**Supplementary Table 1**

Supplementary table 1a-c: Growth data of bacterial strains for implementation of modeling algorithms. Growth data of two *Listeria monocytogenes* datasets, with different initiation population size, over a period of 552 h were obtained from ([1](#_ENREF_1)). Also, growth of *Escherichia coli* was profiled by optical density (OD), spectrophotometry at 610 nm. For *E. coli* dataset, the following information was collected over an experimental period of 13 h: *E. coli* (initial OD = 2.205) was cultured (batch culture) in a liquid LB (Luria-Bertani) medium at 37˚C and OD measurement (every 30 min) was continued until the death phase (the difference between the two last OD was lower than former).

**Supplementary table 1a:** Growth data of *Listeria monocytogenes* (dataset 1)

|  |  |  |  |
| --- | --- | --- | --- |
| Time (h) | *log* cfu/mL1 | N(t)2 | ln(N(t) /N0) 3 |
| 0 | 0.63 | 4.26E+00 | 0.00 |
| 20 | 0.63 | 4.32E+00 | 0.00 |
| 24 | 0.78 | 6.03E+00 | 0.35 |
| 50 | 0.83 | 6.68E+00 | 0.45 |
| 64 | 0.93 | 8.41E+00 | 0.68 |
| 69 | 1.17 | 1.46E+01 | 1.23 |
| 73 | 0.76 | 5.77E+00 | 0.30 |
| 89 | 1.14 | 1.37E+01 | 1.17 |
| 96 | 1.30 | 2.02E+01 | 1.55 |
| 120 | 1.89 | 7.75E+01 | 2.90 |
| 141 | 2.19 | 1.55E+02 | 3.59 |
| 161 | 2.61 | 4.03E+02 | 4.55 |
| 188 | 3.19 | 1.54E+03 | 5.89 |
| 215 | 3.71 | 5.07E+03 | 7.08 |
| 238 | 4.11 | 1.29E+04 | 8.02 |
| 259 | 4.53 | 3.42E+04 | 8.99 |
| 283 | 5.04 | 1.10E+05 | 10.16 |
| 312 | 5.56 | 3.62E+05 | 11.35 |
| 337 | 6.01 | 1.01E+06 | 12.38 |
| 355 | 6.20 | 1.59E+06 | 12.83 |
| 381 | 6.61 | 4.08E+06 | 13.77 |
| 406 | 6.63 | 4.24E+06 | 13.81 |
| 430 | 6.69 | 4.88E+06 | 13.95 |
| 456 | 6.68 | 4.79E+06 | 13.93 |
| 504 | 6.69 | 4.88E+06 | 13.95 |
| 552 | 6.68 | 4.76E+06 | 13.93 |

1Bacterial growth was measured as *log* colony formation unite (cfu)/mL ([2](#_ENREF_2))

2Bacterial population at ‘t’ time

3Initial bacterial population

**Supplementary table 1b:** Growth data of *Listeria monocytogenes* (dataset 2)

|  |  |  |  |
| --- | --- | --- | --- |
| Time (h) | *log* cfu/mL1 | N(t)2 | ln(N(t) /N0) 3 |
| 0 | 2.63 | 4.27E+02 | 0 |
| 16 | 2.64 | 4.35E+02 | 1.85E-02 |
| 20 | 2.71 | 5.10E+02 | 1.79E-01 |
| 24 | 2.72 | 5.25E+02 | 2.08E-01 |
| 40 | 2.69 | 4.87E+02 | 1.33E-01 |
| 45 | 2.66 | 4.58E+02 | 7.16E-02 |
| 50 | 2.68 | 4.80E+02 | 1.18E-01 |
| 64 | 2.85 | 7.15E+02 | 5.16E-01 |
| 69 | 2.96 | 9.14E+02 | 7.62E-01 |
| 73 | 2.98 | 9.46E+02 | 7.97E-01 |
| 89 | 3.23 | 1.71E+03 | 1.39E+00 |
| 96 | 3.31 | 2.06E+03 | 1.57E+00 |
| 120 | 3.77 | 5.89E+03 | 2.62E+00 |
| 141 | 4.19 | 1.54E+04 | 3.59E+00 |
| 161 | 4.63 | 4.31E+04 | 4.62E+00 |
| 169 | 4.76 | 5.70E+04 | 4.89E+00 |
| 188 | 5.24 | 1.74E+05 | 6.01E+00 |
| 215 | 5.72 | 5.19E+05 | 7.10E+00 |
| 238 | 6.15 | 1.41E+06 | 8.10E+00 |
| 259 | 6.41 | 2.59E+06 | 8.71E+00 |
| 283 | 6.71 | 5.16E+06 | 9.40E+00 |
| 312 | 6.78 | 6.03E+06 | 9.56E+00 |
| 337 | 6.87 | 7.38E+06 | 9.76E+00 |
| 355 | 6.89 | 7.81E+06 | 9.81E+00 |
| 381 | 7.03 | 1.07E+07 | 1.01E+01 |
| 406 | 7.07 | 1.19E+07 | 1.02E+01 |
| 456 | 7.16 | 1.44E+07 | 1.04E+01 |
| 552 | 7.13 | 1.35E+07 | 1.04E+01 |

