What is claimed is:

1. A cell culture assembly comprising:
a cell culture container comprising at least one well having an opening and a nadir; wherein the nadir comprises a substrate having an array of microwells; an insert structured to fit inside the at least one well of the cell culture container, said insert comprising a first open end, a second end having an opening, wherein said first open end and said second end define a cavity therebetween, and
wherein the second end comprises a fluid permeable mesh.

2. The cell culture assembly of claim 1, wherein the mesh comprises pores having an average pore size in a range from 10 micrometers to 200 micrometers.

3. A cell culture assembly according to claim 1 or 2, wherein the well is configured such that cells cultured in the well form spheroid in the array of microwells.

4. A cell culture assembly according to claim 3, wherein the pores of the mesh are of a size that allows passage of individual cells through the mesh and prevents passage of spheroids formed in the array of microwells through the mesh.

5. The cell culture assembly of any one of claims 1-4, wherein well insert further comprises a side wall, or a plurality of supports, extending from the first end to the second end.

6. The cell culture insert of claim 5, wherein at least a portion of said side wall comprises said mesh.

7. The cell culture assembly any one of claims 1-6, wherein the well insert further comprises one or more flanges extending from the first open end.

8. The cell culture assembly of any one of claims 1-7, wherein the well further defines an upper edge, wherein the first open end of the insert contacts the upper edge of the well to position the mesh a distance from the nadir.

9. The cell culture assembly of claim 8, further comprising a support, wherein the insert

contacts the support to position the mesh a distance from the nadir.

10. The cell culture assembly of any one of claims 1-9, wherein said well comprises a conical shape from the aperture to the nadir.

11. The cell culture assembly of any one of claims 1-10, wherein at least a portion of the interior surface of the insert is treated or coated to prevent cell adhesion to the interior surface of the insert.

12. The cell culture assembly of any one of claims 1-9 and 11, wherein the mesh comprises an average pore size of less than or equal to 40 micrometers.

13. A method of culturing spheroid cells in a cell culture assembly of any one of claims 1-12 comprising:

positioning an insert in a well;

introducing cells and media into the cavity of the insert,

allowing cells to pass through the mesh of the insert and form spheroids in the space between the nadir of the well and the mesh of the insert.

14. A method of removing media from a cell culture assembly of any one of claims 1-12 comprising:

positioning an insert in a well;

introducing cells and media into the cavity of the insert,

allowing cells to pass through the mesh of the insert and form spheroids in the space between the nadir of the well and the mesh of the insert

removing the media from the well above the insert.

15. The cell culture assembly according to any of claims 1 to 11,

wherein the insert further comprises

a frame, wherein the fluid permeable mesh comprises pores; and

wherein the pores comprise an average pore size in a range from 10 micrometers to 100 micrometers.

16. The cell culture assembly of claim 15, wherein the pores of the mesh are configured to prevent spheroids from passing through the mesh.

17. The cell culture assembly according to claim 15 or 16, wherein the well further defines an upper edge, wherein the frame contacts the upper edge to position the mesh a distance from the nadir.

18. The cell culture assembly according to claim 15 or 16, further comprising a support, wherein the frame contacts the support to position the mesh a distance from the nadir.

19. The cell culture assembly according to any one of claims 15 to 18, wherein interior surface of the well comprises a conical shape from the aperture to the nadir.

20. The cell culture assembly according to any one of claims 15 to 19, wherein the mesh comprises a circular shape.

21. The cell culture assembly according to any one of claims 15 to 19, wherein the mesh defines a square shape.

22. The cell culture assembly according to any one of claims 15 to 21, further comprising a plurality of wells and wherein the insert comprises a plurality of inserts, wherein each of the inserts is configured to be positioned in at least a portion of a different one of the wells of the plurality of wells.

23. The cell culture assembly according to any one of claims 15 to 22, wherein the interior surface of the well is coated with an ultra-low-adhesion material.

24. The cell culture assembly according to any one of claims 15 to 23, wherein at least a portion of the frame comprises mesh.

25. The cell culture assembly according to any one of claims 15 to 24, wherein the frame comprises at least one support wire coupled to the fluid permeable mesh.

26. The cell culture assembly according to any one of claims 15 to 25, wherein the well comprises at least one sub-well along the interior surface.

27. A method of culturing spheroid cells in a cell culture assembly of any one of claims 15-26 comprising:

positioning an insert in a well;

introducing cells and media into the cavity of the insert,

allowing cells to pass through the mesh of the insert and form spheroids in the space between the nadir of the well and the mesh of the insert.

28. A method of removing media from a cell culture assembly of any one of claims 15-26 comprising:

positioning an insert in a well;

introducing cells and media into the cavity of the insert,

allowing cells to pass through the mesh of the insert and form spheroids in the space between the nadir of the well and the mesh of the insert

removing the media from the well above the insert.