

Stanford International Symposium  
*Alcohol, rituals and spiritual world in  
ancient China and beyond:  
An interdisciplinary perspective*  
*April 15-16, 2019*



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# *John W. Arthur*

*University of South Florida St. Petersburg*

## Presentation Title

*Beer, Status, and Identity in Two Southern Ethiopian Communities: Archaeological and Ethnoarchaeological Analyses*

## Bio

Dr. **John Arthur** is an Associate Professor at the University of South Florida St. Petersburg. He received his Ph.D. in Anthropology in 2000 from the University of Florida. John has worked in southwestern Ethiopia since 1995 conducting ceramic ethnoarchaeological and Holocene archaeological research. In Ethiopia, John was part of a research project where they discovered a human burial dating to 4,500 years ago, which led to the extraction of ancient DNA, sequencing for the first time an African ancient genome. This discovery was published in the premier journal Science. He has worked with the Gamo community in southern Ethiopia understanding the importance of beer in their daily and ritual lives. While investigating household ceramic assemblages among the Gamo, he discovered how to interpret beer production in the ancient past, which has been documented in places such as Ethiopia, Sudan, and northern Mexico. In addition to his Ethiopian research, he has been excavating the shell mound at the Weeden Island Site in Pinellas County, Florida. John is the President of the non-profit organization, Alliance for Weeden Island Archaeological Research and Education. Recently, he was named a fellow in the illustrious Explorers Club.



## Abstract

The drinking of African Indigenous beers is an expression of a variety of identities from age, gender, status, ethnicity, and can serve to either bond or exclude people in a community. Beer has a deep history in Africa connecting the living with the spirits, as well as motivating people to work as a form of economic payment. This study analyzes the intersection of beer and pottery using both archaeological and ethnoarchaeological analyses of pottery by examining two ethnic groups in southern Ethiopia, the Gamo and the Konso. Beer production and consumption is an essential social lubricant in both ethnic groups used as a daily food, economic commodity, and a ritual libation. However, beer is not accessible to everyone. Beer has and continues to be a symbol of high status in Gamo, whereas beer in Konso is consumed by all segments of society. This paper uses my ethnoarchaeological analysis of household pottery assemblages as a baseline to compare to archaeological pottery assemblages from a Gamo hide worker site and two Konso hide worker sites. The archaeological pottery assemblages suggest that the drinking of beer reflects the social organization of both ethnic groups.

# Masahiro Baba

Waseda University



## Presentation Title

*Egypt's oldest beer brewery discovered at Hierakonpolis*

## Bio

**Masahiro Baba** is an Associate Professor in the Waseda Institute for Advanced Study at Waseda University. He obtained his PhD in Archaeology in 2010 from Waseda University, with a dissertation titled “Integrated Analysis on Pottery Production in Predynastic Egypt.” Since 2003, he has carried out excavations at the industrial area (Locality HK11C) of Hierakonpolis, where the Egypt’s oldest beer brewery installation was discovered. To fully understand the brewing method, he has been conducting interdisciplinary projects with archaeobotanists and chemists.

## Abstract

Excavations at Hierakonpolis, a major population center of Predynastic Egypt, have revealed a well-preserved installation consisting of five freestanding ceramic vats for large-scale beer preparation. Residues from the interior of vats provide a radiocarbon date of 3764-3537 calibrated BCE, making this the earliest beer production site in Egypt and one of the earliest in the world to operate on a large-scale. The vat exteriors had been coated with mud and pottery sherds to protect from thermal shock and promote even heating, and a ring of large sherds cemented together with mud placed around the base aided stability and enclosed the fire, all of which leave no doubt that these vats functioned as heating installations for wort making. In this conference, determinations of the beer content and brewing method by botanical examinations and chemical analyses will be presented.

# *Ran Chen*

*Stanford University*

## Presentation Title

*Food Processing and Fermented Beverages during Classic Period at Copan, Honduras: Investigating Elite Drinking in Mayan Feasting*

## Bio

**Ran Chen** is an MA student in Chinese Archaeology at Stanford University. Her major research interest is prehistoric China. She mainly applies use-wear and residue analyses to explore subsistence strategies. Her current research projects consider the functional studies of microliths in Inner Mongolia and central Henan. Prior to her MA studies, Ran received her BA in Antiquity and Museology at Zhejiang University, China.

