

## Characterization of Historic Mortar Samples and Period Analysis: A Case Study

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The Imperial Temple in Antioch Ad Cragum is estimated to be first constructed at the end of 2<sup>nd</sup> and start of 3<sup>rd</sup> century, the time of the Severan dynasty. However, archaeological evidence also suggests that there were interventions during the Byzantine era, with burials over the temple platform, a wine press on the northern side, and walls constructed perpendicular to the temple on the southern side. There is also a retaining wall in the back of the temple that holds the earth against erosion from the hill on the back, but it is curiously close to the Temple to be from the original construction. The interdisciplinary team of experts working on this project collected five samples of mortar from the rubble base of the temple and the above mentioned walls, in order to test and compare them. With this information, team aims to better understand the historical evolution of this interesting structure. The results of the mortar testing will also be utilized to determine the requirements for compatible intervention mortars. X-ray diffraction (XRD), Scanning Electron Microscope (SEM), X-ray fluorescence (XRF) and thin sector analyses are applied to the mortar samples. The results are discussed and suggestions for future interventions are derived.

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