

CLAIMS

1. A method of fabricating and dosing a cell array, comprising:
providing a mixture of cells and a UV curable hydrogel matrix, wherein the cells are embryonic stem cells, induced pluripotent stem cells (iPSC) or cardiomyocytes;
applying a volume of the mixture in N x N array to a support and optionally providing for a specific geometry for the applied volume;
exposing the support to UV light to cure each volume in the array and optionally incubating the array under conditions that provide for cell viability; and
contacting the array with one or more compounds.
2. The method of claim 1 wherein the cells are iPSCs.
3. The method of claim 1 wherein the cells are cardiomyocytes.
4. The method of claim 1 wherein the support is a rigid support.
5. The method of claim 1 wherein the support is a flexible support.
6. The method of claim 1 wherein the support comprises glass, ceramic or a polymer sheet or film.
7. The method of claim 1 wherein the array is coated with an adhesion polymer.
8. The method of claim 1 wherein the specific geometry is provided by a mold or by microstructures in the array.
9. The method of claim 1 wherein the one or more compounds are applied using ultrasonic deposition.
10. A method of fabricating a stem cell array, comprising:
mixing induced pluripotent stem cells (iPSC) into or onto a UV curable hydrogel matrix;

coating the mixture onto a support to provide a N x N array of the hydrogel stem cell mixture with a specific predetermined geometry; and
applying UV light to cure the mixture in the presence of a micro mold template.

11. The method of claim 10 further comprising incubating the cells in nutrient solution and optionally exposing the array to one or more compounds.

12. The method of claim 11 wherein the one or more compounds is/are applied via ultrasonic deposition.

13. The method of claim 10 wherein the cells are iPSC cardiomyocytes.

14. The method of claim 10 wherein the support is transparent.

15. The method of claim 10 wherein the support is a polyester film, comprises polycarbonate or comprises glass.

16. The method of claim 10 wherein the support is porous.

17. The method of claim 10 wherein the specific geometry is provided by a mold or by microstructures in the array.

18. The method of claim 10 wherein the array is coated with an adhesion polymer.

19. A method of fabricating an array for cells, comprising:
providing a preembossed film substrate having microstructures that provide for a specific geometry and optionally coating the microstructures with one or more cellular adhesion polymers;
applying a volume of a mixture of iPSC cardiomyocytes and a UV curable hydrogel matrix to the support; and
laminating the support to a microplate in a N x N array, optionally wherein each N is independently an integer from 1 to 10,000.

20. The method of claim 1 wherein the hydrogel comprises gelatin.
21. The method of claim 20 wherein the hydrogel comprises GelMa.
22. The method of claim 21 wherein the cells are stem cell derived cardiomyocytes.