

CONTENTS

NOTICES	2
PUBLICATION ALERTS	2
SCIENCE NEWS – Ancient tsunami heaved 700-ton boulders over island cliffs	2
SCIENCE NEWS – First DNA extracted from an ancient African shows widespread mixing with Eurasians.....	2
SCIENCE NEWS – Homosexuality may be caused by chemical modifications to DNA	3
NATURE NEWS – Mega-tsunami	3
NATURE NEWS – Homo naledi	3
NATURE NEWS – Brain work	3
NATURE NEWS – Ancient genome	3
SCIAM NEWS – Locating the Brain's Funny Bone	3
SCINEWS.COM – Geologists Find Evidence of Ancient Megatsunami in Cape Verde Islands	3
SCINEWS.COM – Studies Suggest Homo naledi Walked Upright and Climbed Trees	3
SCIENCE DAILY – Chimpanzees shed light on origins of human walking.....	4
SCIENCE DAILY – Understanding others' thoughts enables young kids to lie	4
SCIENCE DAILY – Foot fossils of human relative illustrate evolutionary 'messiness' of bipedal walking.....	4
SCIENCE DAILY – Young male chimpanzees play more with objects, but do not become better tool users	4
SCIENCE DAILY – Remote sensing technology used to map habitat of monkey with hominid-like behavior	4
SCIENCE DAILY – Ravens cooperate, but not with just anyone.....	4
SCIENCE DAILY – New clues about how humans become tool users	4
SCIENCE DAILY – Ancient genome from Africa sequenced for the first time	4
SCIENCE DAILY – Difficulty processing speech may be an effect of dyslexia, not a cause	4
SCIENCE DAILY – More 'global' individuals contribute less	4
PUBLICATIONS	5
Proceedings of the Royal Society B – 7 October 2015	5
PAPERS	5
KAROLINA MARCINIAK, PETER W. DICKE & PETER THEIR – Monkeys head-gaze following is fast, precise and not fully suppressible.....	5
ULRIKA CANDOLIN & IINA TUKIAINEN – The sexual selection paradigm: have we overlooked other mechanisms in the evolution of male ornaments?.....	5
ATTILA SZOLNOKI & MATJAŽ PERC – Antisocial pool rewarding does not deter public cooperation	5
Philosophical Transactions of the Royal Society B – No issue this week.....	5
Royal Society Biology Letters – No issue this week.....	5
Royal Society Open Science – No issue this week	5
New Scientist – 10 October 2015	6
NEWS	6
Why resurgence of therapy that unearths 'lost' memories is risky	6
Science – 10 October 2015.....	6
NEWS	6
Can epigenetics explain homosexuality puzzle?	6
Prehistoric Eurasians streamed into Africa, genome shows.....	6
Science Express – 9 October 2015.....	6
PAPERS	6
M. GALLEGO LLORENTE et al – Ancient Ethiopian genome reveals extensive Eurasian admixture throughout the African continent	6
Science Advances – 9 October 2015	6
NOTHING OF INTEREST	6
Nature – 8 October 2015.....	6
NEWS	6
Walking with chimps	6
ARTICLES	6
PAPERS	6
SUSANNE SCHINDLER et al – Sex-specific demography and generalization of the Trivers–Willard theory	6

Nature Communications – 7 October 2015.....	7
PAPERS	7
TRACY L. KIVELL et al with LEE R. BERGER – The hand of Homo naledi	7
W. E. H. HARCOURT-SMITH ET AL WITH LEE R. BERGER – The foot of Homo naledi	7
NATHAN E. THOMPSON et al – Surprising trunk rotational capabilities in chimpanzees and implications for bipedal walking proficiency in early hominins	7
Nature Scientific Reports – 7 October 2015.....	7
PAPERS	7
GIANNI BARCACCIA et al – Uncovering the sources of DNA found on the Turin Shroud	7
PETER R. BLAKE et al with FELIX WARNEKEN – The shadow of the future promotes cooperation in a repeated prisoner’s dilemma for children	8
KEKE HUANG et al – Understanding Cooperative Behavior Based on the Coevolution of Game Strategy and Link Weight	8
LUO-LUO JIANG, WEN-JING LI & ZHEN WANG – Multiple effect of social influence on cooperation in interdependent network games.....	8
STEVEN D. EMSLIE et al – Chronic mercury exposure in Late Neolithic/Chalcolithic populations in Portugal from the cultural use of cinnabar.....	9
PLoS One – 11 October 2015.....	9
PAPERS	9
KATHELIJNE KOOPS et al with CAREL P. VAN SCHAIK – Sex Differences in Object Manipulation in Wild Immature Chimpanzees (Pan troglodytes schweinfurthii) and Bonobos (Pan paniscus): Preparation for Tool Use?.....	9
GERALD CARTER & LAUREN LEFFER – Social Grooming in Bats: Are Vampire Bats Exceptional?	9
JUSTIN W. ADAMS et al – Surface Model and Tomographic Archive of Fossil Primate and Other Mammal Holotype and Paratype Specimens of the Ditsong National Museum of Natural History, Pretoria, South Africa	9
PLoS Biology – 6 October 2015	10
NOTHING OF INTEREST	10
PLoS Genetics – 8 October 2015	10
NOTHING OF INTEREST	10
PNAS – 7 October 2015	10
PAPERS	10
NAOMI E. LEVIN et al with YOHANNES HAILE-SELASSIE – Dietary change among hominins and cercopithecids in Ethiopia during the early Pliocene	10
CARRIN M. HALFFMAN et al – Early human use of anadromous salmon in North America at 11,500 y ago.....	10
Frontiers in Psychology – 9 October 2015.....	10
NOTHING OF INTEREST	10
Frontiers in Neuroscience – 9 October 2015.....	10
NOTHING OF INTEREST	10
PeerJ – 7 October 2015	10
PAPERS	10
MICHELLE S.M. DRAPEAU – Metacarpal torsion in apes, humans, and early Australopithecus: implications for manipulatory abilities	10
To unsubscribe from the EAORC Bulletin	11

NOTICES

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.

