

Quantifying the past, present and future at the Laboratory of Chronology

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The Laboratory of Chronology at the Finnish Museum of Natural History, University of Helsinki, operates in a multidisciplinary field of science based on three cornerstones: ¹⁴C-AMS dating, luminescence dating and stable isotope measurements. Frequently upgraded OASIS database (www.oasisnorth.org) provides a reflection of the work containing presently the published University of Helsinki ¹⁴C measurements and northern dietary isotopic data of multiple sources.

During its >45 years of existence, over 7000 radiocarbon analyses have been processed. Collaborative efforts of the Laboratory of Chronology together with the Department of Physics (Univ. of Helsinki) has led to the establishment of Radiocarbon Analytics Finland (RACAF) – a common umbrella under which all the phases of ¹⁴C analytics are now performed within even less than ± 20 year statistical uncertainty.

Luminescence measurement provide a tool to extend the time span of research to reach the last glacial and post-glacial era that has shaped the environment we presently live in. In the Laboratory of Chronology is made about 50 age determination/year from archaeological or geological samples. The luminescence datings are based mostly on Optically Stimulated Luminescence method (OSL).

The laboratory houses two IRMSs for analysis of light stable isotopes, with EA-, TC/EA-, GasBenchII-, and PreCon- peripherals. The main avenues of investigations comprise climate and ecology in the past, present and future. Current major projects deal with 1) studying climate anomalies using carbon and oxygen isotopes of pine tree-rings from Northern Finland 2) subsistence of Iron Age people in Finland; 3) the paleoecology of the Wrangel Island mammoth population.