

# Sacramento Archeological Society, Inc. Newsletter

www.sacarcheology.org.

Sept/Oct - 2019

# **UPCOMING EVENTS**

- September 7, 2019, Saturday 3:00 7:00 pm SAS Potluck Social at Dan & Victoria Foster's
- September 11-13, 2019 Santa Cruz Archaeological Tour
- September 26, 2019, Thursday, 10:30 am 5:00 pm FSRA Rock Art Outing
- October 19, 2019, Saturday, 1:00 3:00 pm. "Now We're Cooking: The Role of Fire and Cooked Food in Neanderthal Extinction" by Anna Goldfield, PhD at Maidu Museum and Historical Site
- December 7, 2019, Saturday, 12:00 5:00 pm Annual meeting featuring "Is there evidence for human occupation in the Tule Lake/Kettleman City, California area as much as 30,000 years ago? Could it be 130,000 years ago? by Dennis Fenwick and "Are you Aryan? What we now know about the Proto-Indo-Europeans and why they still matter." by Marty Fenwick at Carolyn and Gordon McGregor's

See calendar in <u>www.sachaeology.org</u> for complete set of calendars Also note calendar for Friends of Sierra Rock Art below.

> SAS Potluck Social Saturday, September 7, 2019 3:00 – 7:00 p.m. at Dan & Victoria Foster's 11177 Walmort Rd, Wilton CA 95693

Dan and Victoria Foster are graciously hosting a Society Social on **Saturday, September 7** at their farm. The social will start at 3:00 p.m. with a potluck dinner around 5:00 p.m. At this informal event we will have time to get to know each other and of course talk about archaeology.

Please bring a dish to share and any beverages you might wish. There is a barbecue and swimming pool - bring your swim suit.

For additional information and/or directions please call Dan at 279-444-2099.

Santa Cruz Archaeological Tour

September 11 - 13, 2019 Archaeological pre-history and historical tour of Santa Cruz

#### Wednesday, Sept 11

1:00 -- Meet in Santa Cruz (SC) at Comfort Inn, 110 Plymouth St., Santa Cruz for an orientation

2:00-5:00 – Rich Fitzgerald will lead a tour of selected sites in the SC area such as mid-Holocene age midden at Sand Hill Bluff and the Cultural Preserve at Wilder Ranch State Park. Other possible destinations may include the Mission Santa Cruz State Park and a little further south on highway the newly restored Castro Adobe (Rancho San Andres State Park).

#### Thursday, Sept 12

8:00 -- Meet at **Comfort Inn**, 110 Plymouth St., Santa Cruz for briefing on logistics/carpooling 9:00-5:00 – John Foster will lead a tour to selected sites including Franklin Point shipwreck cemetery and the middens at Año Nuevo State Park. Bag lunch in the field

5:00 -- Enjoy evening pot luck with Santa Cruz Archeological Society at Live Oak Grange, 1900 17<sup>th</sup> Ave, Santa Cruz

#### Friday, Sept 13

9:00 -- Meet at entrance to University of California Santa Cruz for briefing on logistics/carpooling

9:00-10:00 – Patricia Paramoure, Santa Cruz Archeological Society (SCAS) will lead a tour of Cowell Lime Works District, located on the lower campus of UCSC

11:30-1:00 - Robyn Houts (SCAS) will lead a tour the Chitactac site at 10001 Watsonville Road, Gilroy.

Since attendance is limited but still open, register now for the Santa Cruz archaeological tour. A registration fee of **\$20** per person is due with the registration. Applications will be first come first served basis. Membership in either Sacramento Archeological Society or Santa Cruz Archeological Society is required. All participants are required to sign a Hold Harmless Agreement prior to the tour. Participants will be responsible for making their own lodging, transportation, food arrangements.

You may use our web site <u>http://sacarcheology.org/society-membership/</u> to pay the registration fee of \$20 per person using a credit card or Paypal. Alternatively, please make out your check to "Sacramento Archeological Society, Inc." and mail it to: Sacramento Archeological Society, Inc.

Sacramento, CA 95816-9287

# FSRA Outing for SAS Members <u>Thursday, September 26, 2019</u> 10:30 a.m. – 5:00 p.m.

Friends of Sierra Rock Art (FRSA) (www.sierrarockart.com) are offering a one-day field trip to two Sierra rock art sites for SAS members on Thursday, Sept. 26, meeting near the Boreal/Castle Peak I-80 exit at 10:30 a.m. FSRA board member, Nolan Smith and FSRA president, Bill Drake, will lead the outing. Nolan recently retired from 40 years as an archaeologist for the Tahoe National Forest and was the district archaeologist for the Foresthill District.

