A. aerobic

B. anaerobic, $\text{NO}_3$

C. anaerobic

D. $D=0.1 \, \text{1/hr} \quad \text{C-limited}$

E. $D=0.4 \, \text{1/hr} \quad \text{C-limited}$

F. $D=0.4 \, \text{1/hr} \quad \text{N-limited}$
Supplementary Information Figure 8 Sensitivity analysis around the identified optimal solution of the non-convex nonlinear maximization of biomass yield per flux unit objective function. Each point represents an optimization with a nonlinear, but convex reformulation of the original objective function (see materials and methods for details). The letters A – F refer to the six considered environmental conditions without invoking additional constraints. The optimal solution, which has been obtained with 100 multiple starting points using the general nonlinear solver of the programming package LINDO (Lindo Systems Inc., Chicago, IL), corresponds to $\varepsilon_0$ and is shown in red. Increases (decreases) in $\varepsilon$ correspond to increased (decreased) weighting of the flux norm minimization objective function according to $\varepsilon = \varepsilon_0 \cdot (1 \pm 0.5)$ (see materials and methods for details). Changes in $\varepsilon$ did not result in flux distributions with a higher objective function value, thus strongly indicating that global optima were actually identified.