Karin Margarita Frei

Denmark

Provenance Studies of Ancient Textiles, a New Method Based on the Strontium Isotopic System

In the last two decades, measurements of strontium isotopes in archaeological bone tissue/skeletons have shown to be an effective technique for the characterisation of human and animal mobility in prehistory. Recently a new method, also based on the strontium isotopic system, has been developed in order to address questions regarding the provenance of ancient textiles. Presently, this method is being applied to Danish Iron Age garments, which represent one of the best preserved prehistoric textile collections from European prehistory. Moreover, the method is being further developed to remove possible dyestuffs, as these could act as potential contaminants to the primary nutritional wool fiber's strontium isotopic signature. Furthermore the growing interest in the study of ancient textiles and their potential to elucidate not only historic and prehistoric textile technology, but also socio-economic and even religious purposes, makes this method an important new tool within archaeology. This paper aims at delineating the present potential of the novel method as well as presenting its limitations.

References:

Balakina, G.G., Vasiliev, E.V., Karpova, V.I., and Mamatyuk, V.I., 2006, HPLC and molecular spectroscopic investigations of the red dye obtained from an ancient Pazyryk textile: Dyes and Pigments, v. 71, p. 54-60.

Bentley, R.A., 2006, Strontium isotopes from the earth to the archaeological skeleton: A review: Journal of Archaeological Method and Theory, v. 13, p. 135-187. Ferreira, E.S.B., Hulme, A.N., McNab, H., and Quye, A., 2004, The natural constituents of historical textile dyes: Chemical Society Reviews, v. 33, p. 329-336.

Frei, K.M., Frei, R., Mannering, U., Gleba, M., Nosch, M.L., and Lyngstrøm, H., 2009a, Provenance of ancient textiles – a pilot study evaluating the strontium isotope system in wool: Archaeometry, v. 51, p. 252-276.

Frei, K.M., Skals, I., Gleba, M., and Lyngstrøm, H., 2009b, The Huldremose Iron Age textiles, Denmark: an attempt to define their provenance applying the Strontium isotope system: Journal of Archaeological Science, v. 36, p. 1965-1971.

Frei, K.M., Vanden Berghe, I., Frei, R., Mannering, U., and Lyngstrøm, H., 2010, Removal of natural organic dyes from wool – implications for ancient textile provenance studies: Journal of Archaeological Science, v. in press.

Martoglio, P.A., Bouffard, S.P., Sommer, A.J., Katon, J.E., and Jakes, K.A., 1990, Unlocking the secrets of the past; the analysis of archaeological textiles and dyes: Analytical Chemistry, v. 62, p. A1123-A1128.

Price, T.D., Grupe, G., and Schroter, P., 1998, Migration in the Bell Beaker period of central Europe: Antiquity, v. 72, p. 405-411.

Wallert, A., and Boytner, R., 1996, Dyes from the Tumilaca and Chiribaya Cultures, South Coast of Peru: Journal of Archaeological Science, v. 23, p. 853-861.

Contributor:

Karin Margarita Frei Center for Textile Research, CTR, SAXO Institute, University of Copenhagen, Njalsgade 80, DK-2300, Denmark