

# AnVRopomotron Transcript

by Dr. Keith Chan

version 1.2.3

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Welcome to the AnVRopomotron transcript! This document is intended for anyone who needs the text of the museum to displayed outside of the browser and for those who want a visual description of all of the museum contents. The transcript mimics the museum experience by starting in the central Centerpiece Hall. Then, each item in the VR Grab Lab is described, followed by the Scale Model Hall, Human Evolution Hall, and Burial Chamber.

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## **Centerpiece Hall**

The museum is within a building of light gray walls and a green floor. The Centerpiece Hall of the museum is an open space ringed by exhibits and walls with text. The walls to the front have instructions for the museum experience that are customized for each device. To the east is the Grab Lab. The Scale Model Hall is to the west.

### ***Wall Text***

#### **North Wall**

“Scale Model Hall” is to the left of the centerpiece statue and “VR Grab Lab” is to the right.

#### **South Wall**

“AnVRopomotron” in extremely large type, stretching across the length of the wall. Under the title is a short web link to this document. “Version 1.1.5” is in small type in the corner.

#### **West Exhibit — Height Chart**

The wall to the left has text and markings showing the height of various primates. From bottom to top:

##### ***Left Column***

- *Homo floresiensis* LB1 (3 feet 6.0 inches, or 1.06 meters)
- Neanderthal female average (5 feet 0.6 inches, or 1.54 meters)

- Neanderthal male average (5 feet 5.3 inches, or 1.66 meters)
- Robert Pershing Wadlow (tallest recorded person) (8 feet 11.1 inches, or 2.72 meters)
- Gigantopithecus (bipedal) (9 feet 9.6 inches, or 3.27 meters)

**Center column:**

- Lucy (*Australopithecus afarensis* female) (3 feet 6 inches, or 1.06 meters)
- Chewie (*Australopithecus afarensis* male), 5 feet 5 inches, or 1.65 meters)

**Right column:**

- Common chimpanzee female (4 feet 1.2 inches, or 1.26 meters)
- Common chimpanzee male (4 feet 4.8 inches, or 1.34 meters)
- *Homo naledi* male (5 feet 0 inches, or 1.5 meters)
- Nariokotome (Turkana) Boy (*Homo erectus*) (5 feet 3 inches, or 1.60 meters)

**Front of the Room (North) – Centerpiece Statue**

A tall angular statue of four different figures is set against a reflective silver background. In the back is Gigantopithecus, the tallest figure at ten feet tall (3.05 meters). It is standing on its hind legs with arms reaching up near the ceiling to hold on to a vine there. It has very long arms compared to its legs, all connected by a barrel-shaped body. At the tip of its right pointing figure is a tiny figure that is barely visible. It is Archicebus, standing on four legs on the finger of Gigantopithecus. Archicebus resembles more a mouse than a monkey. In front on the ground are two more statues. To your right is a Modern *Homo sapiens* woman wearing a plain field outfit of a collared top and pants. Her hands are folded lightly in front of her. To your left is the figure of Lucy, an *Australopithecus afarensis*. She is shorter than the human figure, only up to the other statue's

waist. Lucy is reaching out with a long right arm, and has tucked her left arm back to her side. Lucy's head is more ape-like with wider proportions and a more projecting face than the human.

### ***Centerpiece Statue Information Panels***

#### **Gigantopithecus**

- Scientific Name: *Gigantopithecus blacki*
- Location: China, Vietnam, and Indonesia
- Time: 9 to 0.1 million years ago
- Notes: The largest primate that has ever lived. Estimates reach 3 meters (9.8 feet) tall and 1300 pounds. Only teeth and mandible fossils have been found.

#### **Archicebus**

- Scientific Name: *Archicebus achilles*
- Location: China
- Time: 55 million years ago
- Notes: Possibly the smallest primate ever.

#### **Lucy**

- Scientific Name: *Australopithecus afarensis*
- Location: Ethiopia
- Time: 3.4 million years ago
- Notes: Female australopithecine discovered by Donald Johanson and team in 1974.

#### **Modern Human**

- Scientific Name: *Homo sapiens*
- Location: Earth



- Time: 300,000 years ago to present
- Notes: The only surviving hominin, with the most advanced cultural ability.

## **Back of the Room (South) – Chimpanzee Statue**

A 3D scan of a metal statue with a bluish green tint showing a chimpanzee sitting on a stack of books and contemplating a human skull in its hand. It resembles Rodin's The Thinker. The statue is just over a yard tall and larger than life size.

### ***Chimpanzee Statue Information Panel***

- "Conversion"
- Location: Au von Tulln, Austria
- Date: 2008
- Source: Scan by Niederösterreich 3D
- Notes: This statue by Klaus Weber is based on the 1893 "Affe mit Schädel" (Monkey with Skull) by Hugo Rheinhold

## **Grab Lab**

Heading right from the Centerpiece Hall leads to the VR Grab Lab, where there are tables of small objects that can be handled. Closest to the Centerpiece Hall are the Artifact table and Primate Figures table. More tables lie beyond a passage of turns. The Centerpiece Hall is west.

### ***Artifact Table***

## **Lomekwian Hammerstone**

Description: Description: The stone tool is a mottled orange-brown round rock

and as large as a grapefruit. Most of the surface is smooth except for one of the sides that is flattened by the loss of a piece. The opposite side has a smaller circular indentation.

***Information Panel:***

- Location: Lake Turkana, Kenya
- Time: 3.3 million years ago
- Source: Scan by the UCFanthropology
- Notes: The Lomekwian is the currently oldest known stone tool style. The hominids of this time and location were members of Australopithecus and Kenyanthropus, though they have not been directly associated with the tools. Types of worked stone include hammerstones, anvils, cores, and flakes.
- This hammerstone, labeled LOM3-2012 surf 54, has impact points and an area that resembles a flaked rock.

**Acheulian Handaxe**

Description: The axe is a pointed triangle-shaped rock the size of an adult human hand. The wide base is gray while the rest is unevenly colored yellow and orange. There is a scalloped texture around the entire edge of the stone from chipped rock.

***Information Panel:***

- Location: Abbeville, France
- Time: Unknown
- Source: Scan by Kathleen Brock of Research Laboratories of Archaeology, University of North Carolina at Chapel Hill
- Notes: Handaxes were a technology widespread in time and geography,

from 1.8 million to 130,000 years ago in Africa, Europe, and Asia. The chipped stone tools are associated with Homo erectus and continued to be used with archaic Homo sapiens.

## **Wal**

**I**

### **Illustration:**

- Description: A black and white ink drawing of an Achelian handaxe. The lines show many chipped facets, especially along the edge. A scale at the bottom of the drawing reaches 8 centimeters, around 80% of the tool's maximum width at the base.
- "Palaeolithic Handaxe" by The Portable Antiquities Scheme/The Trustees of the British Museum, used under CC BY 2.0
- Sub-triangle handaxe from Suffolk, England

## **Mousterian Scraper**

Description: This rock is ovular overall but with many chipped faces. It is light brown and the size of a drink coaster. There is a slight curve to the shape. The outside curve side is rougher with more facets. The inner curve side is mostly one smooth face. A researcher has written "chambe mous" and "52909" in ink on the smoother side.

### **Information Panel:**

- Location: Chambes, France
- Time: Unknown
- Source: Scan by Abigail Gancz of Research Laboratories of Archaeology, University of North Carolina at Chapel Hill
- Notes: Mousterian tools were made with more efficiency and for more

functions than the earlier Acheulian style. European Mousterian tools, dated between 160,000 and 40,000 years ago, are associated with Neanderthals. Scrapers could have been used to producing leather from animal hides."

## **Wal**

**I**

### **Illustration:**

- Description: The drawing is in black and white ink and shows seven different Mousterian tools. While they have individual differences, most share a lightly curved length with the longer curve as the working surface and the shorter curve serving as the grip. In the lower right is the only exception, an long oval-shaped dull point. The drawing is signed "A. de Mortillet."
- "Mousterian Points and Scrapers" by Wellcome Images, used under CC BY 4.0;
- Illustration of Mousterian scrapers from 1903.

## **Clovis Lanceolate Spear Point**

Description: This item is a light yellowish brown and it is the size of a cracker. The shape resembles a tiny boogie board the length of a finger. One end is pointed while the other has been shaped into two small points on either side of the flat shape.

### **Information Panel:**

- Location: Piedmont region of North Carolina
- Time: 10,000 to 9,000 thousand years ago
- Source: Scan by Steve Davis of Research Laboratories of Archaeology, University of North Carolina at Chapel Hill

- Notes: Clovis was the first widespread North American stone tool style. The spear points have been found with the skeletal remains of megafauna, suggesting that the tools were important and accessing that resource.

## **Hippopotamus Ivory Harpoon**

Description: The harpoon is a long and pointed object of around six inches (15.24 cm). It is a uniform medium brown. Down one side of the harpoon's length are a series of six barbs that point backwards from the tip. The other side has been broken off.