## Abstract

Drinking, a central part of feasting, played a significant role in Mayan society due to its hallucinatory qualities. This study samples four grinding stones and eight pottery vessels from Copan, Honduras for use-wear and residue analyses in order to investigate the meaning of drinking behavior among the Classical Maya. Use-wear analysis of the stone manos and metates indicates that they were used to process soft plant materials. Starch analysis shows that those stone tools were multifunctional and potentially used to grind multiple kinds of plants such as maize, chili pepper, beans, etc. Phytolith analysis reveals residues predominated by Panicoideae grasses, which corroborates the result of starch analysis. Overall, these analyses suggest that one lime-coated mano was used for processing maize, and the pottery vessels were mainly used for making maize drinks. This research indicates that fermented maize drinks could have been one kind of important elite drinks in Copan.



# Stephen Dueppen and Daphne Gallagher

University of Oregon



## Presentation Title

*Alcohol, Spirituality and the House: Exploring Ritual Use of Beer at Kirikongo, Burkina Faso*

## Bio

**Stephen Dueppen** (PhD University of Michigan) is Associate Professor of Anthropology at the University of Oregon. His research focuses on the development of noncentralized complexity, or those with dispersed arrangements of power and authority (and ritual). He has

directed fieldwork at and around the site of Kirikongo, Burkina Faso since 2004. His research at Kirikongo has been published in his book *Egalitarian Revolution in the Savanna: The Origin of a West African Political System* as well as in numerous journals including *American Antiquity*, *Antiquity*, and the *Cambridge Archaeological Journal*. In addition to the archaeological project at Kirikongo, Dr. Dueppen also collaborates on projects elsewhere in Burkina Faso and in Senegal, on topics ranging from the adoption of agriculture to imperial economies.

**Daphne Gallagher** (PhD University of Michigan) is Senior Lecturer in the Clark Honors College at the University of Oregon. Her research focuses on agricultural practice, wild plant management, and the development of complex societies in West Africa. She has directed fieldwork in southeastern Burkina Faso on the development of non-urban states, is a core member of fieldwork and analyses at Kirikongo in western Burkina Faso, and collaborates extensively on archaeobotanical projects throughout West Africa. Her research has been published in edited volumes and journals including *Journal of Anthropological Archaeology*, *Journal of Ethnobiology*, and *Azania*. Her book on the Gulmance Kingdoms of southeastern Burkina Faso is forthcoming from Yale University Papers in Anthropology

## Abstract

Sorghum beer plays important roles in ritual processes in central West Africa. While richly documented in the ethnohistoric record and well known from contemporary practices, little research has been conducted on the deeper histories of alcohol in the region. This paper focuses on the material remains of beer production and consumption at the site of Kirikongo, Burkina Faso (ca. AD 100-1650). A well preserved site with stratified in situ structures and features, Kirikongo is composed of thirteen discrete mounds, each of which was occupied by a multi-family House. By combining the results of ceramic, paleoethnobotanical, and contextual analyses, we can begin to characterize alcohol production and consumption at different Houses at the site over time and consider the role that alcohol had in maintaining spiritual connections to deities and ancestors. We explore how alcohol was incorporated into the community's ritual and political economy during both a period of increasing inequality, as well as after an egalitarian revolution that replaced centralized power with communal governance. From the combined data, alcohol may have played a central role in ritual practice from the foundation of the community.

*David Edwards*  
*University of Leicester*

**Presentation Title**

*Beers, Pottery and Power in the Middle Nile*

**Bio**

**David Edwards** is a lecturer in archaeology at the University of Leicester, UK. He has published extensively on Meroitic, Medieval and more recent archaeology of Sudan and Nubia. He has a particular research interest in archaeological approaches to early political developments within the Middle Nile/Sudan as well as long-standing interests in the often spectacular ceramic culture of the region.

**Abstract**

As in many regions of the world, grain beers have a long history of use in ceremonial/ritual in the Middle Nile. Its wider and pervasive social importance may be hard to overstate, not least in its use in the mobilisation of communal labour. The extent to which this may be manifested, and recognised, archaeologically presents many interesting challenges. A range of evidence now suggests that sorghum beers performed important, if changing, roles within the Meroitic kingdom of the Middle Nile (c.400BCE-350CE). One area this is very evident is in the often highly elaborated Meroitic ceramic culture. In this contribution I will explore a variety of different forms of evidence relating to the use of beers in various contexts, evidence for changing practices over time and also how this may relate to the political project of the Meroitic state. Earlier manifestations of such practices will also be explored, and some suggestions offered concerning possible implications for our understanding of earlier polities and ceramic traditions of the region, as at Kerma.