If there is a journal you feel I should be tracking on a regular basis, do let me know.

And if you have any other ideas for extending the “EAORC experience”, please contact me.

SCIENCE NEWS – Ancient tsunami heaved 700-ton boulders over island cliffs

An ancient landslide on an island volcano is providing a worrisome lesson about tsunamis, thanks to some geologic sleuthing. According to a new study in the Cape Verde archipelago, a landslide triggered a tsunami powerful enough to push massive boulders on a neighboring island onto a high plateau. The scientists warn that although such events are extremely rare, they could also be devastating if they hit a populated coastal area.

http://news.sciencemag.org/asiapacific/2015/10/ancient-volcanic-collapse-likely-triggered-270-meter-high-tsunami?utm_campaign=email-news-latest

SCIENCE NEWS – First DNA extracted from an ancient African shows widespread mixing with Eurasians

Africa is the birthplace of our species and the source of ancient migrations that spanned the globe. But it has missed out on a revolution in understanding human origins: the study of ancient DNA. Although researchers have managed to sequence the genomes of Neandertals from Europe, prehistoric herders from Asia, and Paleoindians from the Americas, Africa’s hot and humid climate has left little ancient DNA intact for scientists to extract. As a result, “Africa was left out of the party,” says anthropological geneticist Jason Hodgson of Imperial College London.

[http://news.sciencemag.org/evolution/2015/10/first-dna-extracted-ancient-african-skeleton-shows-widespread-mixing-
eurasians?utm_campaign=email-news-latest](http://news.sciencemag.org/evolution/2015/10/first-dna-extracted-ancient-african-skeleton-shows-widespread-mixing-eurasians?utm_campaign=email-news-latest)

SCIENCE NEWS – Homosexuality may be caused by chemical modifications to DNA

A new study of male twins, scheduled for presentation at the annual meeting of the American Society of Human Genetics (ASHG) in Baltimore, Maryland, today, could help explain that paradox. It finds that epigenetic effects, chemical modifications of the human genome that alter gene activity without changing the DNA sequence, may have a major influence on sexual orientation.

[http://news.sciencemag.org/biology/2015/10/homosexuality-may-be-caused-chemical-modifications-
dna?utm_campaign=email-news-latest](http://news.sciencemag.org/biology/2015/10/homosexuality-may-be-caused-chemical-modifications-dna?utm_campaign=email-news-latest)

NATURE NEWS – Mega-tsunami

When the eastern flank of a Cape Verde volcano splashed into the sea 73,000 years ago, it generated an enormous wave that rose to 170 metres of height before it crashed into a nearby island, geophysicists have discovered. The mega-tsunami is one of the largest in the geological record.

[Nature news story](#)
[Science Advances paper](#)

NATURE NEWS – Homo naledi

The human ancestor *Homo naledi* was able to move efficiently on the ground but also adept at climbing in trees ([BBC](#); [Nature Communications paper 1](#); [Nature Communications paper 2](#)). A crowd-sourced archaeology effort identified the previously unknown early human ancestor from a collection of more than 1,500 ancient bones and teeth unearthed in an African cave.

[Nature news story](#)

NATURE NEWS – Brain work

A controversial European neuroscience project that aims to simulate the human brain in a supercomputer has published its first major result: a digital imitation of circuitry in a sandgrain-sized chunk of rat brain. The work models some 31,000 virtual brain cells connected by roughly 37 million synapses.

{Only 99,999,969,000 cells and 99,999,963,000,000 synapses to go}

[Nature news story](#)
[Cell paper](#)

NATURE NEWS – Ancient genome

A 4,500-year-old skeleton from a cave in Ethiopia has produced Africa's first ancient human genome. The man's DNA suggests that Middle Eastern farmers migrated into Africa several thousand years ago, leaving traces of their Eurasian ancestry in the genomes of many modern-day Africans.

[Nature news story](#)
[Science paper](#)

SCIAM NEWS – Locating the Brain's Funny Bone

By Dwayne Godwin and Jorge Cham

"Getting" a joke and cracking up have separate addresses

http://www.scientificamerican.com/article/locating-the-brain-s-funny-bone/?WT.mc_id=SA_MB_20151007

SCINEWS.COM – Geologists Find Evidence of Ancient Megatsunami in Cape Verde Islands

A team of geologists from Japan, the United States and Europe has found evidence that the sudden collapse of Fogo volcano – one of the tallest and most active oceanic volcanoes on our planet – approximately 73,000 years ago generated an ocean megatsunami that dwarfed anything ever seen by humans.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/RUD459XNVmo/science-megatsunami-fogo-volcano-cape-verde-
03304.html?utm_source=feedburner&utm_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/RUD459XNVmo/science-megatsunami-fogo-volcano-cape-verde-03304.html?utm_source=feedburner&utm_medium=email)

SCINEWS.COM – Studies Suggest *Homo naledi* Walked Upright and Climbed Trees

Homo naledi – an extinct species of hominin whose fossil skeletons were discovered in a South African cave and introduced to the world last month – may have been uniquely adapted for both tree climbing and walking as dominant forms of movement, while also being capable of precise manual manipulation.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/TKwH6SPiwag/science-homo-naledi-foot-hand-
03313.html?utm_source=feedburner&utm_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/TKwH6SPiwag/science-homo-naledi-foot-hand-03313.html?utm_source=feedburner&utm_medium=email)

SCIENCE DAILY – Chimpanzees shed light on origins of human walking

Scientists investigating human and chimpanzee locomotion have uncovered unexpected similarities in the way the two species use their upper body during two-legged walking.