### ***Information Panel:***

- Location: Ileret, Kenya
- Time: 9,000 years ago
- Source: Scan by African Fossils
- Notes: Fishing cultures lived around the lush Lake Turkana in the early Holocene. This tool would have been hafted to a wood shaft and used to spear fish, with the barbs allowing for the fish to be retrieved with the harpoon.

## ***Wal***

***I***

### ***Photograph:***

- Description: This photo shows a hippopotamus submerged in water except for its head. Its mouth is open wide as it points its snout up, showing the light pink palate and array of teeth. The canines and incisors are long and pointed..
- "Hippo (*Hippopotamus amphibius*) Yawning" by Bernard DUPONT, used under CC BY-SA 2.0

- A hippopotamus showing tusks like the source material of the harpoon.

## **Engraved Water Bottle**

Description: The bottle is a bluish-gray pot with a flaring rounded base and a vertical opening. It is the size of a cereal bowl. Around the round base are fine light engravings that depict stylized birds.

### ***Information Panel:***

- Location: Moundville, Alabama
- Time: 1400
- Source: Replica scan by Research Laboratories of Archaeology, University of North Carolina at Chapel Hill
- Notes: Moundville is a Mississippian culture site that held a dense agricultural population living amongst 34 constructed mounds. The original artifact was studied by archaeologist Clarence B. Moore in the turn of the 20th century. His notebooks label the bird figures as ivory-billed woodpeckers, a species now likely extinct.

## ***Wal***

***I***

### ***Illustration:***

- Description: Color painting of two woodpeckers sitting on either side of a vertical tree branch. On the left, the upper surface, is a female woodpecker that has black plumage except for white highlights, wingtips, and a white beak as well. On the right underside of the branch is the male woodpecker, which has similar coloration to the female in addition to a large red crest coming out from the back of his head.
- Painting by John James Audubon, image by Houghton Library, used under

public domain

- Painting of ivory-billed woodpeckers.

## **Human Femur Dagger**

Description: This tool is a uniform orange-brown. It is a long dagger of over a foot (30.5) cm in length, ending in a sharp tapered point. At the other end are the identifiable dual condyles of a human femur. Around this end are stylized engravings.

### ***Information Panel:***

- Location: Upper Sepik River, Papua New Guinea
- Time: Mid 1900s
- Source: Scan by 3D Modeling of Bone Daggers from Papua New Guinea Project, Hood Museum of Art, Dartmouth College
- Notes: Daggers carved from human femurs were used for combat but also had symbolic value. The bones were from respected warriors and believed to be imbued with their power. Daggers were also carved from cassowary bird bones.

## ***Wal***

***I***

### ***Photograph:***

- Description: A photograph of a bone dagger on a dark background. The dagger is pointing downward. Its color is a gradient of caramel, with more saturation towards the grip and lightening towards the point. The grip end has incisions in patterns of diamonds, lines, and circles, which are darker than the rest of the bone.
- Image by Saint Louis Art Museum, used under public domain

- Dagger carved from a cassowary bird femur, Papua New Guinea

## ***Primate Figures Table***

### **Woman of Willendorf**

Description: The rounded human figure is around four inches (10.16 cm) tall. It is untextured and colored a uniform orange. The figure is a curvy woman with an over sized head wearing what appears to be a knit cap. Her face is featureless. She has large bosoms bracketed by extremely thin arms. The abdomen is round and there is a hint of female genitalia. The legs taper down to two small feet.

#### ***Information Panel:***

Location: Austria

- Time: 32,000 years ago
- Source: Scan by Scan the World
- Notes: Nude female figures with exaggerated sexual features, labeled 'Venus figurines' may have represented fertility. This artifact, the most famous of this category, was found in 1908. It is currently in the Naturhistorisches Museum, Vienna, Austria.

### ***Wal***

***I***

#### ***Photograph:***

- Description: A close-up photograph of a carved female figure. The head and torso are slender while the gluteal area of the upper leg is extremely large. The figure appears to have thin arms resting on top of her bosom, which are partially broken. The figure has a shiny mottled brown pattern except for the broken parts that are a uniform light color.



- Photograph by Vassil, used under CC0
- The "Venus of Lespugue," 23,000 years old, found in Haute-Garonne, France.

## **Canopic Jar Lid**

Description: A bust of a baboon head in a tan material with a jar stopper at the bottom. The head has a long dog-like snout and ear-like mounds of fur on either side of the head. Carved eyes are barely visible on the face. On the back are two stickers placed by archivists but they are faded.

### ***Information Panel:***

- Location: Egypt
- Time: Unknown
- Source: Scan by Anna Garnett and Thomas Flynn for the British Museum
- Notes: Canopic jars contained isolated organs of mummified people and were entombed together. The hamdryas baboon bust represents the Egyptian god Hapi, who protected the lungs of the deceased."

## ***Wal***

***/***

### ***Photograph:***

- Description: A photograph of four animal-headed jars on a gray gradient background. From left to right, the animals are a falcon, human, baboon, and jackal. The size of the jars increase from left to right. All of the jars are an unpainted tan color.
- Photograph by The Metropolitan Museum of Art, used under CC0
- Set of canopic jars representing the four sons of Horus, 25th Dynasty (712 to 664 BC).

## **Nasca Vessel**

Description: The rounded container is covered in two outlined humanoid figures in various shades of brown. They appear to be humans wearing masked face plates with whiskers. They are hunched over, showing that they are wearing elaborate cloaks. To the right side of each face is the figures' right arms, each of which is holding a light brown staff. At the top of the container are two vertical spouts, connected by a bridge of pottery.

### ***Information Panel:***

- Location: Peru
- Time: 325 to 440
- Source: Scan by Laura Shea of Mount Holyoke College Art Museum, South Hadley, Massachusetts
- Notes: The Nasca were a prehistoric culture on the southern coast of Peru. They are most known today for the Nasca Lines, large designs exposed in the Nazca Desert. This container is decorated with multi-colored figure of a ritual performer in a whiskered mask and elaborate cloak."

## ***Wal***

***I***

### ***Photograph:***

- Description: A flattened gold mask is photographed on a gray background. The mask has raised features, such as human eyes, nose, and mouth with teeth barred. Snake-like projections complete with little eyes ring the top and sides of the mask.
- Photograph by The Cleveland Museum of Art, used under CC0
- Nasca culture mask made of hammered gold alloy.

## **Baboon Figurine**

Description: This full body carving of a sitting baboon is a bright blue with small spots of brown wear. The baboon has a long squared snout with a short thin line representing the mouth. Round tufts of fur extend like ear muffs from the sides of the head. Small ears are carved into the tufts. A thick cloak of fur incised in an intricate hatched pattern starts at the back of the head and continues down over the body to the folded arms and mid-back. The lower half of the baboon is thin in comparison, ending in small rounded haunches and a tail curving around the right side. On the front, stretched a length forward are his genitalia.

### ***Information Panel:***

- Location: Egypt
- Time: 700 to 500 BC
- Source: Scan by the Minneapolis Institute of Art
- Notes: This figurine was made from faience, a type of glazed ceramic ware. The hole at the top would have held a crescent crown representing the moon god Thoth. This god is also associated with writing, measurement, and balance.

## ***Wal***

***/***

### ***Photograph:***

- Description: This photograph shows a male hamadryas baboon sitting on a rocky outcropping. The baboon is resting on its red posterior with hind legs folded up and elbows resting on the knees. The baboon is covered in long crinkled white fur except for the pink face and shorter fur on the hands and feet.
- Photograph by Moataz Tawfek Egbaria, used under CC BY-SA 4.0
- Male hamadryas baboon, seated.

## ***Pre-Homo Fossil Skull Table***

### **Archicebus**

Description: A reconstruction of a rodent-like prehistoric primate. Its body can fit in the palm of an adult human hand. While the body resembles a rodent and is covered in gray fur, the head has the shorted snout of a primate, and orange forward facing eyes. The limbs are longer than a typical rodents' and its peach-colored hands and feet are larger, with longer digits and divergent thumbs and big toes. Out the back of the Archicebus is a long, thin, and gray tail that stretches further than the body before rapidly curving downward, ending in a darkened tuft.

#### ***Information Panel:***

- Scientific Name: *Archicebus achilles*
- Location: China
- Time: 55 million years ago
- Item: Scale Model
- Source: Model by Keith Chan
- Notes: Possibly the smallest primate ever. The collection of traits resemble haplorhine primates (tarsier, monkeys, apes, and humans). The weight of the organism is from 20 to 30 grams. The small body and pointed teeth suggest an insectivorous diet.

### **Proconsul**

Description: The replica shows the distorted husk of a fossil cranium. While the left side of the face is damaged, the right eye socket is mostly intact and facing forward. It has the typically small nose opening of a primate. Its snout is short.

Many teeth of the upper jaw are present. They show a 2 1 2 3 pattern, with two incisors, one canine, two premolars, and three molars on each side.

Information Panel:

- Scientific Name: *Proconsul africanus* or *hesloni*
- Location: Rusinga Island, Lake Victoria, Kenya
- Time: 23 million years ago
- Item: Cranium
- Source: Replica scan by African Fossils
- Notes: Proconsulids were species of early apes. While possessing ape dental traits and lacking a tail, the rest of their anatomy was similar to Old World monkeys.

