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## Lemurs To Humans Report (preliminary information)

**Identifying topics that need to have reports written about them takes a lot less time than writing them up. Consequently, we have an increasing backlog of reports to write. While somewhat frustrating, this is, of course, much better than the alternative! Below are some of the quotes from *The Urantia Book* and links to information that we used to identify the topic. Please get in touch if you have additional information that is relevant to the preparation of one of our upcoming reports.**

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*The Urantia Book* states:

Early in this period [The Age Of Early Mammals; 50,000,000 years ago] and in North America the placental type of mammals suddenly appeared, and they constituted the most important evolutionary development up to this time. Previous orders of nonplacental mammals had existed, but this new type sprang directly and suddenly from the pre-existent reptilian ancestor whose descendants had persisted on down through the times of dinosaur decline. The father of the placental mammals was a small, highly active, carnivorous, springing type of dinosaur.

45,000,000 years ago . . . [m]ammalian life was evolving rapidly. A small reptilian, egg-laying type of mammal flourished, and the ancestors of the later kangaroos roamed Australia. Soon there were small horses, fleet-footed rhinoceroses, tapirs with proboscises, primitive pigs, squirrels, lemurs, opossums, and several tribes of monkeylike animals. They were all small, primitive, and best suited to living among the forests of the mountain regions.(1)

About this time [30,000,000 years ago] a notable thing occurred in western North America: The early ancestors of the ancient lemurs first made their appearance. While this family cannot be regarded as true lemurs, their coming marked the establishment of the line from which the true lemurs subsequently sprang.(2)

Man thus evolved from the higher mammals derived principally from the western implantation of life in the ancient east-west sheltered seas. The eastern and central groups of living organisms were early progressing favorably toward the attainment of prehuman levels of animal existence. But as the ages passed, the eastern focus of life emplacement failed to attain a satisfactory level of intelligent prehuman status, having suffered such repeated and irretrievable losses of its

Search

highest types of germ plasm that it was forever shorn of the power to rehabilitate human potentialities.

Since the quality of the mind capacity for development in this eastern group was so definitely inferior to that of the other two groups, the Life Carriers, with the consent of their superiors, so manipulated the environment as further to circumscribe these inferior prehuman strains of evolving life. To all outward appearances the elimination of these inferior groups of creatures was accidental, but in reality it was altogether purposeful.

Later in the evolutionary unfolding of intelligence, the lemur ancestors of the human species were far more advanced in North America than in other regions; and they were therefore led to migrate from the arena of western life implantation over the Bering land bridge and down the coast to southwestern Asia, where they continued to evolve and to benefit by the addition of certain strains of the central life group. Man thus evolved out of certain western and central life strains but in the central to near-eastern regions.(3)

65:2.16 In this way the life that was planted on Urantia evolved until the ice age, when man himself first appeared and began his eventful planetary career. And this appearance of primitive man on earth during the ice age was not just an accident; it was by design. The rigors and climatic severity of the glacial era were in every way adapted to the purpose of fostering the production of a hardy type of human being with tremendous survival endowment.

## THE DAWN RACES OF EARLY MAN

ABOUT ONE MILLION years ago the immediate ancestors of mankind made their appearance by three successive and sudden mutations stemming from early stock of the lemur type of placental mammal. The dominant factors of these early lemurs were derived from the western or later American group of the evolving life plasm. But before establishing the direct line of human ancestry, this strain was reinforced by contributions from the central life implantation evolved in Africa. The eastern life group contributed little or nothing to the actual production of the human species.

### 1. THE EARLY LEMUR TYPES

The early lemurs concerned in the ancestry of the human species were not directly related to the pre-existent tribes of gibbons and apes then living in Eurasia and northern Africa, whose progeny have survived to the present time. Neither were they the offspring of the modern type of lemur, though springing from an ancestor common to both but long since extinct.

While these early lemurs evolved in the Western Hemisphere, the establishment of the direct mammalian ancestry of mankind took place in southwestern Asia, in the original area of the central life implantation but on the borders of the eastern regions. Several million years ago the North American type lemurs had migrated westward over the Bering land bridge and had slowly made their way southwestward along the Asiatic coast. These migrating tribes finally reached the salubrious region lying between the then expanded Mediterranean Sea and the elevating mountainous regions of the Indian peninsula. In these lands to the west of India they united with other and favorable strains, thus establishing the ancestry of the human race.

With the passing of time the seacoast of India southwest of the mountains

gradually submerged, completely isolating the life of this region. There was no avenue of approach to, or escape from, this Mesopotamian or Persian peninsula except to the north, and that was repeatedly cut off by the southern invasions of the glaciers. And it was in this then almost paradisiacal area, and from the superior descendants of this lemur type of mammal, that there sprang two great groups, the simian tribes of modern times and the present-day human species.

## 2. THE DAWN MAMMALS

A little more than one million years ago the Mesopotamian dawn mammals, the direct descendants of the North American lemur type of placental mammal, suddenly appeared. They were active little creatures, almost three feet tall; and while they did not habitually walk on their hind legs, they could easily stand erect. They were hairy and agile and chattered in monkeylike fashion, but unlike the simian tribes, they were flesh eaters. They had a primitive opposable thumb as well as a highly useful grasping big toe. From this point onward the prehuman species successively developed the opposable thumb while they progressively lost the grasping power of the great toe. The later ape tribes retained the grasping big toe but never developed the human type of thumb.

These dawn mammals attained full growth when three or four years of age, having a potential life span, on the average, of about twenty years. As a rule offspring were born singly, although twins were occasional.

