Claims:

1. A composition or material comprising:

an isolated polypeptide comprising or consisting of:

a. the amino acid sequence set forth in any one of SEQ ID Nos. 2, 21, 23, 24 or 25; or

b. a variant of the amino acid sequence of (a) that shares at least 50 %, more preferably at least 60, 80 or 90 % sequence identity with any one of the amino acid sequences of (a) over its entire length

c. a fragment of the amino acid sequence of (a), the fragment having a length of at least 50, preferably at least 100, more preferably at least 150, most preferably at least 200, 400, or 600 amino acids;

wherein the polypeptide is at least partially in beta sheet conformation, and

wherein the material is selected from the group consisting of: a fibre, a filament, a film, a foam, a nano fibre, a nano sphere, a nano particle, a gel, a liquid crystal mesogen, a colloid, a copolymer, and a block copolymer.

2. The composition or material of claim 1, wherein the polypeptide is soluble in water and/or under mildly acidic conditions having a pH in the range of 4 to 7, 4 to 6 or 4 to 5.

3. The composition or material of claim 1 or 2, wherein the polypeptide comprises at least one domain 1 comprising or consisting of an amino acid sequence selected from the group consisting of HH, TT, SS, AV, TTH, THH, IAAL, SY, VTHHAP, VVLLAAF, HTTHHA, AATVSHTTHHA, FPY, THT, HVT, HHP, VSH and TVS.

4. The composition or material of any one of claim 1-3, wherein the polypeptide comprises at least one glycine rich domain 2:

(i) wherein the glycine rich domain 2 optionally comprises an amino acid sequence selected from the group consisting of GGLYG, GGLYG, GGYG, GLYGG, YGIG, GIG and GYG and/or,

(ii) wherein the at least one glycine rich domain 2 optionally comprises at least one sub-domain 3 comprising the amino acid sequence $GGX_1X_2X_3Y$ (SEQ ID NO:1)

wherein X_1 is nothing, L, F or V;

wherein X_2 is nothing, G, or F; and

wherein X_3 is nothing, G or A;

wherein X_1 of sub-domain 3 is Leucine or wherein sub-domain 3 preferably has the amino acid sequence GGLY, and/or

(iii) wherein the at least one glycine rich domain 2 optionally further comprises at least one sub-domain 4 comprising the amino acid sequence GGY.

5. The composition or material of any one of claim 1-4, wherein the polypeptide comprises at least one amino acid consensus sequence selected from the sequences set forth in SEQ ID Nos. 105, 106, 107, 108, 109 and 110, wherein the polypeptide optionally comprises:

a. the amino acid sequence set forth in any one of SEQ ID Nos. 2 to 53; or
b. a variant of the amino acid sequence of (a) that shares at least 50 %, more preferably at least 60 % sequence identity with the amino acid sequence of the amino acid sequence set forth in any one of SEQ ID Nos. 2 to 53 over its entire length.

6. The composition or material of any one of claims 3 or 4, wherein the polypeptide comprises,

(i) a peptide unit from N- to C-terminus: Proline-Domain 1-Domain 2, or

(ii) a peptide unit from N to C terminus, Proline-Domain 1-Proline-Domain 2, wherein domain 2 of (i) or (ii) optionally comprises (a) from N- to C- terminus: (sub-Domain 3-sub-domain 4)$_n$; wherein n is independently 1 to 4, or (b) from N- to C-terminus, (sub-Domain 3-sub-Domain 4-sub-Domain 3)$_n$; wherein n is independently 1 to 3 .

7. The composition or material of claim 6, wherein the peptide unit is repeated from 2 to 13 times.

8. The composition or material of any one of claims 1 to 7, wherein the polypeptide is isolated and purified from a species in the Decapodiformes super order.

9. An isolated nucleic acid molecule comprising a nucleic acid sequence encoding the polypeptide of any one of claims 1 to 7, wherein the nucleic acid sequence comprises any one of the sequences set forth in SEQ ID Nos. 54 to 100, wherein the nucleic acid sequence preferably is comprised in an expression construct more preferably a vector.

10. A host cell comprising the expression construct of claim 9, wherein the cell is capable of expressing the polypeptide of any one of claims 1-7.

11. The composition or material of claim 1, wherein the material further comprises plastic, resin or a mixture thereof.

12. A method of making the material of claim 1 comprising the steps of:

crushing the polypeptide of any one of claims 1-7;

heating the crushed polypeptide into a liquid; and

forming the material from the liquid.

13. The method of claim 12, wherein

(i) the crushed polypeptide is mixed with plastic, resin or a mixture of both plastic and resin prior to heating the crushed polypeptide at temperatures up to 280ºC; and/or

(ii) forming the material comprises spinning the liquid into a fibre; and/or

(iii) forming the material comprises placing the liquid into a mold; and removing the mold after the liquid solidifies.

14. A tissue scaffold comprising the polypeptide of any one of claims 1-7, wherein the polypeptide is recombinantly produced and formed into an adhesion substrate for cell or tissue growth.