## Toumai

Description: This bocce ball-sized cranium is distorted with crushing towards its right side, but is otherwise solid and intact. The face is extremely short compared to that of apes. An extremely thick brow ridge that crosses over its eye orbits.

**Information Panel:**

- Scientific Name: *Sahelanthropus tchadensis*
- Location: Chad
- Time: 7 to 6 million years ago
- Item: Cranium
- Source: Replica scan by svtlille
- Notes: Sahelanthropus is the earliest known hominin, a primate fossil with clear traits separate from other lineages. The angle of the vertebral column would have attached vertically to the base of the cranium for a bipedal posture. The teeth are also smaller than that of great apes.

## **KNM-WT 40000**

Description: This early hominin cranium has a notably flattened, scooped-in facial structure. No teeth are present. It is the size of a bocce ball.

### ***Information Panel:***

- Scientific Name: *Australopithecus* or *Kenyanthropus platyops*
- Location: West Turkana, Kenya
- Time: 3.5 to 3.2 million years ago
- Item: Cranium
- Source: Replica scan by African Fossils
- Notes: Named for the flattened face compared to other hominins of its time, this species has been interpreted to be a separate species or genus from *Australopithecus afarensis*. The presence of early hominins of different shapes shows that diversity among hominins already existed at that time.

## **The Black Skull (KNM-WT 17000)**

Description: This robust australopithecus cranium has extremely wide and thick cheekbones, forming a diamond shape with the rest of the face. Also, this fossil has a prominent fin of bone running from front to back on top of the brain case.

### ***Information Panel:***

- Scientific Name: *Australopithecus* or *Paranthropus aethiopicus*
- Location: Ethiopia
- Time: 2.5 million years ago
- Item: Cranium
- Source: Replica scan by African Fossils
- Notes: This fossil is named for the dark manganese mineral that became part of the structure. The cranium has large features that accommodate

strong jaw muscles. The muscles would have reached from the mandible, under the arches of the zygomatic (cheek) bones, and all the way up to the sagittal crest at the very top of the cranium.

## **Mrs. Ples (STS 5)**

Description: The replica cranium has a tan spotted plastic texture. It has a projecting face that curves forward from the mid-eye level down the nasal area to the upper jaw. The reconstruction shows portions represented by the fossil and gaps that had to be filled in. The largest filled-in area is a band that starts at the back of the cranium, wraps around the left side of the brain case, and tapers to a point across the sloping forehead.

### ***Information Panel:***

- Scientific Name: *Australopithecus africanus*
- Location: Sterkfontein, South Africa
- Time: 2.05 million years ago
- Item: Cranium
- Source: Replica scan by Digital Atlas of Ancient Life
- Notes: While nicknamed Mrs. Ples by the discoverers, the sex of this individual is debated by scholars. The fossil, the most complete *Australopithecus africanus* cranium, was discovered in 1947. The species lived in forested regions along sources of water surrounded by grassland.

## ***Hominin Fossil Skull Table***

### **KNM-ER 1470**

Description: This reconstruction of a fossilized cranium has a more rounded

braincase than the specimens on the Pre-Homo Fossil Table. It also has thinner brow ridges and a shorter face.

***Information Panel:***

- Scientific Name: *Homo habilis* or *rudolfensis*
- Location: East Turkana, Kenya
- Time: 1.9 million years ago
- Item: Cranium
- Source: Replica scan by African Fossils
- Notes: Early Homo is characterized by an increased cranial capacity from the australopithecines. This fossil was discovered in 1972 by Bernard Ngeneo.

**Nariokotome Boy (KNM-WT 15000)**

Description: The textured model is a light greenish brown. The cranium is most intact except for most of the brow ridge. Many teeth of the upper jaw are present.

***Information Panel:***

- Scientific Name: *Homo erectus*
- Location: Turkana, Kenya
- Time: 1.6 million years ago
- Item: Cranium
- Source: Replica scan by Museo [UV] Historia Natural
- Notes: This fossilized H. erectus, the most complete known skeleton of his species, was found in 1984. The estimated stature of 160 cm (5 foot 3 inches) is tall compared to the estimated juvenile age.



## Atapuerca 5

Description: The full skull is approximately the size of a modern adult human's skull. There are some notable differences, such as a more-projecting face, lower forehead, and and thick brow ridges.

### ***Information Panel:***

- Human Group: Archaic *Homo sapiens* (*Homo heidelbergensis*)
- Time: 430,000 years ago
- Item: Skull
- Source: Scan by Geoffrey Marchal
- Notes: The Atapuerca 5 individual is from the site of Sima de los Huesos in Atapuerca, Spain. His skeletal features indicate a 30-year-old male with numerous cranial and dental injuries.

## Letimela (U.W. 110)

Description: The reconstruction of the front and underside of a small hominid cranium is colored black with tan areas representing the found fossils. Than areas include the area between the brow, tiles of frontal bone, and the upper-deciduous molars. Also recovered and embedded in the face are the crowns of upper incisors. The whole cranium fits in the palm of a typical adult hand.

### ***Information Panel:***

- Scientific Name: *Homo naledi*
- Time: 330,000 to 241,000 years ago
- Item: Cranium
- Source: Reconstruction by Prof. Lee Berger. Scan by Sonia Sequeira
- Notes: The fragmented skull was found on ledge within a narrow fissure. The combination of adult and deciduous teeth suggest an age of 4 to 6

years.

## **Neo (LES1)**

Description: The reconstruction shows a skull with a small but rounded brain case. The snout projects, especially towards the teeth away from the nose. The skull is the size of a cantaloupe.

### ***Information Panel:***

- Scientific Name: *Homo naledi*
- Time: 330,000 to 241,000 years ago
- Item: Skull
- Source: Scan by Sonia Sequeira
- Notes: *Homo naledi* fossils were found in the Rising Star cave system in South Africa and studied by a team led by Lee Berger. The species is unique for having a mixture of australopithecus smaller brain size but with Homo-like structures. Research continues to find out more about this new discovery, addressing questions such as whether their presence in the cave is the result of a funerary practice.

## **La Chapelle-aux-Saints 1**

Description: This model approaches the size of a flattened volleyball. The nose opening is extremely wide and rounded compared to the modern human. There are also prominent arched brows and a long, low forehead. The back of the brain case is lengthened.

### ***Information Panel:***

- Human Group: Neanderthal

- Location: France
- Time: 60,000 years ago
- Item: Cranium
- Source: Replica scan by Anatomical Museum
- Notes: The remains of this individual were discovered in 1908. The skeleton, including the cranium, shows heavy tooth and joint wear, showing that he survived in an extremely demanding environment. Misinterpretation of the skeleton led to the old perception of Neanderthals as ape-like.

## **Virtual Last Common Ancestor, Hypothesis 1**

Description: The cranium model resembles a modern human skull the most of the ones on this table. It has a high forehead and reduced brows. The overall size and thickness is on the more extreme end of modern variation, especially in the size and spacing of the eye orbits and nose.

### ***Information Panel:***

- Human Group: Archaic *Homo sapiens*
- Item: Cranium
- Source: Phylogenetic model by Mounier and Lahr (2019)
- Notes: This model is based on a statistical estimation of cranial landmarks from modern human crania and human fossils. The shape represents a hypothetical last common ancestor of our species.

## **Modern Non-Hominoid Skull Table**

### **Potto**

Description: This scan of a real skull is tiny, the size of a table tennis ball. It is

textured a dull yellow. Notable are the extremely large eye orbits compared to the rest of the skull, ringed by very thin bone. There is a medium-length snout that is long for a primate but short for a rodent. Someone has written an identification number on the brain case and applied a sticker with another number along the right cheekbone.

### **Information Panel:**

- Scientific Name: *Perodicticus potto*
- Location: West and Central African tropical forests
- Item: Cranium
- Source: Scan by Lapworth Museum of Geology
- Notes: Pottos are slow-climbing prosimians that live in African tropical forests. They are active at night and eat fruits and insects. Their maximum size is from 30 to 39 cm (1 foot to 1 foot 3 inches).

### **Wal**

**I**

#### **Illustration:**

- Description: Ink drawing on a tan colored medium showing a potto sitting on a horizontal branch. The potto is looking out at the viewer and is touching the branch with an extended left arm while the right arm is resting on a folded knee.
- Drawing by St. George Jackson Mivart, image by The Internet Archive
- Drawing of a potto from 1894.

### **Indri**

Description: The tennis ball-sized grayish brown skull has openings for wide forward-facing eyes, with a snout in between. It has a long snout and a thickened

mandible.

**Information Panel:**

- Scientific Name: *Indri indri*
- Location: East coast of Madagascar
- Item: Skull
- Source: Micro CT Scan by D'Arcy Thompson Zoology Museum and Scan the World
- Notes: Indris are one of the largest living lemurs, with a body length of up to 72 cm (2 feet 4.3 inches). They form monogamous pairs or live in female-led polygynandrous groups (multiple males and females).

**Wal**

**I**

**Photograph:**

- Description: An indri is photographed clutching to a vertical branch with all four limbs and resting its body weight on a very thin horizontal branch offshoot. The indri is mostly white with black hands and feet, knee, face, and ear tufts.
- By Christophe Germain
- Indri in Andasibe-Mantadia National Park.

