THE NUDIX HYDROLASE HOMOLOGS RV1160 FROM *MYCOBACTERIUM TUBERCULOSIS* **AND ORF135 FROM** *E. COLI* **ARE CTPASES.** *C. Daley, S. Denial, E. Delva, B. Cotman, E. Richter, and S.F. O'Handley*, Department of Chemistry,* <u>cjd4654@rit.edu,</u> <u>sjd1050@rit.edu,</u> <u>sfosch@rit.edu</u>

Orf135 from *E. coli* and Rv1160 from *M. tuberculosis* are CTPases and members of the Nudix hydrolase family, a family of enzymes identified by the common signature sequence GX5EX7REUXEEXGU (U=I, L, or V) that hydrolyze substrates containing a nucleoside diphosphate linked to some moiety, x. Orf135 and Rv1160 have been cloned, expressed, purified, and characterized. CTP is the feedback inhibitor of pyrimidine biosynthesis and a precursor to lipid biosynthesis, thus Orf135 and Rv1160 may help regulate these pathways through degradation of CTP. To definitively establish Orf135's role in the cell, we are in the process of creating a knock-out mutant of Orf135. To establish Rv1160's role in the cell, we will do complementation studies in the Orf135 *E. coli* knock-out mutant. Proving the significance of Orf135 and Rv1160 will help establish the potential of these enzymes as novel antibiotic targets in pathogenic *E. coli* and *M. tuberculosis*.