CLAIMS

1. An isolated oligoadenylate synthetase 1 protein comprising a polypeptide having the amino acid sequence of SEQ ID NO: 1 except for at least one amino acid modification at position 1, 24, 25, 28, 31, 36, 47, 53, 54, 64, 69, 74, 104, 108, 112, 113, 114, 115, 116, 117, 118, 119, 127, 130, 139, 142, 160, 161, 162, 166, 175, 179, 226, 242, 246, 248, 250, 254, 274, 279, 282, 284, 288, 289, 292, 295, 314, 315, and 335.

2. A polynucleotide that encodes the isolated protein of claim 1.

3. A therapeutic composition for treating or preventing infection by a virus in a mammal wherein said composition is the isolated protein of claim 2 with a pharmaceutically acceptable carrier.

4. The therapeutic composition of claim 3 wherein the virus is a flavivirus.

5. The therapeutic composition of claim 3 wherein the virus is hepatitis C virus.

6. A therapeutic composition for treating cancer in a mammal wherein said composition is the isolated protein of claim 1 together with a pharmaceutically acceptable carrier.

7. The therapeutic composition of claim 6 wherein the cancer is prostate cancer.

8. A therapeutic compound for treating or preventing viral infection in a mammal wherein said compound is an inhibitor of the activity of the isolated protein of claim 1.

9. The therapeutic compound of claim 8 wherein the therapeutic compound is an antisense molecule.

10. The therapeutic compound of claim 8 wherein the therapeutic compound is an RNAi molecule.

11. The therapeutic compound of claim 8 wherein the therapeutic compound is a ribozyme.

12. The therapeutic compound of claim 8 wherein the therapeutic compound is an antibody.

13. A diagnostic kit for determining resistance to viral infection, comprising the isolated protein of claim 1.

14. The diagnostic kit of claim 13 further comprising one or more of:

(a) Instructions for using at least one polypeptide for screening, diagnosis, prognosis, therapeutic monitoring or any combination of these applications; and (b)

a label or insert indicating regulatory approval for screening, diagnostic, prognostic or therapeutic use or any combination thereof.

15. The diagnostic kit of claim 13 wherein said isolated protein is detectably labeled.

16. Use of the isolated protein according to claim 1 together with a pharmaceutically acceptable carrier in the preparation of a therapeutic composition for treating a viral disease in a mammalian subject.

17. The use of claim 16 wherein said viral disease is selected from the group consisting of the Flaviviridae family, the Picornaviridae family, the Hepadnaviridae family, the Coronaviridae family, the Paramyxoviridae family, the Retroviridae family, the Rhabdoviridae family, the Papillomaviridae family, and the Herpesviridae family.

18. The use of claim 16 or claim 17 wherein said viral disease is selected from the group consisting of Hepatitis C Virus, Yellow Fever Virus, West Nile Virus, Japanese Encephalitis Virus, Dengue Virus, Bovine Viral Diarrhea Virus, Hepatitis B Virus, Encephalomyocarditis Virus, Human Rhinovirus, Hepatitis A Virus, Human Immunodeficiency Virus, Simian Immunodeficiency Virus, Human T-Lymphotropic Virus, Rous Sarcoma Virus, SARS coronavirus, Rabies Virus, Vesicular Stomatitis Virus, Respiratory Syncytial Virus, Parainfluenza Virus, Human Papillomavirus, and Herpes Simplex Virus.

19. Use of the isolated protein according to claim 1 together with a pharmaceutically acceptable carrier in the preparation of a therapeutic composition for treating cancer in a mammalian subject.

20. The use of claim 19 wherein said cancer is selected from the group consisting of : adrenocortical carcinoma, AIDS related cancers, Kaposi's sarcoma, AIDS-related lymphoma, anal cancer, astrocytoma, basal cell carcinoma, bile duct cancers, bladder cancer, bone cancers, osteosarcomas, malignant fibrous histiocytomas, brain stem glioma, brain tumors, gliomas, astrocytomas, malignant gliomas, ependymomas, medulloblastomas, neuroblastomas, supratentorial primitive neuroectodermal tumor, visual pathway and hypothalamic glioma, breast cancer, bronchial adenoma, Burkitt's lymphoma, carcinoid tumors, central nervous system lymphoma, cervical cancer, leukemias, hairy cell leukemia, acute lymphoblastic leukemia, acute myeloid leukemia, chronic lymphocytic leukemia and chronic myelogenous leukemia, chronic myeloproliferative disorders, colorectal cancer, cutaneous T-cell lymphoma, endometrial cancer, esophageal cancer, Ewing's family of tumors, extracranial germ cell tumor, extragonadal germ cell tumor, eye cancers, intraocular