High clearance (preferred) to moderate (Subaru Outback) vehicles are required and carpooling is encouraged. From our parking location we will hike for <sup>3</sup>/<sub>4</sub>-1 hour along the Pacific Crest Trail to the Sky Castle site. The hike through the forest is mostly on level ground and is pretty easy for people in moderate shape; the very last part involves scrambling up the side of a hill to get to the

outcrop with the images. This is a very interesting archaeological site that was not known to the Forest Service until relatively recently. It contains a small but nice selection of rock art images, a rock shelter, lithic scatter, and possible hunting blind. The petroglyphs are "Style considered 7, High Sierra Abstract-Representational" per archaeologist Louis (Sam) Payen, and are attributed to the Martis Complex (500 AD-2000 BC). Some artifacts found at the site pre-date and postdate the Martis and might go back to "early Archaic" (6,000 BC-3,000 BC).



Sky Castle photo compliments of Bill Drake

At the site, Nolan will discuss rock art site monitoring and the group will divide into teams with the assignment of finding some of the site's features. We will eat lunch at the site. We should be back at our cars by about 2 p.m. From there we will go to the Donner Summit site (taking the Soda Springs/Norden exit off I-80), another Martis site. As well as petroglyphs, this location features the China Wall (built by the Chinese for the railroad), a view of Donner Lake, rock climbers, old Hwy. 40 with modern traffic, the Lincoln Highway from the early 1900s, and a painted advertisement from the 1920s that is situated to be seen by drivers of the old Model As and Ts that rode up the Lincoln Hwy. A remarkable juxtaposition of different "realities" come together at this place. We should be finished by at least 4 p.m. at which point people can head for home on I-80. No serious hiking is involved at this site. (If anyone wants to leave after the Sky Castle visit, they can do that and skip Donner.)

Unlike Donner, Sky Castle is a confidential site and outing participants will sign a confidentiality form and avoid taking gps readings, including via cameras.

Bring lunch, expect (but don't invite) mosquitoes – so bring good repellent; sun protection (sun screen and hat); plenty of water (maybe up to 2 quarts for the Sky Castle hike); light over shirt and shorts, with long pants for back up; hiking shoes with ankle support encouraged; and hiking poles can be helpful.

Carpooling is encouraged. A Subaru Outback clearance or better is needed to get to the parking and initial meeting place. The more high clearance vehicles the better as that depends on where we'll finally park to go hiking from (perhaps leaving some vehicles at the initial meeting place and driving on to another place to leave from). But Subaru Outback clearance (7  $\frac{1}{2}$ " or so) can work (*assuming a good driver who can navigate dips/water bars*)

For information on Style 7 rock art and the Martis Complex, see the article by Bill Drake or contact Bill at <u>billdrake2@gmail.com</u> as well as "The Association of Style 7 Rock Art and the Martis Complex in the Northern Sierra Nevada of California," by Daniel Foster, John Betts and Linda Sandelin, Proceedings of the Society for California Archaeology, Vol. 15, pp.66-93, 2002, which can be accessed through a web search.

The outing is limited to 18 SAS members. Registration will be first come first served basis. Membership in Sacramento Archeological Society is required. All participants are required to sign two Agreements prior to the tour, one for confidentiality and the other for hold harmless. To register for this outing, contact Jan Johansen at janjohansen@sbcglobal.net. In registering, inform her of the type of vehicle you have, how many passengers you can take, and your cell phone number.

### FRDENDS OF SDERRA ROCK ART Schedule of Events 2019

LET'S ROCK

September 7 - Crane Petroglyph Site with Karen Ostergard

October 18 - Presentation by John Noxon and Deb Marcus at Madelyn Helling Library

November 4-6 - Overnight outing to Rock Hill near Exeter, Central Valley, CA

For more information contact Bill Drake at <u>billdrake2@gmail.com</u>.

