

# Wouter & Michael's Solo Newsletter

## Monday 13 Dec 2021

### What's On

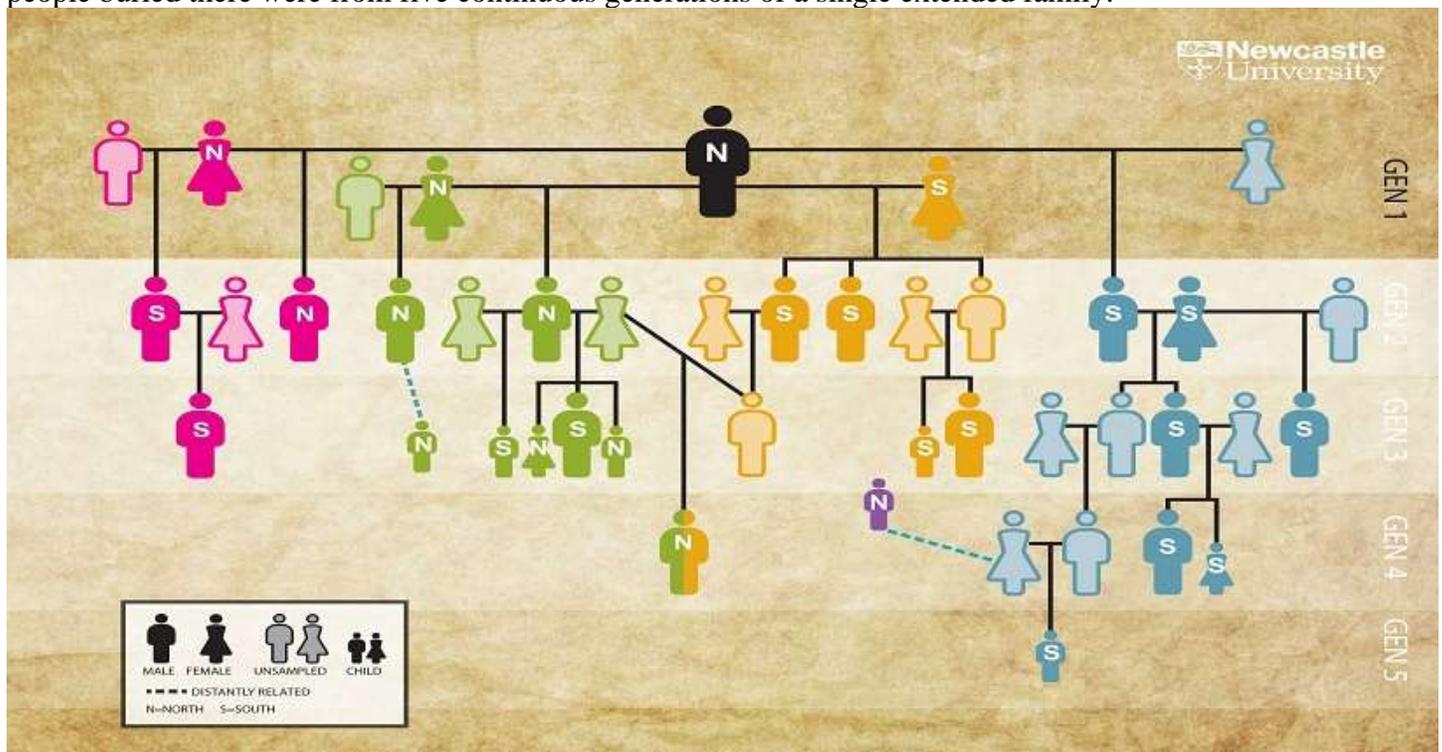
#### Coming Up

Sat 25 Dec Christmas Day  
Sat 1 Jan New Years Day

### The News This Week

#### The World's Oldest Family Tree

Analysis of ancient DNA from one of the best-preserved Neolithic tombs in Britain has revealed that most of the people buried there were from five continuous generations of a single extended family.