The members of this new species had the largest brains for their size of any animal that had theretofore existed on earth. They experienced many of the emotions and shared numerous instincts which later characterized primitive man, being highly curious and exhibiting considerable elation when successful at any undertaking.  
(4)

These aggressive little animals multiplied and spread over the Mesopotamian peninsula for more than one thousand years, constantly improving in physical type and general intelligence. And it was just seventy generations after this new tribe had taken origin from the highest type of lemur ancestor that the next epoch-making development occurred—the sudden differentiation of the ancestors of the next vital step in the evolution of human beings on Urantia.(5)

## 3. THE MID-MAMMALS

Early in the career of the dawn mammals, in the treetop abode of a superior pair of these agile creatures, twins were born, one male and one female. Compared with their ancestors, they were really handsome little creatures. They had little hair on their bodies, but this was no disability as they lived in a warm and equable climate.

These children grew to be a little over four feet in height. They were in every way larger than their parents, having longer legs and shorter arms. They had almost perfectly opposable thumbs, just about as well adapted for diversified work as the present human thumb. They walked upright, having feet almost as well suited for walking as those of the later human races.

Their brains were inferior to, and smaller than, those of human beings but very superior to, and comparatively much larger than, those of their ancestors. The twins early displayed superior intelligence and were soon recognized as the heads of the whole tribe of dawn mammals, really instituting a primitive form of social organization and a crude economic division of labor. This brother and sister mated

and soon enjoyed the society of twenty-one children much like themselves, all more than four feet tall and in every way superior to the ancestral species. This new group formed the nucleus of the mid-mammals.(6)

As time passed, the natural increase in numbers eventually resulted in serious food competition and sex rivalry, all of which culminated in a series of internecine battles that nearly destroyed the entire species. These struggles continued until only one group of less than one hundred individuals was left alive. But peace once more prevailed, and this lone surviving tribe built anew its treetop bedrooms and once again resumed a normal and semipeaceful existence.

You can hardly realize by what narrow margins your prehuman ancestors missed extinction from time to time. Had the ancestral frog of all humanity jumped two inches less on a certain occasion, the whole course of evolution would have been markedly changed. The immediate lemurlike mother of the dawn-mammal species escaped death no less than five times by mere hairbreadth margins before she gave birth to the father of the new and higher mammalian order. But the closest call of all was when lightning struck the tree in which the prospective mother of the Primates twins was sleeping. Both of these mid-mammal parents were severely shocked and badly burned; three of their seven children were killed by this bolt from the skies. These evolving animals were almost superstitious. This couple whose treetop home had been struck were really the leaders of the more progressive group of the mid-mammal species; and following their example, more than half the tribe, embracing the more intelligent families, moved about two miles away from this locality and began the construction of new treetop abodes and new ground shelters—their transient retreats in time of sudden danger.

Soon after the completion of their home, this couple, veterans of so many struggles, found themselves the proud parents of twins, the most interesting and important animals ever to have been born into the world up to that time, for they were the first of the new species of Primates constituting the next vital step in prehuman evolution.

Contemporaneously with the birth of these Primates twins, another couple—a peculiarly retarded male and female of the mid-mammal tribe, a couple that were both mentally and physically inferior—also gave birth to twins. These twins, one male and one female, were indifferent to conquest; they were concerned only with obtaining food and, since they would not eat flesh, soon lost all interest in seeking prey. These retarded twins became the founders of the modern simian tribes. Their descendants sought the warmer southern regions with their mild climates and an abundance of tropical fruits, where they have continued much as of that day except for those branches which mated with the earlier types of gibbons and apes and have greatly deteriorated in consequence.

And so it may be readily seen that man and the ape are related only in that they sprang from the mid-mammals, a tribe in which there occurred the contemporaneous birth and subsequent segregation of two pairs of twins: the inferior pair destined to produce the modern types of monkey, baboon, chimpanzee, and gorilla; the superior pair destined to continue the line of ascent which evolved into man himself.

Modern man and the simians did spring from the same tribe and species but not from the same parents. Man's ancestors are descended from the superior strains of the selected remnant of this mid-mammal tribe, whereas the modern simians (excepting certain pre-existent types of lemurs, gibbons, apes, and other monkeylike creatures) are the descendants of the most inferior couple of this mid-

mammal group, a couple who only survived by hiding themselves in a subterranean food-storage retreat for more than two weeks during the last fierce battle of their tribe, emerging only after the hostilities were well over.

#### 4. THE PRIMATES

Going back to the birth of the superior twins, one male and one female, to the two leading members of the mid-mammal tribe: These animal babies were of an unusual order; they had still less hair on their bodies than their parents and, when very young, insisted on walking upright. Their ancestors had always learned to walk on their hind legs, but these Primates twins stood erect from the beginning. They attained a height of over five feet, and their heads grew larger in comparison with others among the tribe. While early learning to communicate with each other by means of signs and sounds, they were never able to make their people understand these new symbols.

When about fourteen years of age, they fled from the tribe, going west to raise their family and establish the new species of Primates. And these new creatures are very properly denominated Primates since they were the direct and immediate animal ancestors of the human family itself.

Thus it was that the Primates came to occupy a region on the west coast of the Mesopotamian peninsula as it then projected into the southern sea, while the less intelligent and closely related tribes lived around the peninsula point and up the eastern shore line.

The Primates were more human and less animal than their mid-mammal predecessors. The skeletal proportions of this new species were very similar to those of the primitive human races. The human type of hand and foot had fully developed, and these creatures could walk and even run as well as any of their later-day human descendants. They largely abandoned tree life, though continuing to resort to the treetops as a safety measure at night, for like their earlier ancestors, they were greatly subject to fear. The increased use of their hands did much to develop inherent brain power, but they did not yet possess minds that could really be called human.

Although in emotional nature the Primates differed little from their forebears, they exhibited more of a human trend in all of their propensities. They were, indeed, splendid and superior animals, reaching maturity at about ten years of age and having a natural life span of about forty years. That is, they might have lived that long had they died natural deaths, but in those early days very few animals ever died a natural death; the struggle for existence was altogether too intense.

