CLAIMS

1. A platelet-derived growth factor (PDGF) polypeptide comprising at least one modification selected from the group consisting of an amino acid substitution, an amino acid deletion, an amino acid insertion, and combinations thereof relative to the sequence set forth in SEQ ID NO: 1, wherein the modified PDGF polypeptide exhibits increased stability, solubility and/or bioactivity compared to the PDGFB polypeptide of SEQ ID NO: 1.

2. The PDGF polypeptide of claim 1, wherein the polypeptide comprises a sequence of any one of SEQ ID NOs: 2-4, or a sequence with at least 80%, 85%, 90%, 92% or 95% sequence similarity to any one of SEQ ID NOs: 2-4, wherein the polypeptide has a melting temperature of at least 40°C.

3. The PDGF polypeptide of claim 1 or claim 2, wherein the polypeptide comprises a sequence of SEQ ID NO: 2 or SEQ ID NO: 4 or a sequence with at least 80%, 85%, 90%, 92% or 95% sequence similarity to SEQ ID NO: 2 or SEQ ID NO: 4, wherein the polypeptide has a melting temperature of at least 40°C.

4. The PDGF polypeptide of claim 1 or claim 2, wherein the polypeptide comprises a sequence of SEQ ID NO: 2 or a sequence with at least 80%, 85%, 90%, 92% or 95% sequence similarity to SEQ ID NO: 2, wherein the polypeptide is more bioactive than the PDGFB polypeptide of SEQ ID NO: 1.

5. The PDGF polypeptide of claim 1 or claim 2, wherein the polypeptide comprises a sequence of SEQ ID NO: 3 or a sequence with at least 80%, 85%, 90%, 92% or 95% sequence similarity to SEQ ID NO: 3, wherein the polypeptide is more bioactive than the PDGFB polypeptide of SEQ ID NO: 1.

6. The PDGF polypeptide of claim 1 or claim 2, wherein the polypeptide comprises a sequence of SEQ ID NO: 4 or a sequence with at least 80%, 85%, 90%, 92% or 95% sequence similarity to SEQ ID NO: 4, wherein the polypeptide is more bioactive than the PDGFB polypeptide of SEQ ID NO: 1.

7. The PDGF polypeptide of any one of the preceding claims, wherein the polypeptide is soluble and capable of binding a platelet-derived growth factor receptor (PDGFR), optionally PDGFRB.

8. A nucleic acid comprising a sequence selected from the group consisting of:

(a) a nucleic acid sequence encoding a PDGF polypeptide of any preceding claim;
(b) a nucleic acid sequence having at least 80% similarity with the nucleic acid sequence of any one of SEQ ID NOs: 5-7 and encoding a PDGF polypeptide of any preceding claim;
(c) a nucleic acid sequence hybridizing with the complement of the nucleic acid sequence of any one of SEQ ID NOs: 5-7 and encoding a PDGF polypeptide of any preceding claim;
or
(d) a nucleic acid sequence which is the reverse complement of a nucleic acid sequence as defined in (a), (b) or (c).

9. A cell comprising the PDGF polypeptide or nucleic acid sequence of any preceding claim.

10. The cell of claim 9, wherein the cell is a bacteria cell, a yeast cell, a plant cell, an insect cell or a mammalian cell.

11. A method of preparing a PDGF polypeptide according to any one of claims 1-7, wherein the method comprises cultivating the cell of claim 9 or claim 10 under conditions which allow for expression of said polypeptide and, optionally, recovering the expressed polypeptide.

12. A method of preparing a PDGF polypeptide according to any one of claims 1-7, wherein the method comprises i) culturing a nucleic acid sequence of claim 8 in a cell lysate with ribosomal activity and ii) synthesising a protein encoded by the nucleic acid with a cell-free protein synthesis reaction.

13. A method of growing an animal cell, wherein the method comprises cultivating the animal cell in a culture medium containing the PDGF polypeptide of any one of claims 1-7.

14. Use of the PDGF polypeptide of any one of claims 1-7 in an animal cell culture medium.