposure,

iridocyclitis/uveitis/optic neuritis, ischemia- reperfusion injury, ischemic stroke, juvenile rheumatoid arthritis, juvenile spinal muscular atrophy, Kaposi's sarcoma, kidney transplant rejection, legionella, leishmaniasis, leprosy, lesions of the corticospinal system, lipedema, liver transplant rejection, lymphederma, malaria, malignant lymphoma, malignant histiocytosis, malignant melanoma, meningitis, meningococcemia, metabolic/idiopathic, migraine headache, mitochondrial multi-system disorder, mixed connective tissue disease, monoclonal gammopathy, multiple myeloma, multiple systems degenerations (Mencel, Dejerine-Thomas, Shi-Drager, or Machado-Joseph), myasthenia gravis, mycobacterium avium intracellulare, mycobacterium tuberculosis, myelodyplastic syndrome, myocardial infarction, myocardial ischemic disorders, nasopharyngeal carcinoma, neonatal chronic lung disease, nephritis, nephrosis, neurodegenerative diseases, neurogenic I muscular atrophies, neutropenic fever, non-Hodgkin's lymphoma, occlusion of the abdominal aorta and its branches, occlusive arterial disorders, okt3 therapy, orchitis/epidydimitis, orchitis/vasectomy reversal procedures, organomegaly, osteoporosis, pancreas transplant rejection, pancreatic carcinoma, paraneoplastic syndrome/hypercalcemia of malignancy, parathyroid transplant rejection, pelvic inflammatory disease, perennial rhinitis, pericardial disease, peripheral atherosclerotic disease, peripheral vascular disorders, peritonitis, pernicious anemia, pneumocystis carinii pneumonia, pneumonia, POEMS syndrome (polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy, and skin changes syndrome), post perfusion syndrome, post pump syndrome, post-MI cardiotomy syndrome, preeclampsia, progressive supranucleo palsy, primary pulmonary hypertension, radiation therapy, Raynaud's phenomenon, Raynoud's disease, Refsum's disease, regular narrow QRS tachycardia, renovascular hypertension, reperfusion injury, restrictive cardiomyopathy, sarcomas, scleroderma, senile chorea, senile dementia of Lewy body type, seronegative arthropathies, shock, sickle cell anemia, skin allograft rejection, skin changes syndrome, small bowel transplant rejection, solid tumors, specific arrhythmias, spinal ataxia, spinocerebellar degenerations, streptococcal myositis, structural lesions of the cerebellum, subacute sclerosing panencephalitis, syncope, syphilis of the cardiovascular system, systemic anaphalaxis, systemic inflammatory response syndrome, systemic onset juvenile rheumatoid arthritis, T-cell or FAB ALL, telangiectasia, thromboangitis obliterans, thrombocytopenia, toxicity, transplants, trauma/hemorrhage, type III hypersensitivity reactions, type IV

hypersensitivity, unstable angina, uremia, urosepsis, urticaria, valvular heart diseases, varicose veins, vasculitis, venous diseases, venous thrombosis, ventricular fibrillation, viral and fungal infections, vital encephalitis/aseptic meningitis, vital-associated hemaphagocytic syndrome, Wernicke-Korsakoff syndrome, Wilson's disease, xenograft rejection of any organ or tissue, acute coronary syndromes, acute idiopathic polyneuritis, acute inflammatory demyelinating polyradiculoneuropathy, acute ischemia, adult Still's disease, alopecia areata, anaphylaxis, anti-phospholipid antibody syndrome, aplastic anemia, arteriosclerosis, atopic eczema, atopic dermatitis, autoimmune dermatitis, autoimmune disorder associated with streptococcus infection, autoimmune enteropathy, autoimmune hearing loss, Autoimmune Lymphoproliferative Syndrome (ALPS), autoimmune myocarditis, autoimmune premature ovarian failure, blepharitis, bronchiectasis, bullous pemphigoid, cardiovascular disease, catastrophic antiphospholipid syndrome, celiac disease, cervical spondylosis, chronic ischemia, cicatricial pemphigoid, clinically isolated syndrome (CIS) with risk for multiple sclerosis, conjunctivitis, childhood onset psychiatric disorder, chronic obstructive pulmonary disease (COPD), dacryocystitis, dermatomyositis, diabetic retinopathy, diabetes mellitus, disk herniation, disk prolapse, drug induced immune hemolytic anemia, endocarditis, endometriosis, endophthalmitis, episcleritis, erythema multiforme, erythema multiforme major, gestational pemphigoid, Guillain-Barré Syndrome (GBS), Hughes syndrome, idiopathic Parkinson's disease, idiopathic interstitial pneumonia, IgE-mediated allergy, immune hemolytic anemia, inclusion body myositis, infectious ocular inflammatory disease , inflammatory demyelinating disease, inflammatory heart disease, inflammatory kidney disease, iritis, keratitis, keratojuntivitis sicca, Kussmaul disease or Kussmaul-Meier disease, Landry's paralysis, Langerhan's cell histiocytosis, livedo reticularis, macular degeneration, microscopic polyangiitis, morbus bechterev, motor neuron disorders, mucous membrane pemphigoid , multiple organ failure, myasthenia gravis, myelodysplastic syndrome, myocarditis, nerve root disorders, neuropathy, non-A non-B hepatitis, optic neuritis, osteolysis, pauciarticular JRA , peripheral artery occlusive disease (PAOD), peripheral vascular disease (PVD), peripheral artery disease (PAD), phlebitis, polyarteritis nodosa (or periarteritis nodosa), polychondritis, polymyalgia rheumatica, poliosis, polyarticular JRA, polyendocrine deficiency syndrome, polymyositis, polymyalgia rheumatica (PMR), post-pump syndrome, primary parkinsonism, prostatitis, pure red cell aplasia, primary

adrenal insufficiency, recurrent neuromyelitis optica, restenosis, rheumatic heart disease, SAPHO (synovitis, acne, pustulosis, hyperostosis, and osteitis), scleroderma, secondary amyloidosis, shock lung, scleritis, sciatica, secondary adrenal insufficiency, silicone associated connective tissue disease, Sneddon-Wilkinson dermatosis, spondilitis ankylosans, Stevens-Johnson Syndrome (SJS), systemic inflammatory response syndrome, temporal arteritis, toxoplasmic retinitis, toxic epidermal necrolysis, transverse myelitis, TRAPS (Tumor Necrosis Factor Receptor-Associated Periodic Syndrome, Type 1 allergic reaction, Type II diabetes, usual interstitial pneumonia (UIP), vasculitis, vernal conjunctivitis, viral retinitis, Vogt-Koyanagi-Harada syndrome (VKH syndrome), wet macular degeneration, or wound healing.

