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Biomarker Reconstructions of Ritual Burial Activities in a Bronze Age Royal Tomb

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The Bronze Age city of Qatna, located in modern Syria, is represented by an impressive 1 kilometre square tell bounded by ramparts that rise to a height of ca. 10 to 15 m. During recent excavations involving a consortium of German, Italian and Syrian archaeologists a major discovery was made by the German team of a subterranean tomb rock cut into a limestone cliff-face. Situated beneath the Palace, the tomb is the first to have been discovered in an unlooted state in the region in modern times. The tomb is thought to have been in continuous use for 300-400 years for the burial of Royal elite individuals (Pfälzner, 2004). The contents of the tomb were found *in situ*, had never been buried nor come into significant contact with groundwater and thus were in a remarkable state of preservation. Almost 2000 finds were recorded including: jewellery and various carved objects, basalt statues, sarcophagi, human and animal bones, and ca. 200 pottery and stone vessels.

In addition, the floor of the tomb was covered by a layer of anthropogenic sediment deriving from activity within the tomb during the period of use. Major inputs to the sediments are anticipated to be organic remains of decomposed tissues, embalming agents and treatments, food offerings, plant materials, wood and resins. A unique opportunity therefore existed to investigate the artefact assemblage and sediments for chemical indicators of human activities associated with funerary practices undertaken during the period of use of the Qatna Royal Tomb. Field campaigns in 2003, 2004

and 2005 resulted in samples being taken of all organic materials and objects likely to contain organic residues. These materials have been submitted to a range of elemental (organic and inorganic), spectroscopic (FTIR and NMR), chromatographic and mass spectrometric (organic and stable isotopic) analyses. Our overall aim was to determine the nature of the organic materials presents and, hence, deduce their origins, biologically and geographically.

The soils of the tomb floor displayed variable colourations revealing areas of 'staining' attributable to high organic matter concentrations. Biomolecular analyses of the tomb floor sediments reveal complex compositions of components of plant and animal (possibly human) origin. Biomarker distributions correlate with the scatters of archaeological finds, especially deposits of human remains and associated artifacts. One of the most spectacular discoveries has been the presence of purple dye within the sediments of the tomb. FTICRMS, HPLC and NMR analyses confirmed the presence of various indigo derivatives that unambiguously characterise this as being Tyrian or Royal Purple dye. Correlation of the occurrence of the dye in the sediments with funerary artefacts and human bones indicates an origin from textile(s) associated with the deceased.