# Suofei Feng

Stanford University

## Presentation Title

*Social Uses of Large-Mouth Vats from Xipo Cemetery*

## Bio

**Suofei Feng** is an MA student in Chinese Archaeology at Stanford. Her degree thesis is about starch and phytoliths analysis, focusing on the pottery vessels from a Middle Yangshao site in the Yellow River region, China. She finds the topic that how people differentiated themselves and being differentiated in a community quite intriguing, which can be revealed by what they consumed. These further trigger more thoughts in the business, politics, and resource distribution in today's world. She is also seeking for an application of modern statistical methods in the archaeobotanical researches. Suofei Feng received a B.A. degree in English (2016) from Tongji University in Shanghai, China.



## Abstract

Feasting, which often involves alcoholic drinks, provides important insights into social complexity in the past. Recent excavations at Xipo, a middle Neolithic site in the middle Yellow River region, revealed several large semi-subterranean houses and a cemetery showing evidence of feasting, providing new data to understand the emergence of social complexity in this region. The micro-botanical residue extracted from the pottery of the Xipo cemetery, as highlighted by two pairs of large-mouth vats (dakougang), was analyzed to provide more insights into feasting, social organization, and inter-regional communications in the Xipo society.

# *Renee Friedman*

*University of Oxford*

## Presentation Title

*Alcohol in Early Egypt: Lasting Effects*

## Bio

Dr. **Renée Friedman** is a graduate of the University of California, Berkeley in Egyptian Archaeology (1994) and former curator of Early Egypt at the British Museum. She is currently the director of the Ashmolean Museum's expedition to Hierakonpolis, the largest site of the Predynastic period (4000-3100BC) still extant and accessible anywhere in the Nile Valley, and member of the Faculty of Oriental Studies, University of Oxford.



## Abstract

Alcoholic beverages (beer and wine) were important commodities in Ancient Egypt, providing nutrition in life and death, serving a form of wage, and fulfilling certain ritual and spiritual requirements. A standard part of the diet throughout Egyptian history, recent excavations are showing that their production and acquisition played a particularly significant role during the formative phases of Egyptian civilization. Relatively large-scale installations for the production of beer have been found on several Predynastic (3600-3100BC) sites. The technology and infrastructure required for the brewing industry now appears to have had a substantial effect on the trajectory of economic and social development in the nascent centralized state. Originally an imported product, wine also features largely in this early period as a symbol of wealth and power with ramifications that can be traced in the material culture, later foodways and also ritual practices.



# *Junko Habu*

*University of California Berkeley*



## Presentation Title

*Jomon Fruit Wine Making: Current Perspectives*

## Bio

**Junko Habu** 羽生淳子 is Professor of the Department of Anthropology, University of California, Berkeley, and Affiliate Professor of the Research Institute for Humanity and Nature (RIHN; 総合地球環境学研究所), Japan. She received her BA (1982) and MA (1984) from Keio University and her Ph.D. (1996) from McGill University. Habu has excavated a number of prehistoric Jomon sites and historic Edo period sites in Japan. Her books include *Ancient Jomon of Japan* (Cambridge University Press, 2004), *Evaluating Multiple Narratives* (Springer 2008, co-edited with C. Fawcett and J. M. Matsunaga), and *Handbook of East and Southeast Asian Archaeology* (Springer 2018, co-edited

with P. V. Lape and J. W. Olsen)

## Abstract

This presentation reviews past and present debates on the possibility of brewing alcoholic beverages during the Jomon period (ca. 16,000-2500 cal. BP). The common presence of vessels with spouts, especially those from the Late and Final Jomon periods (ca. 4300-2500 cal. BP) have sometimes been interpreted as indirect evidence for the presence of alcohol. Several scholars have also argued that Middle Jomon flanged pots with holes may have been used as containers for brewing fruit wine. More recently, Tsuji suggested that large amounts of berry seeds excavated from Early Jomon layers of the Sannai Maruyama site (Aomori Prefecture), particularly those of elderberry (*Sambucus*), mulberry (*Morus*), wild kiwi (*Actinidia*), wild grape (*Vitis*) and brambles (*Rubus*), as well as the seeds of Amur cork (*Phellodendron amurense*), cornel (*Cornus controversa*) and Japanese angelica tree (*Aralia elata*), are an indication of the brewing of fruit wine. Tsuji also reported the similar composition of fruit seeds at the Early Jomon Ikenai site (Akita Prefecture). By examining these new lines of evidence, this presentation discusses the timing of possible production of alcoholic beverage in relation to the development of Jomon social and cultural complexity.

