

Middle Islamic Burial at 'Ayn Gharandal

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The Roman Fort at 'Ayn Gharandal

'Ayn Gharandal is a Roman military site located ca. 70 km north of the Gulf of Aqaba in the country of Jordan. The site in the Wadi Araba (Araba Valley) has been the focus of research since 2009, partially prompted by an "initial aim to assess damage from looting." Investigation also revealed damage caused by heavy construction equipment and the insertion of power lines through some of the site structures.

Excavations by the 'Ayn Gharandal Archaeological Project (AGAP) have uncovered the remains of a fourth century CE fort, bathhouse, and early Christian church. Excavations have also revealed that the site was reused for a Muslim burial ground. Carbon testing on the inhumations suggest the burials date to the twelfth-fourteenth centuries CE.

The areas of the site excavated during the 2019 field season (Square A:5-5/6-5 and A:4-3/7-6) are rooms of the fort that were reused as rooms in the church complex.

Excavation and Repatriation

The goal of the 2019 season in A:5-5/6-5 was to excavate down to the level of the Roman-period floor, ca. 3 m below the sandy modern surface. The NE corner of the square had been previously excavated during the 2017 field season, and the 2019 dig team began by making an initial 10cm pass to remove modern wind-blown sand from the surface of the entire square before continuing to excavate the area in stratigraphic layers.

A:5-5/6-5 included a number of burials containing human skeletal remains, and so was excavated in a "stair-stepped" fashion for approximately 1m before level excavation recommenced after all inhumations had been painstakingly excavated.

In each instance a burial was uncovered, other excavation efforts in the vicinity of the burial ceased, and a dedicated excavation of the inhumation was carried out. Once the skeletal remains had been articulated, elevations and GPS points were recorded, and photographs for 2D and 3D documentation were taken. Remains were then carefully removed from the surrounding sandy soil and placed into opaque collection bags, which were then placed into a container filled with a padding agent (such as clean sand), and transported to the lab. Arriving at the lab, the remains were cleaned and assembled for measurement, non-destructive analysis, and documentation.

Once analysis was complete, remains were wrapped in new cloth and taken back to the site for repatriation. Skeletal remains from 'Ayn Gharandal are all respectfully repatriated to a designated area on the hills near the site, less than 1km away and within sight of the site itself.

All remains, including those in L5337 (discussion of which follows), excavated during the 2019 field season at 'Ayn Gharandal were successfully repatriated prior to the conclusion of the season in August 2019.

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Figure 1: Satellite Image of 'Ayn Gharandal Excavation Site

