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[0009] In accordance with an aspect, a biological analysis system is provided. The system comprises a thermal cycler. The thermal cycler includes a block assembly, an optical system, a cover, a user interface, and a processor. The block assembly can be configured to receive a plurality of samples and cycle the plurality of samples through a series of temperatures. The optical system can comprise an optical sensor configured to detect a fluorescence level emitted from each of the plurality of samples. The cover can comprise a heat source, wherein the heat source is configured to prevent thermal non-uniformity of sample holders containing the respective samples when the samples are cycled through a series of temperatures. The user interface can be integrated on an exterior surface of the thermal cycler. The processor can be programmed to process the detected fluorescence levels and display the fluorescence levels on the integrated user interface in real-time, wherein the parameters for displaying the fluorescent levels are changeable based on user preference, and wherein the user interface comprises a touchscreen display configured to allow user manipulation of data and data view via touch input.

[0010] As disclosed, the parameters can be, for example, a selection of one or more sample holders that receive the plurality of samples, a selection one or more wells within

CLAIMS

1. A biological analysis system comprising:

a thermal cycler comprising:

a block assembly configured to receive a plurality of samples and cycle the plurality of samples through a series of temperatures;

an optical system comprising an optical sensor configured to detect a fluorescence level emitted from each of the plurality of samples;

a cover comprising a heat source, wherein the heat source is configured to prevent thermal non-uniformity of sample holders containing the respective samples when the samples are cycled through a series of temperatures;

a user interface integrated on an exterior surface of the thermal cycler; and

a processor programmed to process the detected fluorescence levels and display the fluorescence levels on the integrated user interface in real-time, wherein the parameters for displaying the fluorescent levels are changeable based on user preference, and wherein the user interface comprises a touchscreen display configured to allow user manipulation of data and data view via touch input.

2. The biological analysis system of Claim 1, wherein the parameters are selected from the group consisting of a selection of one or more sample holders that receive the plurality of samples, a selection one or more wells within the one or more sample holders, a selection of one or more dyes within the one or more wells, and combinations thereof.

3. The biological analysis system of Claim 2, wherein the one or more sample holders are selected from the group consisting of a 96- well block, a 384- well block, a low-density array, and a through-hole array.

4. The biological analysis system of Claim 1, wherein the processor is programmed to display the fluorescence levels in the form of real-time amplification plots.

5. The biological analysis system of Claim 2, wherein the block assembly is an interchangeable block assembly and is configured to accommodate any one of a plurality of sample holders selected from the group consisting of a 96- well block, a 384- well block, a low-density array, and a through-hole array, and wherein the processor is programmed to display the fluorescence levels in the form of real-time amplification plots for any one of the plurality of sample holders.