

# The Ladies of Highfield, the Blokes from Hoy and a Sheep from Tell Abu Hureyra: a New Approach for Detecting Mammal Milk Consumption in the Archaeological Record



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Two important dietary events in the early life of mammals involve milk. The first, nursing, is the exclusive consumption of milk and the second, weaning, is the mixed diet transition from milk to solid foods. Calcium isotope ratios ( $^{44}\text{Ca}/^{42}\text{Ca}$ ) have shown promise as a proxy for milk consumption in dental enamel. As part of the Lactase persistence and the early Cultural History of Europe (LeCHE) project, a research project initiated under The Marie Curie Initial Training Network (2009-2013), the effects of milk consumption on  $\delta^{44/42}\text{Ca}$  values in sheep enamel were assessed during a controlled study to identify the periods of nursing and weaning.

The results on modern sheep indicated: first, a 0.44 to 0.50‰ depletion in  $^{44}\text{Ca}$  in milk relative to grass demonstrating that milk is a dietary source of depleted calcium isotopes, and secondly, that first and second molar samples show a significant mean difference, with first molars being consistently depleted in  $^{44}\text{Ca}$  by 0.18‰. These results are indicative of milk being the primary food during the first molar's development, and with weaning having occurred during the development of the second molar. The serial sample results from molars of modern sheep provided an independent indication of the timing of nursing and weaning. Comparisons of different modern sheep management schedules to those from archaeological sites helped indicate periods of ancient sheep nursing and weaning.

# MCI

## *Topics in Museum Conservation*

**April 20, 2017**  
**2:00 pm**  
**Thursday**

***MCI Theater***

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