WHAT IS CLAIMED IS:

1. An isolated peptide comprising an amino acid sequence of RYLLEAKEAENITTG (SEQ ID NO:1), wherein the isolated peptide is not RYLLEAKEAENITTGC (SEQ ID NO: 2), wherein the isolated peptide is no more than 23 amino acid residues long and has tissue protective activity, and wherein one amino acid residue of the amino acid sequence is optionally substituted with another amino acid.

2. The isolated peptide of claim 1, wherein the substitution is a conservative substitution.

3. The isolated peptide of claim 1, wherein the substitution is a nonconservative substitution.

4. The isolated peptide of claim 1, wherein the substitution is a substitution with an amino acid equivalent having a side chain modification or side chain substitution.

5. The isolated peptide of claim 1, wherein the amino acid sequence of the peptide consists of RYLLEAKEAENITTG (SEQ ID NO:1).

6. A pharmaceutical composition comprising the isolated peptide of any one of claims 1-5 and a pharmaceutically acceptable carrier.

7. The pharmaceutical composition of claim 6, wherein the composition is formulated for oral, intranasal, ocular, inhalational, transdermal, rectal, sublingual, or parenteral administration.

8. The pharmaceutical composition of claim 6, wherein the composition is formulated as a perfusate solution.

9. The pharmaceutical composition of any one of claims 6-8, wherein the pharmaceutical composition is for use in treating or preventing tissue damage in a subject in need thereof.

10. The pharmaceutical composition of claim 9, wherein the subject has cancer, a neoplastic disorder, ischemia, trauma, inflammation, or a disease or disorder of the central or peripheral nervous system, or wherein the subject was exposed to a toxic agent.

11. The pharmaceutical composition of any one of claims 6-8, wherein the pharmaceutical composition is for use in treating a subject suffering from inflammation, cachexia, or a disease or disorder of the central or peripheral nervous system.

12. The pharmaceutical composition of claim 11, wherein the cachexia is cancer cachexia.

13. The pharmaceutical composition of claim 9, wherein the subject has a cardiovascular disease, cardiopulmonary disease, respiratory disease, kidney disease, disease of the urinary system, disease of the reproductive system, bone disease, skin disease, gastrointestinal disease, endocrine abnormality, metabolic abnormality, or cognitive dysfunction.

14. A pharmaceutical composition comprising an effective amount of an isolated peptide comprising an amino acid sequence of RYLLEAKEAENITTG (SEQ ID NO:1), wherein the isolated peptide is not RYLLEAKEAENITTGC (SEQ ID NO: 2), wherein the isolated peptide is no more than 23 amino acid residues long and has tissue protective activity, wherein one amino acid residue of the amino acid sequence is optionally substituted with another amino acid, and wherein the pharmaceutical composition is for use in preventing, treating, ameliorating, or managing tissue damage in a subject in need thereof, wherein the subject has cancer, a neoplastic disorder, trauma, inflammation or toxic agent exposure.

15. The pharmaceutical composition of claim 14, wherein the substitution is a conservative substitution.

16. The pharmaceutical composition of claim 14, wherein the substitution is a nonconservative substitution.

17. The pharmaceutical composition of claim 14, wherein the substitution is a substitution with an amino acid equivalent having a side chain modification or side chain substitution.

18. The pharmaceutical composition of claim 14 wherein the amino acid sequence of the peptide consists of RYLLEAKEAENITTG (SEQ ID NO:1).

19. The pharmaceutical composition of any one of claims 10, and 14-18, wherein the cancer is infiltrating breast cancer, pre-invasive breast cancer, inflammatory breast cancer, Paget's disease, metastatic breast cancer, recurrent breast cancer, appendix cancer, bile duct cancer, extrahepatic bile duct cancer, colon cancer, esophageal cancer, gallbladder cancer, gastric cancer, intestinal cancer, liver cancer, pancreatic cancer, rectal cancer, stomach cancer, adrenal cancer, bladder cancer, kidney cancer, penile cancer, prostate cancer, testicular cancer, urinary cancer, cervical cancer, endometrial cancer, fallopian tube cancer, ovarian cancer, uterine cancer, vaginal cancer, vulvar cancer, eye cancer, head and neck cancer, jaw cancer, laryngeal cancer, pharyngeal cancer, oral cancer, nasal cavity cancer, salivary gland cancer, sinus cancer, throat cancer, thyroid cancer, tongue cancer, tonsil cancer, Hodgkin's disease, leukemia, acute lymphocytic leukemia, acute granulocytic leukemia, acute myelogenous leukemia, chronic lymphatic leukemia, chronic myelogenous leukemia, multiple myeloma, lymphoma, b-cell lymphoma, lymph node cancer, bone cancer, osteosarcoma, melanoma, skin cancer, basal cell cancer, squamous cell cancer, sarcoma, Ewing's sarcoma, Kaposi's sarcoma, brain cancer, astrocytoma, glioblastoma, glioma, pituitary gland cancer, spinal cord cancer, lung cancer,

adenocarcinoma, oat cell cancer, non-small cell lung cancer, small cell lung cancer, squamous cell cancer, or mesothelioma.