1Bacterial growth was measured as *log* colony formation unite (cfu)/mL ([2](#_ENREF_2))

2Bacterial population at ‘t’ time

3Initial bacterial population

**Supplementary table 1c:** Growth data of *Escherichia coli* dataset (dataset 3)

|  |  |  |  |
| --- | --- | --- | --- |
| Time (h) | *log* cfu/mL1 | N(t)2 | ln(N(t) /N0) 3 |
| 0 | 6.70 | 5.04E+06 | 0 |
| 0.5 | 6.74 | 5.44E+06 | 7.64E-02 |
| 1 | 6.75 | 5.60E+06 | 1.05E-01 |
| 1.5 | 6.86 | 7.20E+06 | 3.57E-01 |
| 2 | 7.02 | 1.05E+07 | 7.32E-01 |
| 2.5 | 7.27 | 1.88E+07 | 1.32E+00 |
| 3 | 7.53 | 3.38E+07 | 1.90E+00 |
| 3.5 | 7.70 | 5.00E+07 | 2.29E+00 |
| 4 | 7.85 | 7.12E+07 | 2.65E+00 |
| 4.5 | 7.90 | 7.94E+07 | 2.76E+00 |
| 5 | 7.94 | 8.73E+07 | 2.85E+00 |
| 5.5 | 7.98 | 9.57E+07 | 2.94E+00 |
| 6 | 8.03 | 1.06E+08 | 3.05E+00 |
| 6.5 | 8.06 | 1.14E+08 | 3.12E+00 |
| 7 | 8.07 | 1.18E+08 | 3.15E+00 |
| 7.5 | 8.09 | 1.23E+08 | 3.20E+00 |
| 8 | 8.11 | 1.29E+08 | 3.24E+00 |
| 8.5 | 8.12 | 1.31E+08 | 3.26E+00 |
| 9 | 8.13 | 1.34E+08 | 3.28E+00 |
| 9.5 | 8.14 | 1.37E+08 | 3.31E+00 |
| 10 | 8.15 | 1.41E+08 | 3.33E+00 |
| 10.5 | 8.15 | 1.42E+08 | 3.34E+00 |
| 11 | 8.16 | 1.45E+08 | 3.36E+00 |
| 11.5 | 8.17 | 1.47E+08 | 3.37E+00 |
| 12 | 8.17 | 1.48E+08 | 3.38E+00 |
| 12.5 | 8.17 | 1.49E+08 | 3.39E+00 |
| 13 | 8.18 | 1.50E+08 | 3.39E+00 |

1Bacterial growth was measured as *log* colony formation unite (cfu)/mL ([2](#_ENREF_2))

2Bacterial population at ‘t’ time

3Initial bacterial population

**References**

1. Augustin JC, Zuliani V, Cornu M, Guillier L. Growth rate and growth probability of *Listeria monocytogenes* in dairy, meat and seafood products in suboptimal conditions. J Appl Microbiol. 2005;99(5):1019-42. 10.1111/j.1365-2672.2005.02710.x

2. Augustin J-C, Brouillaud-Delattre A, Rosso L, Carlier V. Significance of Inoculum Size in the Lag Time of *Listeria monocytogenes*. Appl Environ Microbiol. 2000;66(4):1706-10. 10.1128/AEM.66.4.1706-1710.2000