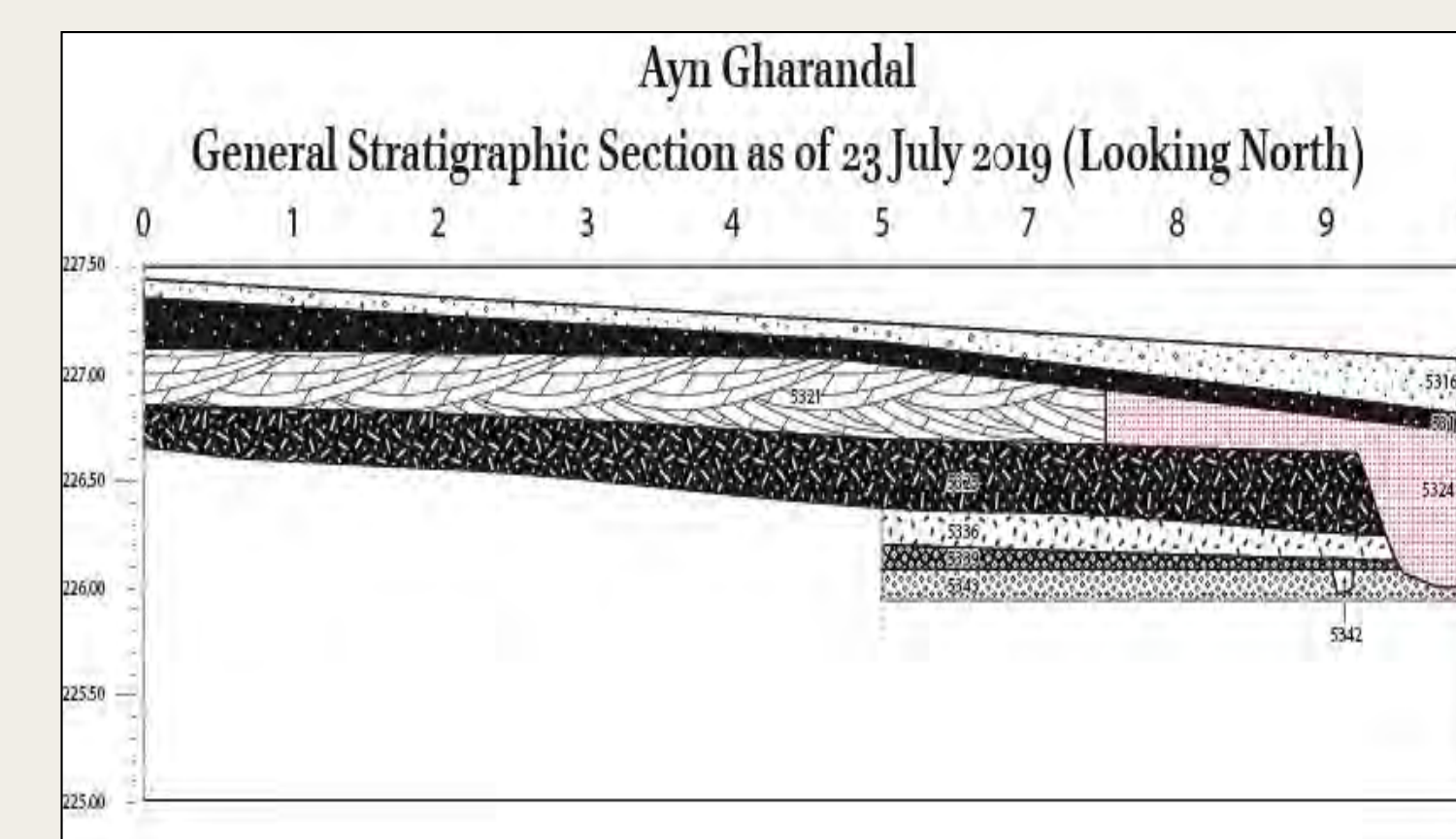


Figure 2: Diagram of Stratigraphy in A:5-5/6-5



Figure 3: 3D Rendering of A:5-5/6-5 with L5337 (Orange Circle)



Figure 4: Photograph of Partially Excavated Contents of L5337

The Burial in Locus 5337

The burial in L5337 was oriented toward E. The positioning of the skeletal remains on the right side are consistent with other inhumations excavated at 'Ayn Gharandal in previous years. The skeletal remains were protected by a soil concretion which likely contributed a great deal to the well-preserved state of the skeletal remains.

The remains were mostly intact, aiding in articulation. Results of physical analysis indicated that these remains represent a sub-adult individual of approximately seven years of age (+/- 18mo.). Estimation of age at time of death was accomplished by analysis of skeletal dentition and long bone measurement, consistent with standard disciplinary best practices. Due to the pre-pubescent age range of the skeletal remains, biological sex cannot be reliably determined.

During examination of skeletal remains signs of nutritional stress were not observed in the teeth; however, the remains did present with *cribra orbitalia*. *Cribra orbitalia* is defined as a sieve-like porosity of the orbital bone and is a marker of nutritional stress, specifically a lack of vitamin B12 or iron in an individual's diet. According to analysis of the remains, this dietary deficit was likely ongoing at the time of the individual's death, as there was no evidence of remodeling or healing of the *cribra orbitalia* present in these skeletal remains.

Portions of the third and fourth right metatarsals showed evidence of *periostitis*—inflammation of the periosteum that closely covers the majority of all bone surfaces—which could have been due to an infection, injury, or fracture. Other than osteological evidence of dietary stress and previous injury, the remains of this sub-adult appeared to be healthy and in the normative range of growth and development.

The orientation of the remains, the location of the burial stratigraphically, and the results of carbon dating provide strong evidence to support an assertion that this was likely the burial of a Muslim child, which was dug centuries after the fort was last occupied by the original Roman inhabitants.

