



ARCHAEOLOGICAL SCIENCE in Hong Kong

What is archaeological science and why is it such an important field?

The field of archaeology has undergone tremendous change in recent years. Particularly, advances in scientific methods and an increasing institutional push for interdisciplinarity have enabled and encouraged archaeologists to explore new ways to reconstruct the past. These state-of-the-art technologies have revolutionised the way we learn about the past, opening up areas of human history previously inaccessible using conventional methods. We can now take our investigations to an entirely new level of detail and accuracy, from intimate details such as the eye and hair colour of someone who lived thousands of years ago¹, to global concerns such as past climatic events^{2,3}. Recent research demonstrates the successful use of scientific methods in addressing social issues such as social stratification, gender dynamics, trading networks, and cultural changes in past societies^{4,5,6}. Moreover, in addition to learning about how our ancestors lived, archaeology also has direct and indirect relevance for current issues. For example, by looking at recovery patterns of past populations from various crises (e.g. climate change⁷, epidemics⁸, or wars and forced displacements⁹), we can provide valuable information to help inform decision making on how best to implement policies relating to emergencies in modern

¹ Draus-Barini, J., Walsh, S., Pośpiech, E. et al. Bona fide colour: DNA prediction of human eye and hair colour from ancient and contemporary skeletal remains. *Investig Genet* 4, 3 (2013).

² Li, M., Wang, F., Cai, B., et al. Timing and structure of 10.9 and 10.3 ka BP events revealed by annually laminated stalagmite records from Shihua Cave, northern China. *Paleoceanogr Paleoclimatology* 37: e2022PA004459 (2022).

³ Park, J., Park, J., Yi, S., et al. Abrupt Holocene climate shifts in coastal East Asia, including the 8.2 ka, 4.2 ka, and 2.8 ka BP events, and societal responses on the Korean peninsula. *Sci Rep*, 9(1), 1-16. (2019).

⁴ Cintas-Peña, M., Sanjuán, L.G. Gender inequalities in Neolithic Iberia: A multi-proxy approach. *Eur J Archaeol* 22(4): 499-522 (2019).

⁵ Liu, S., Rehren, T., Pernicka, E., et al. Copper processing in the oases of northwest Arabia: technology, alloys and provenance. *J Archaeol Sci* 53:492-503 (2015).

⁶ Cheung, C., Schroeder, H., & Hedges, R. E. Diet, social differentiation and cultural change in Roman Britain: new isotopic evidence from Gloucestershire. *Archaeol and Anthropol Sci* 4: 61-73 (2012)..

⁷ Burke, A., Peros, M.C., Wren, C.D. et al. The archaeology of climate change: The case for cultural diversity. *Proc Natl Acad Sci USA* 118(30): e210853718 (2021).

⁸ Gamble, L.H., Claassen, C., Eerkens, J.W. et al. Finding archaeological relevance during a pandemic and what comes after. *Am Antiq* 86(1): 2-22 (2020).

⁹ Taylor, T. Believing the ancients: quantitative and qualitative dimensions of slavery and the slave trade in later prehistoric Eurasia. *World Archaeol*, 33(1): 27-43 (2001).

times. Furthermore, archaeological methods may also find utility in other related fields, including but not limited to forensic recovery of human remains¹⁰, wildlife trafficking¹¹, and biodiversity studies¹². Therefore, there is both the need and urgency to continue developing archaeological sciences.

How do we plan to promote archaeological science in Hong Kong?

Despite having proved to be immensely successful in many other countries, the implementation of scientific methods in archaeological research is still not routinely practiced in Hong Kong. Fortunately, researchers with related expertise and interests, as well as required equipment and analytical facilities can be found across universities in Hong Kong. Hence, this initiative intends to bring together a team of researchers and practitioners with shared interests in using or developing scientific methods in archaeology, providing an arena for us to share and exchange ideas, experiences, and findings. This first (to hopefully more) initiative will focus on two themes, bioarchaeology (i.e. health, diet, and mobility) and material science (i.e. metal and ceramics). Planned activities will take the forms of public talks, seminars, and technical workshops. More information on these activities will be announced soon.

What is the future for this effort?

One of the main objectives of this project is to help connect researchers and students with shared interests in the human past but possess different relevant skills. While the current initiative only focuses on connecting researchers within Hong Kong, it is hoped that the success of this effort will serve as a springboard for larger collaborations with researchers beyond Hong Kong in the near future.

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¹⁰ Blau, S., Skinner M. The use of forensic archaeology in the investigation of human rights abuse: Unearthing the past in East Timor. *Int J Hum Rights* 9(4): 449-463 (2005).

¹¹ Hopkins III, J.B., Frederick, C.A., Yorks, D., et al. Forensic Application of Stable Isotopes to Distinguish between Wild and Captives Turtles. *Biol* 11(12): 1728 (2022).

¹² Boivin, N.L., Zeder, M.A., Fuller, D.Q. et al. Ecological consequences of human niche construction: Examining long-term anthropogenic shaping of global species distributions. *Proc Natl Acad Sci USA* 113(23): 6388-6396 (2016).