69. The use of the binding protein of any one of claims 1-16 or the antibody construct of any one of claims 17-26 in the manufacture of a medicament for treating a patient suffering from a disorder in which prostaglandin E_2 is detrimental, wherein the binding protein or antibody construct is formulated for administration, concurrently or sequentially, with a second agent, wherein the second agent is methotrexate; leflunomide; a corticosteroid; prednisone; cortisone; anti-malarial medications; hydroxychloroquine; gold; sulfasalazine; penicillamine; cyclophosphamide, cyclosporine; minocycline; acetaminophen; aspirin; ibuprofen; naproxen; celecoxib; Infliximab; etanercept; abatacept; rituximab; anakinra; a biologic agent or an oral delivery agent targeting IL-6, IL-6R, IL-17, IL-18, IL-23, or B7.1/B7.2; a steroid; artificial joint fluid; synvisc; hyalgan; asacol; azulfidine; budesonide; entocort; flagyl; imuran; mercaptopurine; metronidazole; protostat; purinethol; remicade; acetocot; acetylsalicylic acid; acuprin 81; adalimumab; aleve; amcort; anaprox; aristocort; aspirtab; azmacort; bufferin; buffex; cataflam; celebrex; clinoril; diclofenac; dipentum; easprin; indocin; indomethacin; triamcinolone; voltaren; Avonex; Azasan; Azathioprine; Betaseron; Bubbli-Pred; Copaxone; Cotolone; Glatiramer; Interferon Beta-1a; Interferon Beta-1b Solution; Key-Pred; Key-Pred SP; Mitoxantrone; Natalizumab; Novantrone; Orapred; Orapred ODT; Pediapred; Pred-Ject-50; Predacort 50; Predalone 50; Predate-50; Prednisolone; Prelone; Rebif; Tysabri; Abraxane; Adriamycin; Adrucil; Aldara; Alemtuzumab; Alimta; Aminolevulinic Acid; Anastrozole; Aprepitant; Arimidex; Aromasin; Arranon; Arsenic Trioxide; Avastin (Bevacizumab); Azacitidine; Bevacizumab; Bexarotene; Bortezomib; Campath (Alemtuzumab); Camptosar (Irinotecan Hydrochloride); Capecitabine; Carboplatin; Cetuximab; Cisplatin; Clafen (Cyclophosphamide);

Clofarabine; Clofarex (Clofarabine); Clolar (Clofarabine); Cytarabine; Cytosar-U (Cytarabine); Cytoxan (Cyclophosphamide); Dacogen (Decitabine); Dasatinib; Decitabine; DepoCyt (Liposomal Cytarabine); DepoFoam (Liposomal Cytarabine); Dexrazoxane Hydrochloride; Docetaxel; Doxil (Doxorubicin Hydrochloride Liposome); Doxorubicin Hydrochloride; Doxorubicin Hydrochloride Liposome; Dox-SL (Doxorubicin Hydrochloride Liposome); Efudex (Fluorouracil); Ellence (Epirubicin Hydrochloride); Eloxatin (Oxaliplatin); Emend (Aprepitant); Epirubicin Hydrochloride; Erbitux (Cetuximab); Erlotinib Hydrochloride; Evacet (Doxorubicin Hydrochloride Liposome); Evista (Raloxifene Hydrochloride); Exemestane; Faslodex (Fulvestrant); Femara (Letrozole); Fluoroplex (Fluorouracil); Fluorouracil; Fulvestrant; Gefitinib; Gemcitabine Hydrochloride; Gemtuzumab Ozogamicin; Gemzar (Gemcitabine Hydrochloride); Gleevec (Imatinib Mesylate); Herceptin (Trastuzumab); Hycamtin (Topotecan Hydrochloride); Imatinib Mesylate; Imiquimod; Iressa (Gefitinib); Irinotecan Hydrochloride; Ixabepilone; Ixempra (Ixabepilone); Keoxifene (Raloxifene Hydrochloride); Kepivance (Palifermin); Lapatinib Ditosylate; Lenalidomide; Letrozole; Levulan (Aminolevulinic Acid); LipoDox (Doxorubicin Hydrochloride Liposome); Liposomal Cytarabine; Methazolastone (Temozolomide); Mylosar (Azacitidine); Mylotarg (Gemtuzumab Ozogamicin); Nanoparticle Paclitaxel (Paclitaxel Albumin-stabilized Nanoparticle Formulation); Nelarabine; Neosar (Cyclophosphamide); Nexavar (Sorafenib Tosylate); Nilotinib; Nolvadex (Tamoxifen Citrate); Oncaspar (Pegaspargase); Oxaliplatin; Paclitaxel; Paclitaxel Albumin-stabilized Nanoparticle Formulation; Palifermin; Panitumumab; Paraplat (Carboplatin); Paraplatin (Carboplatin); Pegaspargase; Pemetrexed Disodium; Platinol-AQ (Cisplatin); Platinol (Cisplatin); Raloxifene Hydrochloride; Revlimid (Lenalidomide); Rituxan (Rituximab); Sclerosol Intrapleural Aerosol (Talc); Sorafenib Tosylate; Sprycel (Dasatinib); Sterile Talc Powder (Talc); Steritalc (Talc); Sunitinib Malate; Sutent (Sunitinib Malate); Synovir (Thalidomide); Talc; Tamoxifen Citrate; Tarabine PFS (Cytarabine); Tarceva (Erlotinib Hydrochloride); Targretin (Bexarotene); Tasigna (Nilotinib); Taxol (Paclitaxel); Taxotere (Docetaxel); Temodar (Temozolomide); Temozolomide; Temsirolimus; Thalomid (Thalidomide); Thalidomide; Totect (Dexrazoxane Hydrochloride); Topotecan Hydrochloride; Torisel (Temsirolimus); Trastuzumab; Trisenox (Arsenic Trioxide); Tykerb (Lapatinib Ditosylate); Vectibix (Panitumumab); Velcade

(Bortezomib); Vidaza (Azacitidine); Vorinostat; Xeloda (Capecitabine); Zinecard (Dexrazoxane Hydrochloride); Zoledronic Acid; Zolinza (Vorinostat); or Zometa (Zoledronic Acid).