*Yahui He*  
Stanford University

**Presentation Title**

*Alcohol production and consumption in the north Loess Plateau during the late Neolithic period: microbotanical analysis results from the Shimao site*

**Bio**

**Yahui He** is a PhD student in Department of East Asian Languages and Cultures at Stanford University, specializing in Chinese archaeology. Her research interests include human-environment relationships, food production and consumption and their roles in the social, political and spiritual dimensions of prehistoric China. Most recently, her field and laboratory work employ archaeobotanical analysis to study foodways in northern China during the Neolithic period.

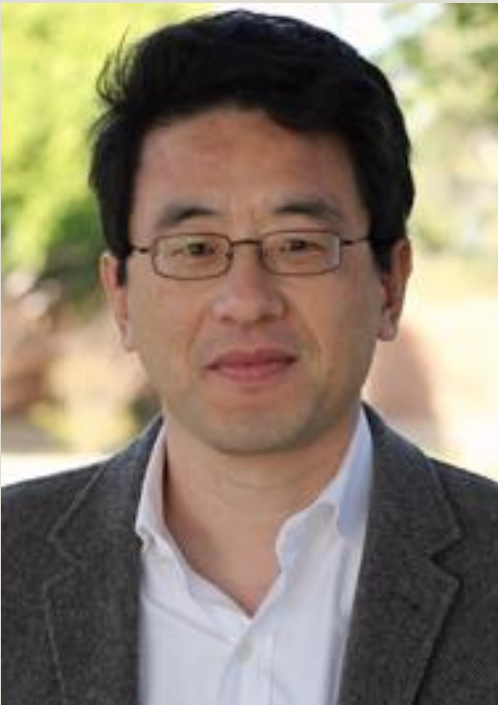


**Abstract**

Alcoholic beverages were used in ancient rituals and feasting, often to symbolize elite status and power, mark communal activities, or even for everyday consumption. Although diverse possibilities for alcohol use have been illuminated by historical, artistic and ethnographic approaches, a recent breakthrough in microfossil and chemical analyses of vessels has produced direct evidence of ancient alcohol production. Scholars interpreted Gui pitcher, one of the common pottery types in China, as the alcohol drinking vessels based on historical records and pottery typology. However, limited analysis has been conducted on the pottery per se. This study applies microbotanical analysis on Gui and other drinking vessels from the Shimao site (ca. 4300-4000 BP) to investigate how alcohols were produced and consumed during the late Neolithic period and to help understand social structures in the north Loess Plateau during the late Neolithic.

# Min Li

University of California Los Angeles



## Presentation Title

*Beyond Continuity and Rupture: Religious Transformation and the Rise of Bronze Age China*

## Bio

**Min Li** (PhD in Anthropology, University of Michigan, 2008) is an associate professor of East Asian archaeology at Department of Anthropology and Department of Asian Languages and Cultures at UCLA. His archaeological research spans from state formation in early China to the emergence of the early modern global trade network. He is also co-director of the landscape archaeology project in the Bronze Age city of Qufu, China. He is author of the *Social Memory and State Formation in Early China* published by the Cambridge University Press.

## Abstract

Design attributes for the earliest bronze vessels in early Bronze Age China suggest their use as apparatus for ritual consumption of alcohol-based beverages. This paper places technological and design choices for the early bronze assemblage within the context of expanding cultural interactions during the Longshan society of the late third millennium BCE. Experimentation with diverse techniques and substances of ritual consumption brought together by the expanding interaction contributed to the development of a distinctive bronze assemblage that characterized the ritual and political tradition of early Bronze Age China. At the bottom of this development is a syncretic development in techniques of religious communication involving the use of bronze vessels.