**Coiba Island Howler Monkey, male**

Description: The howler monkey skull has an incredibly enlarged mandible that flares down and back. The skull is the size of a baseball.

**Information Panel:**

- Scientific Name: *Alouatta palliata*

- Location: Coiba Island, Panama
- Item: Skull
- Source: Scan by The Smithsonian Museum of Natural History
- Notes: Howler monkeys have enlarged vocal organs for making loud calls through their dense forest environment.

## **Wal**

**I**

### **Photograph:**

- Description: This photograph shows a view of heavily forested islands as seen from the blue water. The islands are almost completely covered in trees with the exception of thin strips of beach.
- Photo by Alex Proimos, used under CC BY 2.0
- Coiba Island, Panama. The island separated from the isthmus from 18,000 to 12,000 years ago.

## **Squirrel Monkey**

Description: This small skull can fit on a business card. There are large eye sockets that are separated only by a thin wall of bone. The snout is greatly reduced while the front teeth are disproportionately large.

### **Information Panel:**

- Scientific Genus: *Saimiri*
- Location: Central and South America
- Item: Skull
- Source: Scan by RISD Nature Lab
- Notes: Squirrel monkeys are platyrrhines (New World monkeys) with bodies around a foot (30.5 cm) long. They can be found in groups of up to 500

individuals and are active in the daytime.

## **Wal**

**I**

### **Photograph:**

- Description: A single squirrel monkey is seen up close in this photograph as it is halfway between standing and sitting on a suspended rope. The monkey has many colors: yellow fur overall except for a light chest, and gray shoulders and head. The eyes are outlined by white fur and pink skin. The snout is dark skin. In addition, the ears are white with pink skin towards the opening.
- Photo by Tambako The Jaguar, used under CC BY-ND 2.0
- Squirrel monkey at the Zurich Zoo, Switzerland

## **Hamadryas Baboon**

Description: This impressive skull is long with an extensive snout. At the end of the snout are extremely large canines, whose roots are visible embedded in the upper jaw.

### **Information Panel:**

- Scientific Name: *Papio hamadryas hamadryas*
- Location: The Horn of Africa and southwestern Arabian Peninsula
- Item: Skull
- Source: Scan by The Smithsonian Museum of Natural History
- Notes: Baboons are Old World monkeys that form troops of a few adult males, many adult females, and their offspring. Troops can form larger groups of up to 400 individuals. The snout of baboons has evolved to allow for forward-facing vision while providing structural support for the large

canine teeth.

## **Wal**

**/**

### **Photograph:**

- Description: This photograph shows a troop of baboons sitting or clutching to a rocky surface. Near the center is the dominant male. He is the largest and covered in puffed out white fur and pink skin. Eight other baboons surround him, all with brownish fur and bright red rumps.
- By UrLunkwill, used under CC BY-SA 3.0 DE
- Hamadryas baboon troop with one adult male and numerous females.

## **Rhesus Macaque**

Description: The dark brownish-gray textured skull is around the size of a bocce ball. It has a medium-length snout between those of the mandrill and snub-nosed monkeys. The upper canines are longer than the other teeth, though not as long as the baboons'.

### **Information Panel:**

- Scientific Name: *Macaca mulatta*
- Location: Central Asia, India, Southeast Asia, and China
- Item: Skull
- Source: Scan by RISD Nature Lab
- Notes: The wide range of rhesus macaques attest to their adaptability to different environments. Some live within human farmland and cities. Also, several colonies of released monkeys live in United States territory.
- See a model of a rhesus macque in the Scale Model Hall!



## **Wal**

### **I**

#### **Photograph:**

- Description: A single monkey is photographed laying down on its belly on a fallen log. Its coat is a mix of medium and light brown. Exposed skin on the fingers and toes are gray while pink skin is visible around the face. The monkey is looking out towards the camera with dull orange eyes with small pupils.
- Photo by Allan Hopkins, used under CC BY-NC-ND 2.0
- Rhesus monkey in Keoladeo National Park, India.

## **Mandrill**

Description: The mandrill skull is the largest on the table, exceeding a foot (30.5 cm) in length. The snout is extremely long, with impressive flares of bone running down the right and left sides. The teeth are large, especially the canines.

#### **Information Panel:**

- Scientific Name: *Mandrillus sphinx*
- Location: Tropical forests of western Africa
- Item: Skull
- Source: Scan by The Smithsonian Museum of Natural History
- Notes: The male mandrill is the heaviest Old World monkey, though slightly shorter than baboons. Females live in stable social groups that can number 1,300 members. In contrast, males live solitary lifestyles but compete with each other to be accepted into the female group for mating.

## **Wal**

### **I**

#### **Photograph:**

- Description: This photo is a portrait of a male mandrill. The face has many standout features. The snout is a bright light blue, with ridges running down the length. The nostrils are bright red. Tufts of light fur ring the pink outlined-mouth. Under his projecting brow ridge are two piercing orange eyes.
- Photo by William Warby, used under CC BY 2.0;
- Male mandrill. The red and blue hues are from light scattering through an array of collagen fibers in the skin.

## **Golden Snub-Nosed Monkey**

Description: This cranium is squarish in shape when seen from the top due to the very short snout. The eye orbits are large in comparison to the nose opening. The object is the length of a computer mouse, but with an equal width.

#### **Information Panel:**

- Scientific Genus: *Rhinopithecus*
- Location: Central Chinese mountainous forests
- Item: Cranium
- Source: Scan by Morphosourcus
- Notes: This species is known for their distinctive long golden fur and pale blue faces. This cranium is probably female.

## **Wal**

### **I**

#### **Photograph:**

- Description: Two monkeys with orange fur are photographed, with one mostly obscured by the other. The monkeys have bright orange fur on the head and more dull fur on the body and down the arms. Ringing the eyes and the nose and mouth are patches of blue skin. The nose of the monkeys are extremely short, reduced to two vertical slits almost flush against the face.
- Photo by Jack Hynes, used under CC BY-SA 2.0
- Two snub-nosed monkeys near Xian, China.

## **Hominoid Skull Table**

### **Lar Gibbon**

Description: The gibbon cranium is the size of a tennis ball and its roundness shows the short snout of the primate. The upper canines are surprisingly long relative to the other teeth. The brain case is slightly more rounded than those of monkeys.

#### **Information Panel:**

- Scientific Name: *Hylobates lar carpenteri*
- Location: Southeast Asia
- Item: Skull
- Source: Scan by The Smithsonian Museum of Natural History
- Notes: The specimen was found in Phak Khinak Mountain, Thailand. The sex is unknown. The left mandible has an extra tooth, an impacted fourth molar.

## **Wal**

### **I**

#### **Radiograph:**

- Description: The x-ray image taken from the side shows the density of bone in the gibbon cranium. Dark areas, which are denser, appear at the front of the snout, within the molar teeth, and at the base of the skull.
- Image by The National Museum of Natural History, used under CC0
- X-ray image of the specimen cranium.

## **Western Lowland Gorilla, male**

Description: This skull is the largest on the table, with many extreme features. It stands over a foot (30.5 cm) tall and exceeds that in length. At the front of the medium-length snout are thick canine teeth and incisors. Thick bone surrounds the eye orbits. A tall thin crest of bone stretches down the center line of the brain case.

#### **Information Panel:**

- Scientific Name: *Gorilla gorilla gorilla*
- Location: Central Africa
- Item: Skull
- Source: Scan by The Smithsonian Museum of Natural History
- Notes: Western lowland gorillas are the most common type found in captivity. This male's skull has a large sagittal crest down the top of the cranium that acts as attachment sites for jaw muscles. The specimen was found in South Kamerun, Cameroon, Africa.
- See models of the related eastern lowland gorilla in the Scale Model Hall!

## **Wal**

**I**

### **Photograph:**

- Description: This photograph shows the upper half of a knuckle-walking male gorilla. He has dark gray fur overall except for light gray or silver fur on this lower body and a patch of reddish brown fur over the brow ridge and up the sloping forehead. The skin, seen on the face and visible left ear, is black.
- By Meghan Murphy, Smithsonian's National Zoo, used under CC0
- Male western lowland gorilla.

## **Western Lowland Gorilla, female**

Description: The female gorilla skull is notably smaller than the males' on the table. The brain case is smooth and the canines are not as extreme compared to the other teeth. The size is like that of a cantaloupe.

### **Information Panel:**

- Scientific Name: *Gorilla gorilla gorilla*
- Location: Central Africa
- Item: Skull
- Source: Scan by The Smithsonian Museum of Natural History
- Notes: Gorillas are herbivores, eating plant material in their lush tropical forest environment. The specimen was found in Souanke Region of Africa, in the border area of Gabon, Cameroon, and Congo. There is a high level of sexual dimorphism in overall size and thickness of the features compared with the skull of the male gorilla to your left.
- See models of the related eastern lowland gorilla in the Scale Model Hall!