The analysis revealed five continuous generations of a single extended family

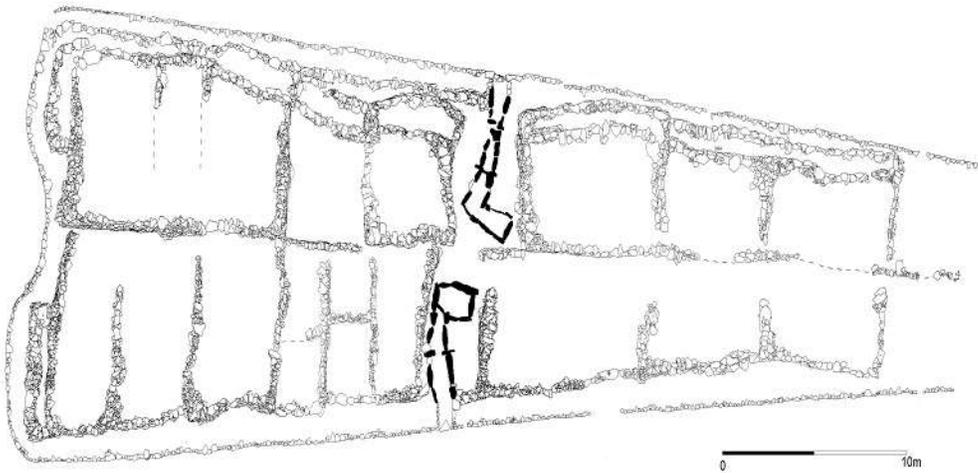
This study gives us an unprecedented insight into kinship in a Neolithic community. The separate chambered areas suggests that the architectural layout of other Neolithic tombs might tell us about how kinship operated in those tombs.

By analysing DNA extracted from the bones and teeth of 35 individuals entombed at Hazleton North long cairn in the Cotswolds-Severn region, the research team was able to detect that 27 of them were close biological relatives. The group lived approximately 5700 years ago – around 3700-3600 BC - around 100 years after farming had been introduced to Britain.

Published in *Nature*, it is the first study to reveal in such detail how prehistoric families were structured, and the international team of archaeologists and geneticists say that the results provide new insights into kinship and burial practices in Neolithic times.

The research team – which included archaeologists from Newcastle University and geneticists from the University of the Basque Country, University of Vienna and Harvard University - show that most of those buried in the tomb were descended from four women who had all had children with the same man.

The cairn at Hazleton North included two L-shaped chambered areas which were located north and south of the main 'spine' of the linear structure. After they had died, individuals were buried inside these two chambered areas and the research findings indicate that men were generally buried with their father and brothers, suggesting that descent was patrilineal with later generations buried at the tomb connected to the first generation entirely through male relatives.



While two of the daughters of the lineage who died in childhood were buried in the tomb, the complete absence of adult daughters suggests that their remains were placed either in the tombs of male partners with whom they had children, or elsewhere.

Plan showing the layout of the interior of the cairn at Hazleton North. The North and South L-shaped chambered areas are outlined in black.

Although the right to use the tomb ran through patrilineal ties, the choice of whether individuals were buried in the north or south chambered area initially depended on the first-generation woman from whom they were descended, suggesting that these first-generation women were socially significant in the memories of this community.

Dr Chris Fowler of Newcastle University, the first author and lead archaeologist of the study, said: "This study gives us an unprecedented insight into kinship in a Neolithic community. The tomb at Hazleton North has two separate chambered areas, one accessed via a northern entrance and the other from a southern entrance, and just one extraordinary finding is that initially each of the two halves of the tomb were used to place the remains of the dead from one of two branches of the same family. This is of wider importance because it suggests that the architectural layout of other Neolithic tombs might tell us about how kinship operated at those tombs."

There are also indications that 'stepsons' were adopted into the lineage, the researchers say - males whose mother was buried in the tomb but not their biological father, and whose mother had also had children with a male from the patriline.

Image showing what the exterior of the cairn at Hazleton North may have looked like.



Additionally, the team found no evidence that another eight individuals were biological relatives of those in the family tree, which might further suggest that biological relatedness was not the only criterion for inclusion. However, three of these were women and it is possible that they could have had a partner in the tomb but either did not have any children or had daughters who reached adulthood and left the community so are absent from the tomb.

Iñigo Olalde of the University of the Basque Country and Ikerbasque, the lead geneticist for the study and co-first author, said: “The excellent DNA preservation at the tomb and the use of the latest technologies in ancient DNA recovery and analysis allowed us to uncover the oldest family tree ever reconstructed and analyse it to understand something profound about the social structure of these ancient groups.”

