Figure S1: Variation of the steady state specific rates of glucose consumption rate $r_s$, ethanol production $r_p$, and oxygen consumption $r_o$ as a function of the concentration of glucose fed to a chemostat. The specific rates in the carbon- and oxygen-limited regimes are independent of the feed glucose concentration, but increase with the dilution rate. The different symbols represent the various operating conditions: $k_la$ $\approx$ 50 h$^{-1}$ and $D = 0.07$ h$^{-1}$ (●), 0.10 h$^{-1}$ (●), 0.15 h$^{-1}$ (●), 0.20 h$^{-1}$ (●); and $k_la$ $\approx$ 100 h$^{-1}$ and $D = 0.1$ h$^{-1}$ (●).
**Figure S2**: Determination of the biomass yields in the carbon- and oxygen-limited regimes.

(A) Yields of biomass on glucose are $Y_{sx} = 0.44$ gdw g$^{-1}$ and $Y'_{sx} = 0.15$ gdw g$^{-1}$ (B) Yields of biomass on ethanol are $Y'_{px} = 1.11$ gdw g$^{-1}$ (C) Yields of biomass on oxygen are $Y_{ox} = 0.55$ gdw g$^{-1}$ and $Y'_{ox} = 0.91$ gdw g$^{-1}$. The data for $k_{i,a} \approx 50$ h$^{-1}$ and 100 h$^{-1}$ are represented by circles and triangles, respectively. The data for carbon- and oxygen-limited regimes are represented by open and closed symbols, respectively. The fits to these data are represented by dashed and solid lines, respectively.
Figure S3: Closure of the carbon balance in carbon-, dual-, and oxygen-limited regimes assuming that the cell composition is CH$_{1.61}$O$_{0.5}$N$_{0.16}$. In the carbon-limited regime $0 < Ds_f / (k_l a \cdot c_o^*) < 1.3$, the carbon balances close well since $Y_{sx} + Y_{sp} + Y_{sc} \approx 1.1$. However, in the dual- and oxygen-limited regimes $Ds_f / (k_l a \cdot c_o^*) > 6.1$, the balances do not close well since the sum of the yields is 0.7-0.8. The poorer carbon recovery in these regimes is due to excessive foaming which does not occur in the carbon-limited regime. The shaded region represents 30 % deviation from complete carbon recovery. The different symbols represent the various operating conditions, $k_l a = 50$ h$^{-1}$ and $D = 0.07$ h$^{-1}$ (●), 0.10 h$^{-1}$ (●), 0.15 h$^{-1}$ (●), 0.20 h$^{-1}$ (●); $k_l a = 100$ h$^{-1}$ and $D = 0.1$ h$^{-1}$ (●).