## **Wal**

**I**

### **Photograph:**

- Description: This image is a photo showing a female gorilla sitting on the grass while clutching an infant to her chest, protected by arms that meet at the hands around the smaller one's back.. The gorilla is mostly black fur with a black skin on the face and ears and gray skin on the hands.
- By Mehgan Murphy, Smithsonian's National Zoo, used under CC0
- Female western lowland gorilla with infant.

## **Chimpanzee**

Description: The chimpanzee skull is the size of a cantaloupe. The roots of the long canines can be seen running under ridges along the snout. There is a wide space between the two eye orbits and also apart from the nose opening.

### **Information Panel:**

- Scientific Name: *Pan troglodytes*
- Location: West and Central African tropical forests
- Item: Skull
- Source: Scan by National History Museum Imaging, London, UK
- Notes: The Pan genus is the closest living lineage to humans. Chimpanzees have complex social dynamics and cultural transmission of tools and behavior.

## **Wal**

**I**

### **Photograph:**

- Description: A skeleton of a chimpanzee is mounted on an orange artificial

floor and in front of blue and orange wall panels. The chimp is posed knuckle-walking on its right hand while its left arm is slightly raised. Both feet are flat on the ground.

- Photo by the National Museum of Natural History, used under CC0
- Mounted chimpanzee skeleton.

## **Modern Human**

Description: Compared to the other objects on the table, the human skull shows a tall vertical forehead, rounded brain case, and greatly reduced snout and teeth size. Features around the skull show some rugged features but not to an extreme level.

### ***Information Panel:***

- Scientific Name: *Homo sapiens*
- Location: Earth
- Item: Skull
- Source: Scan by aellis43
- Notes: This skull is from the collection of San Antonio College, Texas. Its details are unknown.

## **Scale Model Hall — Prehistoric Primates**

This section of the museum is a hallway lined with models of prehistoric primates. Each display has an information panel and many have large matching photos on a nearby wall. The Centerpiece Hall is east and the Scale Model Hall — Modern Primates is west.

### ***Plesiadapis***

Description: An orange and white mammal the size of a house cat is clinging to

the short edge of the dividing wall at eye level. Its head is long compared to primates. At the end of the snout is a nose much like a dogs'. At the other end of the body is a long curved fluffy tail as a squirrel would have. Its splayed hands and feet end in digits tipped with claws.

**Information Panel:**

- Scientific Name: *Plesiadapis cookei*
- Location: Wyoming, USA
- Time: 62 to 56 million years ago
- Notes: Plesiadapis is a relative of primates with traits adapted to clinging to large diameter tree branches and trunks.

**Notharctus**

Description: Shown in mid-leap above your height, the Notharctus looks like a large squirrel with long limbs and forward facing eyes. It has a three colored coat with a black back and tail, white face and chest, and red abdomen. It's hands are reached out ahead of it for an unseen perch upon landing. The tail is long and bushy, the same length as the rest of the head and body and extended out the rear.

**Information Panel:**

- Scientific Name: *Notharctus tenebrosus*
- Location: Wyoming, USA
- Time: 46 million years ago
- Notes: This early primate resembles a lemur, with core primate traits such as grasping limbs.

**Megaladapis**

Description: Clutching vertically to a tree trunk a foot wide is a bear-like



prehistoric primate. It resembles a cross between a koala and a lemur, but much larger than either. Like both, the fur is mostly gray except for a white belly and face. It's face resembles a ring-tailed lemur's with an extended snout and black fur around its yellow eyes. The snout does have a tapir-like prehensile projection. Its upper canine teeth can be seen protruding under its upper lip from its closed mouth.

**Information Panel:**

- Scientific Name: *Megaladapis edwardsi*
- Location: Madagascar
- Time: From unknown to around the year 1500
- Notes: One of the extinct 'koala lemurs,' adapted for slow vertical climbing and leaf-eating.

**Proconsul**

Description: Proconsul is walking with all four limbs on a sturdy tree with forking branches. The primate resembles a medium-sized dog with black fur with two notable exceptions. One is its head, which resembles a chimpanzee with a short snout, forward-facing eyes, and ears on the side of its head. Towards the rear, there is no tail.

**Information Panel:**

- Scientific Name: *Proconsul nyanzae*
- Location: Lake Victoria region, Kenya
- Time: 18 million years ago
- Notes: *Proconsul nyanzae* is the largest of the proconsulids, whose traits were adapted to movement on large tree limbs in dense forests.

## Human Evolution Hall

Through the north end of the Prehistoric Primates exhibit is a winding hallway that leads to the Human Evolution Hall. At the end of the hall, squares of sky blue line the walls, increasing in number to the entrance the hall. The exhibit is a huge, nearly circular room with the same sky blue walls. In the center of the room is a yellow spiraling staircase with branching platforms. At the base of the staircase is the text "6 million years ago." Up the stairs are more labels showing the passage of time during the walk. Between "5 million years ago" and "4 million years ago" is a walkable platform to the right that leads to the Ardi display. Between 3 and 2 million years ago is another branching path. At the other end of the platform is a statue of Lucy. Past her is the step for 3 million years, then 2 million. Just beyond this step is another platform leading to Turkana Boy. The stairs continue spiraling past 1 million years ago, then crossing 500,000 years and 100,000 years. The next platform is next, presenting Flo, the *Homo floresiensis*. A few steps further up is a platform with a Neanderthal figure. Finally, at the top of the staircase is a platform with no model, which uses the user themselves as the modern *Homo sapiens*.

### ***Ardi***

Ardi is presented in U.C. Berkeley blue. She is standing on the platform with her right foot propped up on a gold rock. Ardi is turning to look to her left at the entrance to the spiral ramp with arms outstretched. Her arms are very long, ending in large hands. Her head is smaller than her limbs and body suggest. Behind her are two information panels.

### **Left Information Panel**

- Ardi (ARA-VP-6/1)
- Site: Middle Awash, Ethiopia

- Time: 4.4 million years ago
- Discovered by Tim White and team in 1994
- Under study for over a decade, researchers published findings on the Ardi skeleton in 2009. Throughout the body are adaptations for both tree climbing and bipedal walking on flat ground. For example, the foot has a divergent big toe for grasping, but the foot structure is rigid.

## **Right Information Panel**

- Species: *Ardipithecus ramidus*
- Range: Ethiopia
- Species Age: 4.4 mya
- Small canines in both males and females resemble those of modern species with low conflict and high male parental investment.
- Reconstruction of the paleoenvironment showed that Ardi lived in a wooded environment within savannahs with nearby water.

## **Wall Photograph**

- Description: A dawn or sunset view of a grassy plain with sparse trees in the distance and mountains even further back.
- Awash National Park By Gregoire Dubois, used under CC BY-NC-SA 2.0

## ***Lucy***

Lucy is cast in a yellow-green plastic. The figure is climbing a section of a tree. Her feet are resting on a horizontal branch. Her lengthy right arm is extended up to grab an overhead branch. Her left arm is flexed close to her torso, her hand placed on the vertical trunk of the tree. Most striking is her chimpanzee-like face and small stature. Behind her are two information panels.

## Left Information Panel

- Name: Lucy (A.L. 288-1)
- Site: Hadar, Ethiopia
- Time: 3.2 million years ago
- Discovered by Donald Johanson and team in 1974
- Roughly 40% of Lucy's fossilized skeleton were found. The remains of the knee joint showed a valgus knee, one which directs toward the centerline of the body. This type of knee is an indicator of habitual bipedalism.

## Right Information Panel

- Species: *Australopithecus afarensis*
- Range: Ethiopia, Kenya, and Tanzania
- Species Age: 3.9 to 3 mya
- The traits of this species show a mixture of ape features and those of humans who evolved from this genus. While the lower limbs are geared towards two-legged movement, the strong upper limbs and broad chest also suggest that climbing was an important ability. The skull was ape-like, though with shortened canine teeth.

## Wall Photograph

- Description: Overhead view of rugged terrain with a city visible to the right.
- False color satellite image of the Afar region By European Space Agency, used under CC BY-SA 2.0

## ***Turkana Boy***

The statue of this individual is a vibrant red. The human figure is slender but also with a broad chest. The profile of the face shows a sloping forehead. His long slender legs are noticeable and distinctive from the earlier hominins. He is standing up straight with a slight right twist to the body. His right arm is held flexed at the abdomen level while the left arm is hanging with no particular action.

### **Left Information Panel**

- Name: Turkana (Nariokotome) Boy (KNM WT-15000)
- Site: Nariokotome, Kenya
- Time: 1.6 million years ago
- Discovered by Kamoya Kimeu and team in 1984
- This individual is the most complete member of its species found. Estimates of his age vary, from 8 to 12 years old based on different measures. Had he reached adulthood, his height may have been just over 6 feet (185 cm).
- Some researchers consider Turkana Boy to be a member of the African species *Homo ergaster*.

### **Right Information Panel**

- Species: *Homo erectus*
- Range: East and South Africa, Europe, Middle East, East Asia, and Southeast Asia
- Species Age: 1.8 million to 300,000 years ago
- This species is the longest lived in the human lineage, with many changes from earlier hominins. Biologically, they possess more traits for endurance running, such as proportionally longer legs and shorter arms. They are also

linked with many technological developments, such as the control of fire and the Acheulian tool style.

