



FIGURE 20.4. (A) The red line shows the predicted combination of oxygen uptake rate and malate uptake rate that will maximize growth rate. Dots show rates measured over a range of temperatures and malate concentrations. The two blue points are the start and end points of an evolution experiment that spanned 30 days (~500 generations). Units are mmole per gram dry weight per hour. (B) When grown on glycerol, the base population does not fit the predicted line of optima (red). (C) However, after 40 days (~700 generations) of selection on glycerol, the bacteria now follow the predicted optimum. Evolution toward the predicted optimum was seen in three replicate selection experiments. Units as in A.

20.4A–C, modified from Ibarra R.U. et al., *Nature* **420**: 186–189, © 2002 Macmillan, www.nature.com