<http://www.sciencedaily.com/releases/2015/10/151006192837.htm>

SCIENCE DAILY – Understanding others' thoughts enables young kids to lie

Kids who are taught to reason about the mental states of others are more likely to use deception to win a reward, according to new research.

<http://www.sciencedaily.com/releases/2015/10/151006150339.htm>

SCIENCE DAILY – Foot fossils of human relative illustrate evolutionary 'messiness' of bipedal walking

A new study on *Homo naledi*, the extinct human relative whose remains were discovered in a South African cave and introduced to the world last month, suggests that although its feet were the most human-like part of its body, *H. naledi* didn't use them to walk in the same way we do. Analysis of 107 foot bones indicates that *H. naledi* was well adapted for standing and walking on two feet, but that it also was likely comfortable climbing trees.

<http://www.sciencedaily.com/releases/2015/10/151006131938.htm>

SCIENCE DAILY – Young male chimpanzees play more with objects, but do not become better tool users

Research into differences between chimpanzees and bonobos in 'preparation' for tool use reveals intriguing sex bias in object manipulation in young chimpanzees -- one that is partly mirrored in human children.

<http://www.sciencedaily.com/releases/2015/10/151007144835.htm>

SCIENCE DAILY – Remote sensing technology used to map habitat of monkey with hominid-like behavior

Scientists interested in the early-hominid-like behavior of capuchin monkeys in Brazil are concerned that the animals will lose critical habitat with the expansion of industrial agriculture in their region. A new article describes the use of remote sensing technology in mapping capuchin habitat.

<http://www.sciencedaily.com/releases/2015/10/151007125014.htm>

SCIENCE DAILY – Ravens cooperate, but not with just anyone

Ravens spontaneously solve a task that requires both coordination and cooperation -- an ability that so far only a handful of species like chimpanzees and elephants have proved to master. A team of researchers has shown this for the ravens using an experimental set-up.

<http://www.sciencedaily.com/releases/2015/10/151007110741.htm>

SCIENCE DAILY – New clues about how humans become tool users

New research gives researchers a unique glimpse at how humans develop an ability to use tools in childhood while nonhuman primates -- such as capuchin monkeys and chimpanzees -- remain only occasional tool users.

<http://www.sciencedaily.com/releases/2015/10/151008142801.htm>

SCIENCE DAILY – Ancient genome from Africa sequenced for the first time

The first ancient human genome from Africa to be sequenced has revealed that a wave of migration back into Africa from Western Eurasia around 3,000 years ago was up to twice as significant as previously thought, and affected the genetic make-up of populations across the entire African continent.

<http://www.sciencedaily.com/releases/2015/10/151008142618.htm>

SCIENCE DAILY – Difficulty processing speech may be an effect of dyslexia, not a cause

The cognitive skills used to learn how to ride a bike may be the key to a more accurate understanding of developmental dyslexia. And, they may lead to improved interventions. Scientists investigated how procedural learning how individuals with dyslexia learn speech sound categories. They found that learning complex auditory categories through procedural learning is impaired in dyslexia.

<http://www.sciencedaily.com/releases/2015/10/151008131050.htm>

SCIENCE DAILY – More 'global' individuals contribute less

The more individuals perceive themselves as "citizens of the world," the less likely they are to contribute to collective public goods and the more likely to hitch a "free ride" on the contributions of other citizens, new research indicates.

<http://www.sciencedaily.com/releases/2015/10/151008095104.htm>

PUBLICATIONS

Proceedings of the Royal Society B – 7 October 2015

PAPERS

KAROLINA MARCINIAK, PETER W. DICKE & PETER THEIR – Monkeys head-gaze following is fast, precise and not fully suppressible

Human eye-gaze is a powerful stimulus, drawing the observer's attention to places and objects of interest to someone else ('eye-gaze following'). The largely homogeneous eyes of monkeys, compromising the assessment of eye-gaze by conspecifics from larger distances, explain the absence of comparable eye-gaze following in these animals. Yet, monkeys are able to use peer head orientation to shift attention ('head-gaze following'). How similar are monkeys' head-gaze and human eye-gaze following? To address this question, we trained rhesus monkeys to make saccades to targets, either identified by the head-gaze of demonstrator monkeys or, alternatively, identified by learned associations between the demonstrators' facial identities and the targets (gaze versus identity following). In a variant of this task that occurred at random, the instruction to follow head-gaze or identity was replaced in the course of a trial by the new rule to detect a change of luminance of one of the saccade targets. Although this change-of-rule rendered the demonstrator portraits irrelevant, they nevertheless influenced performance, reflecting a precise redistribution of spatial attention. The specific features depended on whether the initial rule was head-gaze or identity following: head-gaze caused an insuppressible shift of attention to the target gazed at by the demonstrator, whereas identity matching prompted much later shifts of attention, however, only if the initial rule had been identity following. Furthermore, shifts of attention prompted by head-gaze were spatially precise. Automaticity and swiftness, spatial precision and limited executive control characterizing monkeys' head-gaze following are key features of human eye-gaze following. This similarity supports the notion that both may rely on the same conserved neural circuitry.

