参考译文

Ancient Whiz Opens Archaeology Window

古代奇才开启考古之窗

A 10,000-year-old archaeological site in central Turkey is helping scientists unlock the region’s PEE-historic past. That’s right: the salty residue of ancient urine can reveal how and when humans went from hunter-gatherers to herder-farmers, who kept and raised animals in their settlements.

土耳其中部一处有10000年历史的考古遗址，正在帮助科学家解开该地区过去的小便历史。没错:远古尿液中的盐分残留物可以揭示出人类是如何以及何时从狩猎采集者转变为牧民的，牧民在他们的居住地饲养动物。

“And so we thought, okay, what’s a process that an animal would go through if it was being kept at the site, whether it’s corralled between buildings or kept in other specific areas…”Archaeologist Jordan Abell, from Columbia’s Lamont-Doherty Earth Observatory. He’s been studying the settlement of Aşıklı Höyük, located on a 16-meter high mound near Turkey’s Melendiz River.“… we thought, okay, well, these animals would be urinating all the time that they were on the mound.”

哥伦比亚大学拉蒙特-多尔蒂地球观测站的考古学家乔丹·阿贝尔说:“所以我们想，好吧，如果动物被保存在这个地方，不管是被圈在建筑物之间还是被保存在其他特定的地方，它们会经历怎样的过程呢?”他一直在研究解决AşıklıHoyuk,位于土耳其Melendiz河附近的一个16米高丘。“……我们想，好吧，这些动物在土堆上一直在小便。”

In the dry climate of central Turkey, the sodium, chloride and nitrates from all that animal excretion would be trapped in the layers of earth onto which they were originally peed. Excavating those salts, layer by layer, should provide a timeline of animal populations at the site.“And so we calculated, using a simple mass balance approach, an estimate of the number of organisms that it would take to produce these large quantities of salt.”

在土耳其中部干燥的气候中，所有动物排泄出来的钠、氯和硝酸盐都会被困在最初用来撒尿的土层中。一层一层地挖掘这些盐，应该可以提供该遗址动物种群的时间表。“因此，我们用一种简单的质量平衡方法计算出了生产这些大量盐所需的生物体数量。”

Abell and his colleagues found that from 10,000 years ago to about 9,700 years ago, the site jumped from having just a few large organisms’ worth of whiz to more than 1,800.Of course, people pee, too. So the researchers had to figure out which salts were from humans and which were from their animals. Luckily, the location of the salts provided clues. For example, high concentrations in narrow alleyways too small for animals.

Abell和他的同事们发现，从一万年前到大约9700年前，这个遗址的生物数量从仅有几个大型生物的数量跃升到了1800多个。当然，人们也会尿尿。所以研究人员必须弄清楚哪些盐来自人类，哪些来自动物。幸运的是，盐的位置提供了线索。例如，在狭窄的小巷中高浓度的水对动物来说太小了。

“The general thought is that they might have been standing on their roofs, and just peeing into these alleyways.”Something that goats and sheep do rarely, if ever. By subtracting contributions from humans, the researchers calculated that there had to be between 800 and 1,300 sheep and goats to account for the remaining pee. The study appears in the journal Science Advances. [J.T. Abell et al, Urine salts elucidate Early Neolithic animal management at Aşıklı Höyük, Turkey]

“一般的想法是，他们可能站在屋顶上，只是在这些小巷里小便。这是山羊和绵羊很少做的事情。通过减去人类的贡献，研究人员计算出必须有800到1300只绵羊和山羊才能解释剩余的尿液。这项研究发表在《科学进展》杂志上。

If true, it means that animal domestication didn’t originate solely in the Fertile Crescent of Mesopotamia, as many of us learned in history class.“Our technique has been able to support that idea, that somewhere outside the Fertile Crescent, in this case in Central Turkey, was developing this process at near the same time as has been shown elsewhere within the Fertile Crescent.”

如果这是真的，那就意味着动物驯化并不仅仅起源于美索不达米亚的新月沃土，正如我们许多人在历史课上学到的那样。“我们的技术已经能够支持这样一种观点，即在新月沃土之外的某个地方，比如土耳其中部，正在发展这一过程，与新月沃土其他地方的情况几乎同时发生。”

An important discovery, since the advent of herding and farming was a turning point for human civilization, leading to cities and modern society.Abell points out that many archaeological sites have little in the way of physical evidence, like bones and artifacts, but presumably all of them have pee. So his advice for other archaeologists who want to track animal and human populations? Look out for number one.

这是一个重要的发现，自从畜牧业和农业出现以来，这是人类文明的一个转折点，导致了城市和现代社会的出现。阿贝尔指出，许多考古遗址几乎没有实物证据，比如骨头和手工艺品，但据推测，它们都有尿液。那么他对其他想要追踪动物和人类种群的考古学家的建议是什么呢?注意第一。

听力原文

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