And now, after almost nine hundred generations of development, covering about twenty-one thousand years from the origin of the dawn mammals, the Primates suddenly gave birth to two remarkable creatures, the first true human beings.

Thus it was that the dawn mammals, springing from the North American lemur type, gave origin to the mid-mammals, and these mid-mammals in turn produced the superior Primates, who became the immediate ancestors of the primitive human race. The Primates tribes were the last vital link in the evolution of man, but in less than five thousand years not a single individual of these extraordinary tribes was left.(7)

*The Urantia Book* also summarizes the above extended recounting of this period of evolutionary history as follows:

The great event of this glacial period was the evolution of primitive man. Slightly to the west of India, on land now under water and among the offspring of Asiatic migrants of the older North American lemur types, the dawn mammals suddenly appeared. These small animals walked mostly on their hind legs, and they possessed large brains in proportion to their size and in comparison with the brains of other animals. In the seventieth generation of this order of life a new and higher group of animals suddenly differentiated. These new mid-mammals—almost twice the size and height of their ancestors and possessing proportionately increased brain power—had only well established themselves when the Primates, the third vital mutation, suddenly appeared. (At this same time, a retrograde development within the mid-mammal stock gave origin to the simian ancestry; and from that day to this the human branch has gone forward by progressive evolution, while the simian tribes have remained stationary or have actually retrogressed.)

1,000,000 years ago Urantia was registered as an inhabited world. A mutation within the stock of the progressing Primates suddenly produced two primitive human beings, the actual ancestors of mankind.(8)

An exact date for the birth of the first two human beings (*Homo erectus*) is provided in *The Urantia Book*. From the year A.D. 1934 back to the birth of the first two human beings is just 993,419 years. (9)

Out of North America

### **Scientists Unearth Fossils of 1-Ounce Primate in Mississippi**

By Alexis Madrigal March 03, 2008

Researchers uncovered the 55.8 million year-old fossil remains of a tiny monkey, the oldest primate ever found in Europe or North America, near the coast of Mississippi.

The discovery sheds light both on the origins of monkeys in North America and on the conditions of the continent during the massive global warming of 55 million years ago. It suggests that primates came across a land-bridge that once connected Asia and Alaska, where conditions were tropical.

"These primates only inhabited tropical and subtropical forests. Wet, muggy, warm climates," said Chris Beard, lead researcher on the discovery and a paleontologist at Carnegie Mellon Natural History Museum. "That tells you a lot about the Bering land itself, indirectly. Think about Costa Rica in Alaska."

The primate migration occurred during what is known as the Paleocene-Eocene Thermal Maximum, a warming of the Earth that Beard described as "one of the only times in history where the rate and magnitude (of global warming) is similar to what's happening today."

The Earth's continental structures, however, looked very different from how they do today. For a brief time, 55.8 million years ago, North America was connected to both Europe and Asia by narrow strips of land.

That led some scientists to theorize that primates migrated to North America from Europe via the land connecting Scotland with Greenland. Beard said that his finding rules out this migratory flow because primates had already colonized North America when the Europe-North America land-bridge opened.

Beard published his findings on the newly named primate, *Teilhardina magnoliana*, today in the Proceedings of the National Academy of Sciences.

If you took a look at the one-ounce primate and immediately wanted one as a pet, the closest animal you could find in today's world is one of Madagascar's mouse lemurs. (But they're very seriously endangered, so you can't have one.)(10)

## Fossils Hint at Primate Garden of Eden in Asia

Published: Tuesday, April 19, 1994

SCIENTISTS exploring a Chinese quarry have found fossils of a monkey the size of a mouse that is among the earliest known primates.

The quarry was likened to a "Garden of Eden for primates" by one expert not involved with the discovery because its fossils show a variety of early primates from about 45 million years ago, suggesting that Asia was a cradle for early primate development.

Dr. Mary Dawson, an author of a report on the findings, said, "People tend to think of Africa as being the center of origin of this group." But the findings, she added, are "opening up the strong possibility that Asia was indeed a cradle for the development of early primates."

Primates include monkeys, apes and humans as well as other animals like lemurs and tarsiers. In all, five new types of early primates were found at the site.

Some of the fossils were those of what is believed to have been a small, early monkey. They included three jaw fragments with teeth, some toothless jaw fragments, about a dozen isolated teeth and parts of elbow and ankle bones, Dr. Dawson said.

The fossils are from a period long before humans evolved. *Australopithecus afarensis*, the human ancestor from Africa best known for the partial skeleton known as "Lucy," is thought to have lived as early as four million years ago.

The discoveries are reported in the current issue of the journal *Nature* by Dr. Dawson and Dr. Chris Beard, both of the Carnegie Museum of Natural History in Pittsburgh, and colleagues from Beijing. Oldest Family Fossils?

The fossils were unearthed between 1987 and 1993 from natural crevices in a limestone quarry near Shanghuang in the Jiangsu Province of eastern China. Dr. Dawson said the small primates may have lived in the fissures, or predators may have dropped their bones there.

The quarry is dug out of two sides of a hill that rises above rice paddies. The fossils were found in three towering, nearly vertical cracks about six feet wide that were filled with dirt and rock, Dr. Dawson said.

Three monkey teeth found earlier in Africa have been regarded as the oldest known fossils of the monkey-ape-human family. Dr. Dawson said the Chinese fossils may be older, although she leaned toward the view that they were not.

But Dr. Richard Kay, a fossil primate expert at Duke University, said the ages of the Chinese and African fossils are so uncertain that the Chinese creature may well be older. He said that the Chinese fossils were probably from a monkey but that other scientists might disagree. Dr. Kay, who had discussed the findings with Dr. Beard, said that if they are, then "he's got practically the Garden of Eden for primates" in the Chinese site.

