CLAIMS

1. A device for collection of internal fluid from a wound or incision comprising:

A) a housing comprising:

i) at least one fluid inlet connector,

ii) a fluid chamber comprising at least one pressure sensing element,

iii) at least one peristaltic or positive displacement pump unit,

iv) a control unit including a circuit control board, and

v) at least one outlet port; and

B) at least one fluid collector connected to said at least one outlet port for collection of fluid drained from said wound or incision;

wherein said at least one fluid inlet connector is configured to connect to a drainage structure positioned within said wound or incision;

wherein said at least one fluid inlet connector is in fluid communication with said fluid chamber and said fluid chamber is positioned downstream from said at least one fluid inlet connector;

wherein said fluid chamber is in fluid communication with said at least one peristaltic or positive displacement pump unit;

wherein said at least one peristaltic or positive displacement pump unit is in fluid communication with said at least one outlet port of said housing;

wherein said circuit control board of said control unit is configured to monitor the pressure developed by said at least one peristaltic or positive displacement pump unit in order to selectively run or momentarily stop said at least one peristaltic or positive displacement pump

unit to regulate the pressure delivered to the wound or incision site by receiving input data from said at least one pressure-sensing element;

wherein said at least one peristaltic or positive displacement pump unit is configured to create a negative pressure to drain said fluid therethrough into said at least one peristaltic or positive displacement pump unit through said at least one fluid inlet connector and to create a positive pressure between said at least one peristaltic or positive displacement pump unit and said at least one fluid collector to transport said fluid from said at least one peristaltic or positive displacement pump unit to said at least one fluid collector through said at least one outlet port; and

wherein all electronic components for operation of components ii), iii), and iv) are present within said housing.

2. The device of claim 1, wherein said at least one fluid collector comprises one or more fluid reservoirs.

3. The device of claim 2, wherein said one or more fluid reservoirs are removably attached to said at least one outlet port.

4. The device of claim 3, wherein said one or more fluid reservoirs are disposable and of a collapsible or non-collapsible nature.

5. The device of claim 2, wherein said one or more fluid reservoirs comprise a fluid intake port and an air release port.

6. The device of claim 5, wherein said one or more fluid reservoirs comprise one or more air-permeable but liquid-impermeable membranes.

7. The device of claim 5, wherein said one or more fluid reservoirs are internally segmented or compartmented.

8. The device of claim 5, wherein said one or more fluid reservoirs are rigid or flexible, in whole or in part.

9. The device of claim 5, wherein said fluid intake port comprises a one-way valve.

10. The device of claim 5, further comprising an activated carbon section proximate said air release port.

11. The device of claim 5, further comprising means to measure the amount of fluid in said one or more fluid reservoirs.

12. The device of claim 1, wherein said at least one pump unit is a peristaltic pump with a central rolling mechanism sequentially compressing an internal flexible tubing.

13. The device of claim 1, further comprising a first one-way valve at said at least one fluid inlet connector and a second one-way valve at said at least one outlet port.

14. The device of claim 1, further comprising a binder to which said device is removably attached.

15. The device of claim 1, wherein said pump unit further comprises a wireless communications unit to wirelessly communicate some or all of said input data to an external computing device.

16. The device of claim 1, further comprising one or more sensors adapted to measure biological or chemical properties or parameters, or combinations thereof, of the collected fluid, further wherein said properties or parameters include one or more pH, cytokines, chemokines, reactive oxygen species, or protein levels.

17. The device of claim 1 wherein said device exhibits collection unit-fill detection facilitated by tracking operation of said pump at a known flow rate or displacement per amount time.