# Now We're Cooking: The Role of Fire and Cooked Food in Neanderthal Extinction By Anna Goldfield, PhD Archaeologist

Saturday, October 19, 2019

1:00 p.m. – 3:00 p.m.

at Maidu Museum & Historical Site 1970 Johnson Ranch Drive, Roseville, California 95661

#### **OPEN TO THE PUBLIC**

Join us to celebrate International Archaeology Day. We have teamed with **Maidu Museum & Historical Site** to increase the public's awareness of archaeology. **Sacramento** 



Archeological Society will feature a presentation on Neanderthal by Anna Goldfield, PhD, Archaeologist and host of The Dirt Podcast. She will explore some of the



physiological differences between Neanderthals and Anatomically Modern Humans, and will discuss what role the use of fire and a cooked versus a raw diet might have had on the rate of extinction of Neanderthal populations. **Maidu Museum & Historical Site** will offer hands on archaeological experience for children and family tours of their historical site.

Neanderthal and Homo sapien skeletons

#### Entrance Fee Charged

Questions? Please contact Jan Johansen at janjohansen@sbcglobal.net or Maidu Museum and Historical Site at **916.774.5934**.

Dr. Goldfield is a zooarchaeologist and science writer whose research focuses on Neanderthal physiology and nutrition. Currently, she is also an anthropology instructor at Cosumnes River College in Sacramento and a writer for the online anthropology journal Sapiens.org (<u>https://www.sapiens.org/column/field-trips/neanderthal-body/</u>). In addition Anna is the co-host of The Dirt, a podcast about archaeology, anthropology, and our shared human past (www.thedirtpod.com).

# **PREVIOUS EVENTS**

# SAS Eclectic Symposium

Our eclectic symposium held on Saturday, July 6 at Carolyn and Gordon McGregor's home featured: "Olmec Encounters" by **John and Dan Foster**, "Puebloean Culture and Rock Art of Colorado and Utah" by **Knuti VanHoven and Paul K Davis**, and "Peopling of Americas" by **Jan Johansen**. Following the presentations a special session for those attending Oregon Archaeological Tour was held. We most heartily thank Carolyn and Gordon McGregor for hosting the event. As always Carolyn catered a delicious lunch.

For the "Olmec Encounters" presentation John started with a video displaying photographs from their tour in 2018. Dan followed with detailed information on the 17 Olmec Colossal Heads. Marion Stirling and her husband Matthew found 10 or the 17 heads. For more information see

https://www.washingtonpost.com/archive/lifestyle/1996/07/08/archaeologist-marion-pugh-digging-upmemories/09f465e7-5900-455e-bcd5-b81828a502d5/?utm\_term=.d1c5a69cce02



Paul introduced the next topic, "Puebloan Culture and Rock Art of Colorado and Utah" and Knuti showed and commented on photos from their travels to Colorado and Utah in 2018. The lovely presentation stimulated our memories of SAS tours to many of these archaeological sites.

Jan dove back in time to review evidence of hominid presence in North and South America. She introduced climatic data that might suggest early entrance of hominids from Asia. This might explain their presence in South America as early as 45,000 years before present and the Cerutti finds in San Diego dated to 130,000 years before present.

# Oregon Archaeological Tour

From Monday, July 15, 2019 through Saturday, July 20, 2019 the Sacramento Archeological Society provided a guided archaeological tour of paleo sites in southeastern Oregon for 21 members. On Tuesday, July 16 the group explored two rock art sites: Greaser Canyon and Petroglyph Lake. Greaser Canyon petroglyphes were easy to observe since they were mostly located on a main boulder along the road. Petroglyph Lake, on the other hand, required driving on a gravel road onto Hart Mountain and after another short drive on a back road, walking to Petroglyph Lake. The series of petroglyphs were located on boulders above the lake. Many were faint. Photos are compliments of Jan Johansen.



Greaser Canyon photo

Petroglyph Lake petroglyph photo



McGregors and others at Petrogyph Lake

Doug LaRocca at Petrogyph Lake

On Wednesday, July 17 the tour continued under the guidance of archaeologist, Bill Cannon. He took us to the site of the Dietz excavation with which he had been involved. Many Clovis

artifacts had been found on the surface. Apparently, it was a manufacturing site about 13,500 years ago. We continued to Horse Mountain, a source of obsidian.



Group overlooking Dietz site

Bill Cannon pointing to obsidian flakes



Group at Horse Mountain

On Thursday, July 18 and Friday, July 19 Dr. Pat O'Grady showed us sites that he had been or is excavating: Rimrock Draw Shelter, Sheep Mountain and Sage Hen Gap. An archaeological field school was in progress at Rimrock Draw Shelter. We were able to observe activity in two trenches. To date artifacts at Rimrock Draw Shelter have been dated to 18,300 BP. While in the area Eric DeMartini found a crescent on the surface.



