CLAIMS

WHAT IS CLAIMED IS:

1. An apparatus for bioprocessing, comprising:

a housing;

a drawer receivable within the housing,

wherein the drawer includes a plurality of sidewalls and a bottom integrated with the sidewalls defining a processing chamber,

wherein the sidewalls further define an open top allowing a bioreactor vessel to be placed into the processing chamber, wherein the drawer translates between a closed position in which the drawer is received within the housing, and an open position in which the drawer extends from the housing;

wherein when the drawer extends from the housing access to the processing chamber is enabled through the generally open top; and,

at least one bed plate positioned within the processing chamber and configured to receive and support a rigid bottom plate of the bioreactor vessel;

wherein the at least one bed plate includes an actuator mechanism that is configured to contact an end portion of the rigid bottom plate of the bioreactor vessel and selectively raise the end portion above an opposite end portion to agitate fluid in the bioreactor vessel.

2. The apparatus of claim 1, further comprising:

at least one heating element for heating the processing chamber;

wherein the at least one heating element is controllable to heat the plurality of sidewalls to maintain contents of the bioreactor vessel at a desired temperature.

3. The apparatus of claim 2, wherein:

a heating element of the at least one heating element is operatively connected to the at least one bed plate;

wherein the heating element is controllable to heat the at least one bed plate to maintain the contents of the bioreactor vessel at the desired temperature.

4. The apparatus of claim 1, wherein:

the at least one bed plate includes a plurality of locating pins configured to interface with the bioreactor vessel to ensure alignment of the bioreactor vessel on the bed plate.

5. The apparatus of claim 1, wherein:

the at least one bed plate includes a sensor for detecting proper alignment of the bioreactor vessel on the bed plate.

6. The apparatus of claim 1, wherein:

the sensor is one of an infrared optical beam or a lever switch.

7. The apparatus of claim 1, further comprising:

an actuator mechanism integrated with the bed plate, the actuator mechanism being operable to selectively tilt the bioreactor vessel with respect to the at least one bed plate.

8. The apparatus of claim 7, wherein:

the actuator mechanism includes a pair of cam arms on opposite ends of the at least one bed plate that extend through the at least one bed plate to engage opposing end portions of the rigid bottom plate of the bioreactor vessel and selectively raise and lower each of the opposing end portions of the rigid bottom plate such that each of the opposing end portions is alternatively raised off of the at least one bed plate to agitate fluid in the bioreactor vessel.

9. The apparatus of claim 1, further comprising:

at least one guide rail mounted to the housing and operatively connected to the drawer; and

a linear actuator operable to move the drawer along the track system between the open position and the closed position.

10. The apparatus of claim 9, wherein:

the linear actuator is configured to move the drawer along the track system at a predetermined and constant speed to minimize disturbance to contents of the bioreactor vessel.

11. The apparatus of claim 1, wherein:

the drawer includes a compartment having at least one rail for supporting a disposable media bag;

wherein the compartment is accessible without moving the drawer to the open position.

12. The apparatus of claim 11, further comprising:

a refrigeration means for cooling the media bag to a predetermined temperature.

13. The apparatus of claim 1, further comprising:

a load cell positioned within the drawer, configured to support a waste bag and sense a weight of the waste bag.

14. The apparatus of claim 1, wherein:

the at least one bed plate is two bed plates, wherein each bed plate is configured to receive a bioreactor vessel.

15. The apparatus of claim 1, further comprising:

an anvil integrated with the drawer; and

an array of pinch valve linear actuators positioned opposite the anvil, the anvil and the pinch valve linear actuators forming a channel therebetween for receiving a plurality of pinch valve tubes;

wherein each of the pinch valve linear actuators is selectively actuatable to engage one of the plurality of pinch valve tubes to control a flow of fluids through the plurality of pinch valve tubes.

16. The apparatus of claim 15, further comprising:

at least one pump positioned within the housing behind the drawer; and

a pump shoe integrated with the drawer, the at least one pump and the pump shoe forming a passage for receiving at least one pump tube.

17. The apparatus of claim 16, further comprising:

a drawer engagement actuator positioned within the housing and operable to selectively position the plurality of pinch valve tubes and the at least one pump tube, or the at least one pump and the array of pinch valve linear actuators, in an engagement position where the at least one pump and the array of pinch valve linear actuators can engage the at least one pump tube and plurality of pinch valve tubes, respectively, and a clearance position where the at least one pump and the array of pinch valve linear actuators are disengaged from the at least one pump tube and the plurality of pinch valve tubes, respectively.

18. The apparatus of claim 17, wherein:

the linear actuator and the drawer engagement actuator are operable independently of one another such that the drawer can be moved to the open position in a first mode where the at least one pump and the array of pinch valve linear actuators are in the engagement position, and a second mode where the at least one pump and the array of pinch valve linear actuators are disengaged from the plurality of pinch valve tubes.

19. The apparatus of claim 1, wherein:

the drawer includes at least one chevron-shaped alignment feature for facilitating alignment of a tray containing the bioreactor vessel with the drawer.

20. The apparatus of claim 1, wherein:

the at least one bed plate includes at least one load cell for sensing a weight of the bioreactor vessel.

21. A bioprocessing apparatus comprising:

a housing;

a drawer receivable within the housing, translatable from open and closed positions,

wherein the drawer further comprises a plurality of sidewalls and a bottom integrated and configured to define a processing chamber,

wherein the sidewalls further define an open top, said open top remaining generally open when the drawer is either open or closed; and,

at least one bed plate positioned within the processing chamber configured to receive a bioreactor vessel,

wherein the at least one bed plate includes an actuator mechanism that is configured to contact an end portion the bioreactor vessel and selectively raise the end portion above an opposite end portion to agitate fluid in the bioreactor vessel.