

Mary Lynn Trawick*Biochemical Evaluation of Cathepsin Enzymes*

(Chemistry and Biochemistry / Arts and Sciences)

A small library of synthetic compounds, provided through collaboration from the laboratory of Professor Kevin G. Pinney, will be evaluated as potential inhibitors of a series of enzymes, called cysteine protease cathepsins. These enzymes play important roles in cancer biology (especially in tumor metastasis), rheumatoid arthritis, osteoporosis, osteoarthritis, and in protozoan infections such as Chagas' disease. Therefore, inhibitors of such enzymes have valuable potential as therapeutic agents. The library has previously yielded potent inhibitors of two members of this family of enzymes (Siles et al., *Bioorg. Med. Chem Lettr.*, 2006, 16, 4405-4409; Trawick et al., *FASEB J.*, 2007, A642) that are currently undergoing further investigation. An important feature of this project is the application of existing instrumentation to develop high-throughput screening of target compounds to facilitate the testing procedure. Results will be modeled on computers using available commercial software, which when combined with the inhibitor studies, will provide valuable information for the design of the next generation of inhibitors for this important family of enzymes.