Rim Rock Shelter trench

Group at Rim Rock Shelter



Eric's crescent find

Group at Sheep Mountain site

Sheep Mountain, an earlier excavated site was difficult to reach but offered a splendid view of the valley below. One could imagine tracking herds 20,000 years ago. Additional excavation is hopefully in the future. Finally, Pat showed us another observation point for game, Sage Hen Gap site near Burns. There 15 Clovis points among others had been found, dated to 17,400 BP. Denise Ruzicka was fortunate to find another Clovis point at this site.



Pat O'Grady with group at Sage Hen Gap



Clovis point found at Sage Hen Gap by Denise

On Saturday, July 20 Joe Wanamaker led 13 SAS members to Fort Rock Cave, near Fort Rock State Park. It was fascinating to have the depth of excavation illustrated with a marked walking stick At this cave during an excavation in 1938 sandals dated to about 10,000 years ago were found. Other similarly constructed sandals along with historical artifacts were observed in Harney County Historical Museum, Burns on July 19th.



Joe Wanamaker and group at Fort Rock Cave



Fort Rock Cave



cave



Joe illustrating excavation depths with stick 10,400 to 9,100 YPB dated footwear found in

### **MEMBER'S CORNER**

The Dirt – A podcast for all ages and backgrounds about archaeology, anthropology, and our shared human story http://thedirtpod.com

# **ARCHAEOLOGICAL REFERENCES**

The intent of this section is to summarize of recent archaeological articles. Some of these have been forwarded to SAS members.

### "The Atacama Complex"

"The Atacama desert in Chile is officially the oldest, driest desert in the world. It turns out to be the location of a vast sprawling prehistoric complex unlike any other in the Americas. Perhaps ironically, it is the historical lack of water in the region that has preserved the remains of this incredible discovery, which lies today, partially concealed beneath the silt of an ancient flood event."

#### http://www.ancient-

wisdom.com/chileatacama.htm?fbclid=IwAR29mPQCIweooTaIZvPlv0bc37XAKmbRRuz7zmA gPWpUL856GAVx61HkjZM

# "A late Middle Pleistocene Denisovan mandible from the Tibetan Plateau"

"Denisovans are members of a hominin group who are currently only known directly from fragmentary fossils, the genomes of which have been studied from a single site, Denisova Cave in Siberia. They are also known indirectly from their genetic legacy through gene flow into several low-altitude East Asian populations and high-altitude modern Tibetans. The lack of morphologically informative Denisovan fossils hinders their ability to connect geographically and temporally dispersed fossil hominins from Asia and to understand in a coherent manner their relation to recent Asian populations. This includes understanding the genetic adaptation of humans to the high-altitude Tibetan Plateau, which was inherited from the Denisovans.

This report addresses a Denisovan mandible identified by ancient protein analysis, found on the Tibetan Plateau in Baishiya Karst Cave, Xiahe, Gansu, China. They determined the mandible to be at least 160 thousand years old through U-series dating of an adhering carbonate matrix. The Xiahe specimen provides direct evidence of the Denisovans outside the Altai Mountains and its analysis unique insights into Denisovan mandibular and dental morphology. Their results indicate that archaic hominins occupied the Tibetan Plateau in the Middle Pleistocene epoch and successfully adapted to high-altitude hypoxic environments long before the regional arrival of modern *Homo sapiens*." (Fahu Chen *et al*, *Nature*, V. 569, 2019-5-16, pp. 409-412)

### "Phylogenetic evidence for Sino-Tibetan origin in northern China in the Late Neolithic"

"The study of language origin and divergence is important for understanding the history of human populations and their cultures. The Sino-Tibetan language family is the second largest in the world after Indo-European, and there is a long-running debate about its phylogeny and the time depth of its original divergence. This study performed a Bayesian phylogenetic analysis to examine the two competing hypotheses of the origin of the Sino-Tibetan language family: the 'northern-origin hypothesis' and the 'southwestern-origin hypotheses'. The northern-origin hypotheses states that the initial expansion of Sino-Tibetan languages occurred approximately

4,000-6,000 years before present (BP; taken as AD 1950) in the Yellow River basin of northern China, and that this expansion is associated with the development of the Yanshao and/or Majiayao Neolithic cultures. The southwestern origin hypotheses states that an early expansion of Sino-Tibetan languages occurred before 9,000 years BP from a region in southwest Sichuan province in China or in northeast India where a high diversity of Tibeto-Burman languages exist today. Consistent with the northern-origin hypotheses, the Bayesian phylogenetic analysis of 109 languages with 949 lexical root-meanings produced an estimated time depth for the divergence of Sino-Tibetan languages of approximately 4,200-7,800 years BP, with an average value of approximately 5,900 years BP." This supports the northern-origin hypothesis. "Their results are compatible with the archaeological records, and with the farming and language dispersal hypothesis of agricultural expansion in China."

