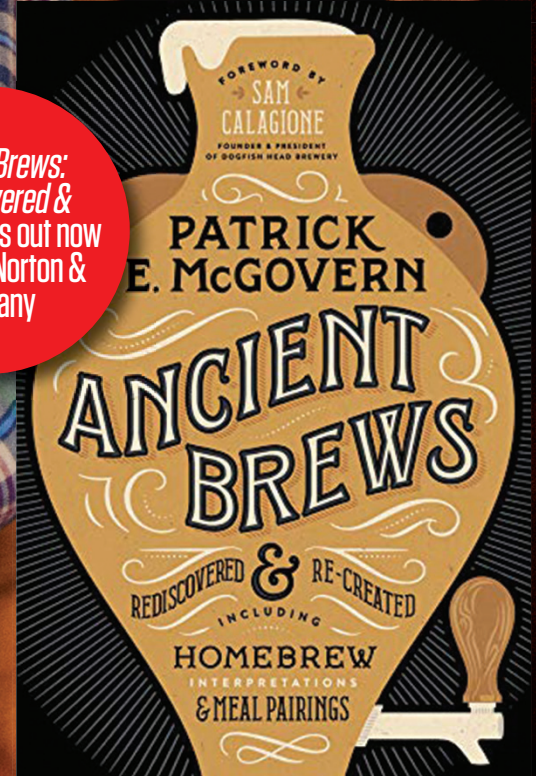


Q&A With...

DR PATRICK McGOVERN

THE LEADING EXPERT IN
ANCIENT WINES TALKS
ABOUT HIS GROUNDBREAKING
WORK DISCOVERING AND
EVEN RECREATING LOST
ALCOHOLIC BEVERAGES

*Ancient Brews:
Rediscovered &
Re-Created* is out now
from WW Norton &
Company



Dr 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. His previous books include *Ancient Wine* and *Uncorking The Past*. Learn more at <https://www.penn.museum/sites/biomoleculararchaeology/>.

A selection of the acclaimed beers made by Dogfish Head Brewery



Q HOW DID YOU GET STARTED HUNTING FOR EVIDENCE OF FERMENTED BEVERAGES AROUND THE WORLD?

A As an undergraduate at Cornell University, I was drawn to both the humanities and sciences, and finally settled on a major in chemistry and a minor in English literature. I went to medical school and studied neurochemistry, but then I got interested in the origins of humankind and went into archaeology. A fellowship in the radiocarbon laboratory funded my PhD research at the University of Pennsylvania. So I started to bring the scientific aspect together with the archaeological sciences and history. The Penn Museum, with its well-excavated finds from around the world, was the perfect starting point for integrating the natural sciences with the humanities, especially when I went to work the Museum Applied Science Center for Archaeology (MASCA) at the Penn Museum, where I began an innovative archaeological chemistry and ceramics program, first focusing on inorganic archaeological remains (pottery, glass, etc) and then moving on to organics (dyes, foods and ultimately ancient fermented beverages).

Q YOU'VE ALSO EXPLORED HOW AGRICULTURE COULD BE DRIVEN BY THE PURSUIT OF FERMENTED PRODUCTS, SUCH AS WAS WHEAT CULTIVATED TO MAKE BEER OR BREAD?

A The question of 'Which Came First?: Bread or Beer' crucially depends on how difficult each is to make. Beer is easier, in my opinion, because as a liquid, its starches will readily be converted to sugar that then ferment due to insects inoculating the 'wort' with yeast on their bodies when they are

attracted to the sugary concoction. No baking is required, like bread. But other high sugar products as well, like honey, and also high-sugar fruits and tree resins are even more easily fermented, because yeast is directly associated with them and requires no inoculation of the diluted honey, fruit juice, or sap. To make any of these natural products in quantity, additional expertise (eg beehive production and viticulture) are needed, and this would have stimulated the rise of more complex societies and eventually civilisation, as we know. In the case of beer in lowland Mesopotamia and Egypt where the first literate societies arose, specialised systems of agriculture and irrigation spurred on the rise of cities.

Q SOME OF YOUR DISCOVERIES HAVE BEEN FROM ARCHIVED ARTEFACTS, OTHERS FROM NEW DIGS. DOES IT MAKE A DIFFERENCE TO YOUR WORK TO BE PHYSICALLY IN THE FIELD?

A Being in the field is always better, but not always possible. In the field, I get to see the situation in which the find was made so you can assess how suitable it is for chemical residue analysis. You can assess the surrounding soil, the water table, and other non-human factors of importance. Assessing the human context is also very important. Was the artefact of interest found in a tomb, occupational context, or possibly a garbage pit? Can it be exactly dated? What was found in association with it that might elucidate its significance? You don't want to spend time and money on poorly dated, possibly contaminated artefacts of little importance. So, I always feel that being in the field is the best idea, but then you have to travel there and that can sometimes be a bit of a struggle. The second-best option is to

ensure you've got good archaeologists excavating there. Washing the artefacts should be minimal. Originally the Georgian sherds were put through a hydrochloric acid bath and of course hydrochloric acid really destroys organic material, so we had problems getting good results from those early sherds that I got from earlier excavations. Now they send the sherds from current, ongoing excavations without washing it. They also collect the soil around the artefact to serve as a chemical background for microbial production of the fingerprint compounds that we are in search of to determine the original natural products. Then, we lightly wash the artefact with distilled water and then proceed from there with our analysis.

Q FROM ANALYSING SAMPLES YOU'VE TAKEN THE NEXT STEP OF RECREATING DRINKS AND ENTIRE MEALS, SUCH AS THE KING MIDAS FUNERARY FEAST?

A That was the first chemical reconstruction of an ancient fermented beverage that we did, and it turned out remarkably well. We had literally pounds of residue from the University of Pennsylvania Museum's excavation of Gordion in central Turkey, dating to about 750-700 BC. We hit the food and beverages residues inside the largest Iron Age drinking-set with every sensitive scientific technique available at the time. As a result, we were able to recreate the culinary dimensions of the funerary feast in large measure at the Penn Museum in September 2000. A fitting way to mark the new millennium! Sam Calagione at Dogfish Head Brewery took charge of the drink, while Pam Horqitz, the Museum's excellent chef prepared the spectacular main entrée, the spicy, barbecued lamb stew. The event was huge success, and many more recreations followed around the States.

Q THAT PRESUMABLY LED TO YOU WORKING ON AWARD-WINNING DRINKS WITH DOGFISH HEAD BREWERY?

A Yes, Midas Touch has won a ton of awards, golds - which is appropriate - but also plenty of silvers and bronzes. It is the most awarded of any Dogfish brew. But I have a special place in my heart for what is thus far the most ancient alcoholic beverage identified. Chateau Jiahu is the name of the Dogfish recreation, and its formulation based on our analysis of residues from inside pottery jars excavated at Jiahu in the environs of China's Yellow River, dated to about 6000-5500 BCE. The Midas discovery is relative newcomer by comparison. I was fortunate enough to be at the Great American Beer Festival in Denver in 2008 when Chateau received its gold medal. I placed it in our lab, together with one of the sherds we analysed and the first bottle of Chateau Jiahu, to make a small shrine. I bow down to it when I enter the lab, in the hope that we will make more discoveries.