
Chronology of the Lower to Middle Paleolithic transition at Tabun Cave (Israel) using IRSL (pIRIR290) dating

Mailys Richard^{*†1,2}, N. Mercier³, M. Weinstein⁴, and R. Shimelmitz⁴

¹Institut de Recherches sur les Archéomatériaux - Centre de Recherche en Physique Appliquée à l'Archéologie – université Bordeaux Montaigne, CNRS : UMR5060 – Maison de l'Archéologie, Esplanade des Antilles, 33607 Pessac, France

²Centro Nacional de Investigación sobre la Evolución Humana (CENIEH) – Paseo Sierra de Atapuerca 3, 09002 Burgos, Spain, Espagne

³Institut de Recherche sur les Archéomatériaux – Centre de Recherche en Physique Appliquée à l'Archéologie, UMR 5060 CNRS, Université Bordeaux Montaigne, 33607 Pessac, France – Centre National de la Recherche Scientifique - CNRS – France

⁴Zinman Institute of Archaeology, University of Haifa, 199 Aba Khoushy Ave., Mount Carmel, Haifa, 3498838, Israel – Israël

Résumé

Tabun Cave, located in Mount Carmel, Israel, is one of the most famous sites in the Levant. Its exceptional sequence spans the Lower and late Middle Palaeolithic and the industries found at the site became a reference for the Palaeolithic of the Levant. Human remains associated with the Levallois technology were found in the Middle Palaeolithic layers, including a Neanderthal skeleton (C1), and a mandible (C2) whose attribution is still debated. Electron spin resonance (ESR) of tooth enamel and thermoluminescence (TL) of burnt flint were applied to establish the chronology of the sequence. However, the sedimentary matrix has never been dated. We present here the first dates obtained using infrared stimulated luminescence (IRSL) of feldspar with the pIRIR290 protocol, whose main advantage is that fading may be negligible. Samples were retrieved from the section exposed by Jelinek's excavation and include Units I of the Middle Paleolithic, Units II-IX of the early Middle Paleolithic and Unit X of the Lower to the Middle Paleolithic transition.

Our new age results indicate that the sediments throughout the investigated portion of the section were deposited between 280 ± 33 ka (Unit X, layer 72) and 146 ± 11 ka (Unit I, layer 20). The age obtained for Unit X, documenting the transition between the Acheuleo-Yabroudian and the Acheulean, and where the Levallois core technology is first documented in the sequence, is ca. 280 ka. The early Middle Palaeolithic layer starts at ca. 246 ka, indicating that the Lower to Middle Paleolithic transition occurred during Marine Isotope Stages 8 and 7, in agreement with TL data.

*Intervenant

†Auteur correspondant: mailys.richard@cenieh.es

Mots-Clés: Chronology, Lower Paleolithic, Middle Paleolithic, Tabun Cave