

Affiliation: Masaryk University, Faculty of Medicine
Study program: PhD program Biomedical Sciences
Specialization: Cell and Tissue Morphology
Study Mode: doctoral full-time
Workplace: Department of Anatomy

Supervisor: Kateřina Vymazalová, vymazalova@med.muni.cz

Lab's website: <https://anatomy.med.muni.cz/vyzkum/vyzkumna-skupina-lekarske-antropologie-a-klinicke-anatomie>

Title:

Use of histological methods and micro-CT in the diagnosis of bone pathologies

Brief annotation (max 200 words):

The basic method of studying pathological lesions or trauma in historical anthropology or forensic medicine is macroscopic analysis. However, it has clearly defined limits and it is often necessary to supplement it with specialized examinations. Histological analysis is one of these additional, but for differential diagnosis very important examination. In addition to differential diagnosis, it is also used to distinguish between human and nonhuman remains, determine the age at death of examined individuals, or identify strange bodies, such as calcified or ossified tissues. However, we classify the making of histological sections as an invasive method. Bones affected by pathological processes are usually poorly preserved and fragile and easily damaged. Some lesions can be completely destroyed by the preparation of a histological sample.

The very dynamically developing micro-computed tomography technique can thus be a suitable complement to classical methods. This imaging is non-destructive and enables a 3D reconstruction of the scanned object. Even here, however, there are still limits in the limited size of the object that can be scanned. The introduction of micro-CT technology into paleopathology and related fields and its combination with histological methods can bring a whole range of benefits.

Goals:

1. Comprehensive literature review of current findings on the use of histology and micro-CT in the evaluation of bone pathologies.
2. Application of histological methods in the evaluation of specific bone pathologies.
3. Verification of the possibilities of using the micro-CT technique in the study of bone pathologies.

Funding

-FTE (0.2.)/specific research/scholarship

Requirements:

- graduate of General Medicine, Dentistry or Anthropology
- excellent knowledge of English

Information about the supervisor:

- assistant professor at Department of Anatomy, Faculty of Medicine
- publication activity: 16 publications in WoS
- H-index in WoS: 3

Masaryk University, Faculty of Medicine

Kamenice 753/5, 625 00 Brno, Czech Republic

T: +420 549 49 2910, E: info@med.muni.cz, www.med.muni.cz

Bank account: KB Brno, Ref. No.: 85636621/0100, ID: 00216224, Tax ID: CZ00216224

Please quote the Reference Number in your reply.