Supporting Information

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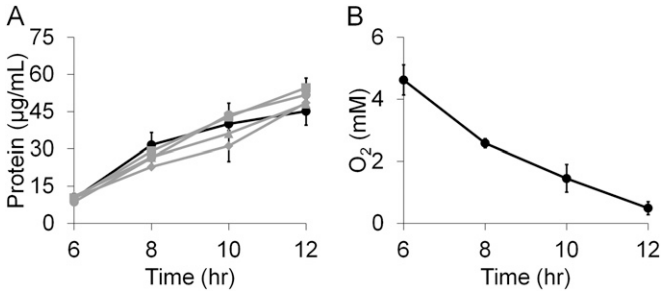

Fig. S1. Exposure of *P. furiosus* cultures to O_2 (0.8–4.9 mM) after 6 h of growth does not significantly impair growth. Cultures (40 mL) in 100-mL bottles were grown at 95 °C in medium containing 5 g/L maltose, 0.5 g/L yeast extract, and no sulfide on a shaking platform (150 rpm). Cultures were exposed to a range of O_2 concentrations (0.8–4.9 mM) after 6 h of growth. (*A*) Growth was monitored using total cell protein. (*B*) Total O_2 measured over time in cultures exposed to 4.9 mM O_2.

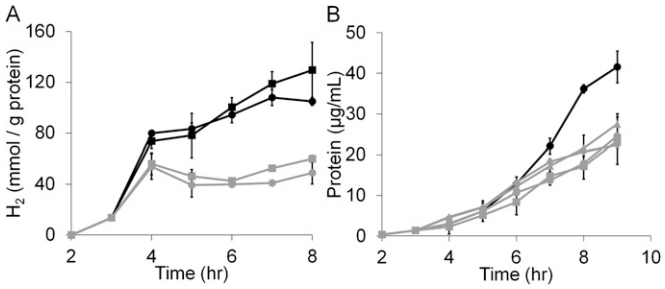

Fig. S2. H_2 recycling does not play a major role in O_2 detoxification in *P. furiosus*. Cultures (40 mL) in 100-mL bottles were grown at 95 °C in medium containing 5 g/L maltose, 0.5 g/L yeast extract, and no sulfide on a shaking platform (150 rpm). Growth was monitored by total cell protein. (*A*) Specific H_2 production. Cultures of COM1c2 (circles) and SHI SHIIc (squares) were grown anoxically (black) or were exposed to 8% O_2 (vol/vol in headspace) after 4 h of growth (gray). Specific hydrogen production values are reported. (*B*) Cultures of COM1c2 were grown anoxically (black) or were exposed to 8% O_2 (vol/vol in headspace) after 4 h of growth (gray) with 0% H_2 (circles), 5% H_2 (squares), 10% H_2 (triangles), or 15% H_2 (diamonds) added.

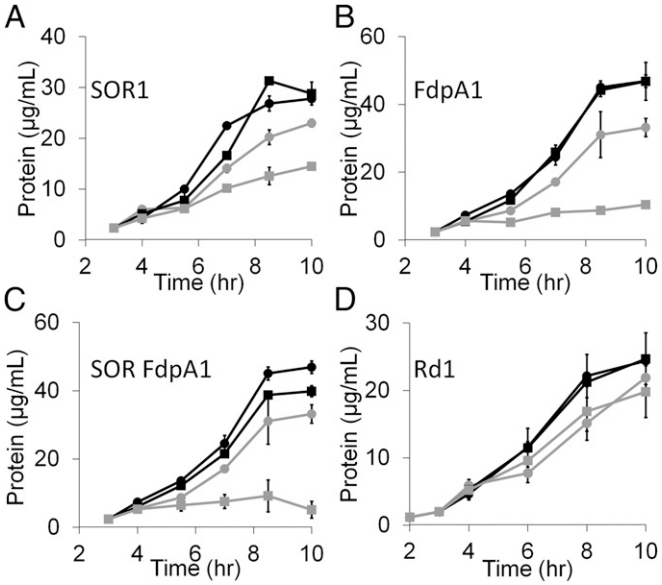

Fig. S3. Exposure of *P. furiosus* mutants lacking SOR, FdpA, and Rd to O_2 challenge. Cultures (40 mL) in 100-mL bottles were grown at 95 °C in medium containing 5 g/L maltose, 0.5 g/L yeast extract, and no sulfide on a shaking platform (150 rpm). Cultures parent (circles) or mutant (squares) were grown anoxically (black) or were exposed to 8% O_2 (vol/vol in headspace) after 4 h of growth (gray). Growth was monitored using total cell protein. (*A*) SOR1, (*B*) FdpA1, (*C*) SOR FdpA1, and (*D*) Rd1.