70. The use according to claim 68, wherein the binding protein or antibody construct is formulated for parenteral, subcutaneous, intramuscular, intravenous, intrarticular, intrabronchial, intraabdominal, intracapsular, intracartilaginous, intracavitary, intracelial, intracerebellar, intracerebroventricular, intracolic, intracervical, intragastric, intrahepatic, intramyocardial, intraosteal, intrapelvic, intrapericardiac, intraperitoneal, intrapleural, intraprostatic, intrapulmonary, intrarectal, intrarenal, intraretinal, intraspinal, intrasynovial, intrathoracic, intrauterine, intravesical, bolus, vaginal, rectal, buccal, sublingual, intranasal, and/or transdermal administration.

We Claim:

1. A binding protein comprising an antigen-binding domain capable of binding prostaglandin E_2 (PGE2), wherein said antigen-binding domain comprises heavy chain variable domain complementarity determining regions (CDRs): GYTFTKYWLG (SEQ ID NO: 54), DIYPGYDYTHYNEKFKD (SEQ ID NO: 55), and SDGSSTY (SEQ ID NO: 56); and light chain variable domain CDRs: TSSQNIVHSNGNTYLE (SEQ ID NO: 57), KVSNRFSG (SEQ ID NO: 58), and FQVSHVPYT (SEQ ID No: 59).

2. The binding protein of claim 1, wherein the binding protein further comprises human acceptor framework sequences.

3. The binding protein of claim 1 or claim 2, wherein the binding protein

(a) is capable of modulating a biological function of prostaglandin E_2;

(b) is capable of neutralizing prostaglandin E_2;

(c) is capable of preventing the binding of prostaglandin E_2 to one or more prostaglandin E_2 receptors selected from the group consisting of EP1, EP2, EP3, and EP4;

(d) is capable of preventing the binding of prostaglandin E_2 to prostaglandin E_2 receptors EP1, EP2, EP3, and EP4;

(e) is capable of binding prostaglandin E_2 with an EC_{50} selected from the group consisting of about $1x10^{-6}$ to about $1x10^{-7}$ M, about $1x10^{-7}$ to about $1x10^{-8}$ M, about $1x10^{-8}$ to about $1x10^{-9}$ M, about $1x10^{-9}$ to about $1x10^{-10}$ M, about $1x10^{-10}$ to about $1x10^{-11}$ M and about $1x10^{-11}$ to about $1x10^{-12}$ M using an ELISA assay; and/or

(f) is capable of inhibiting calcium influx induced by prostaglandin E_2 to the prostaglandin E_2 receptor EP4 in an EP4 receptor mediated FLIPR assay with an IC_{50} selected from the group consisting of about $1x10^{-6}$ to about $1x10^{-7}$ M, about $1x10^{-7}$ to about $1x10^{-8}$ M, about $1x10^{-8}$ to about $1x10^{-9}$ M, about $1x10^{-9}$ to about $1x10^{-10}$ M, about $1x10^{-10}$ to about $1x10^{-11}$ M, and about $1x10^{-11}$ to about $1x10^{-12}$ M.

4. The binding protein of any one of claims 1-3, wherein the binding protein has been affinity maturated.

5. The binding protein of any one of claims 1-4, wherein the binding protein comprises: SEQ ID NOS: 60 and 61,

SEQ ID NOS: 62 and 63,

SEQ ID NOS: 64 and 65,

SEQ ID NOS: 66 and 67,

SEQ ID NOS: 68 and 69,

SEQ ID NOS: 70 and 71,

SEQ ID NOS: 72 and 73,

SEQ ID NOS: 74 and 75,

SEQ ID NOS: 76 and 77,

SEQ ID NOS: 78 and 79, or

SEQ ID NOS: 80 and 81.

6. The binding protein of any one of claims 1-5, wherein the binding protein is selected from the group consisting of an immunoglobulin molecule, a disulfide linked Fv, a monoclonal antibody, a scFv, a chimeric antibody, a single domain antibody, a CDR-grafted antibody, a diabody, a humanized antibody, a multispecific antibody, a Fab, a dual specific antibody, a Fab', a bispecific antibody, a F(ab')2, and a Fv.

7. The binding protein according to any one of claims 1-6, further comprising a heavy chain immunoglobulin constant domain selected from the group consisting of a human IgM constant domain, a human IgG4 constant domain, a human IgG1 constant domain, a human IgE constant domain, a human IgG2 constant domain, a human IgG3 constant domain, and a human IgA constant domain.

8. The binding protein according to claim 7, wherein the immunoglobulin constant domains comprise an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-4.

9. A bispecific binding protein comprising at least one binding protein according to any one of claims 1-8.

10. The binding protein according to any one of claims 1-9, wherein

(a) the binding protein possesses a human glycosylation pattern;

(b) the binding protein is crystallized;

(c) the binding protein is part of a carrier-free pharmaceutical controlled release crystallized antibody;

(d) the binding protein is part of an antibody construct that has a greater half-life in vivo than the soluble counterpart of said antibody construct; and/or

(e) the binding protein of (a)-(d) retains biological activity after crystallization.

