Putting dental calculus under the microscope

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Putting Dental Calculus Under the Microscope

Dental calculus. This small, hard, inconspicuous substance that forms on the teeth of humans and animals contains a surprising amount of information about our lives. During its formation and growth as a living plaque biofilm, it tends to accumulate a wide variety of very small particles, especially bacteria and food debris from various sources. Exactly which particles accumulate is influenced by activities and biological processes that are unique to us, such as our dietary preferences, oral hygiene practices, genetics, and the environment in which we live. What makes this so interesting to archaeologists is that, when plaque hardens and forms dental calculus, these particles become trapped and well-protected against removal and degradation during hundreds to thousands of years in the ground, preserving a picture of the activities performed by people in the past.

The major problem—one of the major problems, for there are several—one of the many major problems is that this picture was never a complete picture of a lifetime of activities. Another problem is that the picture has faded over the years, and some parts of it have been completely erased. We know that these problems exist. We know that they limit our interpretations of past activities. What we need to do is approach these problems more systematically at a fundamental level. In my dissertation I introduce a protocol for growing artificial dental calculus in a lab and applying them in a context relevant to archaeology. Working with a very controlled model of dental calculus allows me to explore the influence of a wide range of factors that may affect the uptake of particles into dental calculus, and better explain why and how our picture is incomplete.

"I'm proud of you no matter how it turns out" - My mum

"When are you going to finish it?" - My partner

"This is really boring, dad" - My son

"Unintelligible" - My other son

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