

## Cypriot site hints at early fertility rite

For nearly 10 years archaeologists have been digging up remnants of Mosphilia, a settlement on the Mediterranean island of Cyprus dating to between 4000 B.C. and 2500 B.C. But their most exciting discovery came to light only recently. An exploratory trench has revealed an oblong, flat-bottomed pit containing fire-cracked and ochre-stained stones, stone tools, a triton shell, stacked pottery vessels and a group of 18 stone and pottery figurines.

Further investigation of the 5,000-year-old artifacts indicates they were used in a ritual ceremony that revolved around birth and fertility, project director Diane Bolger reported in Boston last week at the annual meeting of the Archaeological Institute of America. This is the earliest good evidence for ritual activity on Cyprus.

"These are significant and astonishing finds," says Bolger, of the University of Maryland at Baltimore. "A ceremony in which the objects were deliberately burned, broken and taken out of circulation apparently took place."

The location of the Mosphilia pit and the number of artifacts placed within it suggest the ceremony was a public occasion, Bolger adds.

Most of the stone and pottery figurines portray women. Some stand with folded or outstretched arms and others possess swollen bellies and sit on "birthing stools" used during the delivery of a child, Bolger notes. One figure, dubbed Bertha by the researchers, has a massive body and wide hips portraying pregnancy. Bertha's head and those of several other figurines were cleanly, and probably deliberately, broken off, Bolger asserts.

Another figurine includes a striking decoration, she adds. A child, rendered in red paint, emerges from between the broken legs of its mother.

Female figurines found at other archaeological sites on Cyprus are thought by some researchers to have been children's toys. However, Bolger argues, other objects in the Mosphilia pit suggest the 18 figurines played a role in a public ritual stressing fertility and childbirth.

For example, the researchers found the figurines in and around a large bowl whose shape resembles circular buildings of the Chalcolithic period, when copper was used in tool production. A swivel door opens on the side of the vessel, and inside are models of a rectangular hearth and radiating partitions. The artist was probably duplicating a similarly shaped building previously uncovered at Mosphilia, Bolger says. Ash in the pit and cracks on the outer surface of the building model indicate the vessel was intentionally burned before its burial.

Many prehistoric cultures produced

building models, but these are usually found in human burials or with the general remains of a household. At Mosphilia, the model's placement in a pit with more than 50 other objects suggests the entire assemblage was part of an as-yet poorly understood ritual activity, Bolger says.

Ethnographic records of later Cypriot cultures describe circular buildings with central hearths as birthing houses, she adds. The function of the Mosphilia structure on which the vessel is modeled is unclear. Painted decorations on its door are not traditional Chalcolithic designs, Bolger says.

The triton shell offers another sign of

the ceremonial nature of the Mosphilia remains, she points out. These shells are found with ritual artifacts at other Mediterranean sites dating to the first and second millennium B.C.

Artifacts in the Mosphilia pit "may have been charms used during rituals of magic," Bolger suggests. Moreover, the figurines may have served several ceremonial functions. Detailed study of the figurines is now underway at the University of Edinburgh in Scotland.

Unraveling the cultural meaning of the Mosphilia discovery is just one challenge facing investigators, Bolger contends. "We also need to consider why the social customs that led to ritual activities at this site were put to rest after the Chalcolithic period ended [around 2000 B.C.]."

— B. Bower

## Mom's fatty diet may induce child's cancer

Comparisons of populations with widely divergent patterns of fat consumption have long suggested a link between high-fat diets and certain cancers of the female reproductive system. Yet scientists have also observed that women who switch to low-fat diets don't appear to lower their risk of developing such cancers.

A provocative new animal study now points to a possible explanation: that a woman's dietary risk of developing these cancers may be established before birth by what her mother ate during pregnancy.

Bruce E. Walker, an anatomist at Michigan State University in East Lansing, reared female mice from the onset of sexual maturity through their first pregnancy. Each mouse ate one of four diets differing primarily in the proportion of calories derived from fat — roughly 6, 20, 37 or 49 percent. (The typical American diet derives about 38 percent of its calories from fat.) Half the animals in each dietary group also received diethylstilbestrol (DES), a drug that gained notoriety when researchers linked it with reproductive cancers in the daughters of women who had taken it during pregnancy. From birth, the female offspring of each group received a low-fat diet without DES.

Having chosen a mouse strain known for its inherent tendency to develop reproductive tumors even without environmental triggers, Walker wasn't surprised when about 10 percent of the daughters of the two low-fat control groups — the mothers getting no DES — developed such tumors. But he admits to being "quite surprised" when fully half the daughters of the mice on the high-fat but DES-free regimens developed breast, ovarian, uterine and even pituitary cancers, reflecting a fat-related fivefold increase in risk. The only reason he fed some mice DES, he explains, was that he thought any fat effect would be "too subtle" to detect

without it. "As it turned out, [the fat effect] was more pronounced than the multi-generational effect of DES," he says. Among daughters of DES-treated mice, Walker found a fat-linked doubling in the risk of reproductive cancers, with the incidence reaching 58 percent in offspring of the high-fat groups.

Moreover, he reports in the Jan. 3 JOURNAL OF THE NATIONAL CANCER INSTITUTE, 10 of the 98 cancers among offspring of mice on the high-fat diets — including many whose mothers received no DES — spread to other organs. "I've worked with terminally ill mice of this strain for a good number of years in my other DES experiments," he told SCIENCE NEWS. "And though we've looked for metastatic tumors, we've almost never found them. . . . Encountering so many here — and all among the high-fat groups — was quite a dramatic contrast."

Clement Ip, an experimental nutritionist at the Roswell Park Memorial Institute in Buffalo, N.Y., describes the experiments as original and "good" but says Walker's finding that maternal diet affects offspring cancer risk "is not conceptually new." About five years ago, Ip says, researchers showed a similar increase in chemically induced breast cancers among the daughters of animals fed a high-protein diet.

Though the new study doesn't reveal a mechanism to explain the observed link, Walker speculates that a pregnant mother's high-fat diet might lead to abnormal development of the fetus' hypothalamus "and alter [its] programming" for the release of certain hormones later in life — hormones that other researchers have linked with these cancers.

Reproductive-system cancers are the leading killers of U.S. women aged 35 to 74, Walker says. This, coupled with his new data, suggests "there is no justification for high-fat diets during pregnancy," he contends.

— J. Raloff