The findings also included a dozen teeth revealing the earliest known tarsier, a big-eyed, tree-dwelling creature now living in Asian rain forests. The discovery pushes back the fossil record of tarsiers by about 30 million years. Dr. Dawson said the teeth are nearly identical to modern tarsier teeth, suggesting that its diet has changed little.

Researchers also found the remains of a squirrel-size creature from a primate family that lived about the same time in the American West, and remains of another small primate related to those known to have been in Europe at the same time. The findings show more migration occurred than had been thought, Dr. Dawson said.(11)

Do Pakistan Fossils Alter Path of Lemur Evolution?

Bijal P. Trivedi

for National Geographic Today

Scientists have discovered what they believe is the oldest known lemur fossils in the Bugti Hills of central Pakistan. The finding is controversial because the new evidence suggests that lemurs originated in Asia, not in Africa as commonly believed.

The fossil remains consist of a collection of tiny teeth that resemble the teeth of Madagascar's modern dwarf lemur, *Cheirogaleus*. The 30-million-year-old fossils predate all lemur fossils found in Africa. Lead scientist Laurent Mariveux, of Universite Montpellier, in France, said the find was "totally unexpected."

The team dubbed the new lemur *Bugtilemur mathisoni*. The findings are published in the October 19 issue of the journal *Science*.

Today lemurs live primarily in Madagascar and some nearby islands—it is thought that they may have migrated to the islands on floating vegetation. The question now is where did the migration begin?

Geological evidence shows that Madagascar separated from India about 88 million years ago, long before the origin of lemurs about 62 million years ago, making Asia an unlikely point of origin.

Mariveux admits the solution to this enigma is still in the future. But he says, "the time has come for the Asian scenario to receive more serious attention."

But some scientists have more fundamental disputes with Mariveux's work. They question whether these teeth really belong to a lemur.

The trademark feature of a lemur—a tooth "comb", which juts out on the lower jaw—was not among the fossils discovered by the team.

"There isn't enough evidence to determine whether this is, or is not a lemur," says William Hylander, director of the Duke University Primate Center in Durham, North Carolina.

A more likely explanation, says paleontologist Richard Kay, also of Duke University, is that the fossil teeth belong to a family of Eurasian primates—*sivaladapis*—that are now extinct. The *sivaladapis* family of primates which lived in India about 13 million years ago have similar teeth to lorises, a close relative of the lemur, but the two are unrelated.

Mariveux's new finding departs radically from mainstream opinion, which doesn't mean that it is wrong, says Kay, it just needs more support.

Suggesting that the fossilized teeth belong to a lemur is "an extraordinary claim," says Kay. "It demands extraordinary evidence."[\(12\)](#)

Scientific America article on migration from Asia, 2001

### **Fossils Suggest Lemurs May Have Asian, Not African, Roots**

Madagascar houses many unique plants and animals, the most famous of which are almost certainly its lemurs. Although researchers have long studied this group of primitive primates, their evolutionary past has remained largely mysterious, owing to the absence of known fossil representatives. It seemed likely that lemurs originated in continental Africa and later migrated eastward to the island nation. But new data suggests that the charismatic creatures could have Asian, not African, roots. According to a report published today in the journal *Science*, researchers have unearthed the oldest lemur remains known—tiny teeth some 30 million years old in Pakistan.

French paleontologist Laurent Marivaux of the Universit Montpellier II and colleagues have assigned the fossil teeth to a new genus and species, *Bugtilemur mathesoni*. Discovered in the Bugti Hills of Balochistan, Pakistan, *Bugtilemur* exhibits a specialized dental pattern similar to that of the modern dwarf lemur, *Cheirogaleus*. This, the researchers report, suggests one of two things. Either the common ancestors of *Bugtilemur* and *Cheirogaleus* inhabited the Indo-Malagasy land mass prior to its breakup some 88 million years ago, or a migration of lemurs took place between Madagascar and Greater India after they split. The authors



favor the latter, but remain unsure of the direction of the dispersal. If lemurs originated in Africa, they may have colonized Madagascar and later made their way northward to Asia. Alternatively, they may have arisen in Asia and later migrated to Madagascar, perhaps drifting over on rafts of vegetation. Fossilized remains of trees, pollen and fruit from the site suggest that Bugtilemur inhabited a lush environment similar to today's tropical forests.

The Bugti Hills site has yielded several other primate species including members of the group that gave rise to monkeys and apes and other fossil localities in Asia have produced early primate remains as well. "The time has come for the Asian scenario to receive more serious attention, but I think that the paleontological solution to this enigma is still in the future," Marivaux remarks. Plans for further work at Bugti Hills, however, are on hold in light of the recent terrorist attacks on the U.S. "At the moment we are totally dependent on the effects of current events, but we continue to work with our Pakistani colleagues on these exciting discoveries."(13)

### Lemur Family Tree Conclusively Mapped (2/23/2008)

After swabbing the cheeks of more than 200 lemurs and related primates to collect their DNA, researchers at the Duke Institute for Genome Sciences & Policy (IGSP) and Duke Lemur Center now have a much clearer picture of their evolutionary family tree.

Found in nature only on the island nation of Madagascar, off Africa's southeastern coast, lemurs and their close relatives the lorises represent the sister lineage to all other primates. And that makes lemurs key to understanding what distinguishes us and the rest of our primate cousins from all other animals, according to Julie Horvath, a post-doctoral researcher in the IGSP.

"If we find a trait or characteristic shared between lemurs and other primates, it can tell us what is or isn't primate-specific and when those traits arose," said Horvath, who works in the laboratory of IGSP director Huntington Willard.

The new "phylogenomic toolkit" the researchers developed will also play into conservation efforts aimed to save the critically endangered lemurs, by helping to define the number of existing species, said David Weisrock, a post-doctoral researcher working with Duke Lemur Center Director Anne Yoder.