<http://rspb.royalsocietypublishing.org/content/282/1816/20151020?etoc>

ULRIKA CANDOLIN & IINA TUKIAINEN – The sexual selection paradigm: have we overlooked other mechanisms in the evolution of male ornaments?

Extravagant male ornaments expressed during reproduction are almost invariably assumed to be sexually selected and evolve through competition for mating opportunities. Yet in species where male reproductive success depends on the defence of offspring, male ornaments could also evolve through social competition for offspring survival. However, in contrast to female ornaments, this possibility has received little attention in males. We show that a male ornament that is traditionally assumed to be sexually selected—the red nuptial coloration of the three-spined stickleback—is under stronger selection for offspring survival than for mating success. Males express most coloration during parenting, when they no longer attract females, and the colour correlates with nest retention and hatching success but not with attractiveness to females. This contradicts earlier assumptions and suggests that social selection for offspring survival rather than for sexual selection for mating success is the main mechanism maintaining the ornament in the population. These results suggest that we should consider other forms of social selection beyond sexual selection when seeking to explain the function and evolution of male ornaments. An incorrect assignment of selection pressures could hamper our understanding of evolution.

<http://rspb.royalsocietypublishing.org/content/282/1816/20151987?etoc>

ATTILA SZOLNOKI & MATJAŽ PERC – Antisocial pool rewarding does not deter public cooperation

Rewarding cooperation is in many ways expected behaviour from social players. However, strategies that promote antisocial behaviour are also surprisingly common, not just in human societies, but also among eusocial insects and bacteria. Examples include sanctioning of individuals who behave prosocially, or rewarding of free-riders who do not contribute to collective enterprises. We therefore study the public goods game with antisocial and prosocial pool rewarding in order to determine the potential negative consequences on the effectiveness of positive incentives to promote cooperation. Contrary to a naive expectation, we show that the ability of defectors to distribute rewards to their like does not deter public cooperation as long as cooperators are able to do the same. Even in the presence of antisocial rewarding, the spatial selection for cooperation in evolutionary social dilemmas is enhanced. Since the administration of rewards to either strategy requires a considerable degree of aggregation, cooperators can enjoy the benefits of their prosocial contributions as well as the corresponding rewards. Defectors when aggregated, on the other hand, can enjoy antisocial rewards, but due to their lack of contributions to the public good they ultimately succumb to their inherent inability to secure a sustainable future. Strategies that facilitate the aggregation of akin players, even if they seek to promote antisocial behaviour, thus always enhance the long-term benefits of cooperation.

<http://rspb.royalsocietypublishing.org/content/282/1816/20151975>

Philosophical Transactions of the Royal Society B – No issue this week

Royal Society Biology Letters – No issue this week

Royal Society Open Science – No issue this week

New Scientist – 10 October 2015

NEWS

Why resurgence of therapy that unearths 'lost' memories is risky

Researchers are warning that the current publicity around historic abuse claims could lead to a resurgence of the idea of recovering memories. "The real victims are giving credibility to those who are more questionable," says Elizabeth Loftus of the University of California, Irvine.

https://www.newscientist.com/article/mg22830424-400-why-resurgence-of-therapy-that-unearts-lost-memories-is-risky/?cmpid=NLC%7CNSNS%7C2015-0810-GLOBAL%7Cnewtemplate&utm_medium=NLC&utm_source=NSNS&utm_content=NewTemplate

Science – 10 October 2015

NEWS

Can epigenetics explain homosexuality puzzle?

A new study of male twins, scheduled for presentation at a meeting of the American Society of Human Genetics (ASHG) in Baltimore, Maryland, this week, could help explain that paradox. It finds that epigenetic effects, chemical modifications of the human genome that alter gene activity without changing the DNA sequence, may have a major influence on sexual orientation.

<http://www.sciencemag.org/content/350/6257/148.full>

Prehistoric Eurasians streamed into Africa, genome shows

A paper published online this week in Science (M. GALLEGO LLORENTE et al) reveals the first prehistoric genome from Africa: that of Mota, a hunter-gatherer man who lived 4500 years ago in the highlands of Ethiopia.

http://www.sciencemag.org/content/350/6257/149.full?utm_campaign=email-sci-toc

Science Express – 9 October 2015

PAPERS

M. GALLEGO LLORENTE et al – Ancient Ethiopian genome reveals extensive Eurasian admixture throughout the African continent

Characterizing genetic diversity in Africa is a crucial step for most analyses reconstructing the evolutionary history of anatomically modern humans. However, historic migrations from Eurasia into Africa have affected many contemporary populations, confounding inferences. Here, we present a 12.5x coverage ancient genome of an Ethiopian male ('Mota') who lived approximately 4,500 years ago. We use this genome to demonstrate that the Eurasian backflow into Africa came from a population closely related to Early Neolithic farmers, who had colonized Europe 4,000 years earlier. The extent of this backflow was much greater than previously reported, reaching all the way to Central, West and Southern Africa, affecting even populations such as Yoruba and Mbuti, previously thought to be relatively unadmixed, who harbor 6-7% Eurasian ancestry.

