Apr 12th, 2:35 PM - 3:35 PM

Protective Qualities of Duck Carboxypeptidase D Against Adenovirus-Mediated Apoptosis in Primary Rat Hepatocytes

Bridget Wall
Illinois Wesleyan University

Dr. Linda Griffith, Faculty Advisor
Illinois Wesleyan University

Dr. Alexandria Sams, Faculty Advisor
The Massachusetts Institute of Technology

Poster Presentation P50

PROTECTIVE QUALITIES OF DUCK CARBOXYPEPTIDASE D AGAINST ADENOVIRUS-MEDIATED APOPTOSIS IN PRIMARY RAT HEPATOCYTES

Bridget Wall and Dr. Linda Griffith* and Dr. Alexandria Sams*
Biology Department, Illinois Wesleyan University
The Massachusetts Institute of Technology

Duck carboxypeptidase D (DCPD) is a membrane-bound metalloenzyme of the secretory pathway that cleaves arginine or lysine from the carboxy terminus of a protein or peptide. In a prior study of DCPD, a known receptor for Hepatitis B, cells transfected with an adenovirus containing DCPD possessed a distinctly different morphology and vitality in comparison to the adenoviral constructs containing GFP or those lacking a transgene. In essence, DCPD protected the cells from adenovirus-mediated apoptosis, a self-destructive process which occurs upon viral DNA entry, incorporation, and translation. To investigate the mechanism by which DCPD prevents apoptosis, a variety of inhibitors and promoters were tested using primary rat hepatocytes to determine compounds relevant to the prevention pathway. In this pathway, arginine is used as a substrate by members of the nitric oxide synthase (NOS) family to synthesize nitric oxide. The elucidation of this mechanism may lead to further insight on the adenoviral response and perhaps eventual incorporation in a default adenoviral vector for use in gene therapy.