37, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98 or 99 of SEQ ID NO: 2, or any combination of two or more residues thereof.

6. The recombinant human TGF-β2 monomer of claim **5**, wherein the at least one amino acid substitution that increases affinity of the monomer for TβRII comprises at least one substitution at residue 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 or 37, and at least one substitution at residue 89, 90, 91, 92, 93, 94, 95, 96, 97, 98 or 99.

7. The recombinant human TGF-β2 monomer of claim **6**, wherein the at least one amino acid substitution that increases affinity of the monomer for TβRII comprises a lysine to arginine at residue 25, an arginine to lysine at residue 26, a leucine to valine at residue 89, an isoleucine to valine at residue 92, an asparagine to arginine at residue 94, a threonine to lysine at residue 95, an isoleucine to valine at residue 98; or any combination of two or more thereof.

8. The recombinant human TGF-β2 monomer of claim **7**, comprising a lysine to arginine at residue 25, an arginine to lysine at residue 26, a leucine to valine at residue 89, an isoleucine to valine at residue 92, an asparagine to arginine at residue 94, a threonine to lysine at residue 95, and an isoleucine to valine at residue 98.

9. The recombinant human TGF-β2 monomer of claim **3**, comprising the amino acid sequence of SEQ ID NO: 8 or SEQ ID NO: 10.

10. The recombinant TGF-β monomer of claim **1**, which is PEGylated, glycosylated or hyper-glycosylated.

11. A fusion protein comprising the recombinant TGF-β monomer of claim **1** and a heterologous protein.

12. The fusion protein of claim **11**, wherein the heterologous protein comprises a protein tag, an Fc domain, albumin, an albumin-binding polypeptide, an antibody, antigen binding fragment of an antibody, or a targeting moiety.

13. The recombinant TGF-β monomer of claim **1**, comprising a radiotherapy agent, a cytotoxic agent for chemotherapy, a drug, an imaging agent, a fluorescent dye, or a fluorescent protein tag.

14. A composition comprising the recombinant TGF-β monomer of claim **1**, and a pharmaceutically acceptable carrier, diluent, or excipient.

15. A method of inhibiting TGF-β signaling in a cell, comprising contacting the cell with the recombinant TGF-β monomer of claim **1**.

16. A method of treating a disease or disorder associated with aberrant TGF-β signaling in a subject, comprising administering to the subject the recombinant TGF-β monomer of claim **1**.

17. An isolated nucleic acid molecule encoding the recombinant TGF-β monomer of claim **1**.

18. A vector comprising the nucleic acid molecule of claim **17**.

19. An isolated cell comprising the vector of claim **18**.

20. A method of treating a disease or disorder associated with aberrant TGF-β signaling in a subject, comprising administering to the subject the isolated cell of claim **19**.

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