

## S2 Table

**Parameter values of local interactions rules of experimental cross-feeding community.** Comparison of model parameters for the parameterization based on the biophysical model and the one based on experimental data. The biophysical model overestimates the maximum growth rates, however it can accurately predict the ratio of the maximum growth rates, and this is the only factor that matters for the steady-state properties of the community. For the cellular automaton simulations the interaction neighborhood was set to an extended Moore neighborhood with radius  $d$  such that the number of cells in the Moore neighborhood  $(2 \cdot d + 1)^2 - 1$  most closely matched the estimated number of neighbors  $r$  (1 and 5 grid units correspond to a neighborhood size of 8 and 120 cells, respectively). Intervals between brackets are 95% confidence intervals.

Parameter	Description	Estimate from bio-physical rates	Estimate from data	Units
$R_{\Delta P}$	interaction range of $\Delta P$	12.2	12.1 (10.9, 13.3)	$\mu m$
$R_{\Delta T}$	interaction range of $\Delta T$	2.5	3.2 (2.4, 4.1)	$\mu m$
$r_{\Delta P}$	number of neighbors of $\Delta P$	130	129 (108, 150)	cells
$r_{\Delta T}$	number of neighbors of $\Delta T$	10	15 (10, 20)	cells
$d_{\Delta P}$	radius of extended Moore neighborhood of $\Delta P$	5	5	grid units
$d_{\Delta T}$	radius of extended Moore neighborhood of $\Delta T$	1	1	grid units
$\hat{\mu}_{\Delta P}$	maximum growth rate of $\Delta P$	0.77	0.52 (0.50, 0.55)	$1/h$
$\hat{\mu}_{\Delta T}$	maximum growth rate of $\Delta T$	0.22	0.15 (0.14, 0.16)	$1/h$
$\frac{\hat{\mu}_{\Delta P}}{\hat{\mu}_{\Delta T}}$	growth ratio	3.6	3.5 (3.2, 3.8)	