11. A binding protein of any one of claims 1-10, wherein the binding protein is conjugated to an agent selected from the group consisting of an immunoadhesion molecule, an imaging agent, a therapeutic agent, and a cytotoxic agent, wherein the agent is

(a) an imaging agent selected from the group consisting of a radiolabel, optionally selected from the group consisting of ^{3}H, ^{14}C, ^{35}S, ^{90}Y, ^{99}Tc, ^{111}In, ^{125}I, ^{131}I, ^{177}Lu, ^{166}Ho, and ^{153}Sm, an enzyme, a fluorescent label, a luminescent label, a bioluminescent label, a magnetic label, and biotin; and/or

(b) a therapeutic or cytotoxic agent selected from the group consisting of an anti-metabolite, an alkylating agent, an antibiotic, a growth factor, a cytokine, an anti-angiogenic agent, an anti-mitotic agent, an anthracycline, a toxin, and an apoptotic agent.

12. An isolated nucleic acid encoding the binding protein of any one of claims 1-10.

13. A vector comprising the isolated nucleic acid according to claim 12.

14. The vector of claim 13, wherein the vector is selected from the group consisting of pcDNA, pTT, pTT3, pEFBOS, pBV, pN, pBJ, and pA2.

15. A host cell comprising the vector of claim 14, wherein the host cell is not present in a human.

16. The host cell of claim 15, wherein the host cell is selected from the group consisting of a prokaryotic cell, an Escherichia coli cell, a eukaryotic cell, a protist cell, an animal cell, a plant cell, a fungal cell, a mammalian cell, an avian cell, an insect cell, a CHO cell, a COS cell, a HEK293 cell, a yeast cell, a Saccharomyces cerevisiae cell, and an insect Sf9 cell.

17. An *in vitro* method of producing a protein capable of binding prostaglandin E2, the method comprising the step of culturing the host cell of claim 15 in culture medium under conditions sufficient to produce a binding protein capable of binding prostaglandin E2.

18. A composition for the release of a binding protein, the composition comprising:

(a) a crystallized protein according to claim 10;

(b) an ingredient selected from the group consisting of albumin, sucrose, trehalose, lactitol, gelatin, hydroxypropyl-β-cyclodextrin, methoxypolyethylene glycol, and polyethylene glycol; and/or

(c) a polymeric carrier selected from the group consisting of a poly (acrylic acid), a poly (cyanoacrylate), a poly (amino acid), a poly (anhydride), a poly (depsipeptide), a poly (ester), a poly (lactic acid), a poly (lactic-co-glycolic acid) or PLGA, a poly (b-hydroxybutryate), poly (caprolactone), a poly (dioxanone); a poly (ethylene glycol), a poly ((hydroxypropyl) methacrylamide, a poly [(organo) phosphazene], a poly (ortho ester), a poly (vinyl alcohol), a poly (vinylpyrrolidone), a maleic anhydride- alkyl vinyl ether copolymer, a pluronic polyol, albumin, alginate, cellulose, a cellulose derivative, collagen, fibrin, gelatin, hyaluronic acid, an oligosaccharide, a glycaminoglycan, a sulfated polysaccharide, and a blend and/or a copolymer thereof.

19. A pharmaceutical composition comprising the binding protein of any one of claims 1-10 or the antibody conjugate of claim 11 and a pharmaceutically acceptable carrier.

20. The pharmaceutical composition of claim 19, wherein the pharmaceutically acceptable carrier functions as an adjuvant useful to increase the absorption or dispersion of the binding protein, wherein the adjuvant is hyaluronidase.

21. The pharmaceutical composition of claim 19 or claim 20, further comprising at least one additional therapeutic agent for treating a disorder in which prostaglandin E2 activity is detrimental.

22. The pharmaceutical composition of claim 21, wherein the additional agent is selected from the group consisting of an imaging agent, a cytotoxic agent, an angiogenesis inhibitor, a kinase inhibitor, a co-stimulation molecule blocker, an adhesion molecule blocker, an anti-cytokine antibody or functional fragment thereof, methotrexate, cyclosporine, rapamycin, FK506, a detectable label or reporter, a TNF antagonist, an anti-rheumatic, a muscle relaxant, a narcotic, a non-steroid anti-inflammatory drug (NSAID), an analgesic, an anesthetic, a sedative, a local anesthetic, a neuromuscular blocker, an antimicrobial, an antipsoriatic, a corticosteroid, an anabolic steroid, an erythropoietin, an immunization, an immunoglobulin, an immunosuppressive, a growth hormone, a hormone replacement drug, a radiopharmaceutical, an antidepressant, an antipsychotic, a stimulant, an asthma medication, a beta agonist, an inhaled steroid, an oral steroid, an epinephrine or analog thereof, a cytokine, and a cytokine antagonist.

23. Use of the binding protein of any one of claims 1-10 or the antibody conjugate of claim 11 in the preparation of a medicament for reducing prostaglandin E2 activity in a human subject suffering from a disorder in which prostaglandin activity is detrimental.

24. Use of the binding protein of any one of claims 1-10 or the antibody conjugate of claim 11 in the preparation of a medicament for treating a subject for at least one disease or disorder associated with detrimental prostaglandin E2 activity.

25. The use of claim 24, wherein the disorder is selected from the group consisting of an autoimmune disease, an inflammatory disease, a tumor, rheumatoid arthritis, allergic arthritis, Guillain Barre syndrome, infectious mononucleosis, a viral lymphadenopathy, a herpes virus infection, multiple sclerosis, a demyelinating disease, a hematological disorder, hemolytic anemia, thrombocytopenia, an endocrinologic disorder, diabetes mellitus, Addison's disease, idiopathic hypoparathyroidism, chronic lymphocytic thyroiditis, a collagen disorder, systemic lupus erythematosus, a reproductive disorder, amenorrhoea, infertility, recurrent abortion, eclampsia, a headneck tumor, lung cancer, gastric cancer, prostate cancer, pancreatic cancer, a gastrointestinal organ disease, inflammatory bowel disease, ulcerative colitis, Crohn's disease, pain, pain related with osteoarthritis, an ocular disorder, and age-related mascular degeneration.

