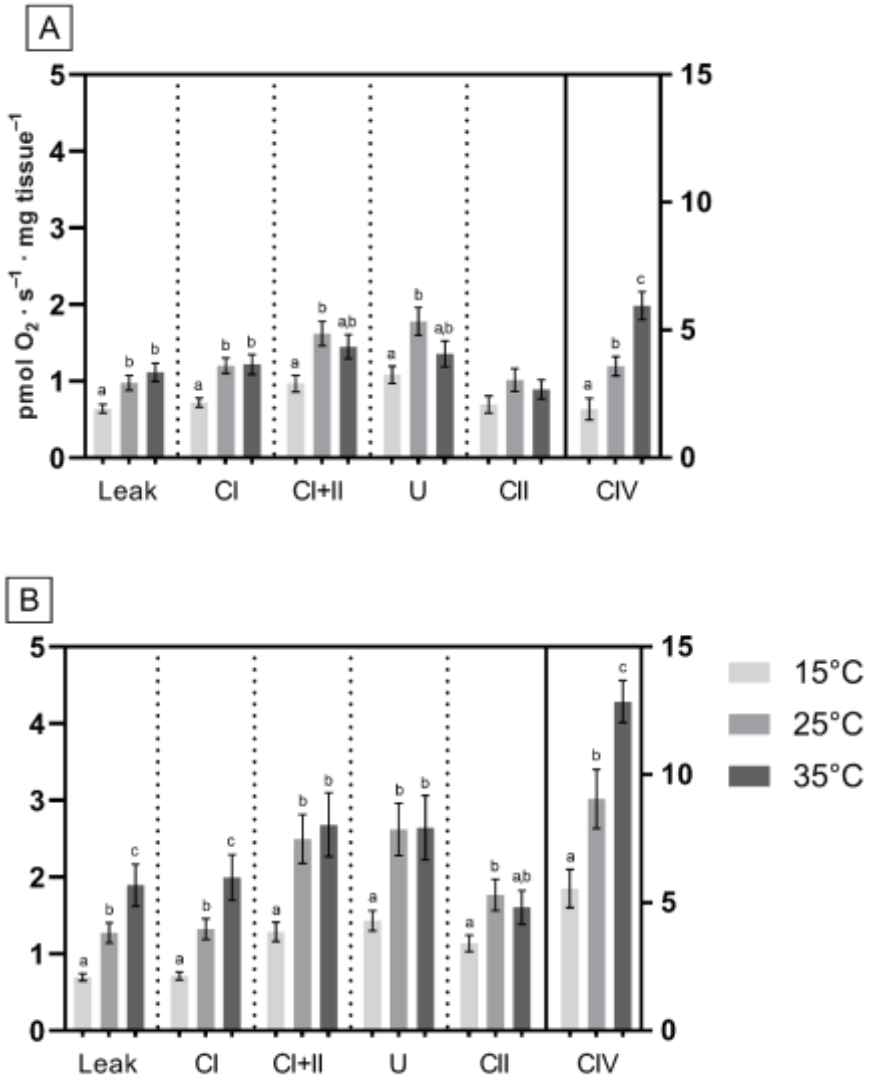

Figure s1. Mitochondrial respiratory capacity measured in permeabilized gills at three different temperatures in *Dreissena bugensis* (**A**) and *Elliptio complanata* (**B**). Data, normalized for mg of tissue, are means ± SEM (n = 9 for *D. bugensis*, n = 12 for *E. complanata*). Respiratory parameters: **Leak**, presence of CI-linked substrates without ADP; **CI**, presence of CI-linked substrates with ADP; **CI+II**, presence of CI/CII-linked substrates with ADP; **U**, presence of CI/CII-linked substrates with ADP and added uncoupler (FCCP); **CII**, presence of CI/CII-linked substrates with ADP and added uncoupler (FCCP) as well as CI-linked inhibitor; **CIV**, presence of CI/CIII-linked inhibitors with Ascorbate/TMPD for sustained activity. Significance was set as $P \leq 0.05$; letters denote differences between temperatures within a parameter with **a** statistically significant from **b** & **c** and **b** statistically different from **a** & **c**. All parameters are associated with the left y axis except for CIV which is associated with the right y axis.

