Prior probability distributions used for parameter estimation k_1 - Rate constant of O_2 reduction k_3 - Rate constant of cbb_3 reduction l_1 - Rate constant of NO reduction 0.0045 0.0040 0.006 0.0040 0.0035 0.005 Probability Density 0.003 0.003 0.001 0.0035 0.0030 0.0030 0.0025 0.00250.0020 0.0020 0.0015 0.0015 0.0010 0.00100.001 0.0005 0.0005 0.0000 0.0000 0.000 550 450 500 300 20 $\mu M^{-1}s^{-1}$ $\mu M^{-1}s^{-1}$ $\mu M^{-1}s^{-1}$ m_1 - Rate constant of NO_2^- reduction l_3 - Rate constant of NorB reduction *m*₃ - Rate constant of AniA reduction 0.005 Probability Density 0.003 0.001 Probability Density 0.003 0.001 0.001 0.0040.001 0.001 0.000 0.0 0.000 0.02 0.04 0.12 0.14 0.16 ~0.06 _0.0Ā ~0:0<u>5</u> 0.00 0.06 0.02 0.04 0.06 0.10 1 $\mu M^{-1}s^{-1}$ $\mu M^{-1}s^{-1}$ $\mu M^{-1}s^{-1}$ β - Rate constant of k_5 - Rate constant of cbb_3 denaturing k_6 - Rate of cbb_3 recovery passive diffusion of O_2 0.006 0.0045 0.016 0.0040 0.014 0.005 Probability Density 0.010 0.008 0.006 0.004 0.0035 Probability Density 0.004 0.0030 0.0025 0.003 0.0020 0.002 0.0015 0.0010 0.001 0.0005 0.000 0.0000 0.00014 0.00015 0.00016 15000 20000 0.00012 0.00013 5000 10000 $\mu M^{-1}s^{-1}$ $\mu M^{-1}s^{-1}$ f - Rate constant of g - Rate of electrons in reduction of cytochromes γ - Loss of NO 0.007 0.30 0.0060.20 0.15 0.15 ity Density 0.0050.0040.003 Probabil Probabil 0.10 0.0020.05 0.001 0.000 0.004 0.003 0.008 0.009 0.7 0.2 0.5 2.0 0.005 0.006 0.007 0.3 0.4 0.5 20 1.5 0.6 s^{-1} $\mu M^{-1}s^{-1}$ μMs^{-1} Q - Quinone concentration X - Cytochrome concentration A - AniA concentration 1.0 Probability Density 0.0 8.0 0.2 0.2 0.0020 0.00150.0010 0.0005 0.0000.0 0.0 -0.02 0.02 0.04 -0.06 _0.0Ā 0.00 12 ૭ 30 20 50 60 μM μΜ μM C - cbb₃ concentration B - NorB concentration 0.007 0.006 0.005

