What is currently claimed:

1. A method for quantifying a number of pathogens or microbes present in a food sample in a microfluidic based assay, comprising:

providing a food sample;

establishing a first dilution of the food sample by adding a first volume of growth media and

serially diluting the first dilution at least one additional time or a plurality of times;

and

enriching the food sample after each dilution, wherein:

subsequent dilutions are increased by a dilution factor, and such dilutions range from between 1 part sample with 1 part media, to 1 part sample with 1000 parts media.

2. The method of claim 1, wherein the plurality of dilutions is between 2 and 3 times.

3. The method of claim 1, wherein the plurality of dilutions is between 2 and 4 times.

4. The method of claim 1, wherein the plurality of dilutions is between 2 and 5 times.

5. The method of claim 1, wherein the plurality of dilutions is between 2 and 6 times.

6. The method of claim 1, wherein the plurality of dilutions is between 2 and 7 times.

7. The method of claim 1, wherein the plurality of dilutions is between 2 and 8 times.

8. The method of claim 1, wherein the plurality of dilutions is between 2 and 9 times.

9. The method of claim 1, wherein the plurality of dilutions is between 2 and 10 times.

10. The method of claim 1, wherein the plurality of dilutions is between 2 and 11 times.

11. The method of claim 1, wherein the plurality of dilutions is between 2 and 12 times.

12. The method of claim 1, wherein the plurality of dilutions is between 2 and 13 times.

13. The method of claim 1, wherein the plurality of dilutions is between 2 and 14 times.

14. The method of claim 1, wherein the plurality of dilutions is between 2 and 15 times.

15. The method of claim 1, wherein the plurality of dilutions is between 2 and 20 times.

16. The method of claim 1, wherein after each enrichment, the method further comprises incubating each dilution at a predetermined temperature for a predetermined amount of time.

17. The method of claim 16, wherein after incubation, the method further comprises testing for the presence of at least one food pathogen, and producing a result thereof.

18. The method of claim 17, wherein the result is proportional to the dilution of a last positive test.

19. The method of claims 17 or 18, wherein testing is performed via a cartridge based assay system.

20. The method of claim 19, wherein the cartridge based assay system is a ferrofluidic based system.

21. The method of claim 16, wherein:

after incubation, the method further comprises:

processing each sample with a dilution specific barcoded label;

combining a set of barcode labeled dilutions that originated from one sample to produce a combined sample;

and

processing the combined sample to determine the last positive dilution in that set of combined dilutions

22. The method of claim 21, wherein the combined sample is tested via a cartridge based assay system having at least one lane with a plurality of unique capture zones coated with anti-barcodes configured to capture cells from each dilution according to the specific cell type.

23. The method of any of claims 17-22, further comprising using a result from a last positive dilution to determine an MPN value.

24. The method of any of claims 19-23, wherein the assay system comprises a calibrated assay system that can be applied to the last positive dilution for determining a cell/CFU concentration.

25. The method of claim 24, wherein the calibrated assay system includes standard test information or curves generated from an enrichment of food samples having known measured CFUs of one or more types of pathogens.

26. The method of any of claims 2-23, further comprising determining a cell/CFU concentration range by analysis of presence-absence data.

27. The method of any of claims 1-26, wherein the factor comprises between 1:2 to 1:1000 the amount of sample of a previous dilution.

28. The method of any of claim 16-27, wherein:

a minimum detected amount of a pathogen in a dilution is at least one cell or CFU;

the plurality of times of dilutions comprise at least three dilutions A, B and C, with dilution factors of 1.000x, 0.010x and 0.001x, respectively;

testing for the presence of at least one food pathogen, and producing a result thereof;

wherein:

a dilution is positive if the cell count is greater than the assay background;

a dilution is negative if the cell count is less than the assay background;

upon dilutions A, B, and C being positive, assay input is greater than 1 cell x lowest dilution factor;

upon the lowest dilution factor being 1:100 (i.e., 0.01x), assay input is > 100 cell;

upon the lowest dilution factor being 1:1000 (i.e., 0.001x), assay input is > 1000 cell;

upon the dilutions A and B being positive, and dilution C being negative, assay input is between 1 cell x lowest dilution factor that is positive, and 1 cell x next lowest dilution factor;

upon the lowest positive dilution factor being 1:100 (i.e., 0.01x) and a next lowest dilution factor is 1:1000 (i.e., 0.001x), assay input is between 100 and 1000 cells;

upon the lowest positive dilution factor is 1:100 (i.e., 0.01x) and a next lowest dilution factor is 1:10,000 (i.e., 0.0001x), assay input must be between 100 and 10,000 cells;

upon dilution A being positive and dilutions B and C being negative, assay input is between 1 cell x lowest dilution factor that is positive and 1 cell x next lowest dilution factor;

upon the lowest positive dilution factor being the undiluted sample and a next lowest dilution factor is 1:100 (i.e., 0.01x), the assay input is between 1 and 100 cells;

or

upon no dilutions being positive, assay input is less than minimum detected amount of 1 cell.