Targeting Cathepsin K in Cardiometabolic Disease

Wednesday, 3/11/15 – 1:00-2:00pm – Room W205, Anatomy/Zoology Building

With guest speaker

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Cathepsins are cysteine proteases that are ubiquitously expressed in various tissues. Our studies reveal that cathepsin K, the most potent cathepsin in terms of its proteolytic functions, is upregulated in the failing human heart and in a variety of rodent models (high-fat diet, pressure-overload, aging, starvation) of heart failure. In contrast, cathepsin K knockout (Ctsk/-) protected against cardiac structural (wall thickness, hypertrophy, fibrosis) and functional changes (contractile functions, calcium handling) associated with heart failure. Cathepsin K knockout attenuated apoptosis, blunted mTOR signaling and inhibited autophagic flux in the cardiomyocytes. Cathepsin K thus represents a novel pharmacological target for the treatment and/or control of heart disease.