26. The use of claim 24, wherein the disorder is selected from the group consisting of rheumatoid arthritis, osteoarthritis, juvenile chronic arthritis, septic arthritis, Lyme arthritis, psoriatic arthritis, reactive arthritis, spondyloarthropathy, systemic lupus erythematosus, Crohn's disease, ulcerative colitis, inflammatory bowel disease, insulin dependent diabetes mellitus, thyroiditis, asthma, allergic diseases, psoriasis, dermatitis scleroderma, graft versus host disease, organ transplant rejection, acute or chronic inunune disease associated with organ transplantation, sarcoidosis, atherosclerosis, disseminated intravascular coagulation, Kawasaki's disease, Grave's disease, nephrotic syndrome, chronic fatigue syndrome, Wegener's granulomatosis, Henoch-Schoenlein purpurea, microscopic vasculitis of the kidneys, chronic active hepatitis, uveitis, septic shock, toxic shock syndrome, sepsis syndrome, cachexia, infectious diseases, parasitic diseases, acquired immunodeficiency syndrome, acute transverse myelitis, Huntington's chorea, Parkinson's disease, Alzheimer's disease, stroke, primary biliary cirrhosis, hemolytic anemia, malignancies, heart failure, myocardial infarction, Addison's disease, sporadic, polyglandular deficiency type I and polyglandular deficiency type IT, Schmidt's syndrome, adult respiratory distress syndrome, acute respiratory distress syndrome, alopecia, alopecia areata, seronegative arthropathy, arthropathy, Reiter's disease, psoriatic arthropathy, ulcerative colitic arthropathy, enteropathic synovitis, chlamydia, yersinia and salmonella associated arthropathy, spondyloarthopathy, atheromatous disease/arteriosclerosis, atopic allergy, autoimmune bullous disease, pemphigus

vulgaris, pemphigus foliaceus, pemphigoid, linear IgA disease, autoimmune haemolytic anaemia, Coombs positive haemolytic anaemia, acquired pernicious anaemia, juvenile pernicious anaemia, myalgic encephalitis/Royal Free Disease, chronic mucocutaneous candidiasis, giant cell arteritis, primary sclerosing hepatitis, cryptogenic autoimmune hepatitis, Acquired Immunodeficiency Disease Syndrome, Acquired Immunodeficiency Related Diseases, Hepatitis B, Hepatitis C, common varied immunodeficiency, common variable hypogammglobulinaemia, dilated cardiomyopathy, female infertility, ovarian failure, premature ovarian failure, fibrotic lung disease, cryptogenic fibrosing alveolitis, post-inflammatory interstitial lung disease, interstitial pneumonitis, connective tissue disease associated interstitial lung disease, mixed connective tissue disease associated lung disease, systemic sclerosis associated interstitial lung disease, rheumatoid arthritis associated interstitial lung disease, systemic lupus erythematosus associated lung disease, dermatomyositis/polymyositis associated lung disease, Sjogren's disease associated lung disease, ankylosing spondylitis associated lung disease, vasculitic diffuse lung disease, haemosiderosis associated lung disease, drug-induced interstitial lung disease, fibrosis, radiation fibrosis, bronchiolitis obliterans, chronic eosinophilic pneumonia, lymphocytic infiltrative lung disease, post-infectious interstitial lung disease, gouty arthritis, autoimmune hepatitis, type- I autoimmune hepatitis, classical autoimmune hepatitis, lupoid hepatitis, type-2 autoimmune hepatitis, anti-LKM antibody hepatitis, autoimmune mediated hypoglycaemia, type B insulin resistance with acanthosis nigricans, hypoparathyroidism, acute immune disease associated with organ transplantation, chronic immune disease associated with organ transplantation, osteoarthrosis, primary sclerosing cholangitis, psoriasis type I, psoriasis type 2, idiopathic leucopaenia, autoimmune neutropaenia, renal disease NOS, glomerulonephritides, microscopic vasulitis of the kidneys, Iyme disease, discoid lupus erythematosus, male infertility idiopathic or NOS, sperm autoimmunity, multiple sclerosis, sympathetic ophthalmia, pulmonary hypertension secondary to connective tissue disease, Goodpasture's syndrome, pulmonary manifestation of polyarteritis nodosa, acute rheumatic fever, rheumatoid spondylitis, Still's disease, systemic sclerosis, Sjorgren's syndrome, Takayasu's disease/arteritis, autoimmune thrombocytopaenia, idiopathic thrombocytopaenia, autoimmune thyroid disease, hyperthyroidism, goitrous autoimmune hypothyroidism (Hashimoto's disease), atrophic autoimmune hypothyroidism, primary myxoedema, phacogenic uveitis, primary vasculitis, vitiligo acute liver disease, chronic liver diseases, alcoholic cirrhosis, alcohol-induced liver injury, choleosatatis, idiosyncratic liver disease, Drug-Induced hepatitis, Non-alcoholic Steatohepatitis,

