GS01-6 **Physiological role of TRPC6 in hyperglycemia-exposed mice hearts**

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Excess production of reactive oxygen species (ROS) caused by hyperglycemia is a major risk factor for heart failure. We have recently reported that TRPC3 positively regulates ROS production with NADPH oxidase 2 (Nox2). Although TRPC3 and TRPC6 have similar structure and activation mechanisms, relation between TRPC6 and TRPC3-Nox2 crosstalk is still unclear. Only TRPC6-deficient mice with treatment of streptozotocin (STZ) showed decreased cardiac function and increased oxidative stress compared with wild type and TRPC3-deficient mice. TRPC6 was upregulated in STZ-treated mice hearts and neonatal rat cardiomyocytes (NRCMs) treated with high glucose while Nox2 was downregulated. In TRPC3/TRPC6/Nox2-expressing cells, TRPC6 inhibited increase of Nox2 protein expression by TRPC3 in its channel activity-independent manner. Upregulation of TRPC6 in hearts exposed to hyperglycemia inhibited formation of TRPC3-Nox2 complex and suppressed Nox2-dependent ROS production, suggesting that TRPC6 upregulation contributes to adaptation for hyperglycemic stress in the heart.