

SHORT SCIENCE

Mushroom suppresses prostate cancer

A senior researcher from Hong Kong has shown that a compound taken from the *lingzhi* mushroom widely used in Asia for its medicinal benefits is highly effective in suppressing prostate tumour development in mice. The research was led by Dr Patrick Ling of the Queensland University of Technology in Brisbane in collaboration with researchers from the University of Hong Kong. The team found that a compound called polysaccharopeptide (PSP), extracted from the "turkey tail" mushroom, targets prostate cancer stem cells and suppresses tumour formation in mice. The discovery



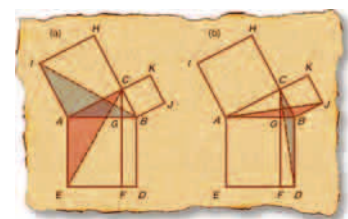
Lingzhi mushroom

has been published in the international science journal *PLoS ONE*. Ling said: "We're seeing 100 per cent of this tumour prevented from developing with PSP... we did not see any side effects."

'No more than 70' original North America settlers

A new study of DNA patterns around the world has concluded that North America was originally populated by no more than 70 people, reports the *Daily Mail*. It has been known that around 14,000 years ago, a group of humans crossed a land bridge that connected what is now Siberia with Alaska. But the new research shows how small that group was, venturing into a vast continent from Asia during the last Ice Age. Up to now, DNA analyses looked at a particular gene, using estimates and modelling assumptions on population sizes over time. But the new study, by Professor Jody Hey of Rutgers University in the US, looked at genomic changes in relation to population expansion over time. Archaeological evidence supports his calculation that the initial settlement of North America occurred between 12,000 and 14,000 years ago.

Amazon tribe tests show geometry is universal



Geometry understood universally.

Elementary geometry is an intuitive subject that is easy to grasp even in the absence of formal training, a new study finds. *The New York Times* reports. Researchers posed questions in Euclidean geometry to adults and children from the Mundurucu community, an isolated indigenous group in the Amazon. Despite having no formal education, the Mundurucu were able to quickly grasp concepts in planar geometry relating to points, lines and triangles. The study appears in the current issue of *Proceedings of the National Academy of Sciences*. The Mundurucu were able to correctly answer questions like, "Can a line be made to cross two other parallel-looking lines?" and "Can a line cross one of two parallel-looking lines but not the other?"

Their aptitude was in fact similar to that of US adults and French children who did have formal training in geometry, said Veronique Izard, a psychologist at the Descartes campus of the University of Paris and the study's lead author. The children were of the same age as the Mundurucu children—from 7 to 13. "This means Euclidean geometry is probably universal to all human beings," she said.

Electron's shape is very round, experiment shows

After three months of experiments in a basement laboratory in London, scientists can confirm that the electron is very, very round, *The Guardian* reports. In the most exquisite measurements yet, researchers declared the particle to be a perfect sphere to within one billionth of a billionth of a billionth of a centimetre. Were the electron scaled up to the size of the solar system, any deviation from its roundness would be smaller than the width of a human hair, the team said in a report published in *Nature*.

LINGUISTICS

Voices out of Africa?



William Wang says there may be more to the origin of the world's multitude of languages than a recent study suggests

Do all our languages trace back to Africa? A new study suggests they do—but it may not be the last word.

In a large statistical study of the world's languages, New Zealand biologist Quentin Atkinson looked at phonetic inventories from more than 500 tongues and found evidence that we all speak languages that have their origin in Africa.

As described in a recent issue of *Science*, Atkinson took phonetic inventories from The World Atlas of Language Structures Online. This consists of three sets: consonants and vowels (that are universal in all languages), and tones (that occur in only some languages, such as Chinese).

The simple assumption at the heart of his statistical model is that as groups of people successively move away from the parent population, their phonetic inventories get successively smaller.

The consonants, vowels and tones became fewer as the speakers moved further away from their point of origin—Africa—across the millennia. Africa was inferred as the point of origin by a statistical model that may be too technical to go into here.

There is a growing body of scientific opinion that anatomically modern humans all originated in Africa. It would be a neat caper to this hypothesis if the same could be shown about the migration of languages across the continents.

