Heart, aorta and liver were collected from 10 wk old C57BL/6J mice. Quantitative RT-PCR confirmed high gene expression (Ct<30cycles) for all H2S synthesising enzymes within liver, while cardiac tissue displayed moderate gene expression of CSE and MPST (Ct<35cycles) and low expression of CBS (Ct>35cycles, n=4). Western blots confirmed the presence of protein within liver and heart homogenates for all enzymes. CSE, CBS and MPST were all localised to the cytosolic component of heart and liver homogenates. Immunohistochemical staining of fixed tissue sections located CSE to vascular smooth muscle in heart and thoracic aorta, while CBS and MPST were found in the vascular endothelium. Cardiomyocytes were immunoreactive for all enzymes.

The murine myocardium has the capacity to regulate local H2S availability, via at least three separate synthetic pathways, that have differential cellular locations. Future studies will investigate whether synthetic enzyme expression and H2S availability is regulated following ischaemia and reperfusion.

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CHARACTERISATION OF THE SYNTHETIC ENZYMES OF H2S IN MURINE MYOCARDIUM

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[1]B S Emerson,* [2]I Dransfield, [1]N M Morton, [1]G A Gray. *[1]Cardiovascular Science, Queens Medical Institute, 47 Little France Crescent, Edinburgh, EH16 4TJ; [2]MRC Centre for Inflammation & Research, Queens Medical Institute, 47 Little France Crescent, Edinburgh, EH16 4TJ*

Hydrogen sulphide (H2S) is a novel endogenously produced gasotransmitter. H2S donor compounds protect the heart from ischaemia-reperfusion injury. However the potential for the heart to regulate endogenous H2S availability to provide cardioprotection is not well characterised. The present study aimed to determine the expression, distribution and sub-cellular localisation of the H2S synthesising enzymes cystathionine β-synthase (CBS), cystathionine gamma-lyase (CSE) and mercaptopyruvate sulfurtransferase (MPST) in the heart.