20. The pharmaceutical composition of any one of claims 10, and 14-18, wherein the trauma or inflammation is caused by appendicitis, blepharitis, bronchitis, bursitis, cervicitis, cholangitis, cholecystitis, chorioamnionitis, conjunctivitis, cystitis, dacryoadenitis, dermatitis, endocarditis, endometritis, epicondylitis, epididymitis, fibrositis, gastritis, gingivitis, glossitis, hidradenitis suppurativa, iritis, laryngitis, mastitis, myocarditis, myositis, nephritis, omphalitis, oophoritis, orchitis, osteitis, otitis, parotitis, pericarditis, peritonitis, pharyngitis, pleuritis, phlebitis, pneumonitis (pneumonia), prostatitis, pyelonephritis, rhinitis, salpingitis, sinusitis, stomatitis, synovitis, tonsillitis, uveitis, urethritis, vaginitis, vulvitis, asthma, systemic lupus erythematosus, myasthenia gravis, tendonitis, angiitis, chronic bronchitis, pancreatitis, osteomyelitis, rheumatoid arthritis, psoriatic arthritis, glomeronephritis, optic neuritis, temporal arteritis, encephalitis, meningitis, traverse myelitis, dermatomyositis, polymyositis, necrotizing fasciitis, hepatitis, necrotizing enterocolitis, pelvic inflammatory disease, inflammatory bowel disease, ulcerative colitis, Crohn's disease, ileitis, enteritis, proctitis, vasculitis, vascular stenosis, restenosis, hypotension, Type-1 diabetes, Kawasaki disease, Decum's disease, chronic obstructive pulmonary disease, psoriasis, atherosclerosis, scleroderma, Sjogren's syndrome, mixed connective tissue disease, rosacea, gastric ulcers, duodenal ulcers, Alzheimer's disease, adult onset Still's disease, acute retinal pigment epitheliitis, Tietze's syndrome, Bechçet's disease, white dot syndrome, acute posterior multifocal placoid pigment epitheliopathy, serpiginous choroiditis, birdshot chorioretinopathy, multifocal choroiditis with panuveitis, diffuse subretinal fibrosis syndrome, punctate inner choroidopathy, multiple evanescent white dot syndrome, diffuse unilateral subacute neuroretinitis, granuloma annulare, irritable bowel syndrome, gastroenteritis, Graves' disease, multiple sclerosis, Dupuytren's contracture, graft rejection diseases, allograft rejection, graft-v-host disease, skin graft rejection, solid organ transplant rejection, bone marrow transplant rejection, inflammatory dermatoses, viral cutaneous pathologies such as those derived from human papilloma virus, HIV, or RLV infection, bacterial,

fungal and or other parasital cutaneous pathologies, cutaneous lupus erythematosus, Hyper IgG4 disease, allergies, allergic diseases, inflammation resulting from blunt trauma, inflammation resulting from contusions, inflammation resulting from allergies, rheumatic disease, childhood arthritis, rheumatoid arthritis, Churg-Strauss syndrome, fibromyalgia, giant cell (temporal) arteritis, gout, Henoch-Schonlein purpura, hypersensitivity vasculitis, ankylosing spondylitis, capsulitis, rheumatic fever, rheumatic heart disease, systemic lupus erythematosus, polymyalgia rheumatica, osteoarthritis, polyarteritis nodosa, Reiter's syndrome, a sports related injury, runner's knee, tennis elbow, frozen shoulder, Achilles tendonitis, plantar fasciitis, bursitis, Osgood-Schlatter disease, a repetitive stress injury, cumulative trauma diseases, focal dystonia, carpal tunnel syndrome, intersection syndrome, reflex sympathetic dystrophy syndrome, stenosing tenosynovitis, De Quervain's syndrome, trigger finger/trigger thumb, thoracic outlet syndrome, tendonitis, tenosynovitis, radial tunnel syndrome, Raynaud's disease, ganglion, gamer's thumb, Wii-itis, sarcoidosis, sciatic nerve injury, organophosphate-induced delayed neuropathy, diabetic neuropathy, inflammation to peripheral nerves or inflammation resulting from infections.