The out-of-Africa idea is built upon two sets of data: fossils unearthed there that date back more than 150,000 years, and DNA analysis of modern populations in many parts of the world.

It's also interesting to note that a gene involved in speech production, the FOXP2, emerged about 150,000 years ago as well.

However, there are complica-

tions. Certain anatomical features in modern Chinese populations, such as shovel shaped incisors, seem to trace back to fossils of Peking Man, closer to 500,000 years old. This indicates at least some degree of contribution to the gene pool for China going back quite a bit further than the out-of-African hypothesis.

And along the same line of thought, fossil discoveries at Zhirendong in Guangxi (广西), reported in the *Proceedings of the National Academy of Sciences* in November 2010, are almost as old as the African fossils.

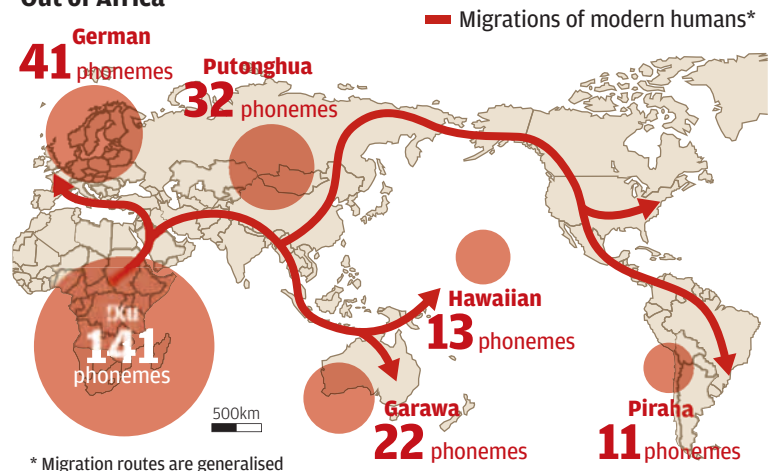
Thanks to work on DNA extracted from the fossils of Neanderthals, we now know that ancient humans interbred with these creatures that became extinct 30,000 years ago. There is no reason to doubt that genes from other species also entered our gene pool at various times.

The more likely scenario is that modern humans emerged at several

different times and several distinct ones during Paleolithic times, not just once 150,000 years ago in Africa. Much of our commonality as a species is probably due to contact and sharing of genetic materials across the many millennia.

The language story is, of course,

Out of Africa



* Migration routes are generalised. A study found that the dialects with the most phonemes, or distinct units of sound, are spoken in Africa, while those with the fewest phonemes are spoken in South America and the South Pacific. The research suggests that language originated in Africa, and spread out through migrations

Source: Quentin Atkinson, University of Auckland

150,000
The approximate number years ago when the human form of the FOXP2 gene - sometimes known as the language gene - appeared

The emergence of language was most likely polygenetic, arising among populations at different times

English, Putonghua and other Chinese dialects, and even to Southeast Asian languages if the family hires domestic help.

Such diversity of influences takes an extreme form in situations where the child grows up in an environment where there is no stable model as a guide, but filled with several languages from which he or she picks up bits and pieces.

Think of the sugarcane plantations in Hawaii in the early 20th century, where labourers were imported from China, Japan, Korea and the Philippines, and housed together in close quarters. It would be hard to predict what language a child raised there would speak. Atkinson's hypothesis doesn't seem to apply to

China. The Chinese language can be traced back well over 3,000 years to the Central Plains in the north, where its earliest written specimens, the Oracle Bone Inscriptions, were unearthed. As this language extended southward over time, it is not at all clear that its phoneme inventory got reduced.

To take just one example from the time domain, the language of Beijing in the north has four tones, while the Cantonese of Hong Kong has nine. The inventory here has more than doubled!

To be sure, Atkinson's data are of modern languages distributed across continents, and his conclusion is on a global scale, not local as in the Chinese case.

Nonetheless the inconsistency here between the local case and his global conclusion should stimulate some interesting research that hopefully will not only resolve this inconsistency but deepen our understanding of language evolution.