<http://www.sciencemag.org/content/early/2015/10/07/science.aad2879>

Science Advances – 9 October 2015

NOTHING OF INTEREST

Nature – 8 October 2015

NEWS

Walking with chimps

What can we learn from chimps swinging their hips? In this Nature Video, we investigate the walking style of our primate cousins, and see what they can teach us about our ambling ancestors.

http://www.nature.com/nature/videoarchive/chimps_walking/index.html?WT.ec_id=NATURE-20151008&spMailingID=49722261&spUserID=MjA1NTkxNTc2NAS2&spJobID=780989504&spReportId=NzgwOTg5NTA0S0

ARTICLES

REGINA NUZZO – How scientists fool themselves – and how they can stop

Humans are remarkably good at self-deception. But growing concern about reproducibility is driving many researchers to seek ways to fight their own worst instincts.

<http://www.nature.com/news/how-scientists-fool-themselves-and-how-they-can-stop-1.18517>

PAPERS

SUSANNE SCHINDLER et al – Sex-specific demography and generalization of the Trivers–Willard theory

The Trivers–Willard theory proposes that the sex ratio of offspring should vary with maternal condition when it has sex-specific influences on offspring fitness. In particular, mothers in good condition in polygynous and dimorphic species are

predicted to produce an excess of sons, whereas mothers in poor condition should do the opposite. Despite the elegance of the theory, support for it has been limited. Here we extend and generalize the Trivers–Willard theory to explain the disparity between predictions and observations of offspring sex ratio. In polygynous species, males typically have higher mortality rates⁴, different age-specific reproductive schedules and more risk-prone life history tactics than females; however, these differences are not currently incorporated into the Trivers–Willard theory. Using two-sex models parameterized with data from free-living mammal populations with contrasting levels of sex differences in demography, we demonstrate how sex differences in life history traits over the entire lifespan can lead to a wide range of sex allocation tactics, and show that correlations between maternal condition and offspring sex ratio alone are insufficient to conclude that mothers adaptively adjust offspring sex ratio.

<http://www.nature.com/nature/journal/v526/n7572/full/nature14968.html>

Nature Communications – 7 October 2015

PAPERS

TRACY L. KIVELL et al with LEE R. BERGER – The hand of *Homo naledi*

A nearly complete right hand of an adult hominin was recovered from the Rising Star cave system, South Africa. Based on associated hominin material, the bones of this hand are attributed to *Homo naledi*. This hand reveals a long, robust thumb and derived wrist morphology that is shared with Neandertals and modern humans, and considered adaptive for intensified manual manipulation. However, the finger bones are longer and more curved than in most australopiths, indicating frequent use of the hand during life for strong grasping during locomotor climbing and suspension. These markedly curved digits in combination with an otherwise human-like wrist and palm indicate a significant degree of climbing, despite the derived nature of many aspects of the hand and other regions of the postcranial skeleton in *H. naledi*.

http://www.nature.com/ncomms/2015/151006/ncomms9431/full/ncomms9431.html?WT.ec_id=NCOMMS-20151007&spMailingID=49717544&spUserID=MTA5NjM3MTAyODYxS0&spJobID=780943740&spReportId=NzgwOTQzNzQwS0

W. E. H. HARCOURT-SMITH ET AL WITH LEE R. BERGER – The foot of *Homo naledi*

Modern humans are characterized by a highly specialized foot that reflects our obligate bipedalism. Our understanding of hominin foot evolution is, although, hindered by a paucity of well-associated remains. Here we describe the foot of *Homo naledi* from Dinaledi Chamber, South Africa, using 107 pedal elements, including one nearly-complete adult foot. The *H. naledi* foot is predominantly modern human-like in morphology and inferred function, with an adducted hallux, an elongated tarsus, and derived ankle and calcaneocuboid joints. In combination, these features indicate a foot well adapted for striding bipedalism. However, the *H. naledi* foot differs from modern humans in having more curved proximal pedal phalanges, and features suggestive of a reduced medial longitudinal arch. Within the context of primitive features found elsewhere in the skeleton, these findings suggest a unique locomotor repertoire for *H. naledi*, thus providing further evidence of locomotor diversity within both the hominin clade and the genus *Homo*.

http://www.nature.com/ncomms/2015/151006/ncomms9432/full/ncomms9432.html?WT.ec_id=NCOMMS-20151007&spMailingID=49717544&spUserID=MTA5NjM3MTAyODYxS0&spJobID=780943740&spReportId=NzgwOTQzNzQwS0

NATHAN E. THOMPSON et al – Surprising trunk rotational capabilities in chimpanzees and implications for bipedal walking proficiency in early hominins

Human walking entails coordinated out-of-phase axial rotations of the thorax and pelvis. A long-held assumption is that this ability relies on adaptations for trunk flexibility present in humans, but not in chimpanzees, other great apes, or australopithecines. Here we use three-dimensional kinematic analyses to show that, contrary to current thinking, chimpanzees walking bipedally rotate their lumbar and thoracic regions in a manner similar to humans. This occurs despite differences in the magnitude of trunk motion, and despite morphological differences in truncal ‘rigidity’ between species. These results suggest that, like humans and chimpanzees, early hominins walked with upper body rotations that countered pelvic rotation. We demonstrate that even if early hominins walked with pelvic rotations 50% larger than humans, they may have accrued the energetic and mechanical benefits of out-of-phase thoracic rotations. This would have allowed early hominins to reduce work and locomotor cost, improving walking efficiency early in hominin evolution.

