

# Drug Discovery in Acid Mine Waste: Searching for Unique Anticancer Agents from the Berkeley Pit Microbe BP 885-7

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## **Abstract:**

The Stierle Research Laboratory searches for bioactive compounds in unusual environments such as the Berkeley Pit. Unique environments produce unique microbes and unique chemistry. The goal of the research is to isolate bioactive metabolites from microbes in the Berkeley Pit and determine their drug potentials.

The Stierle lab uses Signal Transduction Enzyme assays as a means for screening crude extracts and guiding isolation of pure, active compounds. The lab uses MMP-3 and caspase-1 assays as guides. The purpose is to find compounds that inhibit these enzymes since they have been implicated in some disease processes such as cancer, rheumatoid arthritis and multiple sclerosis. The active extracts are then separated using a variety of chromatographic techniques. Once a pure compound is obtained, the goal is structure elucidation. The compounds may also be sent to the NCI for testing in their human cell line screen.

My *Undergraduate Research Proposal* is focused on the microbe we call BP 885-7, also known as *Penicillium rubrum*. Several compounds isolated from this microbe have already shown tremendous activity. My work will be in isolating more new compounds from this microbe that exhibit MMP-3 inhibitory activity. I will also participate in the structure elucidation and testing of those compounds I isolate. My goal is to find compounds with good drug potential so any novel, active compounds will be sent to the National Institutes of Health/National Cancer Institute for through evaluation.

## **Biography:**

I am currently a senior at Montana Tech majoring in Chemistry. I will graduate in December 2007. My immediate plans following graduation will be to study language in Barcelona, Spain. After that, I will apply to medical school and I plan to attend starting in the fall of 2009. My hobbies include snowboarding, hiking, and rafting.