The researchers report their findings in the March 1 issue of *Genome Research*.

Scientists uncover evolutionary relationships among species based on similarities and differences in their genetic codes. The increasing number of fully sequenced genomes available for major evolutionary groups has allowed resolution of relationships that had been considered unmanageable before.

But except for humans' close evolutionary ties to chimpanzees, many of the relationships among other apes, monkeys and pre-monkeys called prosimians have remained somewhat murky, according to Horvath.

To find out where Madagascar's lemurs fit in, the Duke team first needed to develop the tools for comparing sequences from the many lemur species to one another, and to those of other primates including humans.

The researchers identified stretches of DNA sequence held in common between the genomes of the human, the ringtailed lemur and the mouse lemur. These "conserved sequences" served as primers, allowing them to sample comparable bits of sequence across the genomes of the various primate species.

Their analysis confirmed that the first to branch off from the rest of the lemurs, some 66 million years ago, was the aye-aye--a nocturnal primate that taps on trees with its fingers to listen for insects inside, making it Madagascar's version of a woodpecker. They also resolved the relationships among species within the remaining four evolutionary lineages, which includes a diverse cast of characters: the sifakas, named for the hissing "shee-fak" sound they make; the sportive lemurs, which are strictly nocturnal; the mouse lemurs, the smallest of all living primates; and the many so-called "true lemurs," including the blue-eyed black lemur (one of only three blue-eyed primates in the world) and the ringtailed lemur, which is often found in zoos.

"By throwing this much data at the problem, we have absolutely confirmed, beyond any statistical doubt, that the spectacular array of lemurs all descended from a single ancestral species," said Yoder, noting that lemurs account for about 20 percent of primate species and live on less than one percent of the earth's surface. "It further highlights the importance of Madagascar as a cradle for biodiversity."

The study lays the groundwork for doing future studies of lemurs and other primates. The methods the group developed for this study can also be applied to understanding evolutionary relationships among other animal groups for which genomic sequences are hard to come by.

Collaborators on the study included Stephanie Embry, Isabella Fiorentino, Gregory Wray and Huntington Willard, all of Duke; Peter Kappeler, of the German Primate Centre; and James Balhoff, of the National Evolutionary Synthesis Center.

Note: This story has been adapted from a news release issued by Duke University(14)

Department of Dermatology, University of Graz, Austria.

A 31-year-old woman presented with a clinically otherwise unsuspecting area of profuse sweating on her right forearm. Without triggering agents, sweating attacks producing a clear, serous fluid were observed daily. Histopathologic examination of a biopsy specimen showed hyperplastic eccrine glands with pale, stippled cytoplasm characteristic of eccrine hamartoma. No explanation, however, has been given for the fact that several authors observed eccrine hamartomas in the same anatomical location. Adolescent lemurs of the species catta (ringtailed lemur) are equipped with a pair of antebrachial cutaneous glands located on the volar surface of the wrist. They exude a clear secretion enabling them to "brachial branch mark" their territories. Histopathologic findings in the ringtailed lemur's antebrachial organ show characteristics of both apocrine and eccrine glands. In contrast to normal apocrine glands, however, the antebrachial organs of ringtailed lemurs reach the epidermis directly and are not connected to hair follicles. According to the "biogenetic law" of Ernst Haeckel, stating that ontogeny has to be seen as a short and incomplete repetition of phylogeny, a human fetus passes all evolutionary stages from a single cell via amphibians and mammals to a human being. Thus, the antebrachial organ of the ringtailed lemur may be the "phylogenetic explanation" for eccrine hamartomas of the forearm in humans. The histopathologic findings of the antebrachial organ and of eccrine hamartomas are in accordance with this hypothesis.(15)

A 2004 article by National Geographic News reports on research that yielded unexpected results regarding the intelligence of lemurs.

## **Lemur Logic May Provide Clues to Primate Intellect Evolution**

We already know that monkeys and apes have remarkable levels of intelligence. Chimps and gorillas have been taught to use complex sign languages, Rhesus macaques demonstrate knowledge of basic math, and baboons are known to commonly deceive one another to their own ends.

But lemurs— monkeys' primate cousins—were thought to possess few of these abilities. Scientists had all but written them off as a cognitive dead end in the primate family tree.

Now, Aristides, an 11-year-old ring-tailed lemur with fluffy gray fur and enquiring brown eyes, may be about to turn that idea on its head.

With the help of his trainer, psychologist Elizabeth Brannon, Aristides selects sequences of images by pressing his nose against a computer screen. In return for fruit-flavored sugar pellets, Aristides and his eager classmates at the Duke University Primate Center are providing Brannon's team with compelling clues about how our earliest primate ancestors developed mental capabilities that we all share today.

### **Ancestral Brainpower**

Fossils suggest that lemurs, bush babies, lorises, aye-ayes, and their relatives (the prosimians) spilt off from the ancestors of monkeys and apes around 55 million years ago. Therefore studying the brainpower of these seemingly primitive animals might offer insights into the earliest primates' mental abilities.

“Anthropologists are interested in discovering how human intelligence evolved and how we differ to other species,” said Brannon of the Durham, North Carolina-based university. “By pinpointing which cognitive abilities all primates share, including prosimian primates, we hope to determine what aspects of intelligence are general primate adaptations.”

Much of Brannon's research has focused on understanding how humans became so sophisticated numerically. Her studies of human infants, monkeys, and now lemurs are helping to piece together a picture of whether primates possess a special predisposition to math.

Despite the huge quantity of literature on all aspects of intelligence in chimpanzees, rhesus macaques, and a handful of other primates, there has been very little work on lemurs. Brannon's work may now go some way to filling that frustrating data hole.