http://www.nature.com/ncomms/2015/151006/ncomms9416/full/ncomms9416.html?WT.ec_id=NCOMMS-20151007&spMailingID=49717544&spUserID=MTA5NjM3MTAyODYxS0&spJobID=780943740&spReportId=NzgwOTQzNzQwS0

Nature Scientific Reports – 7 October 2015

PAPERS

GIANNI BARCACCIA et al – Uncovering the sources of DNA found on the Turin Shroud

The Turin Shroud is traditionally considered to be the burial cloth in which the body of Jesus Christ was wrapped after his death approximately 2000 years ago. Here, we report the main findings from the analysis of genomic DNA extracted from dust particles vacuumed from parts of the body image and the lateral edge used for radiocarbon dating. Several plant taxa

native to the Mediterranean area were identified as well as species with a primary center of origin in Asia, the Middle East or the Americas but introduced in a historical interval later than the Medieval period. Regarding human mitogenome lineages, our analyses detected sequences from multiple subjects of different ethnic origins, which clustered into a number of Western Eurasian haplogroups, including some known to be typical of Western Europe, the Near East, the Arabian Peninsula and the Indian sub-continent. Such diversity does not exclude a Medieval origin in Europe but it would be also compatible with the historic path followed by the Turin Shroud during its presumed journey from the Near East. Furthermore, the results raise the possibility of an Indian manufacture of the linen cloth.

http://www.nature.com/articles/srep14484?WT.ec_id=SREP-20151006&spMailingID=49708056&spUserID=ODY4NjU1NzU3NQs2&spJobID=780801195&spReportId=NzgwODAxMTk1S0

PETER R. BLAKE et al with FELIX WARNEKEN – The shadow of the future promotes cooperation in a repeated prisoner's dilemma for children

Cooperation among genetically unrelated individuals can be supported by direct reciprocity. Theoretical models and experiments with adults show that the possibility of future interactions with the same partner can promote cooperation via conditionally cooperative strategies such as tit-for-tat (TFT). Here, we introduce a novel implementation of the repeated Prisoner's Dilemma (PD) designed for children to examine whether repeated interactions can successfully promote cooperation in 10 and 11 year olds. We find that children cooperate substantially more in repeated PDs than in one-shot PDs. We also find that girls cooperate more than boys, and that children with more conduct problems cooperate less. Finally, we find that children use conditional cooperation strategies but that these strategies vary by gender and conduct problem rating. Specifically, girls and children with few conduct problems appear to follow an altruistic version of win-stay, lose-shift (WSLS), attempting to re-establish cooperation after they had defected. Boys and children with more conduct problems appear to follow a Grim strategy, defecting for the duration after the partner defects. Thus we provide evidence that children utilize the power of direct reciprocity to promote cooperation in strategic interactions and that, by late elementary school, distinct strategies of conditional cooperation have emerged.

http://www.nature.com/articles/srep14559?WT.ec_id=SREP-20151006&spMailingID=49708056&spUserID=ODY4NjU1NzU3NQs2&spJobID=780801195&spReportId=NzgwODAxMTk1S0

KEKE HUANG et al – Understanding Cooperative Behavior Based on the Coevolution of Game Strategy and Link Weight

In reality, the dependency relationship among individuals is heterogeneous and time-varying. Based on this fact, we present a new mechanism of coevolution of game strategy and link weight when analyzing the evolution of cooperation. In detail, we model the population on a regular network, on which the relationship between players is depicted by a weighted link, and prisoner's dilemma has been applied to describe the interaction of players. Further, the impact of this mechanism on the cooperative behavior has been outlined. By conducting large-scale Monte Carlo simulations, we can easily draw a conclusion that this mechanism can promote cooperation efficiently. Compared with the traditional case, when the temptation of defection b is large, the fraction of cooperation is still able to keep in a high level. With a comprehensive examination of the distribution of stable link weight, it is evident that the coevolution mechanism would deviate the initial distribution. This mechanism induces the heterogeneity of players, which enhances the fraction of cooperation. Numerical simulations also indicate that an intermediate value of Δ/δ warrants an optimal resolution of prisoner's dilemma. The mechanism of coevolution of game strategy and link weight has a practical significance and will provide new insight for the further research.

http://www.nature.com/articles/srep14783?WT.ec_id=SREP-20151006&spMailingID=49708056&spUserID=ODY4NjU1NzU3NQs2&spJobID=780801195&spReportId=NzgwODAxMTk1S0

LUO-LUO JIANG, WEN-JING LI & ZHEN WANG – Multiple effect of social influence on cooperation in interdependent network games

The social influence exists widely in the human society, where individual decision-making process (from congressional election to electronic commerce) may be affected by the attitude and behavior of others belonging to different social networks. Here, we couple the snowdrift (SD) game and the prisoner's dilemma (PD) game on two interdependent networks, where strategies in both games are associated by social influence to mimic the majority rule. More accurately, individuals' strategies updating refers to social learning (based on payoff difference) and above-mentioned social influence (related with environment of interdependent group), which is controlled by social influence strength s . Setting $s = 0$ decouples the networks and returns the traditional network game; while its increase involves the interactions between networks. By means of numerous Monte Carlo simulations, we find that such a mechanism brings multiple influence to the evolution of cooperation. Small s leads to unequal cooperation level in both games, because social learning is still the main updating rule for most players. Though intermediate and large s guarantees the synchronized evolution of strategy pairs, cooperation finally dies out and reaches a completely dominance in both cases. Interestingly, these observations are attributed to the expansion of cooperation clusters. Our work may provide a new understanding to the emergence of cooperation in intercorrelated social systems.

