**Appendix 1 – Supplementary File 1**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Parameter** | **Growth condition** | **Source** |
| **M9glyCAAT** | **M9gly** | **M9ala** |
| $$A$$ | Mean cell area (μm2) | 2.48 | 1.51 | 1.40 | Measured in this work |
| $$w$$ | Mean cell width (μm) | 0.80 | 0.69 | 0.62 | Measured in this work |
| $$L$$ | Mean cell length (μm) | 3.25 | 2.44 | 2.51 | Measured in this work |
| $$V$$ | Mean cell volume (μm3) | 1.50 | 0.83 | 0.70 | Estimated from cell length and width |
| $$V\_{ini}$$ | Cell volume at birth (μm3) | 1.08 | 0.60 | 0.50 | $V\_{ini}=V/(2log2)$ for exponential-growing population |
| $$λ$$ | Normalized growth rate (1/min) | 0.0173 | 0.0069 | 0.0039 | Measured in this work |
| $$τ\_{DB}$$ | Doubling time (min) | 40 | 100 | 175 | Estimated from $λ$ |
| $$\left[Z\right]\_{avg}$$ | Average DNA concentrationunder balanced growth (genome/μm3) | 1.40 | 1.99 | 2.02 | Calculated from cell cycle averaging of the DNA content and cell volume. |
| $$\left[Z\right]\_{ini}$$ | DNA concentrationof 1N cells at birth (genome/μm3) | 0.92 | 1.67 | 2.00 | Calculated from $V\_{ini}$with the assumption of initial DNA content = 1 genome. |
| $$c$$ | Cell volume:protein ratio (106 μm3) | 0.283 | 0.339 | 0.530 | See Appendix 1 – Supplementary File 1 and Appendix 2 – Supplementary File 1 for $V$ and $Y$ estimates, respectively. |
| $$c'$$ | Cell area:protein ratio (106 μm2) | 0.469 | 0.616 | 1.061 | See Appendix 1 – Supplementary File 1 for $V$ and $A$ estimates. |