

CLAIMS

What is claimed is:

1. A magnetic bead purification system, comprising:
 - a housing;
 - 5 a purification station system movable between a purification treatment position inside the housing and a loading position outside the housing, the purification station system being adapted to load a container filled with a mixed liquid of incubated crude proteins and magnetic beads;
 - a liquid path treatment system provided inside the housing, the liquid path treatment
 - 10 system being connectable to a reagent barrel and a waste liquid barrel;
 - a sample addition needle group connected to the liquid path treatment system so as to receive a reagent from the liquid path treatment system or to discharge a waste liquid to the liquid path treatment system, the sample addition needle group being movable within the housing;
 - 15 wherein each sample addition needle of the sample addition needle group comprises a waste discharging needle hole configured to discharge waste liquid from said container at the purification treatment position and a sample addition needle hole configured to add reagents to said container at the purification treatment position;
 - wherein the sample addition needle holes are further configured for spray rinsing of a
 - 20 container wall of said container and bubble blowing in said container at the purification treatment position; and
 - a purification magnetic separation system comprising a magnetic element,
 - wherein the magnetic element is a permanent magnet, and wherein the purification magnetic separation system is controllable to apply a lateral magnetic force to said
 - 25 container at the purification treatment position inside the housing or stop the application of the lateral magnetic force by moving the magnetic element toward and away from the purification treatment position, and the magnetic element applies the lateral magnetic force

to attract the magnetic beads onto the container wall of said container; and

wherein the purification station system comprises a magnetic attraction block so as to move from the loading position to the purification treatment position by the lateral magnetic force of the magnetic element of the purification magnetic separation system.

5 2. The magnetic bead purification system according to claim 1, wherein the purification magnetic separation system comprises a driving system, a sliding system and a transmission system, so as to move the magnetic element towards and away from the purification treatment position.

10 3. The magnetic bead purification system according to claim 1, wherein the purification station system comprises a sliding system, and is driven by a driving device to move from the purification treatment position to the loading position.

4. The magnetic bead purification system according to claim 1, wherein the purification station system comprises two purification station brackets, and each purification station bracket comprises at least one adaptation hole for a purification container.

15 5. The magnetic bead purification system according to claim 1, wherein the sample addition needle group is a variable-spacing sample addition needle group comprising a plurality of sample addition needles.

20 6. The magnetic bead purification system according to claim 5, wherein the variable-spacing sample addition needle group comprises a fixed type sample addition needle fixing block and a movable type sample addition needle fixing block which are each configured to mount a plurality of sample addition needles, and the movable type sample addition needle fixing block is movable to adjust a spacing between the sample addition needles in the sample addition needle group.

25 7. The magnetic bead purification system according to claim 6, wherein the variable-spacing sample addition needle group comprises more than one movable type sample addition needle fixing block.

8. The magnetic bead purification system according to claim 1, wherein the sample addition needle group comprises an elastic mechanism configured for up-and-down trace

movement of the sample addition needles.

9. The magnetic bead purification system according to claim 1, wherein the magnetic bead purification system further comprises a mechanical arm provided inside the housing, and the sample addition needle group is mounted on the mechanical arm to realize movement.

5 10. The magnetic bead purification system according to claim 1, wherein the magnetic bead purification system comprises a cleaning module for cleaning the sample addition needles.

11. The magnetic bead purification system according to claim 10, wherein the cleaning module comprises cleaning liquid addition holes paired with the sample addition needles, a
10 liquid discharging hole, a cleaning slot and a cleaning liquid discharging slot.

12. The magnetic bead purification system according to claim 1, wherein the magnetic bead purification system further comprises a control system; and the control system automatically controls operation of each component of the magnetic bead purification system according to settings.

15 13. The magnetic bead purification system according to claim 1, wherein the magnetic bead purification system further comprises a contamination control system, and the contamination control system comprises a wind path filtering system and an ultraviolet sterilization system.

14. The magnetic bead purification system according to claim 1, wherein the
20 purification station system comprises a fixing device to load a six-hole container.