# CLAIMS

1. A composition comprising a glycosylated interferon-beta-la (IFN-β-1a) comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGRLEYCLKDRMNFDIPEEIKQLQQFQK EDAALTIYEMLQNIFAIFRQDSSSTGWNETIVENLLANVYHQINHLKTVLEEK LEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAWTIVRVEILRNFYFIN RLTGYLRN coupled to a non-naturally-occurring polymer at the N-terminal end of said glycosylated interferon-beta-la, said polymer comprising a polyalkylene glycol moiety.

2. The composition of claim 1, wherein the polyalkylene moiety is coupled to the interferon-beta by way of a group selected from an aldehyde group, a maleimide group, a vinylsulfone group, a haloacetate group, plurality of histidine residues, a hydrazine group and an aminothiol group.

3. The composition of claim 1 or 2, wherein the interferon-beta-1a (IFN-β-1a) is an interferon-beta-la fusion protein.

4. The composition of claim 3, wherein the interferon -beta-1a fusion protein comprises a portion of an immunoglobulin molecule.

5. The composition of any one of claims 1 to 4, wherein the interferon-beta-la is coupled to the polymer at a site by way of a glycan moiety of the interferon-beta-la.

6. The composition according to any one of claims 1 to 5, wherein the polymer has a molecular weight of from about 5 to 40 kilodaltons.

7. A pharmaceutical composition comprising the interferon-beta-la composition of any one of claims 1 to 6.

8. Use of the composition of any one of claims 1 to 6 for the preparation of a

pharmaceutical composition.

9. Use of the composition of any one of claims 1 to 6 for the preparation of a pharmaceutical composition for treating tumors and cancers, autoimmune conditions, viral diseases or angiogenic diseases.

10. The use of claim 9, wherein said tumors and cancers are selected from the group consisting of osteogenic sarcoma, lymphoma, acute lymphatic leukemia, breast carcinoma, melanoma or nasopharyngeal carcinoma.

11. The use of claim 9, wherein said autoimmune conditions are selected from the group consisting of fibrosis, lupus and multiple sclerosis.

12. The use of claim 9, wherein said viral diseases are selected from the group consisting of ECM infection, influenza, viral respiratory tract infections, rabies and hepatitis.

13. The use of claim 9, wherein said angiogenic diseases are selected from the group consisting of diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasias, rubeosis and Osler-Webber syndrome.

14. A composition comprising a glycosylated interferon-beta (IFN-$\beta$) mutant selected from the group consisting of IFN- $\beta$ comprising the amino acid sequence MAYAALGALQASSNFQCQKLLWQLNGRLEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQ NIFAIFRQDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGR ILHYLKAKEYSHCAWTIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNAACAALLAALNGR-LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-AAACAADRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-

LEYCLKDRAAFAIPAEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIAAAAAFAAADAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLANIASIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFAAASSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNASIVA-
ALLSNVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVAHQIAHLAAVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLAAKLAAADFTRGKLMSSLHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEAATAGKAMSALHLKRYYGRILHYLKAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGAIAAYLAAKEYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-

LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAAAYSHCAW-
TIVRVEILRNFYFINRLTGYLRN,

IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQLNGR-
LEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNETIVE-
NLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYAACAW-
TIVRVEILRNFYFINRLTGYLRN,

and IFN-$\beta$ comprising the amino acid sequence MSYNLLGFLQRSSNFQCQKLLWQL-
NGRLEYCLKDRMNFDIPEEIKQLQQFQKEDAALTIYEMLQNIFAIFRQDSSSTGWNET-
IVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLHLKRYYGRILHYLKAKEYSH-
CAWTIVRAEILANFAFIARLTGYLRN coupled to a non-naturally-occurring polymer at the N-terminus of said glycosylated interferon-beta-1a, said polymer comprising a polyalkylene glycol moiety.

15. The composition of claim 14, wherein the glycosylated interferon-beta mutant is an interferon-beta fusion protein.

16. The composition of claim 14, wherein the interferon-beta fusion protein comprises a portion of an immunoglobulin molecule.

17. A pharmaceutical composition comprising the composition of any one of claims 14 to 16.

18. An in vitro method of prolonging the activity of interferon-beta-1a in an in vitro system, comprising coupling said interferon-beta-1a at the N-terminal end to a non-naturally-occurring polymer moiety to yield a coupled polymer-interferon-beta-1a composition, and introducing the coupled polymer-interferon-beta composition to the in vitro system.

19. Use of a non-naturally-occurring polymer moiety to yield a coupled polymer-interferon-beta-1a composition as defined in any one of claims 1 to 6 for the preparation of a pharmaceutical composition.

20. Use of the composition of claim 6 for the preparation of a pharmaceutical composition for inhibiting angiogenesis in a subject.