melanoma, retinoblastoma, gallbladder cancer, stomach cancer, gestational trophoblastic tumor, head and neck cancer, hepatocellular carcinoma, Hodgkin's lymphoma, Non-Hodgkin's lymphoma, primary CNS lymphoma, nasopharyngeal cancer, islet cell carcinoma, kidney (renal cell) cancer, laryngeal cancer, lip and oral cancer, liver cancer, lung cancer, non-small cell and small cell lung cancers, Waldenstrom's macroglobulinemia, Merkel cell carcinoma, mesothelioma, metastatic squamous neck cancer, multiple endocrine neoplasia, multiple myeloma, plasma cell neoplasm, mycosis fungoides, myelodysplastic syndromes, myeloproliferative diseases, nasal cavity and paranasal sinus cancer, ovarian cancer, such as germ cell and epithelial, low-malignant potential ovarian tumor, pancreatic cancer, parathyroid cancer, penile cancer, pheochromocytoma, pituitary tumor, pleuropulmonary blastoma, prostate cancer, rhabdomyosarcoma, salivary gland cancer, sarcomas, Sezary syndrome, skin cancer, such as for example melanoma and squamous cell carcinoma, testicular cancer, thymoma, thymic carcinoma, thyroid cancer, transitional cell cancer, trophoblastic tumor, urethral cancer, uterine cancer, vaginal cancer, vulvar cancer, and Wilms' tumor.

21. Use of the isolated protein of claim 1 for the preparation of a therapeutic compound for treating or preventing viral infection in a mammal wherein said compound is an inhibitor of the activity of the protein.

22. The use according to claim 21 wherein the therapeutic compound is an antisense molecule.

23. The use according to claim 21 wherein the therapeutic compound is an RNAi molecule.

24. The use according to claim 21 wherein the therapeutic compound is a ribozyme.

25. The use according to claim 21 wherein the therapeutic compound is an antibody.

26. An isolated oligoadenylate synthetase 1 protein consisting of amino acid sequence of SEQ ID NO: 1, wherein the methionine at position 1 is deleted, and the amino acid at position 162 is glycine.

27. A therapeutic composition for treating infection by a virus in a mammal or for treating cancer in a mammal wherein said composition comprises a pharmaceutically acceptable carrier and the isolated protein of claim 26.

28. The therapeutic composition of claim 27 wherein the virus is a flavivirus.

29. The therapeutic composition of claim 27 wherein the virus is hepatitis C virus.

30. A therapeutic composition for treating cancer in a mammal wherein said composition is the isolated protein of claim 26 together with a pharmaceutically acceptable carrier.

31. The therapeutic composition of claim 30 wherein the cancer is prostate cancer.

32. The therapeutic composition of claim 30 wherein the therapeutic composition is provided as part of a kit.

33. The therapeutic composition of claim 32 wherein the kit includes one or more of instructions for using the therapeutic composition or a label or insert or insert indicating regulatory approval for use of the therapeutic composition.

34. Use of the isolated protein according to claim 26 together with a pharmaceutically acceptable carrier in the preparation of a therapeutic composition for treating a viral disease in a mammalian subject.

35. A polynucleotide that encodes the isolated protein of claim 26.

CLAIMS

1. An isolated oligoadenylate synthetase 1 protein consisting of the amino acid sequence of SEQ ID NO: 1, except:

(a) the methionine at position 1 is deleted, and the amino acid at position 162 is glycine; or

(b) the methionine at position 1 is deleted, the amino acid at position 162 is glycine, and there is an amino acid substitution at position 104; or

(c) the methionine at position 1 is deleted, the amino acid at position 162 is glycine, there is an amino acid substitution at position 104 and there is an amino acid substitution at a position selected from the group consisting of position 31, 115, 127, 295 and 315.

2. The protein of claim 1(b) or 1(c) wherein the amino acid at position 104 is Lys.

3. A therapeutic composition for treating cancer or an infection by a virus in a mammal wherein said composition comprises a pharmaceutically acceptable carrier and the oligoadenylate synthetase 1 protein of claim 1.

4. A therapeutic composition of claim 3 wherein the virus is a flavivirus.

5. A therapeutic composition of claim 3 or claim 4 wherein the virus is hepatitis C virus.

6. A therapeutic composition of claim 3 wherein the cancer is prostate cancer.

7. Use of an isolated oligoadenylate synthetase 1 protein according to claim 1 or claim 2, or the therapeutic composition according to claim 3 in the preparation of a medicament for the treatment of cancer or a viral infection in a mammalian subject.

8. A use according to claim 7 wherein the virus is a flavivirus.

9. A use according to claim 7 or claim 8 wherein the virus is hepatitis C virus.

10. A use according to claim 7 wherein the cancer is prostate cancer.

11. A kit comprising the therapeutic composition of any one of claims 3 to 6.

12. The kit of claim 11 wherein the kit includes one or more of instructions for using the therapeutic composition or a label or insert indicating regulatory approval for use of the therapeutic composition.

13. An isolated polynucleotide that encodes the oligoadenylate synthetase 1 protein of claim 1 or claim 2.