

CLAIMS

WHAT IS CLAIMED IS:

1. A nucleic acid sequencing apparatus comprising:

(a) a nucleic acid library preparation compartment comprising two or more chambers configured to prepare a plurality of nucleic acids from a sample for a sequencing reaction, wherein said compartment is operatively connected to a nucleic acid sequencing chamber;

(b) a nucleic acid sequencing chamber, wherein said nucleic acid sequencing chamber comprises:

(i) one or more flow cells comprising a plurality of pores or sequencing cartridges configured for the passage of a nucleic acid strand, wherein each said one or more flow cells comprises a sample input port comprising a flow path in fluid communication with a sensing chamber outlet, wherein said sample input port is configured to be robotically opened, wherein said sample input port comprises a plug that projects a sufficient distance above the surface of the flow cell for removal by a robotic tool; and

(c) an automated platform, wherein said automated platform is programmed to robotically move a sample from said nucleic acid library preparation compartment into said sample input port in said nucleic acid sequencing chamber.

2. The nucleic acid sequencing apparatus of claim 1, wherein said automated platform moves a second sample from said nucleic acid library preparation compartment into said nucleic acid sequencing chamber upon detecting a failure of a sequencing reaction.

3. The nucleic acid sequencing apparatus of claim 1, wherein said automated platform moves a second sample from said nucleic acid library preparation compartment into said nucleic acid sequencing chamber upon detecting a completion of a sequencing reaction.

4. The nucleic acid sequencing apparatus of claim 1, further comprising adding a barcode to a plurality of nucleic acids in said two or more chambers of (a), thereby providing a plurality of barcoded nucleic acids for said sequencing reaction.

5. The nucleic acid sequencing apparatus of claim 1, further comprising adding a plurality of mutually exclusive barcodes to a plurality of nucleic acids in said two or more chambers of (a), thereby providing a plurality of mutually exclusive barcoded nucleic acids.

6. The nucleic acid sequencing apparatus of claim 5, wherein said automated platform robotically moves two or more of said mutually exclusive barcoded nucleic acids into said nucleic acid sequencing chamber.

7. The nucleic acid sequencing apparatus of claim 5, wherein said automated platform robotically moves two or more of said mutually exclusive barcoded nucleic acids into a same flow cell of said one or more flow cells.

8. The nucleic acid sequencing apparatus of claim 5, wherein said sample is a food or an environmental sample.
9. The nucleic acid sequencing apparatus of claim 5, wherein said sample is a non-food sample.
10. The nucleic acid sequencing apparatus of claim 9, wherein said sample comprise blood, plasma, urine, tissue, faces, bone marrow, saliva or cerebrospinal fluid.
11. The nucleic acid apparatus of claim 1, wherein said automated platform is programmed to robotically open said plug.
12. The nucleic acid apparatus of claim 1, wherein said automated platform is programmed to flush at least one of said one or more flow cells.
13. The nucleic acid apparatus of claim 1, wherein said automated platform is programmed to move a liquid sample of about 0.1 μ l to about 1000 μ l from said nucleic acid library preparation compartment into said sample input port.