Claims:

1. A device comprising:

a cell trap comprising a plurality of micro-chambers, each micro-chamber configured to hold a cell, and

a manipulator array comprising a plurality of manipulators, each manipulator in spatial communication with a respective micro-chamber, wherein each manipulator comprises a needle, a stage, a tether, and an actuator, wherein the needle is mounted to the stage, and the actuator is operable to apply force to the stage via the tether in a direction to move the needle to penetrate a cell in the respective micro-chamber.

2. The device of Claim 1, wherein each manipulator comprises a plurality of actuators operable to apply a plurality of forces to the stage in a plurality of directions to move the needle.

3. The device of Claim 1, wherein the manipulator array comprises a plurality of sub-arrays, each sub-array comprising a portion of the plurality of manipulators.

4. The device of Claim 3, wherein at least one sub-array of the plurality of manipulators is three-sided.

5. The device of Claim 3, wherein at least one sub-array forms a triangle.

6. The device of Claim 1, the manipulator array further comprising an

interconnect, wherein the interconnect comprises connections to the actuator.

7. The device of Claim 1, the manipulator array further comprising a plurality of interconnects, wherein each interconnect comprises connections to the actuator, and wherein each interconnect is associated with a manipulator.

8. The device of Claim 6, the interconnect comprising a local interconnect, a transitional interconnect and a universal interconnect, wherein the universal interconnect is connected to the transitional interconnect, and the transitional interconnect is connected to the local interconnect.

9. The device of Claim 6, wherein the interconnect is located at a side of the manipulator array.

10. The device of Claim 3, wherein the sub-arrays are arranged to form a hexagon.

11. The device of Claim 6, wherein the interconnect is located at a periphery of the manipulator array.

12. A manipulator array comprising:

a substrate;

a plurality of manipulators arranged on the substrate, each manipulator comprising a needle, a stage, a tether, and an actuator, wherein the needle is mounted to the stage, the stage is connected to the actuator by the tether, and the actuator is operable to apply tension via the tether in at least one axis to actuate the stage in a direction to manipulate the needle; and

a plurality of sub-arrays, each sub-array comprising a portion of the plurality of manipulators, and interconnects formed on each side of each sub-array, wherein the plurality of sub-arrays are arranged together on the substrate with at least a portion of the interconnects located at a periphery of the manipulator array.

13. The array of Claim 12, wherein each manipulator comprises a plurality of actuators operable to apply tension in more than one axis to actuate the stage in a direction to manipulate the needle.

14. The array of Claim 12, wherein at least one sub-array of the plurality of manipulators is three-sided.

15. The array of Claim 12, wherein at least one sub-array forms a triangle.

16. The array of Claim 12, wherein the interconnects comprise connections to the actuator, and wherein each interconnect is associated with a manipulator.

17. The array of Claim 12, the interconnects comprising a local interconnect, a transitional interconnect and a universal interconnect, wherein the universal

interconnect is connected to the transitional interconnect, and the transitional interconnect is connected to the local interconnect.

18. The array of Claim 12, wherein the sub-arrays are arranged to form a hexagon.

19. The array of Claim 13, wherein the plurality of actuators are operable to apply tension in three directions.

20. The array of Claim 13, wherein the plurality of actuators is operable to provide tensile forces.

21. The array of Claim 12, wherein the manipulator array is operable to receive applied voltages at the interconnect, the voltages generating electrostatic forces to cause the actuator to apply tension so as to actuate the stage parallel to a plane parallel with the manipulator array to manipulate the needle.

22. The device of Claim 12, wherein the manipulator array is operable to receive applied voltages at the interconnect, the voltages generating electrostatic forces to cause the actuator to apply tension so as to actuate the stage transverse to a plane parallel with the manipulator array to manipulate the needle.

23. The device of Claim 1, wherein the manipulator array is operable to receive applied voltages at the interconnect at a periphery of the device, the voltages generating electrostatic forces to cause the actuator to apply forces so as to actuate the stage parallel to a plane parallel with the manipulator to move the needle with respect to the associated micro-chamber of the cell trap.

24. The device of Claim 1, wherein the manipulator array is operable to receive applied voltages at the interconnect at a periphery of the device, the voltages generating electrostatic forces to cause the actuator to apply forces so as to actuate the stage transverse to a plane parallel with the manipulator to move the needle with respect to the associated micro-chamber of the cell trap.