Claims

1. A dispensing apparatus for dispensing biofluid, the dispensing apparatus comprising:

a cartridge comprising:

a receiving chamber for receiving a bulk sample of biofluid;

a set of metering chambers fluidically communicative with the receiving chamber, each metering chamber configured for holding a predefined volume of biofluid sample apportioned from the biofluid bulk sample; and

each metering chamber comprising an outlet for dispensing the respective biofluid sample and a dispensing filter for filtering the respective biofluid sample during dispensing,

wherein the biofluid samples in the metering chambers are dispensable through the outlets by applying vacuum pressure in the cartridge, the dispensing filters preventing dispensing of the biofluid samples in absence of the vacuum pressure.

2. The dispensing apparatus according to claim 1, wherein the dispensing filters comprise a set of frit filters and/or a set of semipermeable membranes.

3. The dispensing apparatus according to claim 1 or 2, wherein the dispensing filters are configured to withhold particulate matter of at least 2 µm.

4. The dispensing apparatus according to any one of claims 1 to 3, further comprising a cuvette casing for removably receiving a set of cuvettes, the cartridge and cuvette casing removably coupleable to each other such that each cuvette is joined to a respective one of the metering chambers for receiving the respective filtered biofluid sample.

5. The dispensing apparatus according to claim 4, further comprising the cuvettes in the cuvette casing, wherein the cartridge and cuvette casing are removably coupled to each other and the cuvettes are removably coupled to the metering chambers.

6. The dispensing apparatus according to claim 5, wherein each cuvette contains a magnetic object for facilitating physical mixing of the biofluid sample and a reagent in the cuvette.

7. The dispensing apparatus according to any one of claims 1 to 6, further comprising a cartridge lid for sealing the cartridge.

8. The dispensing apparatus according to claim 7, wherein the cartridge lid comprises a vacuum port for receiving a vacuum actuator that is actuatable by application of the vacuum pressure.

9. The dispensing apparatus according to any one of claims 1 to 8, wherein each metering chamber comprises a retainer ring fitted onto the respective dispensing filter to prevent backflow of the biofluid sample.

10. The dispensing apparatus according to any one of claims 1 to 9, further comprising a piston assembly disposed in the cartridge, the piston assembly actuatable by application of the vacuum pressure for dispensing the biofluid samples.

11. An assay apparatus for assaying biofluid, the assay apparatus comprising:

a vacuum chamber for removably housing a dispensing apparatus comprising a set of cuvettes and a set of biofluid samples, the cuvettes comprising a set of reagents;

a vacuum cover for sealing the dispensing apparatus in the vacuum chamber;

a vacuum device for applying vacuum pressure in the vacuum chamber, the vacuum pressure for dispensing the biofluid samples into the cuvettes, such that the biofluid samples react with the reagents to form assay samples; and

a set of assay control systems for controlling the vacuum device and performing an assay process, the assay process comprising applying the vacuum pressure to dispense the biofluid samples and assaying the assay samples in the cuvettes.

12. The assay apparatus according to claim 11, wherein the vacuum chamber and the vacuum cover comprise a set of interlocking detectors for detecting that the vacuum cover is closed.

13. The assay apparatus according to claim 11 or 12, further comprising a vacuum actuator actuatable by application of the vacuum pressure.

14. The assay apparatus according to claim 13, wherein the vacuum cover comprises a vacuum actuator housing for the vacuum actuator.

15. The assay apparatus according to claim 13 or 14, wherein the vacuum actuator is actuatable to displace a piston assembly of the dispensing apparatus to thereby dispense the biofluid samples.

16. The assay apparatus according to any one of claims 11 to 15, wherein the assay control systems comprise an electromagnetic mixing system for mixing the biofluid samples with the reagents in the cuvettes.

17. A method for assaying biofluid, the method comprising:

providing an assay apparatus comprising a vacuum chamber, a vacuum cover, and a vacuum device;

loading a dispensing apparatus into the vacuum chamber, the dispensing apparatus comprising a set of cuvettes and a set of biofluid samples, the cuvettes comprising a set of reagents;

sealing the dispensing apparatus in the vacuum chamber with the vacuum cover;

operating the vacuum device to apply vacuum pressure in the vacuum chamber, the vacuum pressure for dispensing the biofluid samples into the cuvettes, such that the biofluid samples react with the reagents to form assay samples; and

operating a set of assay control systems to control the vacuum device and perform an assay process, the assay process comprising applying the

vacuum pressure to dispense the biofluid samples and assaying the assay samples in the cuvettes.

18. An assay system for assaying biofluid, the assay system comprising:

a base station;

a number of test stations communicatively connected to the base station, each test station comprising an assay apparatus, the assay apparatus comprising:

a vacuum chamber for removably housing a dispensing apparatus comprising a set of cuvettes and a set of biofluid samples, the cuvettes comprising a set of reagents;

a vacuum cover for sealing the dispensing apparatus in the vacuum chamber; and

a set of assay control systems for performing an assay process; and

the assay system further comprising a set of vacuum devices for applying vacuum pressure in the vacuum chambers of the test stations, the vacuum pressure for dispensing the biofluid samples into the cuvettes, such that the biofluid samples react with the reagents to form assay samples,

wherein the respective assay process comprises applying the vacuum pressure to dispense the biofluid samples and assaying the assay samples in the cuvettes; and

wherein the base station is configured for controlling the test stations to perform the assay processes.

19. The assay system according to claim 18, wherein for each test station, the base station is configured to:

transmit a respective set of instructions to the test station to perform the respective assay process; and/or

transmit a common set of instructions to all the test stations to simultaneously perform the assay processes.

20. A computerized method for availing assay results from an assay process performed on biofluid samples of a patient, the computerized method comprising:

receiving, from a first electronic device, a request from the patient to access an online interface and initiate the assay process, the patient request comprising a device identifier of the first electronic device and identification data associated with a dispensing apparatus for collecting the biofluid samples;

associating the identification data with the device identifier;

receiving, from a second electronic device, a request from an operator performing the assay process to access the online interface and input the assay results, the operator request comprising the identification data and the assay results;

associating the assay results with the identification data; and

sending a results message to the first electronic device, the results message indicating the assay results are available on the online interface accessed by the first electronic device.