CLAIMS

1. A method of recirculating culture media through a microfluidic device, comprising:

(a) providing an assembly, comprising

(i) an inlet reservoir and (ii) an outlet reservoir connected by (iii) a shortcut channel, the shortcut channel containing (iv) a single valve, and the inlet and outlet reservoirs in fluidic communication with (v) a microfluidic device, the inlet reservoir comprising fluid, the microfluidic device comprising inlet and outlet ports, one of the ports linked to one of the reservoirs through a resistor; and

(b) causing fluid in the inlet reservoir to flow into the inlet port of the microfluidic device while the valve is closed, thereby causing fluid to exit the outlet port of the one or more microfluidic devices and enter the outlet reservoir as recirculated fluid;

(c) causing the valve to open, thereby permitting the recirculated fluid in the outlet reservoir to move through the shortcut channel to the inlet reservoir; and

(d) causing the valve to close;

(e) flowing the recirculated fluid in the inlet reservoir into the inlet port of the microfluidic device.

2. A method according to Claim 1, in which the fluid is moved in step (b) with pressure.

3. A method according to Claim 1, in which the single valve is a one-way check valve.

4. A method according to Claim 1, in which the majority of fluid in step (c) moves into the inlet reservoir through the open check valve as the path of least resistance.

5. A method according to Claim 1, in which the microfluidic device further comprises cells.

6. An assembly, comprising:

(i) an inlet reservoir and (ii) an outlet reservoir connected by (iii) a shortcut channel, the shortcut channel containing (iv) a single valve, the inlet and outlet reservoirs in fluidic communication with (v) a microfluidic device, the inlet reservoir comprising

fluid, the microfluidic device comprising inlet and outlet ports, one of the ports linked to one of the reservoirs through a resistor.

7. An assembly according to Claim 6, in which the valve, when closed, is configured to prevent fluid from moving from the outlet reservoir to the inlet reservoir.

8. An assembly according to Claim 6, in which the assembly is configured to move the fluid with pressure.

9. An assembly according to Claim 6, in which the single valve is a one-way check valve.