However, she started the pilot project with low expectations. Lemurs—which are found exclusively on the African island of Madagascar—are much less curious than the average monkey. The handful of existing cognitive studies suggested that the animals had little capacity to learn or complete simple tasks.

### **List Learning**

Nevertheless, Brannon's project has already yielded some encouraging results.

In one trial the Duke University team is testing the star pupil Aristides' ability to remember longer and longer lists of photographic images displayed on the

computer monitor. His classmates—another ring-tailed lemur called Teres and two mongoose lemurs (distinguished by their white snouts and red-brown beards), Miguel and Guillermo—are also eager to complete the same tasks for banana- or tropical fruit-flavored rewards.

Through trial and error, the lemurs are quickly learning to tap out lists of images of snails, houses, trees, cars, mountains, and other brightly colored photographs. The lemurs are also able to correctly order pairs of pictures from the sequence, suggesting that they are able to work through the list in their minds.

“We’ve been finding that ring-tailed lemurs are very good at this task and so far perform similarly to monkeys in terms of their accuracy and response times,” Brannon said. “One big difference is that lemurs elect to use their noses to respond instead of their fingers.”

When participating in these tests, “the animals are not coerced or forced in any way,” Brannon said. When the touch screen is wheeled into Aristides' home cage, he eagerly runs over and begins touching immediately to obtain sugar pellet rewards.

...

### **Clues to Evolution of Human Brain?**

Brannon’s project is “great stuff,” commented Patricia Wright, a world authority on lemurs at the State University of New York in Stony Brook. “The long neglected ‘dunces’ of primates are showing that the test givers were just not asking the questions in the right way,” she said. “Lemurs don't have the kind of hand coordination to pull and push levers, but that doesn't mean they don't know the correct answers.”

...

Some of the factors which have driven the development of intelligence in lemurs like Aristides could be the same factors that led human ancestors on the path to developing the sophisticated numerical and other cognitive abilities that we possess today.

“We can't go back and look at intelligence in the fossil record to understand the thought processes of the earliest primates,” Brannon said. “But we can try and understand what the minds of all primates share and how they differ from other mammals.” (16)

A University of St. Andrews press release provides the following coverage of the research done at this university, indicating a link between humans and lemurs:

Human tendency to follow another person's gaze—‘gaze following’—can be traced back to man's most distant relatives, according to a new scientific report.

Researchers at the University of St Andrews have found evidence that the action is a primitive cognitive skill dating back to the time of the first primates.

Psychologists April Ruiz, Juan Carlos Gomez and Richard Byrne also believe they have solved the evolutionary paradox of why animals such as dogs can follow their master’s gaze to find rewards, yet our closest relatives apparently can’t.

Professor Byrne said, “Humans find it impossible not to look up when they see someone staring upwards at the sky, even when they know it might be a trick. We are not alone in this habit: it’s been known for some years that several species of non-human primates, apes and monkeys, show the same tendency to follow gaze. But when their ability to use this to find useful information (for example, where food is hidden) has been tested, they generally failed.”

Dr Gomez added, “The ability to track gaze makes excellent sense for a social animal like a primate, because it can give clues about foods to eat, predators to avoid, social scenarios to take note of and so on. Up to now, the abilities of non-human primates to interpret gaze have puzzled scientists—the paradox being, what is the point of gaze following if it isn’t used for basic functions such as locating resources?”

The St Andrews team studied the lemur—a primate so distantly related to humans they look more like cats than monkeys—for clues. The new study reports what others have failed to find—that lemurs have the ability to intelligently respond to the gaze of another, by using it to find objects of interest.

“Because we have found this ability, once thought unique to humans, in lemurs, we can push back the date of its original evolution far beyond the last common ancestor we share with apes, or even with monkeys, back to the time of the first primates,” commented April Ruiz.

The St Andrews’ team worked alongside Jean Jacques Roeder at the Centre de Primatologie de l’Université Louis Pasteur in Strasbourg. The researchers carried out a combined study of the two elements, ‘gaze and search’—something that had surprisingly not been done before. They found that whenever a lemur looked at a location signalled by gaze, it was most likely to choose that location to search for food. In contrast to previous tests with primates, the lemurs were able to use gaze to increase their chance of finding food.

The researchers stress that they are not claiming human-like mental abilities in lemurs. “We call the process gaze priming,” explained Professor Byrne. “Following another’s gaze draws an animal’s attention to a place, and if it is the sort of place where food is found, then the animal will be more likely to search there; if it was the sort of place danger lurks, the animal could choose to do the opposite and keep away from it.”

Dr Gomez added, “To benefit from gaze priming the animal doesn’t need to understand anything about the minds of those whose gaze it follows. Our own, human understanding of attention is built on these simple but useful foundations. Humans have evolved to more complex gaze following, resulting in more flexible behavioral responses.”(17)

The four examples given in this report support *The Urantia Book’s* assertions regarding a direction connection to lemurs in the evolutionary development of human beings.

**Footnotes:**

- 1) [Urantia Book 61:1.2,4](#)
- 2) [Urantia Book 61:2.10](#)
- 3) [Urantia Book 65:2.13-16](#)
- 4) [Urantia Book 62:0.1 – 62:2.3](#)
- 5) [Urantia Book 62:2.6](#)
- 6) [Urantia Book 62:3.1-3](#)
- 7) [Urantia Book 62:3.8 – 62:4.7](#)