## **Wall Photograph**

- Description: Zoomed-in view across the lake at gemsbok grazing on the opposite shore. An impressive mountain dominates the background.
- Lake Turkana, KenyaBy Luciano Rizzello, used under CC BY-NC-SA 2.0

## ***Flo***

The diminutive figure in green looks even smaller on wide spaces of the platform. Adding context to the Hobbit nickname for her species is the combination of proportionally large feet and short stature. Flo is posed as if in the middle of an excited gesture, hands clasped in front of her chest and with her head, body, and hips at contrasting angles.

## **Left Information Panel**

- Name: Flo (LB1)
- Site: Liang Bua Cave, Flores, Indonesia
- Time: 100,000 to 60,000 years ago
- Discovered by Peter Brown, Michael Morwood, and team in 2003
- This individual is represented by a nearly complete skull, pelvis and lower limbs, and fragmentary upper limbs. Studies of the cranium found a similarity to Homo erectus as opposed to modern Homo sapiens. Skeletal traits suggest LB1 was female with an age-at-death estimate of around 30 years old.

## Right Information Panel

- Species: *Homo floresiensis*
- Range: Flores Island, Indonesia
- Species Age: 100,000 to 60,000 years ago
- The existence of *H. floresiensis* expands our view of recent hominin diversity. As with another hominin, *Homo luzonensis*, the size of this species fits the biological trend of insular dwarfing, the trend to evolve smaller in an island environment. How *H. floresiensis* fits in the hominin timeline is an open question.

## Wall Photograph

- Description: View from inside an expansive cave looking out the entrance. Small modern human figures show that the entrance is several stories tall. Outside the cave is lush vegetation.
- Liang Bua Cave, Flores, Indonesia By Rosino, used under CC BY-SA 2.0

## Neanderthal Composite

The Neanderthal is cast in blue. He is holding a spear horizontally in a ready position at waist level. His head is large, with sharp angles on his brow and over the top of his sloping cranium. His mouth is open as if addressing something down the point of his spear. Overall the body is wide and stocky with a powerful appearance.

## Left Information Panel

- Name: Neanderthal composite
- This model is based on a composite Neanderthal published by Sawyer and Maley (2005) that combines elements of separate individuals. La Ferrassie 1

contributed most of the skull and limbs while Kebara 2 formed most of the torso. As a result the model represents an adult male.

- The spear is not part of the original composite but reflect a purported Neanderthal technology of a thrusting spear tipped with a Mousterian point that is wrapped in fibers and sealed in place with burnt tar.

## **Right Information Panel**

- Human Group: Neanderthal
- Range: Europe, Middle East, West Asia
- Species Age: 130,000 to 40,000 years ago
- Neanderthals were cold-adapted humans who contributed to the genetics of modern people, especially Europeans and Asians. Their cold adaptation is seen in their widened features across the body, including the torso and nose. Studies have Neanderthal culture have found evidence of complex stone tool construction, artistic designs, and the ability to produce leather for clothing.

## **Wall Photograph**

- Description: View from inside an expansive cave looking out the entrance. Small modern human figures show that the entrance is several stories tall. Outside the cave is a light woodland.
- View inside Shanidar Cave, a Neanderthal site in IraqBy Institut français du Proche-Orient, used under CC BY-SA 2.0



## **Modern Homo sapiens**

### **Left Information Panel**

- Name: You
- You are the result of over a million years of cultural inheritance and billions of years of biological evolution, each winding a path through innumerable possibilities to be who you are today.

### **Right Information Panel**

- Species: *Homo sapiens*
- Range: Earth
- Species Age: 300,000 years ago to present
- Modern *Homo sapiens* are the only surviving members of the hominin lineage, originating in Africa. Biological adaptation to various parts of the planet have produced a wide variety of external appearances and internal physiology. Still, the average difference in DNA between any two individuals is around 0.01%. Culturally, the species has developed tools and ideas far beyond any other.

## **Scale Model Hall — Modern Primates**

This hall is a large rectangular room with models of modern primates. The room is divided into different sections representing geographic regions. Each display has an information panel and many have large matching photos on a nearby wall. The Scale Model Hall — Prehistoric Primates is east. The Burial Chamber is north.

## ***Africa and Madagascar***

### **Rhesus Macaque**

Description: The rhesus macaque is standing on the model of the antibody, positioned at a standing person's chest level. The macaque is on all fours, with his left hand lifted and curled into a fist. The monkey is covered in a light brownish gray fur except for its face and rear, which are a deep red. The macaque has a short curled tail sticking up from its rump.

#### ***Information Panel:***

- Scientific Name: *Macaca mulatta*
- Location: Central Asia, India, Southeast Asia, and China
- Time: Present
- Notes: The primate with the second largest geographic range. Humans have used rhesus macaques for scientific research, including a role in the discovery of the Rh factor antigen in human blood types.

### ***Wal***

***/***

#### ***Photograph:***

- Description: A rhesus monkey is sitting on the corner of a roof, arms draped over the bent knees. In the background is an impressive medieval-style fortress of red stone.
- By Thomas Schoch, used under CC BY-SA 3.0

### **Anti-Rhesus D Antibody**

Description: The antibody model looks like a sea coral growth made of many

connected spherical molecules. The overall form is a Y-shape. It is turquoise and covered by a complex layer of shadows and highlights due to its complex shape.

***Information Panel:***

- Location: Inside Rh- humans
- Size: Around 100 million times actual size
- Source: TedNIH of the U.S. National Institute of Health
- Notes: This protein is made by the immune system of Rh- humans when it contacts Rh antigens, such as from Rh+ fetal blood. The antibodies can then attack Rh+ blood cells.

**Name: Gorilla beringei graueri**

Description: The male and female gorillas are both extremely bulky animals, but the male is noticeably the larger one. The male is to your left, looking towards the right. Most of the gorilla is covered in nearly black fur. The lower chest and lower back are a silvery gray fur color. His face, hands, and feet, all fur-less skin, are a medium gray. He is on all-fours, places his weight on his folded hands in a knuckle-walking formation with his right arm one step ahead. Even four-legged, he stands up the the chest level of the typical adult human. The female gorilla, to your right, is the size of a Shetland pony and also on knuckles, except for a slightly raised right arm. Her fur is slightly lighter than the males' overall, with a brown patch on her lower back. She also has dark gray skin seen on the face, hands, chest, and feet.

***Information Panel:***

- Location: Democratic Republic of Congo
- Time: Present
- Notes: The largest living primate, though critically endangered. An arrow

labeled "Male" points to the larger figure to your left while an arrow labeled "Female" points to the gorilla on the right.

## **Wal**

**I**

### **Photograph:**

- Description: A male gorilla is knuckle-walking through tall grasses, looking out towards the camera. He has a bulky frame, especially the shoulders and a mass of muscle running from the top of his head and down his neck.
- "Imposing" by Joe McKenna, used under CC BY 2.0

## **Madame Berthe's Mouse Lemur**

Description: Gently perched on a thin sapling is an orange and white creature that looks much like a hamster. Unlike a rodent, the mouse lemur has a short snout and large eyes that face forward. It is laying horizontally on a side branch, clutching it with four grasping limbs with pink skinned fingers.

### **Information Panel:**

- Scientific Name: *Microcebus berthae*
- Location: Madagascar
- Time: Present
- Notes: The smallest living primate, with a weight of 1.1 ounces.

## **Mandrills**

Description: The display is on a green platform that is elevated around one and a half feet (half meter). Two monkeys are standing on the platform. The male is around double the size of the female and much stockier. The male also has a

bright blue snout with a red band running down the center that flares around the two nostrils at the very end. Gold fur form a beard that wraps around the sides of the head, connecting to the small ears. At the other end of the male is a bright rump of varying shades of light blue, red, yellow, and pink. He has a small triangular tail that is point up to expose the white fur underneath. Otherwise, the male is covered in grayish-brown fur. The male monkey is reaching his left hand out to lightly groom the female. The female mandrill has the same overall pattern of colors but is drabber. She is turned to look at the ground near the male to accept the grooming.

**Information Panel:**

- Scientific Name: *Mandrillus sphinx*
- Location: West Central Africa
- Time: Present
- Notes: Female mandrills (front) prefer to mate with brightly colored males (back), possibly as an indicator of his status and health.

**Wal**

**I**

**Photograph:**

- Description: An adult female mandrill is sitting on the ground facing the camera. She is mostly grayish-brown, with a lighter fur on her chest and stomach. She has a pale blue snout with a light red centerline as well as a yellow beard. Clutched to her chest is an infant mandrill, barely visible against her fur. To her immediate left is an older juvenile mandrill, who has a dark colored snout but also has a yellow beard.
- "Mandrill Family Portrait" by Eric Kilby, used under CC BY-SA 2.0

## Senegal Galago or Bushbaby

Description: A small squirrel-like primate is standing on a small green platform attached to the south wall. The galago is gray with large ears and brown eyes. It is sitting up on its flexed hindlimbs, holding a blade of grass in its hands. A tail as long as the rest of its body is hanging off of the platform edge.