"A rapidly increasing number of archaeological sites and sustained deforestation in the Yellow River basin indicate two rapid population increases that began at approximately 6,000 years BP and intensified at 5,000 - 4,500 BP. This timeline coincides with the time estimates for the divergence of Sino-Tibetan and Tibeto-Burman languages in the study. Moreover, the Sino-Tibetan language dispersal could be related to the geographical spread of millet agriculture after 6,000 years BP." (Menghan Zhang *et al.*, *Nature*, V. 569, 2019-5-2, pp. 112-115)

### "Ancient DNA reels original of the mysterious Philistines"

"Hard-won genetic clues from the bones of Philistines, a people known from the Old Testament for their battles with Israelites, have taken some of the mystery out of the Philistines' hazy origins.

DNA taken from the remains of 10 individuals buried at Ashkelon, an ancient Philistine port in Israel, displays molecular links to ancient and modern populations in the eastern Mediterranean, archaeogeneticist Michal Feldman and her colleagues report. The researchers managed to retrieve nuclear DNA, which is inherited from both parents, from 10 skeletons: three Late Bronze Age individuals buried at Ashkelon about 3,600 years ago; four early Iron Age infants interred beneath Ashkelon houses between about 3,400 and 3,150 years ago; and three later Iron Age individuals buried in a large cemetery next to Ashkelon's city wall roughly 3,100 years ago.

Ashkelon residents carried that southern European genetic signature between about 3,400 and 3,150 years ago, but it disappeared rapidly as mating increased with locals, the researchers conclude online in *Science Advances* (July 3).

The genetic evidence fits a scenario in which seafaring populations from southern Europe fled collapsing Bronze Age societies more than 3,000 years ago and settled along the eastern Mediterranean coast and were Philistines." (Bruce Bower, *Science News*, 2019-8-2, p. 16) (Ann Gibbons, *Science*, 2019-7-5, p 17)

#### "Neanderthal split came earlier"

"Humans and Neanderthals separated from a common ancestor more than 800,000 years agomuch earlier than many researchers had thought. That conclusion, published May 15 in *Science Advance*, stems from an analysis of early Neanderthal teeth found at a Spanish site called Sima de los Huesos. During hominid evolution, tooth crowns changed in size and shape at a steady rate, says Aida Gómez-Robles, a paleoanthropologist at University College London. The Neanderthal teeth, which date to about 430,000 years ago, could have evolved their distinctive shapes at a pace typical of other hominids only if Neanderthals originated between 800,000 and 1.2 million years ago, she finds. The study indicates that if the last common ancestor of humans and Neanderthals existed after about 1 million years ago, there wasn't enough time for Neanderthal teeth to change at the rate teeth do in other parts of the human family tree to end up looking like the Spanish finds.

Gómez-Robles calculated the rate at which eight ancient hominid species evolved changes in tooth shape. She used two possible evolutionary trees for the eight hominid species to estimate dental evolution rates. Aside from the Spanish Neanderthals and Stone age *H. sapiens*, teeth in her study came from African hominids dating to as early as 3.2 million years ago." (*Science News*, 2019-6-22, p. 8)

### "Knotted strings may record Inca taxes"

In 2013 while excavating an Inca outpost at Inkawasi, an imposing military and administrative site, Alejandro Chu and colleagues found 29 khipus, knotted strings. These khipus were covered by the remains of regional crops, mainly peanuts or chili peppers. Gary Urton, Harvard University archaeologist and Chu think they have untangled the meaning of the crop-topped cords. These khipus recorded a fixed amount, or tax, deducted from food that surrounded communities deposited at the state-run storage center, the researchers reported in the March *Latin American Antiquity*. This is the first evidence, that the Inca devised a way to tax goods.