allergy and asthma, group B streptococci (GBS) infection, mental disorders, depression, schizophrenia, Th2 Type and Thl Type mediated diseases, acute and chronic pain, different forms of pain, and cancers such as lung, breast, stomach, bladder, colon, pancreas, ovarian, prostate and rectal cancer and hematopoietic malignancies, leukemia, lymphoma, Abetalipoprotemia, Acrocyanosis, acute and chronic parasitic or infectious processes, acute leukemia, acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), acute or chronic bacterial infection, acute pancreatitis, acute renal failure, adenocarcinomas, aerial ectopic beats, AIDS dementia complex, alcohol-induced hepatitis, allergic conjunctivitis, allergic contact dermatitis, allergic rhinitis, allograft rejection, alpha-I-antitrypsin deficiency, amyotrophic lateral sclerosis, anemia, angina pectoris, anterior horn cell degeneration, anti cd3 therapy, antiphospholipid syndrome, anti-receptor hypersensitivity reactions, aortic and peripheral aneurysms, aortic dissection, arterial hypertension, arteriosclerosis, arteriovenous fistula, ataxia, atrial fibrillation (sustained or paroxysmal), atrial flutter, atrioventricular block, B cell lymphoma, bone graft rejection, bone marrow transplant rejection, bundle branch block, Burkitt's lymphoma, burns, cardiac arrhythmias, cardiac stun syndrome, cardiac tumors, cardiomyopathy, cardiopulmonary bypass inflammation response, cartilage transplant rejection, cerebellar cortical degenerations, cerebellar disorders, chaotic or multifocal atrial tachycardia, chemotherapy associated disorders, chronic myelocytic leukemia, chronic alcoholism, chronic inflammatory pathologies, chronic lymphocytic leukemia, chronic obstructive pulmonary disease, chronic salicylate intoxication, colorectal carcinoma, congestive heart failure, conjunctivitis, contact dermatitis, cor pulmonale, coronary artery disease, Creutzfeldt-Jakob disease, culture negative sepsis, cystic fibrosis, cytokine therapy associated disorders, dementia pugilistica, demyelinating diseases, dengue hemorrhagic fever, dermatitis, dermatologic conditions, diabetes, diabetes mellitus, diabetic ateriosclerotic disease, diffuse Lewy body disease, dilated congestive cardiomyopathy, disorders of the basal ganglia, Down's Syndrome in middle age, drug- induced movement disorders induced by drugs which block CNS dopamine receptors, drug sensitivity, eczema, encephalomyelitis, endocarditis, endocrinopathy, epiglottitis, Epstein-Barr virus infection, erythromelalgia, extrapyramidal and cerebellar disorders, familial hematophagocytic lymphohistiocytosis, fetal thymus implant rejection, Friedreich's ataxia, functional peripheral arterial disorders, fungal sepsis, gas gangrene, gastric ulcer, glomerular nephritis, graft rejection of any organ or tissue, gram negative sepsis, gram positive sepsis, granulomas due to intracellular organisms, hairy cell leukemia, Hallerrorden-

Spatz disease, Hashimoto's thyroiditis, hay fever, heart transplant rejection, hemachromatosis, hemodialysis, hemolytic uremic syndrome/thrombolytic thrombocytopenic purpura, hemorrhage, hepatitis (A), His bundle arrythmias, HIV infection/HIV neuropathy, Hodgkin's disease, hyperkinetic movement disorders, hypersensitivity reactions, hypersensitivity pneumonitis, hypertension, hypokinetic movement disorders, hypothalamic-pituitary-adrenal axis evaluation, idiopathic Addison's disease, idiopathic pulmonary fibrosis, antibody mediated cytotoxicity, Asthenia, infantile spinal muscular atrophy, inflammation of the aorta, influenza a, ionizing radiation exposure, iridocyclitis, uveitis, optic neuritis, ischemia-reperfusion injury, ischemic stroke, juvenile rheumatoid arthritis, juvenile spinal muscular atrophy, Kaposi's sarcoma, kidney transplant rejection, legionella, leishmaniasis, leprosy, lesions of the corticospinal system, lipedema, liver transplant rejection, lymphederma, malaria, malignant Lymphoma, malignant histiocytosis, malignant melanoma, meningitis, meningococcemia, metabolic/idiopathic, migraine headache, mitochondrial multi-system disorder, mixed connective tissue disease, monoclonal gammopathy, multiple myeloma, multiple systems degeneration, Mencel degeneration, Dejerine-Thomas degeneration, Shi-Drager degeneration, Machado-Joseph degeneration, myasthenia gravis, mycobacterium avium intracellulare, mycobacterium tuberculosis, myelodyplastic syndrome, myocardial infarction, myocardial ischemic disorders, nasopharyngeal carcinoma, neonatal chronic lung disease, nephritis, nephrosis, neurodegenerative diseases, neurogenic I muscular atrophies, neutropenic fever, non-Hodgkin's lymphoma, occlusion of the abdominal aorta and its branches, occlusive arterial disorders, okt3 therapy, orchitis, epidydimitis, vasectomy reversal procedures, organomegaly, osteoporosis, pancreas transplant rejection, pancreatic carcinoma, paraneoplastic syndrome, hypercalcemia of malignancy, parathyroid transplant rejection, pelvic inflammatory disease, perennial rhinitis, pericardia! disease, peripheral atherosclerotic disease, peripheral vascular disorders, peritonitis, pernicious anemia, pneumocystis carinii pneumonia, pneumonia, POEMS syndrome, post perfusion syndrome, post pump syndrome, post-MI cardiotomy syndrome, preeclampsia, progressive supranucleo palsy, primary pulmonary hypertension, radiation therapy, Raynaud's phenomenon and disease, Raynoud's disease, Refsum's disease, regular narrow QRS tachycardia, renovascular hypertension, reperfusion injury, restrictive cardiomyopathy, sarcomas, scleroderma, senile chorea, senile dementia of Lewy body type, seronegative arthropathies, shock, sickle cell anemia, skin allograft rejection, skin changes syndrome, small bowel transplant rejection, solid tumors, specific arrhythmias, spinal ataxia, spinocerebellar degenerations,

