

## Program<sup>1</sup> SMIA; 21.-23.01.2019, Stavanger, Norway:

### **Monday**

**from 09:30 – Registration**

**10:30 - Welcome by the Director of Archaeological Museum, UiS, and the SMIA-committee**

**11:00 - Keynote speaker:**

*Kate Welham, Professor of Archaeological Sciences, Bournemouth University, UK.*

Topic: The state of science in archaeology.

**11:45 - Keynote speaker:**

*Niels Nørkjær Johannsen, Associate professor Archaeology, Aarhus University, Denmark*

Title: Ancient DNA, old epistemology and young interdisciplinarity: on the meeting of archaeology with genetics, and its future

12:30-13:00; *Lunch*

### **Papers (afternoon session: Provenancing humans and their material culture):**

*Session organiser: A.J. Nyland*

13:05-13:25; *Persson, Per*: “Cultural dualism in Neolithic Scandinavia?”

13:25-13:45; *Boessenkool, Sanne; Barrett, James H., Gondek, Agata T. & Star, Bastian*:  
“WALRUSH: Ancient DNA identifies the chronology of walrus ivory trade from  
Norse Greenland

13:45-14:05; *Mullin, Victoria, Bradley, Dan, Mulville, Jacqui & Pearson, Mike Parker*: “Prehistoric  
House Cows: a genetic analysis of cattle at Cladh Hallan, Scotland”

14:05-14:20; *Questions*

14:20-14:40; *Hrnjic, Mahir*: “The Viking Age Silver Networks: Provenance analysis of Islamic  
coins, Perm’/Glazov and Duesminde ring types”

14:40-15:00; *Mannermaa, Kristiina, Heyd, Volker, Moiseev, Vyacheslav & Gerasimov, Dimitri*:  
“Isotope research of archaeological material from Yuzhniy Oleniy Ostrov, NW  
Russia. Mobility patterns of humans and animals”

15:00-15:20; *Stanton, David, Bruford, Michael, Mulville, Jacqui, Pemberton, Josephine & Pérez-  
Espona, Silvia*: “From Deer to Eternity – Ancient and modern management of Insular  
Red Deer”

15:20-15:40; *Moilanen, Ulla, Kinnunen, Jussi & Moilanen, Mikko*: “Haukila sword: The origin  
and the life cycle of an object”

15:40-15:20; *Questions, poster presentations, and final discussion*

### **Posters:**

*Etu-Sihvola, H., Bocherens, H., Drucker, D. G., Junno, A., Mannermaa, K., Oinonen, M., Uusitalo, J.,  
and Arppe, L.*: “The dIANA database - isotopic baseline for paleodietary  
research in the Baltic Sea area”

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<sup>1</sup> Some minor changes in the program may occur

*Gebremariam, Kidane F., Nyland, Astrid J. & With, Ruben*: “Comparative provenance study of lithic materials using two portable xrf instruments.”

*Gunasekara, Janani Sulakkana*: “Dental wear analysis: feature and texture-based correlation”

*Lempiäinen-Avcı, Mia*: “Ancient DNA – a method to study Finnish Crop History”

*Moiso, Jussi*: “People on the move – Multidisciplinary approach to the study of Early Iron Age migrations in Finland”

## **Tuesday**

### **08:30- Papers (morning session: Identifying on-site activities)**

*Session organiser: R. Cannell*

08:35-08:55; *Pálsdóttir, Albína H., Nistelberger, Heidi, Star, Bastiaan, Leifsson, Rúnar, Gondek, Agata, Orlando, Ludovic, Barrett, James H., Hallsteinn Hallsson, Jón, & Boessenkool, Sanne*; “Which horse should we sacrifice? Sex as a determining factor for the selection of horses in Viking Age burials in Iceland”

08:55-09:15; *Peyroteo-Stjerna, Rita*; “One body, multi-possibilities. Investigating hunter-gatherer deathways from multi-analytical perspectives”

09:15-09:35; *Kristiansen, Søren K. & Tjellén, Anna K. E.*; “Preservation of organic macromolecules in situ - New evidence from Iron Age warrior bones in a Danish wetland, Alken Enge”

09:35-09:55; *Demirci, Özge & Junno, Aripekka*; “Pottery lipid characterization of on-site activities among ancient hunter-gatherer-fisher societies in NW Europe and Northern Japan: Preliminary results and discussions”

09:55-10:10; *Questions*

10:10-10:30; *Coffee*

10:30-10:50; *Jouttijärvi, Arne*; “A space for metalworking”

10:50-11:10; *Hakonen, Aki, Vaneekhout, Samuel, Moiso, Kari & Okkonen, Jari*; “Combining GPR and magnetometry for charting decomposed inhumation graves: The trials of Tainiari, Northern Finland”

11:10-11:30; *Kristiansen, Søren, Sulas, Federica, Olsen, Jesper, Raja, Rubina & Sindbæk, Søren M.*; “Best practice pre-excavation and geoarchaeology methods for identifying on-site activities in tropical, arid and temperate climates”

11:30-11:50; *Martens, Vibeke*; “Geoarchaeological and Geochemical Analyses of Conservation State and Preservation Conditions for Archaeological Deposits”

11:50-12:30; *Questions, poster presentations, and final discussion*

12:30-13:00; *Lunch*

### **Posters:**

*Hollund, H., Doherty, M., Teasdale, M., & van der Sluis, L.*: “Bone diagenesis and the microbiome: Metagenomic and histotaphonomic investigation of archaeological bone and the effects of in- and ex-situ environment”