# *Li Liu*

*Stanford University*

## Presentation Title

*Thirst for beer, dispersion of amphora, and growth of millet farming communities in Neolithic China*

## Bio

Li Liu is the Sir Robert Ho Tung Professor in Chinese Archaeology in the Department of East Asian Languages and Cultures at Stanford University since 2010. Previously she taught archaeology at La Trobe University in Melbourne, Australia, for 14 years and was elected as Fellow of Academy of Humanities in Australia. She has a BA in History (Archaeology Major) from Northwest University in China, an MA in Anthropology from Temple University in Philadelphia, and a PhD in Anthropology from Harvard University. Her research interests include archaeology of early China (Neolithic and Bronze Age); ritual practice in ancient China; cultural interaction between China and other parts of the Old World; domestication of plants and animals in China; development of complex societies and state formation; settlement archaeology; urbanism; starch grain analysis; and lithic usewear analysis.



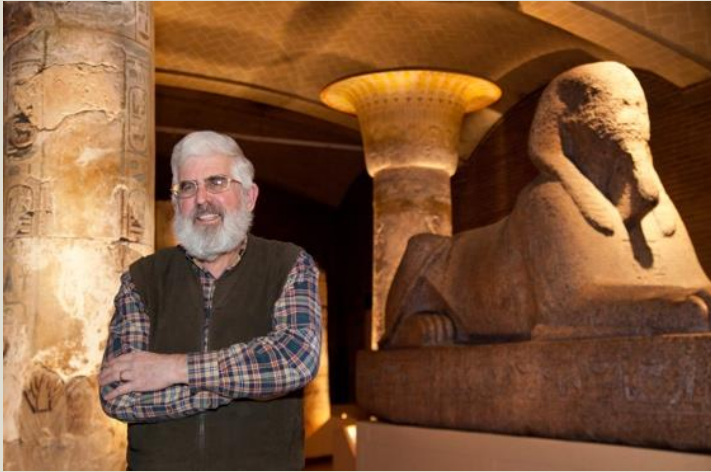
## Abstract

China's long history of alcohol production can be traced to the start of the Neolithic, and feasting with alcoholic beverages has been essential in ritual and political contexts for thousands of years. In this talk, I will examine the socio-economic function of beer in the Neolithic Yangshao culture of north China (5000-3000 BC). I will focus on the temporal and spatial correlations among several lines of archaeological data: beer brewing methods, changing forms of fermentation vessels (amphora), settlement layouts, intensification of millet cultivation, and unprecedented regional expansion of Yangshao farming communities. Millet beer drinking may have played a dynamic role not only to stimulate agricultural production, but also to help formation of certain social values and ritual behaviors that exerted long-lasting influence beyond the Yangshao culture.



# Patrick McGovern

University of Pennsylvania



## Presentation Title

*Alcoholic Beverages as the Universal Medicine before Synthetics*

## Bio

**Patrick E McGovern** is the Scientific Director of the Biomolecular Archaeology Project for Cuisine, Fermented Beverages, and Health at the University of Pennsylvania Museum in Philadelphia, where he is also an Adjunct Professor of Anthropology. Over the past two decades, he

has pioneered the interdisciplinary field of Biomolecular Archaeology. His laboratory discovered the earliest chemically attested alcoholic beverage in the world (ca. 7000 B.C., from China), as well as the earliest grape wine, barley beer, mead, and fermented chocolate beverages. He has published three books on ancient alcoholic beverages: *Ancient Wine: The Search for the Origins of Viniculture* (Princeton University, 2003/2006), recently translated into French as *Naissance de la vigne et du vin* (Paris: Libre & Solidaire, 2015), *Uncorking the Past: The Quest for Wine, Beer, and Other Alcoholic Beverages* (Berkeley: University of California, 2009/2010), and *Ancient Brews Rediscovered and Re-Created* (New York: WW Norton, 2017), together with numerous articles.

## Abstract

Fermentation (anaerobic glycolysis) is probably the first energy system on Earth, which is embodied in the metabolic cellular structures of aerobic organisms, including ourselves, as the Krebs (tricarboxylic acid/citric acid) cycle. Our ancestors applied fermentation to produce alcoholic beverages from high-sugar natural products (e.g., fruits, honey, tree saps, and saccharified roots and grasses), which were available in temperate climates world-wide. The alcohol in the drinks served as a combination antiseptic, analgesic, and anesthetic, much safer than untreated water. Alcohol was also more effective than water in putting botanical compounds with medicinal properties--derived mainly from herbs, spices and tree resins--into solution, that could then be administered orally or topically through the skin. As such, alcoholic beverages were incorporated into pharmacopeias around the world, both written (e.g., Egypt, India, China, Greece and Rome) and unwritten, before the advent of synthetic medicines over the last century and a half. As biomolecular archaeological techniques become increasingly more sensitive and precise, they open up the prospect of "re-discovering" effective, innovative remedies of our ancestors. This phenomenon is illustrated by our research on ancient Chinese fermented beverages.



