

Weber, G.W. Fornai, C., Gopher, A., Barkai, R., Sarig, R. & Hershkovitz, I. The Qesem cave hominin material (Part 1): A morphometric analysis of the mandibular premolars and molar. *Quaternary International*, 398, 159-174. 2016.

**Abstract:** The Mid-Pleistocene Qesem Cave near Tel Aviv in Israel yielded several hominin teeth and abundant faunal and cultural remains. The geological sequences of the cave were dated to 420,000–200,000 years ago. In this contribution, we focus on the three lower postcanine teeth which are among the oldest material from the cave. We used both Geometric Morphometrics and qualitative observations on the outer enamel surface and the internal enamel–dentine junction to investigate shape and size variation in a sample of Early-to Late-Pleistocene fossils (Sangiran, Mauer, Bilzingsleben, Ehringsdorf, Qafzeh, Ohalo), Neanderthals, and geographically diverse recent humans. Our approach based on three dental traits from three tooth types is able to distinguish quite well between dental specimens from anatomically modern humans (AMH) and Neanderthals (NEA). It also confirms an intermediate morphology of Mid-Pleistocene specimens in general, and the close proximity of Ehringsdorf to NEA. While the Qesem premolars display an intermediate shape between NEA and AMH, their size is definitely modern-like. The Qesem molar features a morphology and size closer to NEA. A possible explanation is the evolutionary dissociation of size and shape in premolars, and molars that are morphologically closer to NEA than premolars. It can be noted that a Mid-Pleistocene hominin population was present in Southwestern Asia that shows some Neanderthal affinities, probably more than Mauer and Bilzingsleben, but less than Ehringsdorf. With the current data, however, we cannot confidently assign the Qesem teeth to any existing taxon, nor exclude that it is an autochthonous phenomenon in the Levant.