

CLAIMS

What is claimed is:

1. A computer-implemented method of generating a digital polymerase chain reaction (dPCR) result, the method comprising:

detecting a first set of emission data from a plurality of samples, each included in a sample region of a plurality of sample regions, at a first time during an amplification period;

detecting a second set of emission data from the plurality of samples at a second time during an amplification period, wherein the first and second set of emission data is included in amplification curve data for each of the plurality of samples;

determining a positive or negative amplification determination for each sample of the plurality of samples based in part on the first set of emission data corresponding amplification curve data; and

generating a dPCR result based on the positive or negative amplification determinations for the plurality of samples.

~~2. The computer-implemented method of claim 1, further comprising detecting a second set of emission data from the plurality of samples at a second time during an amplification period, wherein the first and second set of emission data is included in amplification curve data for each of the plurality of samples.~~

~~32.~~ The computer-implemented method of claim ~~21~~, further comprising detecting emission data from the plurality of samples after each stage of thermal cycling in the amplification period to generate the amplification curve data.

~~43.~~ The computer-implemented method of claim ~~21~~, further comprising detecting real-time emission data during the amplification period to generate the amplification curve data.

~~54.~~ The computer-implemented method of claim ~~21~~, wherein the determining the positive or negative amplification determination for each sample of the plurality of samples comprises:

determining a quantification cycle for each of the plurality of samples;

binning the plurality of determined quantification cycles; and

displaying a histogram of the binned quantification cycles for the plurality of samples.

~~65.~~ The computer-implemented method of claim ~~21~~ further comprising:

determining a valid testing of a sample in the plurality of samples based on the amplification curve data of the sample.

~~76~~. The computer-implemented method of claim ~~21~~, further comprising displaying to the user the amplification curve data and the positive or negative determinations.

~~87~~. The computer-implemented method of claim ~~54~~, wherein the amplification curve data is displayed along with the histogram to the user.

~~98~~. The computer-implemented method of claim ~~54~~, wherein a quantification cycle lower than a predetermined threshold is determined to be an invalid testing.

~~109~~. The computer-implemented method of claim ~~54~~, wherein a quantification cycle higher than a predetermined threshold is determined to be a valid testing.

~~110~~. The computer-implemented method of claim ~~54~~, wherein a quantification cycle within a predetermined range is determined to be a valid testing.

~~1211~~. A computer-readable medium encoded with instructions, executable by a processor, the instructions comprising instructions for:

detecting a first set of emission data from a plurality of samples, each included in a sample region of a plurality of sample regions, at a first time during an amplification period;

detecting a second set of emission data from the plurality of samples at a second time during an amplification period, wherein the first and second set of emission data is included in amplification curve data for each of the plurality of samples;

determining a positive or negative amplification determination for each sample of the plurality of samples based in part on the corresponding amplification curve data; and

generating a dPCR result based on the positive or negative amplification determinations for the plurality of samples.

~~1212~~. The computer-readable medium of claim ~~1211~~, wherein the instructions for determining the positive or negative amplification determination for each sample of the plurality of samples comprises instructions for:

determining a quantification cycle for each of the plurality of samples;

binning the plurality of determined quantification cycles; and

displaying a histogram of the binned quantification cycles for the plurality of samples.

~~1213~~. The computer-readable medium of claim ~~1211~~ further comprising instructions for:

determining a valid testing of a sample in the plurality of samples based on the amplification curve data of the sample.

~~15~~14. The computer-readable medium of claim ~~12~~11, wherein the instructions further comprise instructions for displaying to the user the amplification curve data and the positive or negative determinations.

~~16~~15. The computer-readable medium of claim ~~13~~12, wherein the amplification curve data is displayed along with the histogram to the user.

~~17~~16. The computer-readable medium of claim ~~13~~12, wherein a quantification cycle lower than a predetermined threshold is determined to be an invalid testing.

~~18~~17. The computer-readable medium of claim ~~13~~12, wherein a quantification cycle higher than a predetermined threshold is determined to be a valid testing.

~~19~~18. The computer-readable medium of claim ~~13~~12, wherein a quantification cycle within a predetermined range is determined to be a valid testing.

~~20~~19. A system for generating a digital polymerase chain reaction result (dPCR), the system comprising:

a thermal cycler for performing amplification on a plurality of samples;

a processor; and

a memory encoded with instructions for:

detecting a first set of emission data from a plurality of samples, each included in a sample region of a plurality of sample regions, at a first time during an amplification period;

detecting a second set of emission data from the plurality of samples at a second time during an amplification period, wherein the first and second set of emission data is included in amplification curve data for each of the plurality of samples;

determining a positive or negative amplification determination for each sample of the plurality of samples based in part on the corresponding amplification curve data; and

generating a dPCR result based on the positive or negative amplification determinations for the plurality of samples.

~~21~~20. The system of claim ~~20~~19, further comprising detecting emission data from the plurality of samples after each stage of thermal cycling in the amplification period to generate the amplification curve data.

~~22~~21. The system of claim ~~20~~19, further comprising detecting real-time emission data during the amplification period to generate the amplification curve data.

~~23~~22. The system of claim ~~20~~19, wherein the determining the positive or negative amplification determination for each sample of the plurality of samples comprises:
determining a quantification cycle for each of the plurality of samples;
binning the plurality of determined quantification cycles; and
displaying a histogram of the binned quantification cycles for the plurality of samples.

~~24~~23. The system of claim ~~20~~19, further comprising:
determining a valid testing of a sample in the plurality of samples based on the amplification curve data of the sample.

~~25~~24. The system of claim ~~20~~19, further comprising displaying to the user the amplification curve data and the positive or negative determinations.

~~26~~25. The system of claim ~~23~~22, wherein the amplification curve data is displayed along with the histogram to the user.

~~27~~26. The system of claim ~~23~~22, wherein a quantification cycle lower than a predetermined threshold is determined to be an invalid testing.

~~28~~27. The system of claim ~~23~~22, wherein a quantification cycle higher than a predetermined threshold is determined to be a valid testing.

~~29~~28. The system of claim ~~23~~22, wherein a quantification cycle within a predetermined range is determined to be a valid testing.