



# TRANSALPINE MOBILITY AND CULTURE TRANSFER. I.

Research Unit of the German Science Foundation (FOR 1670)

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## 1 Context, aims and scopes of the project

Isotopic mapping has become an indispensable tool for the assessment of mobility and trade in the past. This project aims at solving one prominent limiting factor inherent to this type of study which is the redundancy of geologically defined isotopic ratios. Associated problems include ambiguous definition of place of origin of the bioarchaeological material analyzed due to low spatial resolution, an insufficient differentiation between original isotopic ratios in the finds compared to those that are diagenetically altered, and the lack of appropriate regional isotopic maps. In addition, the abundant bioarchaeological substrate represented by cremated finds has so far been neglected. This project focusses on a reference region of great archaeological relevance: the transalpine Inn-Eisack-Etsch-Brenner passage. Specific archaeological contexts from Late Bronze Age until Roman times are investigated.

## 2 The intention of this project is to:

- construct an isotopic map of the reference region (the Alps and its northern surroundings) by application of an isotopic fingerprint consisting of 4 to 5 isotopic ratios ( $\delta^{18}\text{O}_{\text{phosphate}}$ ,  $^{87}\text{Sr}/^{86}\text{Sr}$ ,  $^{208}\text{Pb}/^{204}\text{Pb}$ ,  $^{207}\text{Pb}/^{204}\text{Pb}$ ,  $^{206}\text{Pb}/^{204}\text{Pb}$ ),
  - focus on the analysis of cremated material ( $\delta^{18}\text{O}$  not applicable),
  - conduct an in-depth mineralogical identification of the nature of the analysed material to safely discern between diagenetic from biological isotopic signatures,
  - define an individual isotopic fingerprint by novel data mining methods,
  - produce a fine-scaled reconstruction of place of origin and migrational direction of non-local skeletal finds of humans and animals, and
  - integrate the data into a freely accessible data bank (world wide data sharing).
- The project consists of the following subprojects (SP 01 to 07):

## 3 SP01: Isotopic mapping of local bioavailable stable isotopes (Sr, Pb, O) and geo-environmental parameters.

Principal investigators: Prof. Dr. G. Grupe, Dr. F. Söllner, Prof. Dr. S. Hölzl

## SP02: Mineralogical assessment of the bioarchaeological finds and validation of isotopic data.

Principal investigator: Prof. Dr. W. Schmahl

## SP03: Central IT services for processing, storage and analysis of bioarchaeological and archaeometric data by means of similarity search, cluster analysis and outlier detection.

Principal investigators: Prof. Dr. H.-P. Kriegel, PD Dr. P. Kröger

## SP04: Mobility and social dynamics in Southern Bavaria and the North Tyrolean Inn Valley during the Urnfield Culture (13.-9. cent. BC).

Principal investigator: Prof. Dr. C. Metzner-Nebelsick

## SP05: Migration or acculturation – the genesis and dispersion of the early Fritzens-Sanzeno-Culture (5/4. Cent. BC)

Principal Investigator: Prof. Dr. A. Lang

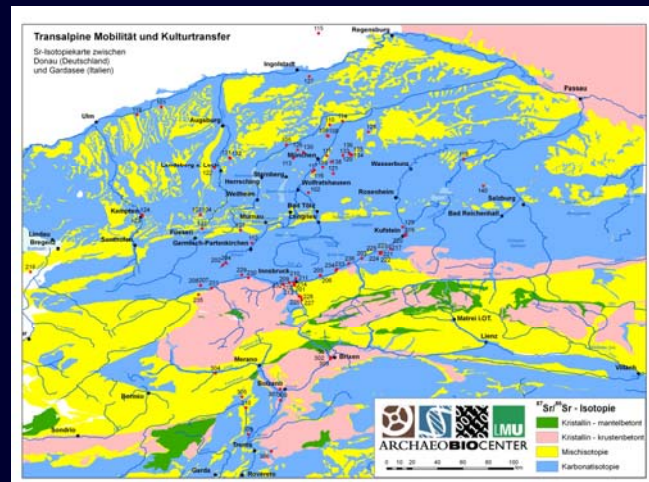
## SP06: Population and livestock in the Rhaetian Alps and alpine foreland of the 1st century AD

Principal investigators: Prof. Dr. J. Peters, Dr. B. Steidl

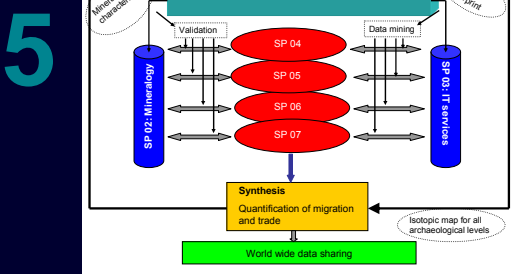
## SP07: Gontia as a „Melting pot“? – The composition of the fortress inhabitants as reflected by the burials. A model for Rhaetia.

Principal investigators: Dr. C.S. Sommer, Prof. Dr. W. Czys, Dr. G. McGlynn

## 4 Isotopic mapping



The sampling sites. Isotopic mapping is achieved by stable strontium, lead, and oxygen isotopes from three species of residential vertebrates each from archaeological sites covering the transalpine passage. Geological and ecological (surface water, botanical samples) serve as controls and for the assessment of modern contamination. For the analysis of human cremations, the isotopic fingerprint made up of Sr, Pb, and O is reduced to Sr and Pb, the isotopes of which are thermally stable.



## Interconnectedness

of the natural (SP 01-03) and cultural scientific (SP 04-07) subprojects. For further details see

<http://www.for1670-transalpine.uni-muenchen.de>

Novel approaches for physical anthropology see posters II and III.

Human cremation: a neglected research substrate