streptococcal myositis, structural lesions of the cerebellum, subacute sclerosing panencephalitis, Syncope, syphilis of the cardiovascular system, systemic anaphylaxis, systemic inflammatory response syndrome, systemic onset juvenile rheumatoid arthritis, T-cell or FAB ALL, Telangiectasia, thromboangitis obliterans, thrombocytopenia, toxicity, transplants, trauma, hemorrhage, type III hypersensitivity reactions, type IV hypersensitivity, unstable angina, uremia, urosepsis, urticaria, valvular heart diseases, varicose veins, vasculitis, venous diseases, venous thrombosis, ventricular fibrillation, viral and fungal infections, vital encephalitis/aseptic meningitis, vital-associated hemaphagocytic syndrome, Wernicke-Korsakoff syndrome, Wilson's disease, xenograft rejection of any organ, xenograft rejection of any tissue, acute coronary syndromes, acute idiopathic polyneuritis, Acute Inflammatory Demyelinating Polyradiculoneuropathy, Acute ischemia, Adult Still's Disease, Alopecia areata, Anaphylaxis, Anti-Phospholipid Antibody Syndrome, Aplastic anemia, Arteriosclerosis, Atopic eczema, Atopic dermatitis, Autoimmune dermatitis, Autoimmune disorder associated with Streptococcus infection, Autoimmune Enteropathy, Autoimmune hearingloss, Autoimmune Lymphoproliferative Syndrome, Autoimmune myocarditis, Autoimmune premature ovarian failure, Blepharitis, Bronchiectasis, Bullous pemphigoid, Cardiovascular Disease, Catastrophic Antiphospholipid Syndrome, Celiac Disease, Cervical Spondylosis, Chronic ischemia, Cicatricial pemphigoid, Clinically isolated Syndrome with Risk for Multiple Sclerosis, Conjunctivitis, Childhood Onset Psychiatric Disorder, Chronic obstructive pulmonary disease, Dacryocystitis, dermatomyositis, Diabetic retinopathy, Diabetes mellitus, Disk herniation, Disk prolapse, Drug induced immune hemolytic anemia, Endocarditis, Endometriosis, endophthalmitis, Episcleritis, Erythema multiforme, erythema multiforme major, Gestational pemphigoid, Guillain-Barre Syndrome, Hay Fever, Hughes Syndrome, Idiopathic Parkinson's Disease, idiopathic interstitial pneumonia, IgE-mediated Allergy, Immune hemolytic anemia, Inclusion Body Myositis, Infectious ocular inflammatory disease , Inflammatory demyelinating disease, Inflammatory heart disease, Inflammatory kidney disease, IPF/UIP, Iritis, Keratitis, Keratojuntivitis sicca, Kussmaul disease, Kussmaul-Meier Disease, Landry's Paralysis, Langerhan's Cell Histiocytosis, Livedo reticularis, Macular Degeneration, Microscopic Polyangiitis, Morbus Bechterev, Motor Neuron Disorders, Mucous membrane pemphigoid, Multiple Organ failure, Myasthenia Gravis, Myelodysplastic Syndrome, Myocarditis, Nerve Root Disorders, Neuropathy, Non-A Non-B Hepatitis, Optic Neuritis, Osteolysis, Pauciarticular JRA, peripheral artery occlusive disease, peripheral vascular

disease, peripheral artery disease (PAD), Phlebitis, Polyarteritis nodosa, periarteritis nodosa, Polychondritis, Polymyalgia Rheumatica, Poliosis, Polyarticular JRA, Polyendocrine Deficiency Syndrome, Polymyositis, polymyalgia rheumatica, Post-Pump Syndrome, primary parkinsonism, Prostatitis, Pure red cell aplasia, Primary Adrenal Insufficiency, Recurrent Neuromyelitis Optica, Restenosis, Rheumatic heart disease, SAPHO, Scleroderma, Secondary Amyloidosis, Shock lung, Scleritis, Sciatica, Secondary Adrenal Insufficiency, Silicone associated connective tissue disease, Sneddon-Wilkinson Dermatosis, spondilitis ankylosans, Stevens-Johnson Syndrome, Systemic inflammatory response syndrome, Tempoml arteritis, toxoplasmic retinitis, toxic epidermal necrolysis, Transverse myelitis, TRAPS, Type I allergic reaction, Type II Diabetes, Urticaria, Usual interstitial pneumonia, Vasculitis, Vernal conjunctivitis, viral retinitis, Vogt-Koyanagi-Harada syndrome, Wet macular degeneration, and Wound healing.

27. The use of claim 24, wherein the medicament is formulated for administering the binding protein before, concurrently, or after the administration of a second agent, wherein the second agent is selected from the group consisting of a rheumatoid arthritis or juvenile rheumatoid arthritis drug selected from the group consisting of methotrexate, leflunomide, low doses of corticosteroids, prednisone, cortisone, anti-malarial medications, hydroxychloroquine, gold, slfasalazine, penicillamine, cyclophosphamide, cyclosporine, minocycline, acetaminophen, aspirin, ibuprofen, naproxen, celecoxib, Infliximab, etanercept, adalimumab, abatacept, rituximab, anakinra, biologic agents and oral delivery agents targeting IL-6, IL-6R, IL-17, IL-18, IL-23, and B7.1/B7.2; an osteoarthritis drug selected from the group consisting of acetaminophen, aspirin, ibuprofen, naproxen, celecoxib, steroids, artificial joint fluid, synvisc, and hyalgan; a Crohn's disease drug selected from the group consisting of adalimumab, azasan, asacol, azathioprine, azulfidine, budesonide, entocort, flagyl, imuran, infliximab, mercaptopurine, metronidazole, protostat, purinethol, remicade, and sulfasalazine; an ankylosing spondylitis drug selected from the group consisting of acetocot, acetylsalicylic acid, acuprin 81, adalimumab, aleve, amcort, anaprox, aristocort, aspirin, aspirtab, azmacort, bufferin, buffex, cataflam, celebrex, clinoril, cortisone, diclofenac, dipentum, easprin, etanercept, indocin, indomethacin, infliximab, naproxen, remicade, triamcinolone, and voltaren; a multiple sclerosis drug selected from the group consisting of Avonex, Azasan, Azathioprine, Betaseron, Bubbli-Pred, Copaxone, Cotolone, Glatiramer, Imuran, Interferon Beta-! a, Interferon Betalb Solution, Key-Pred, Key-Pred SP, Mitoxantrone, Natalizumab, Novantrone, Orapred, Orapred ODT, Pediapred, Pred-Ject-50, Predacort 50,