21. The pharmaceutical composition of claim 9, wherein the tissue damage results from exposure to a toxic agent.

22. The pharmaceutical composition of claim 21, wherein the toxic agent is a biological agent, chemical agent or radiation agent.

23. The pharmaceutical composition of any one of claims 9-22, wherein the subject is a mammal.

24. The pharmaceutical composition of claim 23, wherein the mammal is a human.

25. A method for protecting, maintaining, or enhancing the viability of a responsive cell, tissue, or organ isolated from a mammal comprising exposing the cell, tissue, or organ to a pharmaceutical composition of claim 6.

26. An isolated nucleic acid comprising a nucleotide sequence encoding the isolated peptide of any one of claims 1-3.

27. An expression vector comprising the nucleic acid of claim 26.

28. A host cell comprising the expression vector of claim 27.

29. A method of recombinantly producing an isolated peptide comprising the step of isolating the peptide from the host cell of claim 28.

30. Use of the isolate peptide of any one of claims 1-4 in the preparation of a pharmaceutical composition for treating or preventing tissue damage in a subject in need thereof.

31. The use of claim 30, wherein the subject has cancer, a neoplastic disorder, ischemia, trauma, inflammation, or a disease or disorder of the central or peripheral nervous system, or wherein the subject was exposed to a toxic agent.

32. Use of the isolate peptide of any one of claims 1-4 in the preparation of a pharmaceutical composition for treating a subject suffering from inflammation, cachexia, or a disease or disorder of the central or peripheral nervous system.

33. The use of claim 32, wherein the cachexia is cancer cachexia.

34. The use of claim 30, wherein the subject has a cardiovascular disease, cardiopulmonary disease, respiratory disease, kidney disease, disease of the urinary system, disease of the reproductive system, bone disease, skin disease, gastrointestinal disease, endocrine abnormality, metabolic abnormality, or cognitive dysfunction.

35. Use of an isolate peptide comprising an amino acid sequence of RYLLEAKEAENITTG (SEQ ID NO:1) in the preparation of a pharmaceutical composition for preventing, treating, ameliorating, or managing tissue damage in a subject in need thereof, wherein the subject has cancer, a neoplastic disorder, trauma, inflammation, a disease or disorder of the central or peripheral nervous system, or toxic agent exposure, wherein the isolated peptide is not RYLLEAKEAENITTGC (SEQ ID NO: 2), wherein the isolated peptide is no more than 23 amino acid residues long and has tissue protective activity, and wherein one amino acid residue of the amino acid sequence is optionally substituted with another amino acid.

36. The use of claim 35, wherein the substitution is a conservative substitution.

37. The use of claim 35, wherein the substitution is a nonconservative substitution.

38. The use of claim 35, wherein the substitution is a substitution with an amino acid equivalent having a side chain modification or side chain substitution.

39. The use of claim 35 wherein the amino acid sequence of the peptide consists of RYLLEAKEAENITTG (SEQ ID NO:1).

40. The use of any one of claims 31, and 35-39, wherein the cancer is infiltrating breast cancer, pre-invasive breast cancer, inflammatory breast cancer, Paget's disease, metastatic breast cancer, recurrent breast cancer, appendix cancer, bile duct cancer, extrahepatic bile duct cancer, colon cancer, esophageal cancer, gallbladder cancer, gastric cancer, intestinal cancer, liver

cancer, pancreatic cancer, rectal cancer, stomach cancer, adrenal cancer, bladder cancer, kidney cancer, penile cancer, prostate cancer, testicular cancer, urinary cancer, cervical cancer, endometrial cancer, fallopian tube cancer, ovarian cancer, uterine cancer, vaginal cancer, vulvar cancer, eye cancer, head and neck cancer, jaw cancer, laryngeal cancer, pharyngeal cancer, oral cancer, nasal cavity cancer, salivary gland cancer, sinus cancer, throat cancer, thyroid cancer, tongue cancer, tonsil cancer, Hodgkin's disease, leukemia, acute lymphocytic leukemia, acute granulocytic leukemia, acute myelogenous leukemia, chronic lymphatic leukemia, chronic myelogenous leukemia, multiple myeloma, lymphoma, b-cell lymphoma, lymph node cancer, bone cancer, osteosarcoma, melanoma, skin cancer, basal cell cancer, squamous cell cancer, sarcoma, Ewing's sarcoma, Kaposi's sarcoma, brain cancer, astrocytoma, glioblastoma, glioma, pituitary gland cancer, spinal cord cancer, lung cancer, adenocarcinoma, oat cell cancer, non-small cell lung cancer, small cell lung cancer, squamous cell cancer, or mesothelioma.

