REPLY: We would like to address the letter by Schwarzer and Doenst (4), regarding our recent study (2) investigating the differential influence of streptozotocin-induced diabetes mellitus on interfibrillar and subsarcolemmal mitochondria in mice. This study identified a multitude of differential responses associated with the diabetic phenotype, which included cardiac contractile abnormalities, mitochondrial morphological changes, increases in reactive oxygen species, enhanced oxidative stress, changes in a specific cardiolipin species, and impaired “resting” mitochondrial respiratory rates (1).

We are in agreement with Drs. Schwarzer and Doenst (4) that the inclusion of state 3 respiration analyses would have strengthened our study and enabled a more conclusive interpretation of the data on state 4 respiration. This is not to say that an examination of state 4 respiration independent of state 3 respiration is entirely without value. In fact, in a similar model of diabetes mellitus (streptozotocin), it was shown that decreases in state 3 respiration can occur concomitantly with decreases in state 4 respiration (3).

We would also like to address the second point made by Schwarzer and Doenst (4), regarding the inclusion of two different methodologies for assessing mitochondrial function. In this regard, it is important to point out that at no time do we make comparisons between different electron transport chain complexes (i.e., complex I vs. complex III, etc.). Rather, we only make comparisons of electron transport chain function between treatment groups (i.e., control vs. diabetic, subsarcolemmal mitochondria vs. interfibrillar mitochondria, etc.) in which the same methodology is being employed. Thus the utilization of different methods for assessment should not confound the interpretation of the findings for comparisons made solely between treatment groups.

In conclusion, we hope that our response will help to clarify the interpretation of the data presented regarding the mitochondrial functional parameters presented in Dabkowski et al. (2).

REFERENCES