



Figure 1. ATP requirements for maintenance and growth. Panel A shows the model estimated maximum ATP hydrolysis rates needed to match experimentally measured lactate consumption rates and cellular growth rates at four different dilution rates ($D = 0.025, 0.04, 0.055, 0.085 \text{ h}^{-1}$). The slope and intercept represent the growth- and non-growth rate dependent ATP requirements, GAR and NGAR, respectively. Panel B shows ATP requirements for various microbes that have been reported in the literature [26–32]. The reported GAR values for other microbes were adjusted to remove ATP used for protein polymerization (4 ATP/peptide bond) since ATP used for protein synthesis is accounted for separately in the *S. oneidensis* MR-1 model and is not part of the MR-1 GAR value. Panel C compares model estimates of maximum growth rates (solid line) at different lactate consumption rates (using ATP requirements as reported in panel A) with experimental data. Additional data points were included that were not used in the estimation of the ATP requirements.

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