http://www.nature.com/articles/srep14657?WT.ec_id=SREP-20151006&spMailingID=49708056&spUserID=ODY4NjU1NzU3NQs2&spJobID=780801195&spReportId=NzgwODAxMTk1S0

STEVEN D. EMSLIE et al – Chronic mercury exposure in Late Neolithic/Chalcolithic populations in Portugal from the cultural use of cinnabar

Cinnabar is a natural mercury sulfide (HgS) mineral of volcanic or hydrothermal origin that is found worldwide. It has been mined prehistorically and historically in China, Japan, Europe, and the Americas to extract metallic mercury (Hg⁰) for use in metallurgy, as a medicinal, a preservative, and as a red pigment for body paint and ceramics. Processing cinnabar via combustion releases Hg⁰ vapor that can be toxic if inhaled. Mercury from cinnabar can also be absorbed through the gut and skin, where it can accumulate in organs and bone. Here, we report moderate to high levels of total mercury (THg) in human bone from three Late Neolithic/Chalcolithic (5400–4100 B.P.) sites in southern Portugal that were likely caused by cultural use of cinnabar. We use light stable isotope and Hg stable isotope tracking to test three hypotheses on the origin of mercury in this prehistoric human bone. We traced Hg in two individuals to cinnabar deposits near Almadén, Spain, and conclude that use of this mineral likely caused mild to severe mercury poisoning in the prehistoric population. Our methods have applications to bioarchaeological investigations worldwide, and for tracking trade routes and mobility of prehistoric populations where cinnabar use is documented.

[http://www.nature.com/articles/srep14679?WT.ec_id=SREP-](http://www.nature.com/articles/srep14679?WT.ec_id=SREP-20151006&spMailingID=49708056&spUserID=ODY4NjU1NzU3NQ52&spJobID=780801195&spReportId=NzgwODAxMTk1S0)

[20151006&spMailingID=49708056&spUserID=ODY4NjU1NzU3NQ52&spJobID=780801195&spReportId=NzgwODAxMTk1S0](http://www.nature.com/articles/srep14679?WT.ec_id=SREP-20151006&spMailingID=49708056&spUserID=ODY4NjU1NzU3NQ52&spJobID=780801195&spReportId=NzgwODAxMTk1S0)

PLoS One – 11 October 2015

PAPERS

KATHELIJNE KOOPS et al with CAREL P. VAN SCHAIK – Sex Differences in Object Manipulation in Wild Immature Chimpanzees (*Pan troglodytes schweinfurthii*) and Bonobos (*Pan paniscus*): Preparation for Tool Use?

Sex differences in immatures predict behavioural differences in adulthood in many mammal species. Because most studies have focused on sex differences in social interactions, little is known about possible sex differences in ‘preparation’ for adult life with regards to tool use skills. We investigated sex and age differences in object manipulation in immature apes. Chimpanzees use a variety of tools across numerous contexts, whereas bonobos use few tools and none in foraging. In both species, a female bias in adult tool use has been reported. We studied object manipulation in immature chimpanzees at Kalinzu (Uganda) and bonobos at Wamba (Democratic Republic of Congo). We tested predictions of the ‘preparation for tool use’ hypothesis. We confirmed that chimpanzees showed higher rates and more diverse types of object manipulation than bonobos. Against expectation, male chimpanzees showed higher object manipulation rates than females, whereas in bonobos no sex difference was found. However, object manipulation by male chimpanzees was play-dominated, whereas manipulation types of female chimpanzees were more diverse (e.g., bite, break, carry). Manipulation by young immatures of both species was similarly dominated by play, but only in chimpanzees did it become more diverse with age. Moreover, in chimpanzees, object types became more tool-like (i.e., sticks) with age, further suggesting preparation for tool use in adulthood. The male bias in object manipulation in immature chimpanzees, along with the late onset of tool-like object manipulation, indicates that not all (early) object manipulation (i.e., object play) in immatures prepares for subsistence tool use. Instead, given the similarity with gender differences in human children, object play may also function in motor skill practice for male-specific behaviours (e.g., dominance displays). In conclusion, even though immature behaviours almost certainly reflect preparation for adult roles, more detailed future work is needed to disentangle possible functions of object manipulation during development.

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0139909>

GERALD CARTER & LAUREN LEFFER – Social Grooming in Bats: Are Vampire Bats Exceptional?

Evidence for long-term cooperative relationships comes from several social birds and mammals. Vampire bats demonstrate cooperative social bonds, and like primates, they maintain these bonds through social grooming. It is unclear, however, to what extent vampires are special among bats in this regard. We compared social grooming rates of common vampire bats *Desmodus rotundus* and four other group-living bats, *Artibeus jamaicensis*, *Carollia perspicillata*, *Eidolon helvum* and *Rousettus aegyptiacus*, under the same captive conditions of fixed association and no ectoparasites. We conducted 13 focal sampling sessions for each combination of sex and species, for a total of 1560 presence/absence observations per species. We observed evidence for social grooming in all species, but social grooming rates were on average 14 times higher in vampire bats than in other species. Self-grooming rates did not differ. Vampire bats spent 3.7% of their awake time social grooming (95% CI = 1.5–6.3%), whereas bats of the other species spent 0.1–0.5% of their awake time social grooming. Together with past data, this result supports the hypothesis that the elevated social grooming rate in the vampire bat is an adaptive trait, linked to their social bonding and unique regurgitated food sharing behavior.

