



Life in the proto-urban style: the identification of parasite eggs in micromorphological thin sections from the Basel-Gasfabrik Late Iron Age settlement, Switzerland



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ABSTRACT

The Swiss Basel-Gasfabrik site represents an important Celtic settlement of urban character. Two species of intestinal parasites, *Trichuris* sp. and *Ascaris* sp., were identified in micromorphological thin sections from settlement pits. Species identification is complicated by taphonomic effects as well as the random representation of samples and cuts. Parasite eggs are encountered within and beyond original depository contexts due to water displacement and bioturbation. Our findings introduce micromorphology as a new means of paleoparasitological research which augments classical procedures. It captures parasite remains directly in their original microstratigraphic setting, thus providing information not to be obtained by classical flotation. Our observations are relevant for the selection of suitable sampling sites, sampling strategies, and methods of recovery and identification of paleoparasitological data in archeological sediments. They create new insights into site specific parasite dispersal and living conditions in the Late Iron Age.

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1. Introduction

From about 150 to 80 BC, an unfortified Celtic settlement existed on the left bank of the Rhine River in Basel. This first proto-urban antecedent of the modern city has been explored in numerous archeological excavations ever since its discovery in 1911. A multitude of features like pits and trenches, vast amounts of local and imported artifacts as well as human skeletal remains from two cemeteries and from the settlement area itself allow insights into diverse aspects of the lives of the former population.

Parasites have always been a part of these lives for both humans and their stocks. Evidence of parasites is usually derived from soil samples through wet sieving. Micromorphological thin sections can, however, also document the presence of parasite eggs. Due to a lack of detailed investigations, micromorphology has hitherto rarely been exploited as a source of paleoparasitological data. The selection of suitable sampling locations within archeological deposits, the durability of parasite remains,

sedimentation conditions and taphonomic processes as well as the random information provided by the thin sections all affect the likelihood of identifying parasites in micromorphological samples and need to be considered if valid data is to be gathered. This is exemplified by the evidence of parasite remains in two pits from the Basel-Gasfabrik site.

2. The Basel-Gasfabrik site

Basel-Gasfabrik, a Late La Tène settlement in the so-called Rhine knee on the left bank of the river, was occupied from ca. 150 to 80 BC (Fig. 1). Built in a flood-proof location, it represents the first evidence of a proto-urban site drawing on an extensive rural hinterland in the upper Rhine region and is regarded as a predecessor of the modern city. The settlement, which covered an area of about 150,000 sq m, was unfortified. Houses were constructed exclusively of timber and clay as is typical for pre-Roman sites in central Europe. Therefore, negative features like pits, postholes and trenches prevail, yet there is also evidence of preserved occupation surfaces, streets, and other types of manmade structures. Houses with associated yards, garden plots, animal pens or work areas, specialized crafts zones (pottery, smithy) and numerous other features like pits for various purposes, grain silos, etc. were arranged in an orderly manner, attesting to a purposeful and well-

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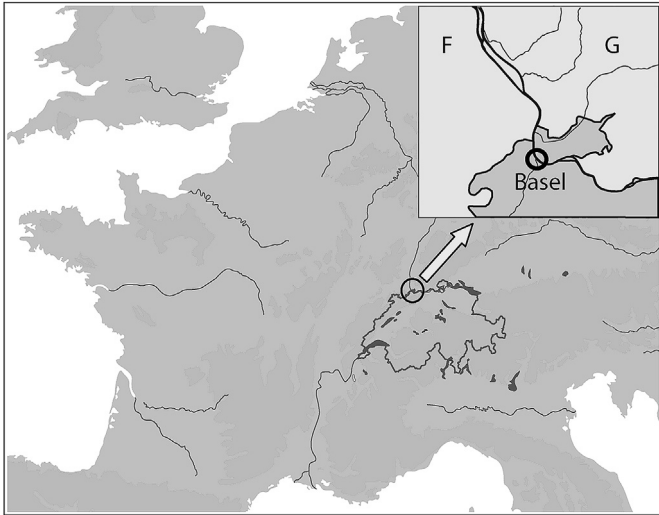


Fig. 1. Location of the Celtic Basel-Gasfabrik site (map of Europe modified from S. Fichtl – UMR 126–6).

planned arrangement of the settlement and permitting the reconstruction of numerous domestic and economic units across its extension (Fig. 2; Hecht et al., 2007).

The rich body of archaeological finds comprises several hundred thousand objects, the majority of which were recovered from more than 500 pits that had served a range of primary functions (grain storage, cellars, wells etc.). After having served their original

purposes, these pits were rapidly infilled with various types of sediment of diverse origin as well as waste. The settlement also had two cemeteries yielding about 200 inhumation burials. Besides, more than 30 human skeletons were found in pits and wells inside the settlement but there are also infant burials and a large number of isolated human bones in a variety of contexts. The complex settlement plan, the spectrum of local crafts as well as the quantity and exceptional quality of artifactual remains identify Basel-Gasfabrik as a settlement center of urban character which was incorporated in trade networks extending as far as the Mediterranean area (Hecht et al., 1999; Jud, 2008).

The dense occupation of the settlement area, the close proximity of humans and livestock as well as the rather coincidental disposal of food waste and both human and animal excrements which become evident from the infillings of the pits must needs have affected local community health including the spread of parasitoses, that is of diseases resulting from the infestation with parasites. One starting place for estimating hygiene is the human skeletal remains: Analyses of the nutritional status and the incidence of infectious disease among the inhabitants will provide basic information on the living conditions in the Celtic settlement. Another source of data is represented by the sediments in the pits. As part of the geoarchaeological studies undertaken during the excavations at Basel-Gasfabrik, micromorphological analyses have been carried out since 1988 (Rentzel, 1997; Rentzel, 1998; Rentzel and Narten, 2000). As a result, a large number of micromorphological soil samples are available for study. Some of these samples will be the subject of the present case study.



Fig. 2. Life in the Celtic settlement of Basel-Gasfabrik reconstructed from archeological findings from the central parts of the site (illustration: Archäologische Bodenforschung Basel-Stadt).

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