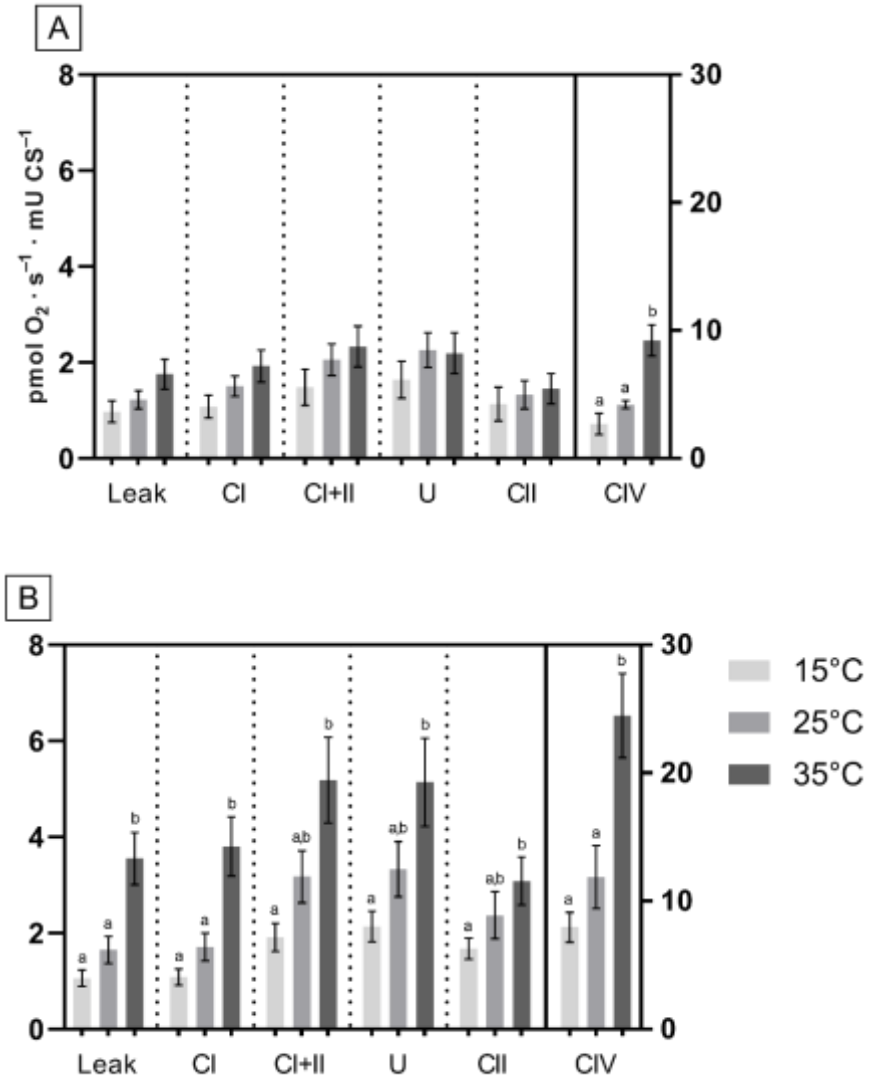

Figure s2. Mitochondrial respiratory capacity measured in permeabilized gills at three different temperatures in *Dreissena bugensis* (**A**) and *Elliptio complanata* (**B**). Data, normalized for mIU of citrate synthase, are means ± SEM (n = 9 for *D. bugensis*, n = 12 for *E. complanata*). Respiratory parameters: **Leak**, presence of CI-linked substrates without ADP; **CI**, presence of CI-linked substrates with ADP; **CI+II**, presence of CI/CII-linked substrates with ADP; **U**, presence of CI/CII-linked substrates with ADP and added uncoupler (FCCP); **CII**, presence of CI/CII-linked substrates with ADP and added uncoupler (FCCP) as well as CI-linked inhibitor; **CIV**, presence of CI/CIII-linked inhibitors with Ascorbate/TMPD for sustained activity. Significance was set as $P \leq 0.05$; letters denote differences between temperatures within a parameter with **a** statistically significant from **b**. All parameters are associated with the left y axis except for CIV which is associated with the right y axis.

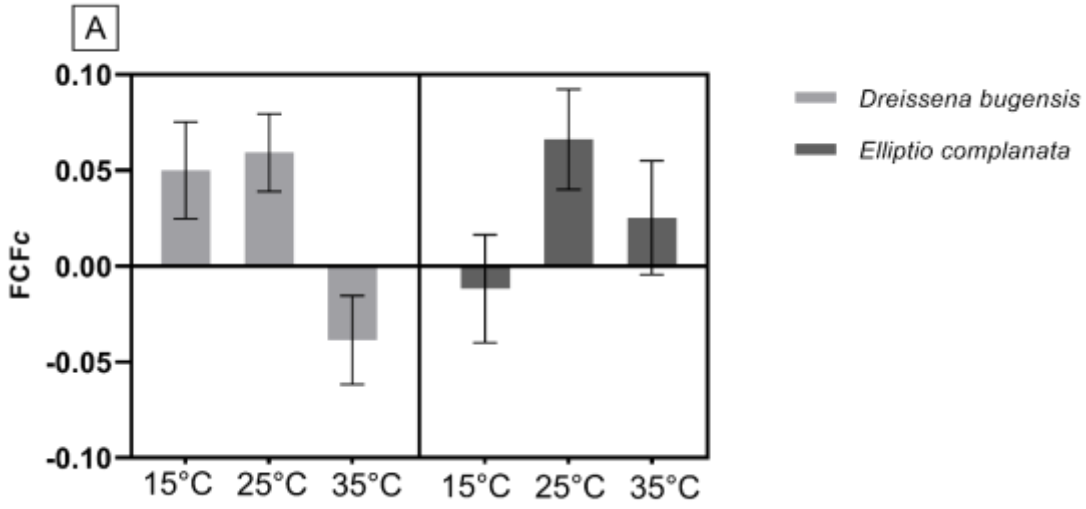

Figure s3. Integrity of the mitochondrial outer membrane (**A**) calculated as the flux control factor for cytochrome *c* (FCFc) ascertained from respiratory values in the presence of complex I substrates; 0 indicates full integrity of the outer mitochondrial membrane and 1 indicates a fully damaged outer mitochondrial membrane ($FCF_c = (CI_c - CI) \cdot CI_c^{-1}$). Data are means ± SEM ($n = 9$ for *D. bugensis*, $n = 12$ for *E. complanata*). Significance was set as $P \leq 0.05$.