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0138430>

JUSTIN W. ADAMS et al – Surface Model and Tomographic Archive of Fossil Primate and Other Mammal Holotype and Paratype Specimens of the Ditsong National Museum of Natural History, Pretoria, South Africa

Nearly a century of paleontological excavation and analysis from the cave deposits of the Cradle of Humankind UNESCO World Heritage Site in northeastern South Africa underlies much of our understanding of the evolutionary history of hominins, other primates and other mammal lineages in the late Pliocene and early Pleistocene of Africa. As one of few designated fossil repositories, the Plio-Pleistocene Palaeontology Section of the Ditsong National Museum of Natural History (DNMNH; the former Transvaal Museum) curates much of the mammalian faunas recovered from the fossil-rich deposits of

major South African hominin-bearing localities, including the holotype and paratype specimens of many primate, carnivore, and other mammal species (Orders Primates, Carnivora, Artiodactyla, Eulipotyphla, Hyracoidea, Lagomorpha, Perissodactyla, and Proboscidea). Here we describe an open-access digital archive of high-resolution, full-color three-dimensional (3D) surface meshes of all 89 non-hominin holotype, paratype and significant mammalian specimens curated in the Plio-Pleistocene Section vault.

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0139800>

PLoS Biology – 6 October 2015

NOTHING OF INTEREST

PLoS Genetics – 8 October 2015

NOTHING OF INTEREST

PNAS – 7 October 2015

PAPERS

NAOMI E. LEVIN et al with YOHANNES HAILE-SELASSIE – Dietary change among hominins and cercopithecids in Ethiopia during the early Pliocene

Dietary change among hominins is a critical aspect of human evolution. Here we use carbon isotope data from fossil teeth of hominins, monkeys, and other mammals from Ethiopia to document C4 food consumption by both hominins and the baboon, *Theropithecus oswaldi*, during the early Pliocene. The expansion of hominin diet and the appearance of the *Theropithecus oswaldi* lineage as early as 3.76 Ma mark a major ecological change within African primate communities. The ability to eat a range of C3 and C4 foods indicates that early Pliocene hominins were likely generalists who could thrive in different and perhaps varying environments.

<http://www.pnas.org/content/112/40/12304.abstract>

CARRIN M. HALFFMAN et al – Early human use of anadromous salmon in North America at 11,500 y ago

Fish bones from the 11,500-y-old Upward Sun River site in interior Alaska represent the oldest evidence for salmon fishing in North America. We used ancient DNA analysis to identify the fish specimens as chum salmon (*Oncorhynchus keta*), and stable isotope analysis to confirm that the salmon were anadromous (sea-run). The exploitation of salmon at this early date is noteworthy because Pale Indians are traditionally portrayed as big-game hunting specialists. Furthermore, the presence of salmon at Upward Sun River over 1,400 km upriver from the coast shows that spawning runs had been established by the end of the last Ice Age. The early availability and use of anadromous salmon has important implications for understanding Pale Indian economies and expansion into North America.

<http://www.pnas.org/content/112/40/12344.abstract>

Frontiers in Psychology – 9 October 2015

NOTHING OF INTEREST

Frontiers in Neuroscience – 9 October 2015

NOTHING OF INTEREST

PeerJ – 7 October 2015

PAPERS

MICHELLE S.M. DRAPEAU – Metacarpal torsion in apes, humans, and early Australopithecus: implications for manipulatory abilities

Human hands, when compared to that of apes, have a series of adaptations to facilitate manipulation. Numerous studies have shown that *Australopithecus afarensis* and *Au. africanus* display some of these adaptations, such as a longer thumb relative to the other fingers, asymmetric heads on the second and fifth metacarpals, and orientation of the second metacarpal joints with the trapezium and capitate away from the sagittal plane, while lacking others such as a very mobile fifth metacarpal, a styloid process on the third, and a flatter metacarpo-trapezium articulation, suggesting some adaptation to manipulation but more limited than in humans. This paper explores variation in metacarpal torsion, a trait said to enhance manipulation, in humans, apes, early australopithecines and specimens from Swartkrans. This study shows that humans are different from large apes in torsion of the third and fourth metacarpals. Humans are also characterized by wedge-shaped bases of the third and fourth metacarpals, making the metacarpal-base row very arched mediolaterally and placing the ulnar-most metacarpals in a position that facilitate opposition to the thumb in power or cradle grips. The third and fourth metacarpals of *Au. afarensis* are very human-like, suggesting that the medial palm was already well adapted for these kinds of grips in that taxon. *Au. africanus* present a less clear human-like morphology, suggesting, perhaps, that the medial palm was less suited to human-like manipulation in that taxa than in *Au. afarensis*. Overall, this study supports previous studies on

Au. afarensis and Au. africanus that these taxa had derived hand morphology with some adaptation to human-like power and precision grips and support the hypothesis that dexterous hands largely predated Homo.

<https://peerj.com/articles/1311/>

To unsubscribe from the EAORC Bulletin

Send an email to martin.edwardes@btopenworld.com with the subject "EAORC unsubscribe".

EAORC website information is at <http://martinedwardes.webplus.net/eaorc.html>