

[0017] FIG. 2 is a block diagram of an apparatus for evaluating samples or analytes in accordance with another embodiment of the present invention;

[0018] FIG. 3 is a flow chart of a method for evaluating samples or analytes in accordance with one embodiment of the present invention;

[0019] FIG. 4 is a flow chart of a method for evaluating samples or analytes in accordance with another embodiment of the present invention;

[0020] FIG. 5 is a flow chart of a method for evaluating samples or analytes in accordance with yet another embodiment of the present invention;

[0021] FIG. 6 is a flow chart of a method for evaluating samples or analytes in accordance with yet another embodiment of the present invention; and

[0022] FIG. 7 is an example of a report generated by one embodiment of the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

[0023] While the making and using of various embodiments of the present invention are discussed in detail below, it should be appreciated that the present invention provides many applicable inventive concepts that can be embodied in a wide variety of specific contexts. The specific embodiments discussed herein are merely illustrative of specific ways to make and use the invention and do not delimit the scope of the invention. Although the following description generally describes various embodiments of the present invention, it should be understood that the system, devices and methods described herein can be applied to other information-based analysis systems, devices and methods.

[0024] Pandora Genomics provides a ready-made solution to make the drug discovery process and clinical use of drugs more efficient and cost effective. The handheld, point-of-care device can integrate sample collection, testing, and intuitive results reporting to facilitate the integration of genetic information into clinical research and care. The technology is easy to implement, has a quick turnaround time, can be located on-site, and can eliminate the need for trained technicians and the need to send samples to a centralized reference laboratory. The device can save money for pharmaceutical companies, patients, and insurance companies by improving the chances of success in drug approval and by reducing hospitalization costs associated with adverse drug events.

[0025] The present invention provides a system, apparatus and method for evaluating samples or analytes using a point-of-care (POC) device. A handheld embodiment of the POC device can have a touch screen interface and separate ports for a monitor, a printer, mass storage, and other devices. The POC device can be run using a smartphone, computer, or directly from the device. The POC device accepts different test “cartridges.” The test cartridge is user selected through the POC device’s software/firmware/integrated hardware in a “decision tree” format. The software/firmware/integrated hardware on the device can aid the user in the selection of the appropriate test type based on the needs of the user. Then, the user may be prompted to insert the appropriate test type into the instrument. The POC device can determine that the appropriate test cartridge has been inserted. The decision tree can be bypassed if the user already knows which test needs to be run. These cartridges can contain different types of molecular tests depending on the need. The POC device can evaluate biological samples where the biological analyte (e.g., DNA) has been extracted and those that do not require analyte

extraction. The POC device may provide Internet access, with integrated wireless and 3G/4G connectivity, enabling electronic health/medical records for data transmission from the POC device to the main center from processing and data storage.

[0026] Now referring to FIG. 1, a block diagram of a system 100 and apparatus 102 for evaluating samples or analytes in accordance with one embodiment of the present invention is shown. The system 100 includes one or more point-of-care devices 102, one or more test cartridges 104, a remote server computer 106 accessible by the POC device 102 via a network 108. The POC device 102 can connect to one or more external devices (e.g., printer, memory stick, computer, etc. (not shown)) directly or one or more external devices (e.g., output devices 110, etc.) via the network 108. Other external devices may include a data storage 112, one or more communication devices 114 (e.g., mobile phones, personal data assistants, portable computers or tablets, etc.), one or more testing devices 116, data sources or devices 118 that provide access to patient information, patient clinical information or other types of information. The server computer 106 is communicably coupled to one or more databases 120.

[0027] The POC device 102 includes a housing 122, a power supply 124 disposed within the housing 122, a memory 126 disposed within the housing 122, a user interface 128 attached to or integrated into the housing 122, one or more communication interfaces 130 disposed within, attached to or integrated into the housing 122, a test cartridge interface 132 disposed within, attached to or integrated into the housing 122, one or more detectors or sensors 134 disposed within the test cartridge interface 132 or the housing 122, and one or more processors 136 disposed within the housing 122 and communicably coupled to the memory 126, the user interface 128, the one or more communication interfaces 130, the test cartridge interface 132 and the one or more detectors or sensors 134. The power supply 124 may include one or more batteries, an AC or DC electrical connection, one or more solar panels, a piezoelectric generator, a kinetic energy converter, an electromagnetic energy converter, an inductively coupled charger or a combination thereof. The user interface 128 can be touch screen interface, keyboard, buttons, mouse, track ball, display, speakers, microphone or other desired components to interface with a user. User interface 128 enables test selection and input of identifying information to pair the test with a patient. The one or more communication interfaces 130 may include a USB-type interface, a video interface, an audio interface, a printer interface, a data transfer interface, a network interface, an optical communications interface, a keyboard cable interface, a mouse cable interface, a wireless device interface, a wireless transceiver, an identity recognition device or a combination thereof. The POC device 102 can be man-portable or handheld (e.g., the housing 122 is less than or equal to approximately four inches by 2.5 inches by 0.5 inches thick).

[0028] The one or more detectors or sensors 134 are operably connected (indicated by arrow 138) to the test cartridge interface 132 and/or the test cartridge 104 to detect one or more properties of a sample or an analyte and generate a test results data based on the one or more properties. The one or more detectors or sensors 134 may detect the one or more properties of the sample or the analyte using fluorescence, luminescence, absorbance, infrared (IR) spectroscopies, surface plasmon resonance (SPR), nuclear magnetic resonance (NMR), Raman Spectroscopy, mass spectrometry (MS), IR