*Jouttijärvi, Arne*; “Nails and anchors- quality and smithing technology of maritime ironwork in the Viking Age”

*Legge, Michael*; “Re-examining a Massacre: The Taphonomy of the War Ditches, Cambridgeshire”

**13:00- Papers (afternoon session: Identifying materials and ancient technologies)**

*Session organiser: H. I. Hollund*

- 13:05-13:25; *Jouttijärvi, Arne*; “According to Theophilus – the making of a medieval chalice and the value of written sources”
- 13:25-13:45; *Lentfer, Carol & Damm, Charlotte*; “Use-wear and residue analyses of Stone Age lithic artefacts from northern Norway: potential and preliminary results”
- 13:45-14:05; *Evans, Sally, Best, Julia & Mulville, Jacqui*; “From the Deep Sea to the Sky – Interpreting ZooMS data”
- 14:05-14:20; *Questions*
- 14:20-14:40; *Coffee*
- 14:40-15:00; *Suomela, Jenni*; “Challenges in Cross-sectioning Textile Fibres”
- 15:00-15:20; *Mackie, Meaghan, Solazzo, Caroline, Gleba, Margarita, Olsen, Jesper V., & Cappellini, Enrico*; “Analysis of Bronze and Iron Age Italian Wool Textiles by Palaeoproteomics”
- 15:20-16:30; *Questions, final discussion, and future prospects for the SMIA-conference*

**Wednesday:**

**WORKSHOPS**

Workshop 1 – full day – 08:30 – 16:00:

*Lee Drake, Adjunct Faculty, Department of Anthropology, University of New Mexico, US*

**Advanced XRF Workshop: XRF and Cultural Heritage: Quantitative, Qualitative, and everything in between**

The growth of portable spectrometry has revolutionized what is possible in conservation and cultural heritage. Historically, compositional analysis required destructive sample presentation. With the advent of handheld spectrometers, not only was non-destructive spectrometry possible, but representative analysis of the object was not constrained to a small sample of measurements. However, this growth in possibility is matched equally by analytical challenges. How many measurements is representative of the object? How do we handle heterogeneous composition? How do we treat pigments, corrosion, patinas, or other surface alterations? Answering these questions requires a deep understanding of both the analytical method and nature of the question.

*Background Knowledge:* Open to beginners and advanced users alike.

*Preference:* Please bring instruments, computers, and objects to analyze if you are able. This workshop will be hands-on and guided for both qualitative and quantitative analysis.

Workshop 2 – half day, 13:00 – 16:00:

*Rebecca Cannell, Post-doc research fellow, University of Oslo, Norway & Bettina Ebert, research fellow University of Oslo, Norway*

**Introduction to soil analysis using pXRF**

This workshop is designed to give a short introduction to the practical methods and interpretative steps involved in analysing soils and sediments using pXRF. It will cover issues and options during analysis, including an introduction to the use of pXRF on a general level. As soil/sediment analysis

poses some unique issues, these will be covered. Data handling, calibration, interpretation, and presentation of results will also be discussed. This workshop is designed as an introduction, therefore some prior knowledge of soil analysis is desirable, but not at all necessary. No prior knowledge of pXRF is required. The workshop will focus upon the use of Niton pXRF's as they are the most common, however we hope to briefly cover the use of Bruker instruments as well.

*Preference:* Participants are encouraged to bring a laptop in order to download the required software (free) for Niton pXRF.

### Workshop 3 – half day, 08:30 – 12:30:

*Anders Lindahl, Professor, University of Lund, Sweden*

#### **h-XRF analysis on Archaeological Ceramics: Sample preparation and evaluation of data.**

Pottery-making can be considered as a complex activity combining technical and social constraints. The study of archaeological ceramic materials bears a cornucopia of insights into behaviour and environment of the people involved into both production and use of pottery. To facilitate subsequent interpretations, a thorough reconstruction of the production technology as well as scientific investigation of the desired use of the ceramic is essential. Both provenance studies and investigations of production technology involve the determination of compositional characteristics in terms of chemical and petrographic attributes of the bulk ceramic or its constituent compounds.

X-ray fluorescence (XRF) is in itself a non-destructive method for chemical analysis in order to define the elemental composition of a test sample. The method has highly accurate determinations for elements. A limitation in the XRF-analysis with the handheld equipment is that elements in the range from Sodium (Na) and lighter cannot be detected.

Clay, and by default ceramics, consist mainly of oxides of the elements silicon and aluminium as well as quite a large portion of Iron, calcium, potassium, titanium, magnesium and phosphorus. All these are normally found in percentage amounts. Other elements are only detected as parts per million (ppm).

Even though the chemistry of the samples partly depends on the mineralogy of the coarse fractions, a much larger part depends on the composition of the clay (Bergman & Lindahl 2016).

The analyses with the h-XRF should always be performed on a clean surface, either a ground powder of the sample, a fresh break or a freshly made cut on the cross section of the sherd.

The element detection is also depending on the duration of the analysis. This means that a higher accuracy in the quantitative analysis is achieved if the object is analysed for a longer time. This is especially true for the lighter elements. To eliminate the impact of the chemical composition of single large grains and to capture the possible variation in the sample several analyses on different parts of the samples is to recommend. The average value from these analyses will thereafter be used as the "true" value.

To interpret correlation and similarities between samples just by looking at tables of data is often difficult and may lead to erroneous results. The different elements could e.g. in an initial stage be compared in two-dimensional plots. To get a better understanding of the relation between the samples a more comprehensive statistical evaluation is achieved by using multivariate analyses e.g. Principal Component Analyses (PCA), involving all the elements found in the h- XRF analyses.