David Reich at Harvard University, whose laboratory led the ancient DNA generation, added: “This study reflects what I think is the future of ancient DNA: one in which archaeologists are able to apply ancient DNA analysis at sufficiently high resolution to address the questions that truly matter to archaeologists.” Ron Pinhasi, of the University of Vienna, said: “It was difficult to imagine just a few years ago that we would ever know about Neolithic kinship structures. But this is just the beginning and no doubt there is a lot more to be discovered from other sites in Britain, Atlantic France, and other regions.”

## Solving a Nitty Problem

Human DNA can be extracted from the 'cement' head lice used to glue their eggs to hairs thousands of years ago, scientists have found, which could provide an important new window into the past.



In a new study, scientists for the first time recovered DNA from cement on hairs taken from mummified remains that date back 1,500-2,000 years. This is possible because skin cells from the scalp become encased in the cement produced by female lice as they attach eggs, known as nits, to the hair.

A mummified adult man of the Ansilta culture, from the Andes of San Juan, Argentina, dating back approx 2,000 years.

that recovered through other methods - has revealed clues about pre-Columbian human migration patterns within South America. This method could allow many more unique samples to be studied from human remains where bone and tooth samples are unavailable.

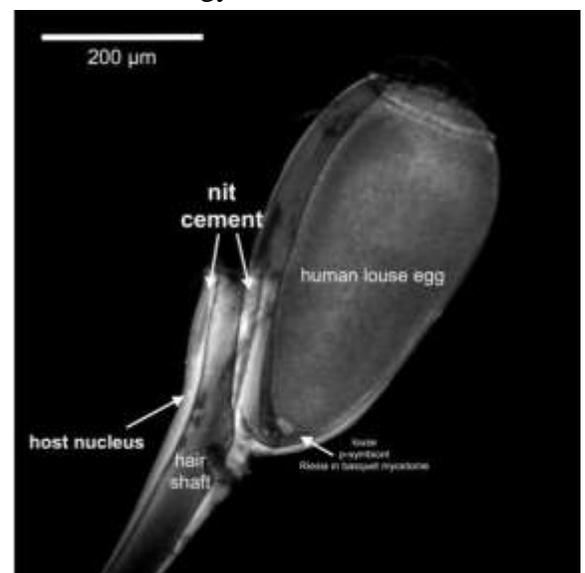
Analysis of this newly-recovered ancient DNA - which was of better quality than

The research was led by the University of Reading, working in collaboration with the National University of San Juan, Argentina; Bangor University, Wales; the Oxford University Museum of Natural History; and the University of Copenhagen, Denmark. It is published in the journal *Molecular Biology and Evolution*.

Dr. Alejandra Perotti, Associate Professor in Invertebrate Biology at the University of Reading, who led the research, said: "Like the fictional story of mosquitos encased in amber in the film *Jurassic Park*, carrying the DNA of the dinosaur host, we have shown that our genetic information can be preserved by the sticky substance produced by headlice on our hair. In addition to genetics, lice biology can provide valuable clues about how people lived and died thousands of years ago.

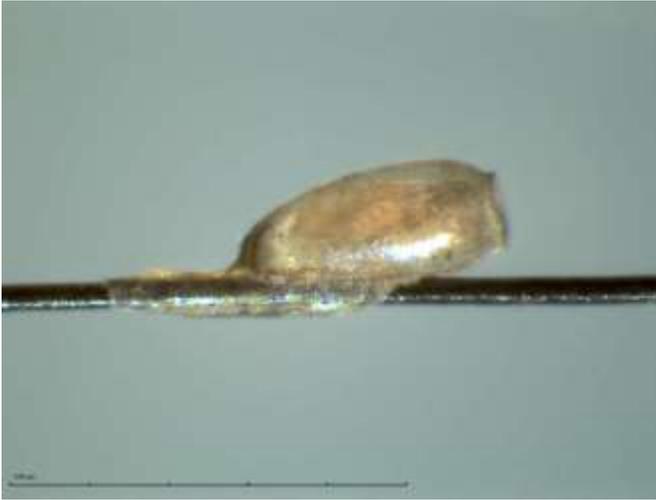
Nit of human louse showing the cement covering the egg shell and hair shaft, including a human cell (nucleus, arrow). Fluorescence microphotograph in the UV light, specimen prepared with a fluorescence dye that binds to DNA (DAPI). Nuclei of cells and bacteria, *Riesia* -primary symbiotic bacterium of lice, show signal (arrows).

