

# **Exploring Health in Prehistoric Thailand: A Brief Report on 2018 Archaeological Excavations and Research at Non Ban Jak**

By: Jessica Schalburg-Clayton and Nellissa Ling

On a humid day in mid-January, we alighted from a local bus, stopping at the periphery of the Phi Mai evening market. With our luggage in tow, passing those who were busy procuring that evening's meal, we headed towards our accommodation. Our home for the month, aptly nicknamed "bone house," primarily functions as the storehouse for the Non Ban Jak skeletal collection. Phi Mai, an approximate five hour journey north of Bangkok, is typically a single day visit for the average tourist, and is thus often overlooked for its deep and rich cultural history. Five minutes away on foot from the house are the ruins of Prasat Phi Mai. A Khmer temple of cultural significance, Prasat Phi Mai was built in the 11-12<sup>th</sup> century CE for Mahayana Buddhism. Not too far in the opposite direction sits a large banyan tree that began stretching its roots over 350 years ago. Positioned as such, we spent the next four weeks aiding in the excavations of nearby site Non Ban Jak and conducting research for our respective PhD projects.

## **Non Ban Jak: About the Site**

This year excavations at the Iron Age Thai (5-9<sup>th</sup> centuries CE) site Non Ban Jak, located in the province Nakhon Ratchasima, took place from January to February. The site consists of two mounded areas, east and west, encircled by moating which has been hypothesized to be linked with the use of wet rice agriculture. This year's excavation opened up an additional section of the eastern mound. In total, 17 burials were uncovered, comprising predominantly infant jar burials, bringing the sample to 217 in total. This reflects the overall demography of the site, which produced a proportionally large number of subadult individuals, comprising over 60% of the total number of individuals. Non Ban Jak sits within a time period when small agricultural-based societies were transitioning towards a more centralized political entity. The skeletons, as such present an opportunity to explore how socially transformative periods in prehistory may have impacted human health and diet.

## **Jessica's Research**

My PhD project is concerned with investigating the relationship between the intensification of wet rice agriculture and the development of social inequality in the Upper Mun River Valley. I will be answering this question by investigating dietary differences and migration of the population at Non Ban Jak. My methodology will include the use of dietary linked stable isotope carbon ( $\delta^{13}\text{C}$ ) and the mobility related isotopes oxygen ( $\delta^{18}\text{O}$ ) and strontium ( $^{87}\text{Sr}/^{86}\text{Sr}$ ). I will also investigate diet through dental calculus, calcified plaque on teeth which often traps bits of plant matter (phytoliths and diatoms) and reflects ingested materials. I will explore diet differences between social status groups, such as the wealthy versus laboring classes, which can be distinguished through grave goods (e.g. bronze jewelry versus iron work tools). Disparity in subsistence strategy between sex and age cohorts can also be telling of social organization. By visiting Non Ban Jak, I was able to begin the process of collecting dental samples from which isotope values will be determined, but also better contextualize the site. I now have a boots-on-the ground understanding of the local geological, plant, and landscape variation.

## **Nellissa's research**

My research investigates noncommunicable diseases (NCDs) in antiquity by exploring two pathological joint conditions observable on the skeleton: diffuse idiopathic skeletal hyperostosis (DISH) and erosive arthropathies, particularly gout. These joint conditions are associated with cardiovascular diseases and the metabolic syndrome. The skeletal manifestations of DISH and erosive lesions have not been systematically recorded in skeletal assemblages from Southeast Asia, and the Non Ban Jak skeletal collection provides a

unique opportunity for me to explore their prevalence rates within a window of human history. From these data, I will investigate if the prevalence of these joint conditions correlate with selected body parameters (in this case, vertebral and femoral dimensions) as a proxy for childhood stress. Exploring DISH and erosive arthropathies may inform the effect of the environment (e.g. famine, differential access to food resources, cultural practices and restrictions) and genetic predisposition on this aspect of human health in the past and the potential consequences of these events in population health today, particularly in groups that are linked ancestrally. This is especially pertinent today as NCDs have become the primary cause of deaths worldwide.

Both of our biocultural research projects, concerned with the archaeological site Non Ban Jak, are part of the larger interdisciplinary research effort exploring the prehistory of the Upper Mun Valley in Thailand. Through visiting, not only were we able to begin work on our separate research projects, but also contextualize our subject of study. Visiting Phi Mai meant cultural immersion, and we both quickly picked up some language useful for day-to-day life in a small town. Overall, conducting fieldwork in Thailand was a dynamic research experience, and we look forward to continuing our work towards reconstructing prehistoric life in the Upper Mun River Valley. We plan to travel back to Phi Mai at the end of this year to complete our research of the Non Ban Jak skeletal collection.

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Exploring the historic temple of Prasat Phi Mai at sunrise.



A Thai archaeologist excavating a burial at Non Ban Jak archaeological site.