41. The use of any one of claims 31, and 35-39, wherein the trauma or inflammation is caused by appendicitis, blepharitis, bronchitis, bursitis, cervicitis, cholangitis, cholecystitis, chorioamnionitis, conjunctivitis, cystitis, dacryoadenitis, dermatitis, endocarditis, endometritis, epicondylitis, epididymitis, fibrositis, gastritis, gingivitis, glossitis, hidradenitis suppurativa, iritis, laryngitis, mastitis, myocarditis, myositis, nephritis, omphalitis, oophoritis, orchitis, osteitis, otitis, parotitis, pericarditis, peritonitis, pharyngitis, pleuritis, phlebitis, pneumonitis (pneumonia), prostatitis, pyelonephritis, rhinitis, salpingitis, sinusitis, stomatitis, synovitis, tonsillitis, uveitis, urethritis, vaginitis, vulvitis, asthma, systemic lupus erythematosus, myasthenia gravis, tendonitis, angiitis, chronic bronchitis, pancreatitis, osteomyelitis, rheumatoid arthritis, psoriatic arthritis, glomeronephritis, optic neuritis, temporal arteritis, encephalitis, meningitis, traverse myelitis, dermatomyositis, polymyositis, necrotizing fasciitis, hepatitis, necrotizing enterocolitis, pelvic inflammatory disease, inflammatory bowel disease, ulcerative colitis, Crohn's disease, ileitis, enteritis, proctitis, vasculitis, vascular stenosis, restenosis, hypotension, Type-1 diabetes, Kawasaki disease, Decum's disease, chronic obstructive pulmonary disease, psoriasis, atherosclerosis, scleroderma, Sjogren's syndrome, mixed

connective tissue disease, rosacea, gastric ulcers, duodenal ulcers, Alzheimer's disease, adult onset Still's disease, acute retinal pigment epitheliitis, Tietze's syndrome, Bechçet's disease, white dot syndrome, acute posterior multifocal placoid pigment epitheliopathy, serpiginous choroiditis, birdshot chorioretinopathy, multifocal choroiditis with panuveitis, diffuse subretinal fibrosis syndrome, punctate inner choroidopathy, multiple evanescent white dot syndrome, diffuse unilateral subacute neuroretinitis, granuloma annulare, irritable bowel syndrome, gastroenteritis, Graves' disease, multiple sclerosis, Dupuytren's contracture, graft rejection diseases, allograft rejection, graft-v-host disease, skin graft rejection, solid organ transplant rejection, bone marrow transplant rejection, inflammatory dermatoses, viral cutaneous pathologies such as those derived from human papilloma virus, HIV, or RLV infection, bacterial, fungal and or other parasital cutaneous pathologies, cutaneous lupus erythematosus, Hyper IgG4 disease, allergies, allergic diseases, inflammation resulting from blunt trauma, inflammation resulting from contusions, inflammation resulting from allergies, rheumatic disease, childhood arthritis, rheumatoid arthritis, Churg-Strauss syndrome, fibromyalgia, giant cell (temporal) arteritis, gout, Henoch-Schonlein purpura, hypersensitivity vasculitis, ankylosing spondylitis, capsulitis, rheumatic fever, rheumatic heart disease, systemic lupus erythematosus, polymyalgia rheumatica, osteoarthritis, polyarteritis nodosa, Reiter's syndrome, a sports related injury, runner's knee, tennis elbow, frozen shoulder, Achilles tendonitis, plantar fasciitis, bursitis, Osgood-Schlatter disease, a repetitive stress injury, cumulative trauma diseases, focal dystonia, carpal tunnel syndrome, intersection syndrome, reflex sympathetic dystrophy syndrome, stenosing tenosynovitis, De Quervain's syndrome, trigger finger/trigger thumb, thoracic outlet syndrome, tendonitis, tenosynovitis, radial tunnel syndrome, Raynaud's disease, ganglion, gamer's thumb, Wii-itis, sarcoidosis, sciatic nerve injury, organophosphate-induced delayed neuropathy, diabetic neuropathy, inflammation to peripheral nerves or inflammation resulting from infections.

42. The use of claim 30, wherein the tissue damage results from exposure to a toxic agent.

43. The use of claim 42, wherein the toxic agent is a biological agent, chemical agent or radiation agent.

44. The use of any one of claims 30-43, wherein the subject is a mammal.

45. The use of claim 44, wherein the mammal is a human.