- 8) Urantia Book 61:6.1,2
- 9) Urantia Book 62:5.1
- 10) <http://blog.wired.com/wiredscience/2008/03/scientists-unea.html>
- 11) NY Times article
- 12) [http://news.nationalgeographic.com/news/2001/10/1022\\_TVlemur.html](http://news.nationalgeographic.com/news/2001/10/1022_TVlemur.html)
- 13) <http://www.sciam.com/article.cfm?id=fossils-suggest-lemurs-ma>
- 14) Geneticarchaeology.com
- 15) <http://www.ncbi.nlm.nih.gov/pubmed/7943634?dopt=Abstract>
- 16) [http://news.nationalgeographic.com/news/2004/06/0604\\_040604\\_lemurs.html](http://news.nationalgeographic.com/news/2004/06/0604_040604_lemurs.html)
- 17) <http://www.st-andrews.ac.uk/news/Title,29322,en.html> The results of the study are published in the journal Animal Cognition, ref DOI 00.1007/s10071-008-0202-z

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## Lemurs To Humans Review

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### Lemurs To Humans Additional Links

USA Today article

<http://www.st-andrews.ac.uk/news/Title,29322,en.html> publication by St. Andrews where study was done comparing lemur-human gazing

[http://news.bbc.co.uk/2/hi/uk\\_news/scotland/edinburgh\\_and\\_east/7863997.stm](http://news.bbc.co.uk/2/hi/uk_news/scotland/edinburgh_and_east/7863997.stm) BBC coverage

<http://nationalzoo.si.edu/Animals/Primates/Facts/FactSheets/Lemurs/default.cfm>

smithsonian, general on lemurs

gold on the history!!! *Primate Evolution and Human Origins* by Russell L. Ciochon and John G. Fleagle

National Geographic 2009

HIV relationship

<http://www.sciencedaily.com/releases/2008/12/081201200113.htm>

<http://dpz.eu/index.php?id=52> pg 25 for right handedness connection, contested issue

[http://www.eurekalert.org/pub\\_releases/2005-08/fm-tnl080205.php](http://www.eurekalert.org/pub_releases/2005-08/fm-tnl080205.php) two new lemur species discovered

<http://content.karger.com/ProdukteDB/produkte.asp?Doi=134160#OLN> abstract of chromosome connection

<http://www.gnXP.com/blog/2009/03/blue-eyed-lemurs-not-herc2.php> blue eyes not genetically connected to lemurs

<http://cat.inist.fr/?aModele=afficheN&cpsidt=2946350> chromosome relationship abstract

[http://www.cell.com/trends/genetics/abstract/S0168-9525\(07\)00060-1](http://www.cell.com/trends/genetics/abstract/S0168-9525(07)00060-1) general support for lemurs at the root of the primate tree

[http://news.nationalgeographic.com/news/2004/06/0604\\_040604\\_lemurs\\_2.html](http://news.nationalgeographic.com/news/2004/06/0604_040604_lemurs_2.html) on unanticipated cognitive abilities

[http://www.amnh.org/sciencebulletins/bio/f/lemurs.20060401/essays/82\\_print.php](http://www.amnh.org/sciencebulletins/bio/f/lemurs.20060401/essays/82_print.php)

history of madagascar's separation in relation to lemurs

<http://www.sciam.com/article.cfm?id=fossils-suggest-lemurs-ma> Lemurs originating in India!!!

<http://www.sciencemag.org/cgi/content/abstract/294/5542/587?ck=nck> lots of scholars listed

[http://news.nationalgeographic.com/news/2001/10/1022\\_TVlemur.html](http://news.nationalgeographic.com/news/2001/10/1022_TVlemur.html)

Free Library: new fossil

<http://www.newscientist.com/article/mg17223142.100-a-giant-leap-for-lemurs.html>

Island stepping stones from India

Free Library: Wyoming Fossils

<http://www.livescience.com/animals/080808-tiny-teeth.html> very important article related to migration

Esciencenews.com

<http://blog.wired.com/wiredscience/2008/03/scientists-unea.html> N. Amer. Migration!!!

<http://news.nationalgeographic.com/news/2008/03/080303-american-primate.html>

primates originating in N. America

[Monkeydaynews.blogspot.com](http://Monkeydaynews.blogspot.com)

<http://today.msnbc.msn.com/id/26094165/>

Primate fossils in China!!!

<http://dukelemurcenter.blogspot.com/>

[Geneticarchaeology.com](http://Geneticarchaeology.com): map of family tree with lemurs, pure gold

The researchers report their findings in the March 1 issue of *Genome Research*.

Collaborators on the study included Stephanie Embry, Isabella Fiorentino, Gregory Wray and Huntington Willard, all of Duke; Peter Kappeler, of the German Primate Centre; and James Balhoff, of the National Evolutionary Synthesis Center.

Full text: <http://genome.cshlp.org/content/18/3/489.full>

<http://online.wsj.com/article/SB124235632936122739.html> a most recent article

*A fossil discovery suggests humans may be descended from an animal that resembles present-day lemurs like this one.*

In what could prove to be a landmark discovery, a leading paleontologist said scientists have dug up the 47 million-year-old fossil of an ancient primate whose features suggest it could be the common ancestor of all later monkeys, apes and humans.

Anthropologists have long believed that humans evolved from ancient ape-like ancestors. Some 50 million years ago, two ape-like groups walked the Earth. One is known as the tarsidae, a precursor of the tarsier, a tiny, large-eyed creature that lives in Asia. Another group is known as the adapidae, a precursor of today's lemurs in Madagascar.

Based on previously limited fossil evidence, one big debate had been whether the tarsidae or adapidae group gave rise to monkeys, apes and humans. The latest discovery bolsters the less common position that our ancient ape-like ancestor was an adapid, the believed precursor of lemurs. [lemur] AP Photo/Karen Tam

A fossil discovery suggests humans may be descended from an animal that resembles present-day lemurs like this one.

Philip Gingerich, president-elect of the Paleontological Society in the U.S., has co-written a paper that will detail next week the latest fossil discovery in *Public Library of Science*, a peer-reviewed, online journal.

"This discovery brings a forgotten group into focus as a possible ancestor of higher primates," Mr. Gingerich, a professor of paleontology at the University of Michigan, said in an interview.

