Claims:

1. A tangential flow filtration (TFF) cassette, comprising:

   a flexible isolation plate;

   at least one of a gasket and a filter plate; and

   disposed between the flexible isolation plate and the gasket or filter plate, a plurality of interleaved layers defining at least one membrane, at least one feed channel and at least one filtrate channel, the plurality of interleaved layers comprising:

   a filtrate channel spacer defining an open interior volume bounded by an inner perimeter and including one or more fluid ports;

   a non-flexible feed channel spacer defining an open interior volume bounded by an inner perimeter and including one or more fluid ports;

   a membrane disposed between the filtrate channel spacer and the feed channel spacers; and, optionally,

   a thin film of pressure sensitive adhesive binding together the membrane and one of the filtrate channel spacer and the feed channel spacer, said thin film of pressure sensitive adhesive having a thickness of less than 50% of height of an adjacent filtrate or feed channel;

   wherein (a) the flexible isolation plate comprises a flexible polymer or a thermoplastic elastomer and is bonded to a first surface of the interleaved layers and (b) the membrane comprises a plurality of track-etched (TE) membranes, wherein the membranes comprise a plurality of pores, and wherein the pores are uniform in size and shape.

2. The cassette of claim 1, wherein the plurality of pores are uniform in diameter, depth, and/or path length.
3. The cassette of claim 1 or 2, wherein the average pore size is 100kD to 30 micron.
4. The cassette of any one of claims 1-4, wherein the TE membrane has a thickness up to 60 microns.
5. The cassette of claim 1, wherein the track-etched membranes comprise a plurality of polycarbonate, polyimide, polyvinylidene fluoride or polyester flat sheets.
6. The cassette of claim 1, wherein the plurality of pores may have one or more of the following structures: cylinder, cone, cigar, funnel and hour glass.
7. The cassette of any one of claims 1-6, wherein the cassette is used in alternating tangential flow filtration.
8. The cassette of any one of claim 1-7, wherein a gasket is bonded to a second surface of the interleaved stack, the gasket comprising separate fluid ports for the feed and filtrate channels.

9. The cassette of any one of claims 1-8, wherein a filter plate is bonded to the gasket, the filter plate comprising a fluid manifold wherein a feed port of the filter plate is aligned with a feed port of the gasket, and a filtrate port of the filter plate is aligned with a filtrate port of the gasket.
10. The cassette of any one of claims 1-9, further comprising a tab or an engraving on a sidewall of the cassette to identify the TFF cassette by one or more of a stock keeping unit (SKU) number, a lot number, a serial number, a capacity, a number of feed and/or filtrate channels, and a number of membranes.
11. The cassette of claim 10, wherein the tab or engraving comprises a barcode.
12. The cassette of any one of claims 1-11, wherein the TFF cassette is disposable after use.
13. The cassette of any one of claims 1-11, wherein the TFF cassette is reusable.
14. The cassette of any one of claims 1-13, wherein the TFF cassette comprises a sealed edge.
15. The cassette of any one of claims 1-14, wherein the at least one feed channel comprises a feed screen disposed within a space defined by the feed channel spacer.
16. The cassette of claim15, wherein the feed screen comprises a woven, non-woven or extruded polymer mesh.
17. The cassette of claim 15 or 16, wherein the at least one filtrate channel comprises a filtrate screen disposed within a space defined by the filtrate channel spacer.
18. The cassette of claim 17, wherein the filtrate screen comprises a woven, non-woven or extruded polymer mesh.
19. A method for the filtration of a cell culture, comprising:

using a cassette, wherein the cassette comprises:

a flexible isolation plate;

at least one of a gasket and a filter plate; and

disposed between the flexible isolation plate and the gasket or filter plate, a plurality of interleaved layers defining at least one feed channel and at least one filtrate channel, the plurality of interleaved layers comprising:

a filtrate channel spacer defining an open interior volume bounded by an inner perimeter and including one or more fluid ports;

a non-flexible feed channel spacer defining an open interior volume bounded by an inner perimeter and including one or more fluid ports;

a membrane disposed between the filtrate channel spacer and the feed channel spacers; and, optionally,

a pressure sensitive adhesive binding together the membrane and one of the filtrate channel spacer and the feed channel spacer, said thin film of pressure sensitive adhesive having a thickness of less than 50% of height of an adjacent channel;

wherein (a) the flexible isolation plate comprises a flexible polymer or a thermoplastic elastomer and is bonded to a first surface of the interleaved stack and (b) the membrane comprises a plurality of track-etched membranes, wherein the membranes comprise a plurality of pores, and wherein the pores are uniform in size and shape;

connecting the cassette housing to a process vessel;

connecting the cassette housing to a separation system;

circulating a cell culture through the track etched membrane filter and separation system;

filtering the cell culture through the membrane filter;

collecting the resulting filtrate; and

returning the cell culture to the process vessel.

20. The method of claim 19, wherein the cell culture is a mammalian cell culture.

21. The method of claim 19 or 20, wherein the circulation of the cell culture is performed by alternating tangential flow.

22. The method of claim 19 or 20, wherein the circulation of the cell culture is performed by tangential flow filtration.