

## Interdisciplinary Research

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### 1. Interdisciplinary Research

Several journals published feature articles on interdisciplinary research this fiscal year. The *Kikan Kōkōgaku* 150 special issue on “Kōkōgaku wa doko e ikunoka?” (Where Is Archaeology Going?); a major theme of the roundtable discussion was interdisciplinary research between archaeology and the natural sciences. *Kikan Kōkōgaku bessatsu* supplementary volume 31 summarized the archaeology symposium held to commemorate the 100<sup>th</sup> anniversary of the Yūzankaku publishing company, “Kōkōgaku no hyakunen: Gakusai kenkyū no ima” (100 Years of Archaeology: Interdisciplinary Research Today), held in 2016 under the title “Jōmon bunka to gakusai kenkyū no ima.” With the accumulation and popularization of interdisciplinary research, there seems to be a trend now to look back at the history of academia in considering the future of interdisciplinary research in archaeology.

### 2. Pottery

*Kōkōgaku Journal* 724 featured a special issue on the analysis of pottery and other fired clay objects under the title of “Taido bunseki no genjō to tenkai (Current State and Development of Clay Component Analysis).” Shōda *et al.* conducted carbon isotope analysis of fatty acids extracted from pottery from the Late Glacial (16,000–10,000 BP) found from the Amur region in Far Eastern Russia, in order to interpret the purpose of use of the earliest pottery, which was verified by comparison with Japanese pottery (*Quat. Sci. Rev.* 229).

### 3. Paleoenvironment

Two symposia were held this fiscal year regarding changes in human society resulting from climate change. The impact of global cold weather events 4.3 ka and 2.8 ka on societies in western Japan was discussed at the symposium “Kankyō henka to seigyō kara mita shakai

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hendō” (Changes in Society and Subsistence from the Perspective of Climate Change) held by the Japanese Archaeological Association on October 26 and 27, 2019. At “Kikō hendō to kodai Nishi Asia” (Climate Change and Ancient West Asia), organized by the Japan Society for West Asian Archaeology on February 1 and 2, 2020, the impact of climate change on the rise and fall of cultures in West Asia was discussed, from the spread of Neanderthals to the destruction of the Hittite Empire.

#### **4. Archaeobotany**

On December 7 and 8, 2019, the symposium “Shu no dōtei e no chōsen” (The Challenge of Species Identification)” was held at the 34<sup>th</sup> Annual Meeting of the Japanese Association of Historical Botany. With the introduction of new methods, it has become possible to identify cultivated, wild, and closely related species as well as color and dormancy characteristics of plants of the past which were difficult to identify only by observing the morphology of seeds and pollen.

#### **5. Zooarchaeology**

The recent establishment of new indicators has made the identification of animal species and domesticated types more accurate. For example, Eda *et al.* introduced the effectiveness of the medullary bone as an indicator of bird utilization. (*Sekai to Nihon no kōkogaku*. Tokyo: Rokuichi Shobō). The medullary bone forms only in the bone marrow cavity of the egg-laying female bird and is therefore an indicator of the killing of the egg-laying female. If a medullary bone is found in a migratory bird of which wild types do not breed in Japan, it indicates this individual is a domesticated bird.

#### **6. Anthropology**

Several studies focusing on oral health in archaic human bones were published in this fiscal year. Sawafuji *et al.* published the result of DNA analysis in the dental calculus of populations in the Edo period (*PLoS One* 15-3). Dental calculus contains residues, such as food and tobacco, remaining in the mouth, and by examining the DNA of the dental calculus, it is possible to identify the plants and animals that the individual consumed at the species level.

#### **7. Genetic Background of Japanese Revealed by Ancient DNA**

In the past few years, DNA analysis of ancient human remains in Japan has been published

## TRENDS IN ARCHAEOLOGY IN JAPAN

continuously, revealing not only the phylogenetic relationship between modern Japanese and neighboring populations, but also the genetic background of Japanese populations of the past. Kanzawa *et al.* showed that the Jōmon population in Hokkaido diverged from the East Eurasian continental populations in very ancient times and was isolated for a long time (*Anthropol. Sci.* 127-2). Takahashi *et al.* reported the results of mitochondrial DNA analysis of human bones of the Jōmon, Kofun, and Heian periods excavated from the Shōmyōji shell mound in Yokohama (*Anthropol. Sci.* 127-1). The differences between the mitochondrial DNA haplotypes of the Kofun and Heian periods in Shōmyōji shell mounds and those of the Jōmon period indicate that by the Kofun period, genotypic change in the ancient Japanese of the Jōmon population had already occurred. Nuclear genome analysis of males and females of the late Yayoi period excavated from the Shimomotoyama rock shelter site at Sasebo indicates that the mingling of Jōmon types and migrant types in Kyushu during the Yayoi period was more than previously expected (SHINODA *et al.*, *Anthropol. Sci. J-Ser.* 127-1).

(written by the author)