Phosphodiesterases at the Crossway between cAMP and cGMP Signaling in the Failing Heart

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The failing heart is characterized by an imbalance between cAMP and cGMP signaling. Phosphodiesterase 2 (PDE2) has the unique property to be stimulated by cGMP, but to hydrolyse cAMP and thus mediates a unique negative cross-talk between both signaling pathways. In experimental mouse models, higher phosphodiesterase 2 abundance was cardioprotective in acute catecholaminergic stress and after myocardial infarction indicating that higher PDE2 activity may serve as a cGMP-activated brake to counteract sympathetic cardiac injury. This seminar will discuss whether activating PDE2 may represent an attractive therapeutic strategy during heart failure.