**Application to analyze bone and tooth enamel from Later Stone Age hunter-gatherer and herder skeletons curated at the McGregor Museum**

For my Masters thesis, I wish to study the diets of hunter-gatherers and herders of the Northern Cape, based on stable isotope analyses of small samples of bone from archaeological human skeletons. This approach is a powerful way of studying past peoples’ diets, use of the landscape and other key features of their lifeways. I am specifically interested in looking at the social organization, association of burial style and diet, and differences in diet between men and women of this area. In this study, I therefore hope to add a new dimension to the life ways of these individuals that may add to already existing work such as that of Morris (1992). I have already done some work on this topic: for my Honours research project in 2012 I carried out these kinds of analyses on a small number of skeletons from the Northern Cape that are curated in the Department of Human Biology at the Medical School of the University of Cape Town. Twenty years ago, Lee-Thorp et al. (1993) analysed a few individuals from the McGregor Museum. These earlier studies were limited because they were based on only a few measurements. I wish to build on this work, developing a much more detailed picture and investigating possible changes through time, and differences in different areas. I am interested in the Northern Cape because it is under-studied in comparison to well-researched areas such as the Western Cape (Sealy 2006, 2010; Sealy & Van der Merwe 1985,1986,1988). It is also known from historical sources that the Northern Cape was occupied by hunter-gatherers until the late 19th century, while communities along the Orange River kept domesticated animals. Combining historical, archaeological and bone chemical information will enable me to reconstruct a richer, more detailed picture of the history of the Northern Cape than is possible in most other areas. A study such as this one will therefore add to our knowledge of the region, as well as adding value to the collections at the McGregor Museum.

The proposed work will focus on the archaeological skeletons from the Riet River and Orange River, as well as individuals from drier areas further away from the rivers. It is not possible at this stage (since I have not yet seen the skeletons) to know which individuals will be most suitable for sampling. The exact specimen numbers and hence the number of individuals to be sampled will be listed after suitable specimens are identified. Where possible, I would like to sample bone and tooth enamel from the same individuals, since these provide different information. Sampling involves minimal damage to the skeletons: I would like to remove about 1cm of bone from one rib or similar skeletal element and a few milligrams of tooth enamel. Most archaeological skeletons are incomplete, and some of the bones are often broken. In many cases, it will be possible to take samples from an already damaged or broken rib. Tooth enamel will be removed from the surface of one side of a tooth, using a small hand-held drill fitted with a dental drill bit. After sampling, it will require close examination to see that any material has been removed at all. There is thus minimal damage to the skeletons for considerable gain in knowledge.

The analytical work will be carried out in the Department of Archaeology at the University of Cape Town, where I am studying for my Masters degree. My supervisor, Prof Judith Sealy, has many years’ experience in this kind of work, and is well placed to guide me. UCT also has all of the equipment necessary for my project.

I hope that this application includes the information required in order to make a decision. I would be happy to provide additional information if necessary.

**References**

Lee-Thorp, J. A., Sealy, J. C. & Morris, A. G. 1993. Isotopic Evidence for Diets of Prehistoric Farmers in South Africa. In: Lambert, J. B. & Grupe, G. (eds) *Prehistoric Human Bone: Archaeology at the Molecular Level:* 99-120. Berlin: Springer-Verlag.

Sealy, J.C. 2006. Diet, Mobility, and Subsistence Patterns among Holocene Hunter-Gatherers in Southernmost Africa. *Current Anthropology* 47(4): 569-595.

Sealy, J. 2010. Isotopic Evidence for the Antiquity of Cattle-Based Pastoralism in Southernmost Africa. *Journal of African Archaeology* 8(1): 65-81.

Sealy, J.C. & Van der Merwe, N.J. 1985. Isotope Assessment of Holocene Human Diets in the South-Western Cape, South Africa. *Nature* 315: 138-140.

Sealy, J. C. & Van Der Merwe, N. J. 1986. Isotope Assessment and the Seasonal-Mobility Hypothesis in the Southwestern Cape of South Africa. *Current Anthropology* 27(2): 135-150.

Sealy, J.C. & Van der Merwe, N.J. 1988. Social, Spatial and Chronological Patterning in Marine Food Use as Determined by δ13C Measurements of Holocene Human Skeletons from the South-Western Cape, South Africa. *World Archaeology* 20(1)*:* 87-102.

Morris, A.G. 1992. *Skeletons of Contact: Study of Protohistoric Burials from the Lower Orange River Valley, South Africa.* Johannesburg: Witwatersrand University Press*.*

Nandi Masemula

MSc candidate, Department of Archaeology, University of Cape Town