"Demand for DNA samples from ancient human remains has grown in recent years as we seek to understand migration and



diversity in ancient human populations. Headlice have accompanied humans throughout their entire existence, so this new method could open the door to a goldmine of information about our ancestors, while preserving unique specimens."

Until now, ancient DNA has preferably been extracted from dense bone from the skull or from inside teeth, as these provide the best quality samples. However, skull and teeth remains are not always available, as it can be unethical or against cultural beliefs to take samples from indigenous early remains, and due to the severe damage destructive sampling causes to the specimens which compromise future scientific analysis. Recovering DNA from the cement delivered by lice is therefore a solution to the problem, especially as nits are commonly found on the hair and clothes of well preserved and mummified humans.



The research team extracted DNA from nit cement of specimens collected from a number of mummified remains from Argentina. The mummies were of people who 1,500-2,000 years ago reached the Andes mountains of the San Juan province, Central West Argentina. The team also studied ancient nits on human hair used in a textile from Chile and nits from a shrunken head originating from the ancient Jivaroan people of Amazonian Ecuador.

A human hair with a nit attached to it with 'cement'.

The samples used for DNA studies of nit cement were found to contain the same concentration of DNA as a tooth, double that of bone remains, and four times that recovered

from blood inside far more recent lice specimens.

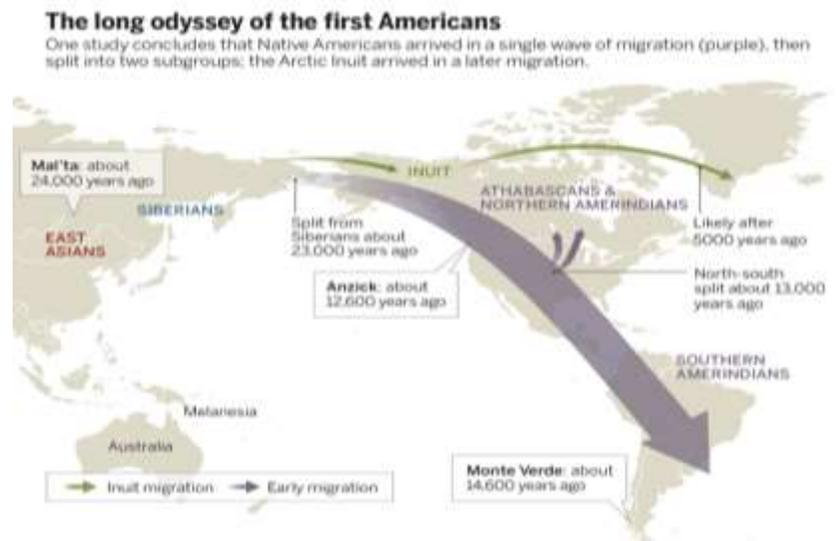
Dr. Mikkel Winther Pedersen from the GLOBE institute at the University of Copenhagen, and first author, said: "The high amount of DNA yield from these nit cements really came as a surprise to us and it was striking to me that such small amounts could still give us all this information about who these people were, and how the lice related to other lice species but also giving us hints to possible viral diseases. "There is a hunt out for alternative sources of ancient human DNA and nit cement might be one of those alternatives. I believe that future studies are needed before we really unravel this potential."

As well as the DNA analysis, scientists are also able to draw conclusions about a person and the conditions in which they lived from the position of the nits on their hair and from the length of the cement tubes. Their health and even cause of death can be indicated by the interpretation of the biology of the nits. Analysis of the recovered DNA from nit-cement revealed and confirmed the sex of each of the human hosts

Migration routes of the first native Americans

A genetic link between three of the mummies and humans in Amazonia 2,000 years ago. shows for the first time that the original

population of the San Juan province migrated from the land and rainforests of the Amazon in the North of the continent (south of current Venezuela and Colombia). All ancient human remains studied belong to the founding mitochondrial lineages in South America.



The earliest direct evidence of Merkel cell Polymavirus was found in the DNA trapped in nit cement from one of the mummies. The virus, discovered in 2008, is shed by healthy human skin and can on rare occasions get into the body and cause skin cancer. The discovery opens up the possibility that head lice could spread the virus.