The discovery has little bearing on a separate paleontological debate centering on the identity of a common ancestor of chimps and humans, which could have lived about six million years ago and still hasn't been found. That gap in the evolution story is colloquially referred to as the "missing link" controversy. In reality, though, all gaps in the fossil record are technically "missing links" until filled in, and many scientists say the term is meaningless. Nonetheless, the latest fossil find is likely to ignite further the debate between evolutionists who draw conclusions based on a limited fossil record, and creationists who don't believe that humans, monkeys and apes evolved from a common ancestor.

Scientists won't necessarily agree about the details either. "Lemur advocates will be delighted, but tarsier advocates will be underwhelmed" by the new evidence, says Tim White, a paleontologist at the University of California, Berkeley. "The debate will persist." The skeleton will be unveiled at New York City's American Museum of Natural History next Tuesday by Mayor Michael Bloomberg and an international team involved in the discovery. According to Prof. Gingerich, the fossilized remains are of a young female adapid. The skeleton was unearthed by collectors about two years ago and has been kept tightly under wraps since then, in an unusual feat of scientific secrecy.

Prof. Gingerich said he had twice examined the adapid skeleton, which was "a complete, spectacular fossil." The completeness of the preserved skeleton is crucial, because most previously found fossils of ancient primates were small finds, such as teeth and jawbones. It was found in the Messel Shale Pit, a disused quarry near Frankfurt, Germany. The pit has long been a World Heritage Site and is the source of a number of well-preserved fossils from the middle Eocene epoch, some 50 million years ago.

Prof. Gingerich said several scientists, including Jorn Hurum of Norway's National History

Museum, had inspected the fossil with computer tomography scanning, a sophisticated X-ray technique that can provide detailed, cross-sectional views. Dr. Hurum declined to comment.

Although the creature looks like a lemur, there are some distinctive physical differences. Lemurs have a tooth comb (a tooth modified to help groom fur); a grooming claw; and a wet nose. Dr. Gingerich said that the adapid skeleton has neither a grooming claw nor a tooth comb. "We can't say whether it had a wet nose or not," he noted.

Since the fossilized creature found in Germany didn't have features like a tooth comb or grooming claw, it could be argued that it gave rise to monkeys, apes and humans, which don't have these features either.

Write to Gautam Naik at [gautam.naik@wsj.com](mailto:gautam.naik@wsj.com)

<http://online.wsj.com/article/SB124235632936122739.html>

### Lemur Family Tree Conclusively Mapped (2/23/2008)

After swabbing the cheeks of more than 200 lemurs and related primates to collect their DNA, researchers at the Duke Institute for Genome Sciences & Policy (IGSP) and Duke Lemur Center now have a much clearer picture of their evolutionary family tree.

Found in nature only on the island nation of Madagascar, off Africa's southeastern coast, lemurs and their close relatives the lorises represent the sister lineage to all other primates. And that makes lemurs key to understanding what distinguishes us and the rest of our primate cousins from all other animals, according to Julie Horvath, a post-doctoral researcher in the IGSP.

"If we find a trait or characteristic shared between lemurs and other primates, it can tell us what is or isn't primate-specific and when those traits arose," said Horvath, who works in the laboratory of IGSP director Huntington Willard.

The new "phylogenomic toolkit" the researchers developed will also play into conservation efforts aimed to save the critically endangered lemurs, by helping to define the number of existing species, said David Weisrock, a post-doctoral researcher working with Duke Lemur Center Director Anne Yoder.

The researchers report their findings in the March 1 issue of *Genome Research*.

Scientists uncover evolutionary relationships among species based on similarities and differences in their genetic codes. The increasing number of fully sequenced genomes available for major evolutionary groups has allowed resolution of relationships that had been considered unmanageable before.

But except for humans' close evolutionary ties to chimpanzees, many of the relationships among other apes, monkeys and pre-monkeys called prosimians have remained somewhat murky, according to Horvath.

To find out where Madagascar's lemurs fit in, the Duke team first needed to develop the tools for comparing sequences from the many lemur species to one another, and to those of other primates including humans.

The researchers identified stretches of DNA sequence held in common between the genomes of the human, the ringtailed lemur and the mouse lemur. These "conserved sequences" served as primers, allowing them to sample comparable bits of sequence across the genomes of the various primate species.

Their analysis confirmed that the first to branch off from the rest of the lemurs, some 66 million years ago, was the aye-aye--a nocturnal primate that taps on trees with its fingers to listen for insects inside, making it Madagascar's version of a woodpecker. They also resolved the relationships among species within the remaining four evolutionary lineages, which includes a diverse cast of characters: the sifakas, named for the hissing "shee-fak" sound they make; the sportive lemurs, which are strictly nocturnal; the mouse lemurs, the smallest of all living primates; and the many so-called "true lemurs," including the blue-eyed black lemur (one of only three blue-eyed primates in the world) and the ringtailed lemur, which is often found in zoos.

"By throwing this much data at the problem, we have absolutely confirmed, beyond any statistical doubt, that the spectacular array of lemurs all descended from a single ancestral species," said Yoder, noting that lemurs account for about 20 percent of primate species and live



on less than one percent of the earth's surface. "It further highlights the importance of Madagascar as a cradle for biodiversity."

The study lays the groundwork for doing future studies of lemurs and other primates. The methods the group developed for this study can also be applied to understanding evolutionary relationships among other animal groups for which genomic sequences are hard to come by. Collaborators on the study included Stephanie Embry, Isabella Fiorentino, Gregory Wray and Huntington Willard, all of Duke; Peter Kappeler, of the German Primate Centre; and James Balhoff, of the National Evolutionary Synthesis Center.

Note: This story has been adapted from a news release issued by Duke University

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*Verifying History and Science in The Urantia Book*