**Table S2. Stoichiometry of cell metabolism used in our simulation models.**

**A. Neutral Simulations**

| Reaction | Solutes | | Particulates | | Rate Expression |
|---|---|---|---|---|---|
| | $G$ | $E$ | $X_{red}$ | $X_{blue}$ | |
| $X_{red}$ Growth | $-\frac{1}{Y}$ | | 1 | | $\mu_{max}\frac{[G]}{[G]+K_G}X_{red}$ |
| $X_{blue}$ Growth | $-\frac{1}{Y}$ | | | 1 | $\mu_{max}\frac{[G]}{[G]+K_G}X_{blue}$ |

**B. Competition Simulations**

| Reaction | Solutes | | Particulates | | Rate Expression |
|---|---|---|---|---|---|
| | $G$ | $E$ | $X_{E-}$ | $X_{E+}$ | |
| $X_{E-}$ Growth | $-\frac{1}{Y}$ | | $1 + B\,f([E])$ | | $\mu_{max}\frac{[G]}{[G]+K_G}X_{E-}$ |
| $X_{E+}$ Growth | $-\frac{1}{Y}$ | | | $1 + B\,f([E])$ | $\mu_{max}\frac{[G]}{[G]+K_G}X_{E+}$ |
| Extracellular Enzyme Production | | 1 | | $-C$ | $R_E\mu_{max}\frac{[G]}{[G]+K_G}X_{E+}$ |

f([$E$]) is a function of local extracellular enzyme concentration, $f([E]) = \begin{cases} 0, & [E] < \tau \\ 1, & [E] > \tau \end{cases}$