blood withdrawal device; (c) a cell transduction apparatus fluidly connected to the cell separation filter; (d) a cell processing apparatus fluidly connected to the cell transduction apparatus; and (e) a cell therapy infusion device fluidly connected to the cell processing apparatus.

[0005a] In one aspect, the present disclosure refers to a cell therapy production system, comprising: (a) a blood withdrawal device; (b) a cell separation device fluidly connected to the blood withdrawal device; (c) a cell transduction apparatus for transducing a cell therapy, the cell transduction apparatus fluidly connected to the cell separation device; (d) a cell processing apparatus for processing a cell therapy, the cell processing apparatus including a cell culture chamber and being fluidly connected to the cell transduction apparatus and to a patient; (e) a cell therapy infusion device capable of returning the cell therapy to the patient, the cell therapy infusion device being fluidly connected to the cell processing apparatus; and (f) an automated process control system configured to automatically control the cell therapy production system; and further comprising a sterile, closed connection between the cell transduction apparatus and the cell processing apparatus for transferring a transduced cell therapy from the cell transduction apparatus to the cell processing apparatus.

[0006] In another example, the present disclosure refers to a cell therapy production system, comprising: (a) a blood withdrawal device; (b) an automated cell engineering system, including: i. an enclosable housing; ii. a cell separation device contained within the enclosable housing and fluidly connected to the blood withdrawal device; iii. a cell transduction apparatus contained within the enclosable housing and fluidly connected to the cell separation filter; and iv. a cassette contained within the enclosable housing, the cassette comprising a cell culture chamber fluidly connected to the cell transduction apparatus; and (c) a cell therapy infusion device fluidly connected to the cell culture chamber.

[0007] Also provided herein is a method for preparing a cell therapy product, the method comprising: withdrawing a blood sample from a patient; passing the blood sample through a cell separation device to remove a target cell population from the blood sample; transducing the target cell population with a vector to produce a transduced cell culture; optionally expanding the transduced cell culture; harvesting the cell culture; and infusing the harvested cell culture into the patient.

Brief Description of the Figures

[0008] FIG. 1 shows a cell therapy production system in accordance with embodiments hereof.

[0009] FIG. 2 shows exemplary components of a call therapy production system in accordance with embodiments hereof.

[0010] FIGS. 3A-3B show an automated cell engineering system in accordance with embodiments hereof.

[0011] FIG. 4 shows a cartridge for use in embodiments hereof.

CLAIMS

1. A cell therapy production system, comprising:

(a) a blood withdrawal device;

(b) a cell separation device fluidly connected to the blood withdrawal device;

(c) a cell transduction apparatus for transducing a cell therapy, the cell transduction apparatus fluidly connected to the cell separation device;

(d) a cell processing apparatus for processing a cell therapy, the cell processing apparatus including a cell culture chamber and being fluidly connected to the cell transduction apparatus and to a patient;

(e) a cell therapy infusion device capable of returning the cell therapy to the patient, the cell therapy infusion device being fluidly connected to the cell processing apparatus; and

(f) an automated process control system configured to automatically control the cell therapy production system; and

further comprising a sterile, closed connection between the cell transduction apparatus and the cell processing apparatus for transferring a transduced cell therapy from the cell transduction apparatus to the cell processing apparatus.

2. The system of claim 1, wherein the cell separation device is a cell separation filter that includes a matrix which captures a target cell population.

3. The system of claim 2, wherein the target cell population is a T-cell population.

4. The system of any one of claims 1-3, wherein the cell transduction apparatus is an electroporation unit.

5. The system of any one of claims 1-4, wherein the cell separation device, the cell transduction apparatus and the cell processing apparatus are contained within an automated cell engineering system.

6. The system of claim 5, wherein the automated cell engineering system includes an enclosable housing.