No doubt the coming decades will bring us closer still to answering the eternal questions of our origins. William Wang, a linguist, is the Wei Lun Research Professor at the electronic engineering department of the Chinese University of Hong Kong

SOCIAL PSYCHOLOGY

Modesty's value differs East to West

Research on students from China and the US suggests cultural norms colour our attitude on self-effacement

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Being modest can boost your self-esteem if you hail from East Asia. But for people in Western societies, not so much. That, at least, is what professor Cai Huajian of the Chinese Academy of Sciences in Beijing and an international research team have found.

"When Chinese behave in a modest way, they view themselves higher or feel better deep inside their hearts," he said in an interview with the *Sunday China Morning Post*.

This is because of the collectivistic nature of East Asian cultures, especially China.

Self-denigration for the purpose of self-enhancement may appear contradictory in Western societies. But in a new study, Cai, a psychologist, and co-researchers argue it makes sense when put into the context of a culture that places a premium on fitting in with others. This collective modesty has baffled Western

scholars such as professor Steven Heine, director of the Institute for Asian Studies at Florida International University.

"[The scholars] think that Easterners lack the need for high self-esteem because they need to be modest," Cai said.

Cai, along with seven other academics from China, Britain and the United States, aimed to disprove what Heine believes by showing that rather than eliminating the need for it, modesty in fact increases self-esteem in Eastern cultures. They carried out three separate samplings to measure the self-esteem levels of 396 mainland and American university students. Participants undertook a series of psychological and personality tests to determine their levels of modesty, internal self-esteem (ISE), and external self-esteem (ESE).

The findings were published in the latest issue of the international journal *Social Psychological and Personality Science*.

ISE refers to how people view

themselves implicitly or "deep down". ESE has to do with how people consciously view themselves, such as when they agree highly with a question like: "I feel I am a person of worth, at least on an equal basis with others."

The research team found that to act modestly for Chinese participants decreased ESE while increasing ISE. However, for the Americans, who do not live in a culture that placed the same importance on self-effacement, levels of ISE were not affected by acting modestly.

To measure modesty, participants were asked to respond to state-

ments such as "bragging about oneself is always socially inappropriate".

Other questions or statements include: "My friends will tell you that, when I accomplish something, I'm not shy about tooting my own horn."

"How much do you like your name?"

"When someone asks me to describe a recent success, I tend to downplay what I've accomplished."

The 396 university students from China and the US had to respond to these and similar questions and statements by Cai and his research team to gauge their self-worth and levels of modesty.

One measurement of modesty was for participants to place themselves on a 7-point scale (1 meant strongly disagree, 7 strongly agree) in response to statements such as the one about bragging about one's accomplishments.

Another was for the students to respond on a 9-point scale. The higher the score, the higher their "internal self-esteem".

Cultural psychologists such as Dr Jochen Gebauer believe that genuinely liking one's full name or initials makes one less prone to depression and anxiety.

When Chinese behave in a modest way, they view themselves higher or feel better deep inside their hearts

CAI HUAJIAN OF THE ACADEMY OF SCIENCES



H.H. ACHARYA SUDHANSHUJI MAHARAJ'S PROGRAMME IN HONG KONG (DISCOURSES IN HINDI)

Sun 29th May 2011
Subject: 1) Does God exist? How to experience and benefit his divinity?

Venue: Hindu Temple, Happy Valley, Hong Kong
Time: 6:30 P.M.

Buses will depart at 6:00 P.M. from Far East Mansion, Middle Road, TST, Kowloon, To Hong Kong.

Mon 30th May 2011
Subject: 1) Know yourself.

Tue 31st May 2011
Subject: 1) Message of Gita for modern times.

Wed 1st June 2011
Subject: 1) What is true wealth and happiness and how to achieve it?

Venue: Crystal Ball Room, Holiday Inn, Golden Mile, Kowloon.
Time: 7:00 P.M.

(Please be seated 15 minutes before Programme Starts)

LANGAR WILL BE SERVED AFTER THE PROGRAMME AT THE TEMPLE

For Further information, please call 2170 5599 or 9633 4360