### **Information Panel:**

- Scientific Name: *Galago senegalensis*
- Location: Across Central Africa
- Time: Present
- Notes: Galagos are adapted to be nocturnal leapers. In the daytime they sleep and hide from predators like the common chimpanzee.

### **Wal**

**I**

### **Photograph:**

- Description: A light gray galago is perched on top of a tree branch, looking down at the camera. The primate's ears are like tall funnels, both pointed forward and slightly outward.
- "Senegal Galago, Sopa Lodge, Serengeti NP, Tanzania, 24th May 2014 02 (2)" by Wildlife Travel, used under CC BY-NC 2.0

## Common Chimpanzees

Description: The display shows two adult chimpanzees. To the right is the male. He is in mid air just under human chest level. He is looking down with arms extended out in a slapping motion. His teeth are bared. The female is on the left half of the display. She is sitting on the ground, looking down at a small log that she is holding down with her left foot. Her right hand has just dropped a pine nut

into a dip on the log. Her left hand is holding a rose colored rock as if preparing to break the nut with it. Around her are whole nuts and scraps of shell.

### **Information Panels:**

- Scientific Name: *Pan troglodytes*
- Location: West and Central Africa
- Time: Present
- Notes: Chimpanzees are highly omnivorous and have been seen using a variety of tools and strategies to find food in the environment.
- Second panel: The female (left) is depicted cracking palm nuts using a rock and tree branch. The male (right) is shown slapping the ground while “displaying,” making attention-getting gestures for status.

### **Wal**

**I**

#### **Photograph:**

- Description: This photograph shows two chimpanzees in a grooming session. One chimp is sitting behind the other, concentrating on hands that are probing through the front one's fur. The one being groomed is looking forward with its mouth slightly open.
- "Chimpanzees in Kibaale Forest NP" by Sandra Aceng, used under CC BY-SA 4.0

### **Aye-Aye**

Description: The display is on a green platform that is elevated around one and a half feet (half meter). Two monkeys are standing on the platform. The male is around double the size of the female and much stockier. The male also has a bright blue snout with a red band running down the center that flares around the

two nostrils at the very end. Gold fur form a beard that wraps around the sides of the head, connecting to the small ears. At the other end of the male is a bright rump of varying shades of light blue, red, yellow, and pink. He has a small triangular tail that is point up to expose the white fur underneath. Otherwise, the male is covered in grayish-brown fur. The male monkey is reaching his left hand out to lightly groom the female. The female mandrill has the same overall pattern of colors but is drabber. She is turned to look at the ground near the male to accept the grooming.

**Information Panel:**

- Scientific Name: *Mandrillus sphinx*
- Location: West Central Africa
- Time: Present
- Notes: Female mandrills (front) prefer to mate with brightly colored males (back), possibly as an indicator of his status and health.

**Wal**

**I**

**Photograph:**

- Description: An adult female mandril is sitting on the ground facing the camera. She is mostly grayish-brown, with a lighter fur on her chest and stomach. She has a pale blue snout with a light red centerline as well as a yellow beard. Clutched to her chest is an infant mandrill, barely visible against her fur. To her immediate left is an older juvenile mandrill, who has a dark colored snout but also has a yellow beard.
- "Aye aye Nocturnal Lemur" by Rod Waddington, used under CC BY-SA 2.0



## ***The Americas***

### **Black-and-Gold Howler Monkey**

Description: A black male howler monkey is perched on a horizontal tree branch that is coming out of a hole in the wall. It is holding on to side branches with each hand and foot. As well, its long and thick tail is curled around the branch behind him for support. The monkey has a thin body, but a large head. His mouth is pushed forward in an O-shape as he calls out. Most of the monkey is covered in black fur, but the skin on its face is bluish-gray. His eyes are yellow with small dark pupils.

#### ***Information Panel:***

- Scientific Name: *Alouatta caraya*
- Location: Center of South America
- Time: Present
- Notes: The loudest land animal, with calls that can be heard 3 miles (5 kilometers) away in ideal conditions.

#### ***Wal***

***I***

#### ***Photograph:***

- Description: Four black howler monkeys are seen along the line of a large tree branch. They are all sitting on the branch looking in different directions. A fifth monkey is in the foreground, hanging off another branch with its tail.
- "Black Howler Monkey Family" by Kent MacElwee, used under CC BY-NC 2.0

## **Panamanian White-Faced Capuchin**

Description: A black-and-white monkey the size of a house cat is standing on a thin tree branch. Its arms are outstretched to grasp thinner branches for support. Its thick black tail is curled around the bottom branch for support. The monkey is mostly black with a white head and shoulders. Its face is pink.

### ***Information Panel:***

- Panamanian White-Faced Capuchin
- Scientific Name: *Cebus imitator*
- Location: Across Central America
- Time: Present
- Notes: Capuchin monkeys are highly intelligent in the use of tools in the wild. They have also been trained for entertainment media and to be assistive animals.

## **Wal**

**I**

### ***Photograph:***

- Description: A capuchin monkey is amid dense foliage. Its tail is draped over a branch overhead while its hind limbs and right hand are grasping supports below.
- "Panamanian white-faced capuchin / *Cebus imitator*" by Jonas Juodišius, used under CC BY-NC-SA 2.0

## **Asia**

## **Philippine tarsier**

Description: A series of tarsiers show different poses during a pounce from

sapling to sapling. The tarsier is the size of an adult human hand, with a large head, small body, and long limbs that end in slender fingers. Its fur is beige, with reddish skinned limbs. The tarsier's large eyes are green. To your furthest left, the first tarsier is clinging vertically to a plant at human chest-level. Its head is turned sharply to see almost directly behind it, where the other models are aligned. The second tarsier has leapt from the tree and is in mid-air with its long frog-like legs tucked under its body. Its ears are swept back and its hands are folded but pointed forward. The third tarsier is descending during its leap. It has twisted its body vertically, with its long legs extending down and forward. Its hands have opened up, ready to grab its target. The fourth tarsier is on another sapling, clinging to it vertically but with a little distance between its body and the plant. It is looking out in the distance, using its right hand to hold a green katydid that it is eating.

**Information Panel:**

- Scientific Name: *Carlito syrichta*
- Location: Southeastern Philippine archipelago
- Time: Present
- Notes: Members of the family Tarsiidae are nocturnal ambush predators with the ability to communicate ultrasonically.
- The distance from branch to branch, 16 feet (4.9 m), can be leaped by a tarsier!

**Wal**

**I**

**Photograph:**

- Description: A tarsier is photographed clutching to a diagonally-reaching tree branch. It is holding on to its support with all four limbs. Especially prominent are the long heel (tarsal) bones of the feet. The tarsier's head is

turned to the right, looking over its bent knee. The eyes are opened wide and extremely circular: a dull orange-brown with small black pupils.

- Photo by Pierre Fidenci, used under CC BY-SA 2.5

## **Lar Gibbon**

Description: The gibbon is in the middle of a swinging motion hanging with his left hand from a vine-like branch that is protruding through the ceiling. The body is very slight compared to his long arms. The gibbon's short legs are tucked under his body. The fur color is mostly creamy except for a ring of white around its face. The face, hands and feet are medium gray skin.

### ***Information Panel:***

- Scientific Name: *Hylobates lar*
- Location: Southeast Asia
- Time: Present
- Notes: Hylobatids are specialized brachiators, swinging their compact bodies using elongated arms.

## **Wal**

***I***

### ***Photograph:***

- Description: This gibbon is sitting on a rock at ground level, with foliage in the background. The pose is mostly symmetrical: legs bent with feet meeting at the center line and a bent arm out either side. Even though the arms are flexed, they reach out a considerable distance.
- By Ladislav Kral, used under CC BY-SA 3.0

## Proboscis Monkeys

Description: An eight foot tall tree is growing out of a green platform along the western wall. On the tree are two monkeys that share a mostly white color scheme with peach and light brown patches. The female proboscis monkey is laying along a tree branch with her head away from the trunk. Her nose is sharply upturned. The male monkey is to the right of the tree, climbing vertically up the trunk and holding on to branches with his outstretched hands. His face is tall with the dominant feature being a long peach fleshy nose. The male is noticeably larger and more robust than the female.

### **Information Panel:**

- *Scientific Name: Nasalis larvatus*
- Location: Borneo
- Time: Present
- Notes: Proboscis monkey males (right) have exaggerated noses that are related to success with attracting females (left).

### **Wal**

**I**

#### **Photograph:**

- Description: A large male proboscis monkey is sitting on a wood platform. His face is seen from the side, accentuating the long drooping nose. Out of focus in the foreground is the smaller female monkey. Her nose is shorter and her head is proportionally smaller than the males'.
- "A male and a female Proboscis Monkey" by shankar s, used under CC BY 2.0

## **Bornean Orangutan**

Description: A stocky and large male orangutan is sitting on the green floor platform. He is twisted slightly to his left, with his long left arm reaching out with a welcoming gesture. His shorter legs are folded in front of his barrel-shaped body. He is covered in orange fur, except for his face, hands, and feet of gray skin. His face is very round with skin flaps to either side.

