**Supplementary File 3**

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| **Parameter** | **Unit** | **Initial estimation** | **Optimized parameters** |
| **M9glyCAA****(model A)** | **M9glyCAA****(model B)** |
| $$r\_{1}$$ | $10^{-3}$/min | 1.99 | 1.22 | 1.76 |
| $$r\_{2}$$ | $10^{-3}$/min | 20.0 | 22.4 | 22.5 |
| $$K\_{1}$$ | 1/$μm^{3}$ | 1.40 | 1.17 | 1.55 |
| $$K\_{2}$$ | 1/$μm^{3}$ | 622 | 797 | 532 |
| $$δ$$ | 1/min | 0.96 | 1.27 | 1.31 |
| $$c$$ | $$10^{-6}μm^{3}$$ | 0.28 | 0.28 | 0.18 |
| $$c'$$ | $$10^{-6}μm^{2}$$ | 0.47 | - | - |
| $$X\_{ini}$$ | $10^{2}$/cell | 20.2 | - | - |
| $$Y\_{ini}$$ | $10^{6}$/cell | 3.82 | - | - |
| $$[Z]\_{avg}$$ | genome/cell | 1.40 | - | - |