The mummies were all likely exposed to extremely cold temperatures when they died, which could have been a factor in their deaths. This was indicated by the very small gap between the nits and scalp on the hairs shaft. Lice rely on the host's head heat to keep their eggs warm and so lay them closer to the scalp in cold environments. Shorter cement tubes on the hair correlated with older and/or less preserved specimens, due to the cement degrading over time.

## **SEA Matters**

### **SEA Christmas Party**

Last Sunday saw many in Solo enjoying the SEA annual Christmas party at Coconuts Restaurant. The children particularly welcomed Santa, and the presents that they received. Johannes made a magnificent gingerbread house in the shape of a traditional Toraja house, which unfortunately he smashed to pieces before a lot of people saw it.



Santa with the BBC – Arnould, Ruben, Santa Ron, Edo and Guus



Charloote and Djarot pose with Santa



Christmas gingerbread cookies



Santa and his elves



The Toraja gingerbread house

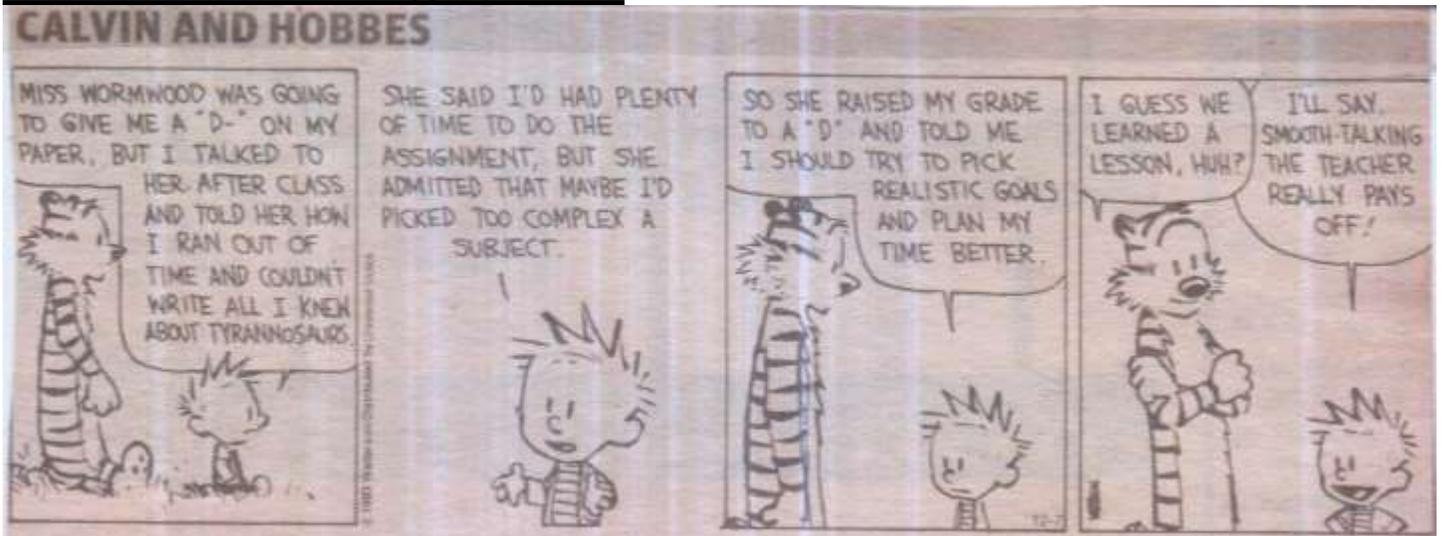
Many thanks to our presentent Big Don for almost single handedly making sure the event was such a success.

## Remember When?



A trip down nostalgia lane – SEA visits the underground river in Gunung Kidul

## Rewards For Getting This Far



**Quote:** “Like what talents you possess: the woods would be very silent if no birds sang there except those that sang best: - . American author & diplomat Henry Van Dyke (1852-1933)

**Thought for the week:** I’m not shy. I’m holding back my awesomeness so that you don’t get intimidated.

Henry Van Dyke



## Word for Word



## FRED BASSET



Contact: Michael or Wouter  
Hp: 0815 4841 8500  
Email: [michael@armadaorient.com](mailto:michael@armadaorient.com)