# *Tate Paulette*

*North Carolina State University*

## Presentation Title

*Inebriation and the early state: The transformative power of beer in Bronze Age Mesopotamia*

## Bio

**Tate Paulette** is an Assistant Professor in the History Department at North Carolina State University. His research explores agricultural practices, fermented beverages, gastro-politics, and state making in Mesopotamia and the broader Near East. Paulette has conducted archaeological fieldwork in Syria, Egypt, Turkey, Cyprus, Scotland, and the US and is currently co-directing a field project at the site of Makounta-Voules-Mersinoudhia (Chalcolithic – Bronze Age) in western Cyprus. In collaboration with the Oriental Institute (University of Chicago) and Great Lakes Brewing Co. (Cleveland, OH), he has also spearheaded an effort to recreate Mesopotamian beer using authentic ingredients, equipment, and brewing techniques.



## Abstract

Alcohol exerts a special kind of force in the human realm – an active, transformative force that has often been exploited by those seeking to acquire, maintain, redistribute, flaunt, and/or camouflage power. State making projects, for example, have often relied heavily on the production and distribution of alcoholic beverages. In focusing on the social and political instrumentality of these beverages, however, we have often lost sight of what makes them such an effective tool of statecraft. People value alcoholic beverages because of the effects that they produce and the atmospheres that they create. Alcoholic beverages have a unique capacity to enter into relations with human beings – to transform individuals, groups, places, and occasions for a brief period of time – and this capacity endows these beverages with a particular kind of agency or efficacy. In this paper, I argue that we need to pay closer attention to this transient, transformative potential and to the ways in which beer may have helped to open up space for a radical reworking of the social and political landscape in Bronze Age Mesopotamia. I examine the production, distribution, and consumption of beer in order to highlight the connection between alcohol, inebriation, and the state making project.

# *Soultana Maria Valamoti*

*Aristotle University of Thessaloniki*



## Presentation Title

*From Field to Feast: Food, Drinks, and Rituals in the Shangshan Culture*

## Bio

**Tania (S.M.) Valamoti** was born in Thessaloniki in 1965. She studied Archaeology at the Aristotle University of Thessaloniki (B.A.) and specialised in Archaeobotany in Sheffield under the supervision of Glynis Jones (M.Sc., PhD). Since 2002 she is

teaching at the Department of Archaeology, Aristotle University of Thessaloniki where she is currently an Associate Professor and leader of PLANTCULT, an ERC funded, Consolidator research programme on the role of plant foods in shaping the prehistoric cuisines of Europe. She has conducted archaeobotanical research in Greece and abroad. LIRA, the Departmental Laboratory that she directs is conducting leading research in Archaeobotany in the Eastern Mediterranean and Southeastern Europe. She has published articles in various journals, authored two books and edited three volumes. Her book "Cooking with Plants in Prehistoric Greece" (Oxbow), due in 2019, combines her passion for cooking and Archaeology. Communicating her research to the wider public has formed an essential element of her approach, thus she has organised events where archaeological information is combined with food tasting. Her major challenge so far has been combining motherhood and family life with a career in Archaeobotany since her PhD years.

## Abstract

Alcoholic drinks and their role in social cohesion and the emergence of elites have featured widely in archaeological discourse in different parts of the world. In prehistoric Europe, wine, beer and mead have been the alcoholic drinks that have been detected in the archaeological record through various lines of evidence, including archaeobotanical remains, ceramic vessel shape and decoration, residue analyses of pottery and for the end of the Bronze Age, textual evidence. Alcohol consumption, wine in particular, becomes more prominent both among archaeological finds and textual evidence during the 1st millennium B.C. This presentation builds upon a wide range of archaeological, textual and pictorial evidence from Greece, spanning the Neolithic through to the 1st millennium B.C. and explores different contexts of ritual uses of alcohol in the study region. This integrated, diachronic overview of the evidence, relies heavily on recent archaeobotanical remains of prehistoric wine and beer and offers an opportunity to discuss culinary identities and their change through time in the region. This is work in progress in the context of ERC project PLANTCULT, GA682529