In analyzing 100 presumed chili pepper and peanut deposited recorded on four khipus, the team found that fixed values on three of the khipus equaled about 2% of an average deposit's sized in units. Some chili pepper khipu contained a fixed value equal to about 11% of an average deposit." (Bruce Bower, *Science News*, 2019-7-22, p. 12)

### "Was our species in Europe 210,000 years ago

#### Skepticism greets starling conclusion from skull fragment found in Greek cave"

"In the late 1970s anthrolopologist exploring a cave in southern Greece found two hominin skull fossils. Now, a state-of-the-art analysis of their shape (together with new dates) suggest one skull might represent our own species living more than 200,000 years ago. The finding, reported in *Nature* this week, would make this the oldest known *Homo sapiens* fossil found in Europe, by at least 150,000 years.

The Apidima 1 skull fragment was more complete on one side than the other, and Apidima 2's skull and face were distorted. So Katherina Harvati, a paleoanthropologist at the University of Tübingen in Germany began by figuring out what they originally looked like. She and her team scanned both fossils with x-ray and created 3D reconstructions. They digitally broke Apidima 2 into 66 bone fragments and painstakingly reassemble them into what was likely their original shape. The result showed the face of a typical Neanderthal, jutting from the skull and complete with protruding brow ridges. The ratio of uranium to its decay products in the bones revealed an age of about 170,000 years old. For Apidima 1, Harvati and her team created a mirror image of the fossil and stitched the two together to see the full shape of the face of the skull. It was short and round, like the skull of *H. sapiens*, and lacked a ridge and furrow that Neanderthal skulls typically have at the back. Harvati and her team concluded that the skull most likely belonged to *H. sapiens*." (Lizzie Wade, *Science*, 2019-7-12, p 111) (Katerina Harvati *et al., Nature*, V 571, pp, 500-509)

### "Late Pleistocene exploration and settlement of the Americans by modern humans"

"The study of the first Americans made slow but steady progress during the 20<sup>th</sup> century. Initially, many sites proposed to predate Clovis did not stand up to scrutiny, having issues with geological context, dating, or even archaeological evidence itself. However, the last 30 years have seen an increasing number of sites providing evidence of early occupation that cannot be dismissed. These sites show that people were present and successfully occupying different area of North and South American between ~15.5 and ~14 ka ago, thereby leading the way to a new understanding of the first Americans. In the last 15 years, genetic information from contemporary Indigenous Americans and the remains of ancient individuals from Asia and the Americas has transformed our understanding of the ancestry of the first Americans. These genomic studies have conclusively shown that the first Americans were the result of ancestral East Asian and northern Eurasian admixture. This founder population made its way to eastern Beringia and after additional population splits travel south of the continental ice sheets covering Canada sometime between ~17.5 and ~14.6 ka ago." (Michael R. Waters, *Science*, 2019-7-12, p 138)

### "Mountain high: oldest clear signs of pot use

#### The levels in braziers show psychoactive marijuana use along ancient Silk Road"

A study, published in *Science Advances*, by a team led by archaeologists Yang Yimin and Ren Meng of Chinese Academy of Sciences in Beijing reports clear physical evidence that mourners burned cannabis on a remote mountain plateau in Central Asia some 2500 years ago. "Cannabis, also known as hemp or marijuana, evolved about 28 million years ago on the eastern Tibetan Plateau, according to a pollen study published in May. The plant which is a close relative of the common hop found in beer still grows wild across Central Asia. More than 4000 years ago, Chinese farmers began to grow it for oil and for fiber to make rope, clothing, and paper.

Pinpointing when people began to take advantage of hemp's psychoactive properties has proved tricky. Archaeologists had made claims of ritual cannabis burning in Central Asian sites as far back as 5000 years ago. But new analyses of these plant remains suggest that early cannabis strains had low levels of tetrahyrocannabinol (THC), the plant's most powerful psychoactive component and so lacked mind-altering properties.

The cannabis burned 2500 years ago at the Jirzankal cemetery, 3000 meters high in the Pamir Mountains in far western China was different. Excavations there have uncovered skeletons and wooden plates, bowls and Chinese harps, as well as wooden braziers that held burning material. All are typical of the Sogdians, a people of western China and Tajikistan who generally followed the Persian faith of Zoroastrianism, which later celebrated the mind-expanding properties of cannabis in sacred texts. The wooden braziers were concentrated in elite tombs dated at about 500 BCE. Yang's and Ren's team ground bits of brazier into powder and applied gas chromatography and mass spectrometry to identify chemical compounds left behind. They found unusually high levels of THC compared with typical wild cannabis. The cannabis was apparently burned in an enclosed space, so mourners almost certainly inhaled the THC-laced fumes." (Andrew Lawler, *Science*, 2019-6-14, p 1018)