an optical system configured to deliver excitation light to the block wells. The system can further comprise a heated cover comprising a lower plate, a heater, and an upper plate having a plurality of upper plate apertures. The lower plate can have a mating surface for mating with an upper surface of the sample holder, the mating surface having a plurality of lower plate apertures each aligned with an associated one of the plurality of block wells to allow excitation light to pass to the block wells. Each upper plate aperture is aligned with a respective lower plate aperture. The heated cover also comprises a first position sensor and a first tab, and the system can also comprise a spring assembly and a second position sensor. The spring assembly can comprise a second tab and is configured to engage the upper surface of the sample holder when the heated cover is moved downward onto the sample holder to increase a pressure on the sample holder. The second tab is configured to block emitted light from the first position sensor to stop the downward movement of the heated cover when the heated cover has provided a defined pressure to the upper surface of the sample holder. The second position sensor is mounted to a fixed position. The first tab is configured to block emitted light from the second position sensor to stop the heated cover from being raised further when the heated cover has been raised to a defined height from the upper surface of the sample holder.

[0006] In accordance with the present disclosure, a biological analysis system is provided. The system comprises a plurality of system modules, the modules comprising a detector module, an emission module, an excitation module, and a base module. The plurality of system modules can be configured to be reversibly connected to form a first biological analysis device type.

[0007] In accordance with the present disclosure, a biological analysis system is provided. The system comprises an instrument and a calibration system for calibrating the instrument. The instrument can comprise a block assembly comprising a sample block configured to accommodate a sample holder having a plurality of reaction sites, and an optical system capable of imaging florescence emission from a plurality of reaction sites. The calibration system can comprise a region-of-interest (ROI) calibrator configured to determine reaction site positions in an image. The calibration system can also comprise a pure dye calibrator configured to determine the contribution of a fluorescent dye used in each reaction site by comparing a raw spectrum of the fluorescent dye to a pure spectrum calibration data of the fluorescent dye. The calibration system can further comprise an instrument normalization calibrator configured to determine a filter normalization factor. The calibration system can even further comprise an RNase P validator configured to validate the instrument is capable

of distinguishing between two different quantities of sample. The calibration system can also comprise a display engine configured to display calibration results.

[0008] Additional aspects, features, and advantages of the present invention are set forth in the following description and claims, particularly when considered in conjunction with the accompanying drawings in which like parts bear like reference numbers.

Claims:

1. A biological analysis system comprising:

a block assembly comprising a sample block having a plurality of block wells, the sample block configured to accommodate a sample holder;

an optical system configured to deliver excitation light to the block wells;

a heated cover comprising:

a lower plate having a mating surface for mating with an upper surface of the sample holder, the mating surface having a plurality of lower plate apertures each aligned with an associated one or more of the plurality of block wells to allow excitation light to pass to the block wells;

a heater;

an upper plate having a plurality of upper plate apertures, each upper plate aperture being aligned with a respective lower plate aperture;

a first position sensor; and

a first tab;

a spring assembly, the spring assembly comprising a second tab, the spring assembly configured to engage the upper surface of the sample holder when the heated cover is moved downward onto the sample holder to increase a pressure on the sample holder, wherein the second tab is configured to block emitted light from the first position sensor to stop the downward movement of the heated cover when the heated cover has provided a defined pressure to the upper surface of the sample holder; and

a second position sensor mounted to a fixed position, wherein the first tab is configured to block emitted light from the second position sensor to stop the heated cover from being raised further when the heated cover has been raised to a defined height from the upper surface of the sample holder.

2. The biological analysis device of Claim 1, wherein the position sensor is an optical sensor.

3. The biological analysis device of Claim 1, wherein each lower plate aperture is aligned with 4 block wells.