PM of Halftime Seminar for Crista Wathen

Working Title: “Development and application of sample preparation methods for analyzing contamination materials for strontium analysis”

The overall theme of the Ph.D. is method development and focusing on materials that are contaminated through the burial context or the conservation process. From an archaeological perspective, contamination can make strontium analysis difficult as the in vivo or the biogenic values may have been changed or are no longer retrievable. Strontium analysis, particularly isotopes can ascertain any migration patterns, and rebuild economic trade routes. It is generally agreed that enamel is the preferred sample type as it is less likely to become contaminated, unlike bones, which are considered to be contaminated until proven that it is not. However, bones can help gives us an overall picture of the individual up to a few years before death (depending on bone and turnover rate).

The importance of strontium analysis with bone, in addition to analysis with tooth enamel, cannot be overstated. For this reason, this Ph.D. is looking at methodological development to decontaminate bones so it can continue to be a viable sample type.

To this end, papers that are expected to be published in the near future and have a collaborative nature are:

1. A Strontium review paper that focuses on the methodological development of decontamination methods and strontium analysis within Archaeology. This paper has been submitted, reviewed, and is currently being edited for resubmission.
2. The Christian Vikings of Varnhem. This is a paper with a collaborative nature with researchers in the department and outside of the department. It will contain strontium isotopic data as well as other isotopic data that has been completed. Results will be presented.
3. Finally, an experimental contamination project where an uncontaminated bone was contaminated with glues with known strontium values. The purpose of this paper is to determine both method viability and whether or not these glues have an effect on those biogenic values. Preliminary results will be presented.

Additionally, there are planned projects that are also in collaboration with other members of the department.

1. Västerhus. Many of the bones from this site are contaminated with both known and unknown glues. A field trip has already been completed to collect samples to calculate for biologically-available strontium.
2. Otolith decontamination.