CLAIMS

1. A regenerative material for treatment of wounds, the material comprising:
   (i) a base poly(lactic-*co*-glycolic acid) (PLGA);
   (ii) a bioactive poly(lactic-*co*-glycolic acid) (PLGA) copolymer; and
   (iii) pores patterned on said material.

2. The regenerative material of claim 1, wherein each pore comprises a polygonal shape;
   and/or each pore has a minimum circumscribed circle diameter of at least 100 µm;
   and/or the distance between the pores is from 100 µm to 300 µm;
   and/or the material comprises a buffer zone surrounding the pores.

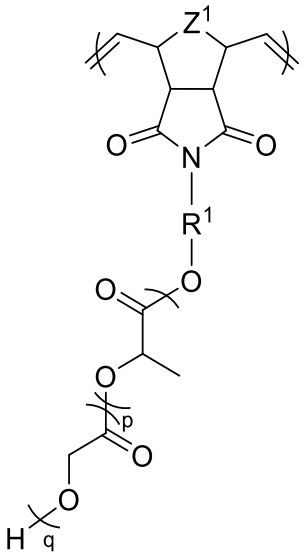
3. The regenerative material of any one of the preceding claims, wherein the material has an infill density of from 70% to 100%.

4. The regenerative material of any one of the preceding claims, wherein the ratio of the (i) base PLGA to (ii) bioactive PLGA copolymer present in the material is from about 60.0 – 99.9 : 0.1 – 40.0;
   and/or the material comprises from 60 wt% to 99.9 wt% of the base PLGA;
   and/or the material comprises from 0.1 wt% to 40 wt% of the bioactive PLGA copolymer.

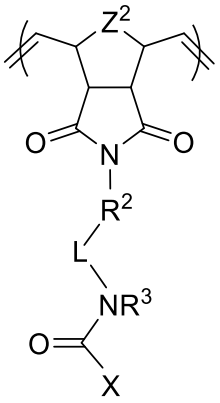
5. The regenerative material of any one of the preceding claims, wherein the material comprises a three-dimensional (3D) printed structure or part.

6. The regenerative material of any one of the preceding claims, wherein the bioactive PLGA copolymer comprises a bioactive PLGA copolymer with a poly(norbornene-dicarboximide) backbone having one or more repeating

units represented by general formula (I) and one or more repeating units represented by general formula (II):



(I)



(II)

wherein

R^1 is selected from a single bond, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted alkoxyalkyl, optionally substituted alkylcarbonyl or optionally substituted alkylcarbonylalkyl;

R^2 is optionally substituted alkyl;

R^3 is selected from H, optionally substituted alkyl, optionally substituted alkenyl or optionally substituted alkynyl;

L is heteroalkylene;

X comprises a bioactive moiety selected from the group consisting of proteins, peptides, oligopeptides, carbohydrates, oligosaccharides, sugar, collagen, hyaluronic acid, therapeutic/drug molecules and derivatives thereof, optionally wherein X is selected from the group consisting of RGD, SRGDS, RGDS, A5G81 (AGQWHRVSVRWGC), SVVYGLR, $(IRIK)_2$, $(IKKI)_3$, heparin oligosaccharide DP8, DP10, DP12, DP14, DP16, DGEA, $(PHypG)_n$ type sequence, $(PGHyp)_n$ type sequence, $(HypGP)_n$ type sequence, $(HypPG)_n$ type sequence, $(GHypP)_n$ type

sequence, $(GPHyp)_n$ type sequence, hyaluronic acid and combinations thereof;

Z^1 and Z^2 are each independently selected from CR^aR^b, O, NR^c, SiR^aR^b, PR^a or S, wherein R^a, R^b and R^c are each independently selected from the group consisting of H, optionally substituted alkyl, optionally substituted alkenyl and optionally substituted alkynyl;

$p \geq 1$; and

$q \geq 1$.

7. A method of preparing a regenerative material of any one of claims 1 to 6, the method comprising:

(i) producing a bioactive PLGA filament; and

(ii) printing a bioactive PLGA material from the bioactive PLGA filament according to a design model to obtain a printed structure or part with pores patterned thereon,

optionally wherein the step (i) of producing a bioactive PLGA filament comprises:

(i-a) providing a base PLGA powder and a bioactive PLGA copolymer;

(i-b) mixing the base PLGA powder with the bioactive PLGA copolymer to obtain a bioactive PLGA formulation; and

(i-c) extruding a bioactive PLGA filament from the formulation; and

optionally wherein the step (ii) of printing a bioactive PLGA material from the bioactive PLGA filament comprises:

(ii-a) feeding the bioactive PLGA filament into a printing apparatus;

(ii-b) applying heat to the bioactive PLGA filament to obtain a molten form of the bioactive PLGA; and

(ii-c) depositing the molten bioactive PLGA on a print bed to form a printed part or structure.

8. The regenerative material of any one of claims 1 to 6 for use in medicine.

9. The regenerative material of any one of claims 1 to 6 for use in stimulating skin and/or tissue regeneration.

10. The regenerative material of any one of claims 1 to 6 for use in treatment of wounds, optionally wherein the wound is selected from the group consisting of acute wounds, burns, incisions, excisions, superficial wounds, partial thickness wounds, full thickness wounds, chronic wounds, slow healing wounds, pressure sores, venous ulcers, diabetic ulcers, foot ulcers, bed sores and combinations thereof.

11. The regenerative material of any one of claims 1 to 6 for use in controlling and/or reducing inflammation.

12. Use of a regenerative material of any one of claims 1 to 6 in the manufacture of a medicament for stimulating skin and/or tissue regeneration.

13. Use of a regenerative material of any one of claims 1 to 6 in the manufacture of a medicament for treatment of wounds, optionally wherein the wound is selected from the group consisting of acute wounds, burns, incisions, excisions, superficial wounds, partial thickness wounds, full thickness wounds, chronic wounds, slow healing wounds, pressure sores, venous ulcers, diabetic ulcers, foot ulcers, bed sores and combinations thereof.

14. Use of a regenerative material of any one of claims 1 to 6 in the manufacture of a medicament for controlling and/or reducing inflammation.

15. A medical device comprising the regenerative material of any one of claims 1 to 6, optionally wherein the medical device is selected from the group consisting of dermal template, dermal regeneration template, skin scaffold, wound care product, wound dressing, personal care product, beauty product and combinations thereof.