# Jiajing Wang

Stanford University

## Presentation Title

*Identifying alcohol production in ancient Egypt and China through starch analysis*

## Bio

**Jiajing Wang** is a PhD Candidate in the East Asian Languages and Cultures Department, Stanford University. She is a prehistoric archaeologist whose research interests include the origins of agriculture, the rise of sociopolitical inequalities, and ancient alcohol production. She studies these topics through residue, use-wear, and lithic analyses. Her recent research has revealed a 5000-year-old beer recipe from the Mijiaya site in China, as well as evidence of fermented beverage in 13,000-year-old stone mortars at Raqefet Cave, Israel. She has published articles in both English and Chinese journals, such as *Proceedings of the National Academy of Sciences*, *Quaternary International*, and *Journal of Archaeological Science Reports*.

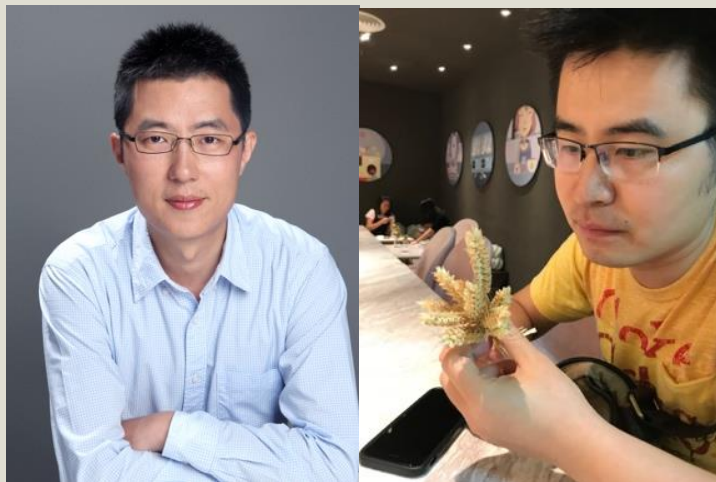


## Abstract

As documented in written and artistic records, the production and consumption of beer played a significant role in the social, political, and economic activities of many ancient societies. However, direct archaeological evidence of beer making has been relatively sporadic. To address this gap, we need a better understanding of the microbotanical residues produced by brewing. In this talk, I introduce a method for identifying starch residues from cereal-based beer, which can be applied to archaeological research in the Old World. Based on this method, I present the preliminary results of residue analysis conducted on the ceramics from Predynastic Egypt and Neolithic China. The ceramic samples come from Hierakonpolis, the earliest beer production site in Egypt, and Qiaotou, an early rice farming community in China.

## *Rui Wen and Duo Tian*

*Northwest University*



### Presentation Title

*Two-step Method to Identify Wine Residue by Spectrum and Chromatography Analysis*

### Bio

**Rui Wen** is a professor and Vice Dean of the School of Cultural Heritage at Northwest University, China. He obtained his bachelor and master's degrees from the University of Science and Technology of China and his PhD from the University of Oxford. His current research projects are funded by the National Natural Science

Foundation of China, Outstanding Young Science and Technology Talents for Cultural Relics Protection of National Cultural Heritage Administration, and the National Social Science Fund of China. He has published more than 30 academic papers, mainly focused on ancient ceramics, glass and organic residues. He is particularly interested in cross-regional material and cultural exchanges.

**Duo Tian** is a Postdoctoral Fellow at Northwest University in Xi'an, China. He received his PhD degree from the same university in 2018. His research investigates the cultural exchange in Eurasia through the archaeobotanical remains from Northwest China. His most recent research explores human-plant relationships in relation to ancient alcohol production.

### Abstract

Wine is one of the most widely consumed beverages in the world, with a long history and great social importance. In spite of the discovery of a significant number of ancient vessels presumed to hold wine, it is often difficult to confirm this typology due to the lack of an effective method for identifying wine residues, particularly in the absence of liquid samples. To resolve this issue, this study develops a preliminary two-step method for identifying wine residue. Using Fourier Transform Infrared Spectroscopy (FTIR) in conjunction with a discriminant analysis model, the first step is to determine to which category of liquid the residue originally pertained. The second step consists of fine identification by High Performance Liquid Chromatography (HPLC) and Gas Chromatography–Mass Spectrometry (GC-MS). The polyphenols, organic acids and proteins remaining in the samples are analyzed and compared with simulated aging wine residue to identify the category of the residue.