Predalone 50, Predate-50, Prednisolone, Prelone, Rebif, and Tysabri; a cancer or malignancy drug selected from the group consisting of Abraxane, Adriamycin, Adrucil, Aldara, Alemtuzumab, Alimta, Aminolevulinic Acid, Anastrozole, Aprepitant, Arimidex, Aromasin, Arran on, Arsenic Trioxide, A vastin (Bevacizumab), Azacitidine, Bevacizumab, Bexarotene, Bortezomib, Campath (Alemtuzumab), Camptosar (Irinotecan Hydrochloride), Capecitabine, Carboplatin, Cetuximab, Cisplatin, Clafen (Cyclophosphamide), Clofarabine, Clofarex (Clofarabine), Clolar (Clofarabine), Cyclophosphamide, Cytarabine, Cytosar-U (Cytarabine), Cytoxan (Cyclophosphamide), Dacogen (Decitabine), Dasatinib, Decitabine, DepoCyt (Liposomal Cytarabine), DepoFoam (Liposomal Cytarabine), Dexrazoxane Hydrochloride, Docetaxel, Doxil (Doxorubicin Hydrochloride Liposome), Doxorubicin Hydrochloride, Doxorubicin Hydrochloride Liposome, Dox-SL (Doxorubicin Hydrochloride Liposome), Efudex (Fluorouracil), Ellence (Epirubicin Hydrochloride), Eloxatin (Oxaliplatin), Emend (Aprepitant), Epirubicin Hydrochloride, Erbitux (Cetuximab), Erlotinib Hydrochloride, Evacet (Doxorubicin Hydrochloride Liposome), Evista (Raloxifene Hydrochloride), Exemestane, Faslodex (Fulvestrant),Femara (Letrozole), Fluoroplex (Fluorouracil), Fluorouracil, Fulvestrant, Gefitinib, Gemcitabine Hydrochloride, Gemtuzumab Ozogamicin, Gemzar (Gemcitabine Hydrochloride), Gleevec (Imatinib Mesylate), Herceptin (Trastuzumab), Hycamtin (Topotecan Hydrochloride), Imatinib Mesylate, Imiquimod, Iressa (Gefitinib), Irinotecan Hydrochloride, Ixabepilone, Ixempra (Ixabepilone), Keoxifene (Raloxifene Hydrochloride), Kepivance (Palifermin), Lapatinib Ditosylate, Lenalidomide, Letrozole, Levulan (Aminolevulinic Acid), LipoDox (Doxorubicin Hydrochloride Liposome), Liposomal Cytarabine, Methazolastone (Temozolomide), Mylosar (Azacitidine), Mylotarg (Gemtuznmab Ozogamicin), Nanoparticle Paclitaxel (Paclitaxel Albuminstabilized Nanoparticle Formulation), Nelarabine, Neosar (Cyclophosphamide), Nexavar (Sorafenib Tosylate), Nilotinib, Nolvadex (Tamoxifen Citrate), Oncaspar (Pegaspargase), Oxaliplatin, Paclitaxel, Paclitaxel Albumin-stabilized Nanoparticle Formulation, Palifermin, Panitumumab, Paraplat (Carboplatin), Paraplatin (Carboplatin), Pegaspargase, Pemetrexed Disodium, Platinol-AQ (Cisplatin), Platinol (Cisplatin), Raloxifene Hydrochloride, Revlimid (Lenalidomide), Rituxan (Rituximab), Rituximab, Sclerosol Intrapleural Aerosol (Talc), Sorafenib Tosylate, Sprycel (Dasatinib), Sterile Talc Powder (Talc), Steritalc (Talc), Sunitinib Malate, Sutent (Sunitinib Malate), Synovir (Thalidomide), Talc, Tamoxifen Citrate, TarabinePFS (Cytarabine), Tarceva (Erlotinib Hydrochloride), Targretin (Bexarotene), Tasigna (Nilotinib), Taxol (Paclitaxel), Taxotere (Docetaxel), Temodar

(Temozolomide), Temozolomide, Temsirolimus, Thalomid (Thalidomide), Thalidomide, Totect (Dexrazoxane Hydrochloride), Topotecan Hydrochloride, Torisel (Temsirolimus), Trastuznmab, Trisenox (Arsenic Trioxide), Tykerb (Lapatinib Ditosylate), Vectibix (Panitumumab), Velcade (Bortezomib), Vidaza (Azacitidine), Vorinostat,Xeloda (Capecitabine), Zinecard (Dexrazoxane Hydrochloride), Zoledronic Acid, Zolinza (Vorinostat), and Zometa (Zoledronic Acid).

28. The use according to claim 24, wherein the medicament is formulated for administering to the subject by at least one mode selected from parenteral, subcutaneous, intramuscular, intravenous, intrarticular, intrabronchial, intraabdominal, intracapsular, intracartilaginous, intracavitary, intracelial, intracerebellar, intracerebroventricular, intracolic, intracervical, intragastric, intrahepatic, intramyocardial, intraosteal, intrapelvic, intrapericardiac, intraperitoneal, intrapleural, intraprostatic, intrapulmonary, intrarectal, intrarenal, intraretinal, intraspinal, intrasynovial, intrathoracic, intrauterine, intravesical, bolus, vaginal, rectal, buccal, sublingual, intranasal, and transdermal.

29. A method of determining the presence of PGE2 or fragment thereof in a test sample by an immunoassay, wherein the immunoassay comprises contacting the test sample with at least one binding protein according to any one of claims 1-10, and at least one detectable label, wherein the method optionally comprises:

(a) a direct assay comprising:

(i) contacting the test sample with at least one binding protein, wherein the binding protein binds to an epitope on the PGE2 or fragment thereof so as to form a first complex;

(ii) contacting the complex with the at least one detectable label, wherein the detectable label binds to the binding protein or an epitope on the PGE2 or fragment thereof that is not bound by the binding protein to form a second complex; and

(iii) detecting the presence of the PGE2 or fragment thereof in the test sample based on the signal generated by the detectable label in the second complex, wherein the presence of the PGE2 or fragment thereof is directly correlated with the signal generated by the detectable label,

or

(b) an indirect assay comprising:

(i) contacting the test sample with at least one binding protein, wherein the binding protein binds to an epitope on the PGE2 or fragment thereof so as to form a first complex;

(ii) contacting the complex with the at least one detectable label, wherein the detectable label competes with the PGE2 or fragment thereof for binding to the binding protein so as to form a second complex; and

(iii) detecting the presence of the PGE2 or fragment thereof in the test sample based on the signal generated by the detectable label in the second complex, wherein the presence of the PGE2 or fragment thereof is indirectly correlated with the signal generated by the detectable label,

wherein if the test sample is from a patient, the method optionally further comprises diagnosing, prognosticating, or assessing the efficiency of therapeutic/prophylactic treatment of the patient.