

CLAIMS

1. A hydrogel scaffold comprising:
 - 3.0-10.0 w/v% gelatin methacryloyl (GelMA);
 - 5 - 0.5-2.0 w/v% alginate;
 - 0.5-2.0 w/v% pectin; and
 - one or more cell types.
- 10 2. The hydrogel scaffold of claim 1, wherein gelatin methacryloyl (GelMA) is comprised at about 3.0 w/v%.
3. The hydrogel scaffold of claim 1 or 2, wherein alginate is comprised at about 1.0 w/v%.
- 15 4. The hydrogel scaffold of any one of claims 1-3, wherein pectin is comprised at about 1.0 w/v%.
5. The hydrogel scaffold of any one of claims 1-4, wherein the one or more cell types comprise stem cells and/or progenitor cells.
- 20 6. The hydrogel scaffold of claim 5, wherein the stem cells are adipose-derived stem cells (ADSCs) or mesenchymal stem cells.
7. The hydrogel scaffold of claim 5, wherein the progenitor cells are myoblasts or myosatellite cells.
- 25 8. A method of myogenic differentiation comprising culturing one or more cell types in the hydrogel scaffold of any one of claims 1-7 in cell culture media, wherein the cell culture media comprises a basal medium and a serum.
- 30 9. The method of claim 8, wherein the basal medium is selected from a group consisting of Dulbecco's Modified Eagle Medium (DMEM), Advanced Dulbecco's Modified Eagle Medium (DMEM)/Ham's F12, DMEM/Ham's F12, Minimal Essential Medium (MEM), Knockout-DMEM (KO-DMEM), Glasgow Minimal Essential Medium (G-MEM), Basal Medium Eagle

(BME), Iscove's Modified Dulbecco's Medium and Minimal Essential Medium (MEM), Ham's F-10, Ham's F-12, Medium 199, and RPMI 1640 Medium.

10. The method of claim 8, wherein the serum is fetal bovine serum (FBS) or horse serum.

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11. The method of claims 8-10, wherein the cell culture media further comprises a steroid or a hormone.

12. A method of fabricating a hydrogel scaffold, the method comprising:

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- a) preparing a solution comprising alginate and pectin;
- b) treating the solution from step a) to a temperature of 4-120°C;
- c) adding gelatin methacryloyl (GelMA) to the heat-treated solution from step b);
- d) adding one or more cell types to solution from step c);
- e) setting an injection rate of 0.1-2.0 ml/min;
- f) wet-spinning a hydrogel scaffold.

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13. The method of claim 12, wherein the solution in step a) comprises 0.5-2.0 w/v% alginate.

14. The method of claim 12 or 13, wherein the solution in step a) comprises 0.5-2.0 w/v% pectin.

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15. The method of any one of claims 12-14, wherein the temperature in step b) is about 80°C.

16. The method of any one of claims 12-15, wherein the solution in step c) comprises 3.0-10.0 w/v% of gelatin methacryloyl (GelMA).

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17. The method of claim 12, wherein the injection rate in step e) is about 0.1 ml/min.