Phylogenetic organization within the mustelids is a topic currently being debated by biologists based on both morphology and genetics. There are currently a number of proposed phylogenies using different physical traits or gene segments. The research I am performing is intended to compare and contrast the limb structure of Lontra canadensis (North American River Otter) with closely related terrestrial mustelids and predecessors.

My main objective is to determine what changes have taken place in otter limbs that allow for their semi-aquatic lifestyle compared to mustelids that utilize other modes of locomotion. Using this data, I hope to help clarify their relationship to other mustelids. On top of this, I hope to discover maceration techniques that will result in better bone cleaning.

Methods that will be utilized include, but are not limited to, a series of range of motion measurements, limb size ratios, and visual shape comparisons that will be taken both in the presence and absence of cartilage. After the data are collected they will be interpreted utilizing various types of statistical analysis in order to determine where the significant morphological differences are located between different species. Maceration will take place in a roaster over a period of time, and different water additives will be compared to determine what results in cleaner, whiter bones.