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*An interdisciplinary perspective*

April 15-16, 2019

Sponsored by:  
Stanford Archaeology Center  
Confucius Institute, Department of East Asian Languages and Cultures  
Freeman Spogli Institute for International Studies

Conference Location:  
Stanford Archaeology Center  
Stanford University  
488 Escondido Mall, Building 500  
Stanford, CA 94305

Date/Time	Activity	Presenter(s)	Presentation Topics
<b>April 14 - Arrival at Stanford</b>			
6:30-8pm		Welcome Dinner	
<b>April 15 Conference Day 1</b>			
9:10-9:45am		Morning reception	
9:45-9:50	Welcome speech	Ian Hodder (Stanford Arch. Center)	
<b>Session 1: Identifying Ancient Alcohol Production: Methods and Interpretation</b> Chair: Min Li			
9:50-10:20	Presentations	Patrick McGovern (University of Pennsylvania Museum)	<i>Alcoholic Beverages as the Universal Medicine before Synthetics</i>
10:20-10:50		Rui Wen and Tian Duo (Northwest University, China)	<i>Two-step Method to Identify Wine Residue by Spectrum and Chromatography Analysis</i>
10:50-11:05		Coffee Break	
11:05-11:35	Presentations	Masahiro Baba (Waseda University)	<i>Egypt's oldest beer brewery discovered at Hierakonpolis</i>
11:35-12:05		Jiajing Wang (Stanford University)	<i>Identifying alcohol production in ancient Egypt and China through starch analysis</i>
12:05-12:30		Discussion	
12:30-1:45		Lunch	
<b>Session 2: Alcohol Production and Consumption in Ancient China</b> Chair: Jiajing Wang			
1:45-2:15	Presentations	Li Liu (Stanford University)	<i>Thirst for beer, dispersion of amphora, and growth of millet farming communities in Neolithic China</i>
2:15-2:45		Suofei Feng (Stanford University)	<i>Social Uses of Large-Mouth Vats from Xipo Cemetery</i>
2:45-3:15		Yahui He (Stanford University)	<i>Alcohol production and consumption in the north Loess Plateau during the late Neolithic period: microbotanical analysis results from the Shimao site</i>
3:15-3:40		Coffee Break	
3:40-4:10	Presentations	Min Li (University of California, Los Angeles)	<i>Beyond Continuity and Rupture: Religious Transformation and the Rise of Bronze Age China</i>
4:10-4:40		Discussion	
7:00-8:30		Dinner	



## April 16 Conference Day 2

9:00-9:30am	Morning reception		
<b>Session 3: Alcohol, Politics, and Rituals</b> <b>Chair: Li Liu</b>			
9:30-10:00	Presentations	Tate Paulette (North Carolina State University)	<i>Inebriation and the early state: The transformative power of beer in Bronze Age Mesopotamia</i>
10:00-10:30		Renee Friedman (University of Oxford)	<i>Alcohol in Early Egypt: Lasting Effects</i>
10:30-11:00		David Edwards (University of Leicester)	<i>Beers, Pottery and Power in the Middle Nile</i>
11:00-11:25	Coffee Break		
11:25-11:55		Stephen Dueppen and Daphne Gallagher University of Oregon	<i>Alcohol, Spirituality and the House: Exploring Ritual Use of Beer at Kirikongo, Burkina Faso</i>
11:55-12:25		John W. Arthur (University of South Florida St. Petersburg)	<i>Beer, Status, and Identity in Two Southern Ethiopian Communities: Archaeological and Ethnoarchaeological Analyses</i>
12:25-12:40	Discussion		
12:40-1:45	Lunch		
<b>Session 4: Finding Alcohol in Archaeology: New approaches and Discoveries</b> <b>Chair: Tate Paulette</b>			
1:45-2:15	Presentations	Soultana Maria Valamoti (Aristotle University of Thessaloniki)	<i>Alcohol and rituals in ancient Greece: an integrative exploration from prehistoric villages to the first cities</i>
2:15-2:45		Junko Habu (University of California, Berkeley)	<i>Jomon Fruit Wine Making: Current Perspectives</i>
2:45-3:15		Ran Chen (Stanford University)	<i>Food Processing and Fermented Beverages during Classic Period at Copan, Honduras: Investigating Elite Drinking in Mayan Feasting</i>
3:15-3:40	Coffee Break		
3:40-4:15	Discussion and Closing Remarks		
7:00-8:30	Dinner		