

Claims:

1. A bioprinting system for printing a liquid to a site of a subject, the bioprinting system comprising:

a bioprinting assembly configured to dispense the liquid to the site of the subject, the bioprinting assembly having at least one reservoir configured to hold the liquid to be dispensed by the bioprinting assembly, and a loading mechanism in fluid communication with the reservoir configured to load the reservoir with the liquid prior to printing onto the site of the subject, wherein the loading mechanism comprises a one way inlet that permits the liquid to be loaded into the reservoir and prevents fluid from exiting the reservoir via the one way inlet.

2. The bioprinting system of claim 1, wherein the subject is a patient, the site is a wound in the subject's skin, and the liquid dispensed by the bioprinting assembly forms a gel over the wound.

3. The bioprinting system of claim 1 or 2, further comprising:

a robotic arm coupled to the bioprinting assembly, the robotic arm configured to move and position the bioprinting assembly over the site; and

a control system configured to control the bioprinting assembly and the robotic arm

4. The bioprinting system of claim 3, wherein the bioprinting assembly further comprises a distance sensor configured to monitor the distance between the bioprinting assembly and the site of the subject, and wherein the control system is configured to use distance information from the distance sensor to control the robotic arm to maintain the bioprinting assembly at a predetermined distance from the site while printing the liquid.

5. The bioprinting system of any one of claims 1 to 4, wherein the loading mechanism provides a sterile fluidic connection and/or comprises any one or more of a check valve, a septum, and a luer lock

6. The bioprinting system of any one of claims 1 to 5, wherein the loading mechanism has a priming fluid line providing a fluid communication between the one way inlet and the reservoir.

7. The bioprinting system of any one of claims 1 to 6, wherein the one way inlet is configured to be removably coupled to a syringe, preferably wherein the one way inlet has a connector configured to be removably coupled to the syringe.

8. The bioprinting system of any one of claims 1 to 9, where the bioprinting assembly comprises a plurality of reservoirs and a plurality of loading mechanisms each in fluid communication with a respective reservoir.
9. The bioprinting system of any one of claims 1 to 8, wherein the at least one reservoir has a dispensing fluid line that is configured to dispense fluid from the at least one reservoir.
10. The bioprinting system of claim 9, wherein the dispensing fluid line has a dispensing outlet having:
 - an open configuration that allows liquid to be dispensed from the at least one reservoir; and
 - a closed configuration that prevents liquid from being dispensed from the at least one reservoir.
11. The bioprinting system of any one of claims 1 to 10, further comprising a pressure regulating system coupled in fluid communication with the at least one reservoir, the pressure regulating system configured to regulate pressure within the at least one reservoir.
12. The bioprinting system of any one of claims 1 to 11, wherein the bioprinting assembly further comprises an aiming aid that is configured to assist with positioning the bioprinting assembly.
13. The bioprinting system of any one of claims 1 to 12, wherein the liquid to be dispensed from the bioprinting assembly includes reagents and activators and is preferably selected from bio-inks, radiation curable bio-inks, activators, cell-inks, and cell-culture solutions.
14. The bioprinting system of any one of claims 1 to 13, wherein the bioprinting assembly further comprises a radiation source configured to cure a radiation curable fluid dispensed by the bioprinting assembly.
15. The bioprinting system of any one of claims 1 to 14, wherein the robotic arm and the bioprinting assembly are configured such that the bioprinting assembly can be manoeuvred to print the liquid onto the site of the subject in any desired orientation.
16. A method of forming a gel over a wound of a subject using the bioprinting assembly of any one of claims 1 to 15, the method comprising:

- a) dispensing a reagent from the bioprinting assembly to a point of the site;
- b) dispensing an activator from the bioprinting assembly onto the dispensed reagent to form a hydrogel; and
- c) repeating steps a) and b) at a plurality of different points of the site to form the gel over the wound.

17. The method of claim 16, wherein the reagent is selected from bio-inks, radiation curable bio-inks, activators, cell-inks, and cell-culture solutions.

18. A method of forming a gel over a wound of a subject using the bioprinting assembly of claim 14, the method comprising:

- a) dispensing a radiation curable reagent from the bioprinting assembly to a point of the site;
- b) illuminating the dispensed radiation sensitive reagent with the radiation source to form a hydrogel; and
- c) repeating steps a) and b) at a plurality of different points of the site to form the gel over the wound.

19. The method of claim 18, wherein the radiation curable reagent is a radiation curable bio-ink.

20. A method of printing liquid to a site of a subject using the bioprinting assembly of any one of claims 1 to 15, the method comprising:

- a) dispensing liquid from the bioprinting assembly to a point of the site; and
- b) repeating step a) at a plurality of different points of the site to cover the site with the liquid.

21. The method of claim 20, wherein the liquid includes cells and/or medicaments.

22. The method of claim 20 or 21, wherein the bioprinting assembly is manoeuvred in any desired orientation to dispense the liquid onto the point of the site in a predetermined orientation.

23. The method of claim 22, wherein a droplet size of the liquid is selected such that the liquid forms a gel at the site of the subject without movement due to gravity.

24. Use of the bioprinting system of any one of claims 1 to 15 to print liquid to a site of a subject.
25. A method of priming a reservoir with a liquid, comprising:
- a) providing the bioprinting system of any one of claims 1 to 15;
 - b) connecting a container comprising the liquid to the loading mechanism in a sterile fluidic connection;
 - c) transferring the liquid from the container to the bioprinting assembly; and
 - d) priming the reservoir with the liquid.
26. The method of claim 25, wherein the liquid is a bio-ink or cell-ink and comprises cells, preferably, the cells are autologous cells of the subject.
27. The method of claims 25 or 26, wherein the container is a syringe, and wherein transferring the liquid comprises injecting the liquid into the bioprinting assembly.
28. The method of any one of claims 25 to 27, wherein the bioprinting system is provided in an operating theatre, and wherein the steps b) to d) are each performed within the operating theatre before the liquid is to be printed onto the site of the subject.