### ***Information Panel:***

- Scientific Name: *Pongo pygmaeus*
- Location: Borneo
- Time: Present
- Notes: The orangutans are the only living great ape genus in Asia. They are critically endangered due to human action, including hunting and the palm oil industry.

## **Wal**

**I**

### ***Photograph:***

- Description: This photo is a portrait of a male orangutan. His face and jowls are pebbled gray skin. Orange facial hair ring the nose and mouth, producing a two-pronged goatee. The orangutan is reaching out and behind him with his left arm, which has long strands of orange fur hanging off it.
- "Male Bornean Orangutan - Big Cheeks" by Eric Kilby, used under CC BY-SA 2.0

## **Kayan River Slow Loris**

Description: A vine stretches across the corner of the hall just to the side of the Burial Chamber entrance. Hanging from the center of the vine by its back feet is a

fuzzy tan-colored primate. The loris is nearly tailless and just under a foot (30.5 cm) long. Its body is curved up so that its face is looking in your direction. The face is white with dark brown stripes that run down past both eyes before tapering off at the jaw line. The loris has large brown eyes that are open wide. Its hands are flexed and hanging loosely.

***Information Panel:***

- Scientific Name: *Nycticebus kayan*
- Location: Borneo
- Time: Present
- Notes: This species of loris was recently found to be distinct from other species especially in their facial markings.
- Second panel: Lorises are threatened by habitat loss and the exotic pet trade.

## **Burial Chamber**

From the far end of the Scale Model Hall, a passage leads to another exhibit, the Burial Chamber. Displayed in the passage is a sign: "Warning: Simulated human burials inside." Upon entering the exhibit, the room is a featureless square, except for a panel on the far end. It shows a world map and an orange button coming out of the walls allows the visitor to select different exhibits to appear in the room. Text above the panel read "Choose a Burial." Here is the description for each exhibit.

### ***Jamestown Burial***

### **Right Wall**

Title: Captain Gabriel Archer

- Born: 1575 in Mountnessing, Essex, England
- Died: 1609 or 1610, Jamestown, Virginia, United States
- Age: 34 to 35
- Model Source: Smithsonian 3D, National Museum of Natural History Anthropology Department, and Jamestown Rediscovery (Preservation Virginia)
- Biography: Captain Archer attended Cambridge and studied law before traveling to North America. In 1602 he documented an expedition led by Captain Bartholomew Gosnold to locations such as Cape Cod and Martha's Vineyard.

Archer was among the founders of the Jamestown colony and became involved in the politics of the settlement, notably becoming a rival of leader John Smith.

Captain Archer died during the "starving time" in the winter of 1609 to 1610.

***Image:***

- Top Caption: Engraving by William Hole, image by The Library of Congress, used under U.S. public domain
- Description: This image is a magnified map of the Virginia colony area. It is an elaborate ink drawing on a tan background. AT the top, drawing into a scroll, is the name "Virginia." The map shows the Chesapeake Bay and many rivers that flow into it. At the top left is an inset image of the inside of a lodge filled with people, including a central figure wearing a feathered headress. To the upper-right of the map is a large human figure draped in animal furs and holding a long bow and club.
- Bottom Caption: Map of the Virginia colony from 1606. The colony is located at around (308.5, 37.5).



## **Left Wall**

Title: The Site

- Notes: Jamestown was the first English colony in the Americas, founded in 1607. Multiple setbacks, such as attacks from the Powhatan whose land the colony occupied, famine, disease, and political unrest led to a disastrous winter in 1609 and 1610. It was in this time that Captain Gabriel Archer died along with over a hundred others.

Archer's grave was located in the chancel of the 1608 church. After the winter, new settlers and supplies bolstered the colony. Abducted Africans were forced into servitude in 1619, leading to institutionalized slavery in 1662. By 1689 Jamestown had dissolved as a settlement.

The area is now an active interpretation center and archaeological site maintained by Preservation Virginia and the National Park Service.

### ***Image:***

- Top Caption: Photo by Darren and Brad, used under CC BY-NC 2.0
- Description: A modern photograph of the church and burial site. The area is now a reconstruction of the church wall, reaching around waist height. It shows a mostly mud construction with sticks embedded vertically within. A wooden fence inside the building's outline marks a back area to the church, where there are four Christian crosses placed in a row.
- Bottom Caption: Reconstruction of the remains of the 1608 church where Captain Archer's remains were found. His grave is marked by the third cross from the left.

## **Back Wall**

Title: Artifacts

- Notes: Captain Archer was buried in a wooden coffin, which has since rotted

but left the nails in place. Outside the coffin in the grave were a piece of a ceremonial staff and a small silver reliquary container. Micro CT analysis of the box revealed that it contained human bone fragments and a lead ampulla (flask with fluid of religious significance).

## **Burial**

### ***Description:***

The burial is displayed as a model hovering a half meter off the ground. The soil is a uniform orange-brown. The skeleton is laid out flat on the his back with arms down the sides of the torso and legs extended straight. The skull is still supported by a stump of unexcavated soil. The face of the cranium is broken, though the brain case and upper jaw is intact. The cranium is tilted slightly upward relative to the rest of the skeleton and the mandible has dropped down to leave an unnaturally gaping mouth. The ribcage has collapsed and not much of the bones of the torso are visible. The upper end of the humeri have been broken, but the rest of the arms are intact. The hands are either broken or still encased in soil. The pelvis has split into right and left halves and appear heavily worn. The heads of the femora and tibiae are broken though the rest of the long leg bones are intact. The feet have collapsed toward each other and are mostly intact. Several modern objects from the excavation surround the skeleton. Above the skull is a square orange tag. Scale bars were placed to either side of the legs and just under the feet.

### ***Information Panels:***

Several square boxes with text hover over the burial. Some have arrows indicating certain points of interest.

Title: Silver Reliquary Location

- Indicating: On a square-shaped pedestal of soil directly outside the lower left leg.
- Notes: The small silver box with the letter M engraved in one side was found here. Archaeologists left the pedestal of soil to show the depth of the artifact in the grave.

Title: Coffin Remnants

- Indicating: Two thin crooked nails jutting out of the grave on the left side relative to the burial, parallel to the floor of the burial over the level of the skeleton.
- Notes: Nails from the decayed coffin remain in the grave. Researchers can reconstruct the shape of the coffin based on the location of the nails.

Title: Photogrammetry

- Indicating: A meter-long white stick with a series of circular symbols.
- Notes: Calibrated scale bars assist in the 3D digitization of the grave.

Title: Dental Issues

- Indicating: The teeth of Captain Archer.
- Notes: Biological anthropologist Douglas W. Owsley notes carious lesions and abscesses on the teeth, which may be the result of a diet high in local maize.

Title: Respect

- Notes: Coffin burial in the church chancel during the disastrous winter would have required great effort from starving colonists. The location in the church is reserved for people of high rank.

Title: Preservation

- Notes: Three other graves accompanied Archers' in the chancel. All contained early leaders of the colony.

## ***Calatrava de la Nueva Burial***

### **Right Wall**

Title: Knight of Calatrava

- Date: Early 1200s
- Age: Adult
- Models Source: Global Digital Heritage
- Context: Excavations from 2001 to 2004 led by Ana Maria Segovia Fernandez uncovered a series of burials in the chapter house of the convent. The burials were arranged along the north-south axis with their heads pointed west. This burial was noted as Enterramiento (burial) 6, located furthest to the south, but was the fifth buried in the chapter house of the convent. They are believed to be knights of the Order of Calatrava, a Spanish military and religious organization. He is wearing a hat or crown.

### ***Image:***

- Top Caption: Image by The Metropolitan Museum of Art, used under CC0 1.0 Universal
- Description: A close-up photograph of a carving. It shows a male figure wearing a chainmail surcoat and kneeling towards your right. His torso is twisted towards the viewer, with a right hand raised, though the object in his hand is now broken. On his waist is a sword in a scabbard. The figure's face is long, with a distinct nose and thin oval eyes and thick brows.
- Bottom Caption: "Sculpture of a Kneeling Knight or King", from Northern Spain from 1175 to 1225.

## Left Wall

Title: The Site

- Notes: The Sacred Convent and Castle of Calatrava la Nueva was the headquarters of the Order of Calatrava, a society of religious warriors. It was occupied from 1217 to 1804, before the Order moved to another location. The fortress occupied a strategic view of the Aldea del Rey region from the peak of the Cerro del Alancrenejo mountain. Within sight was the rival Almohad-occupied Salvatierra Castle, their last stronghold in the region.

The grounds covered 46,000 square meters and was a self-sufficient community. Today the site is a tourist attraction with restored structures in some areas though the chapter house has been sealed.

### ***Image:***

- Top Caption: Photo by Centre Europeu de Barcelona, used under CC BY-NC-ND 2.0
- Description: This photograph uses a tilted angle to make an intriguingly framed composition of the cathedral's scalloped circular window. Due to the positioning, the window is tucked inside a stone arch that is in the foreground. The arch has a series of bricks of varying shades of brown. The blocks have a spongy texture, making the structure resemble cake.
- Bottom Caption: View of the church within the fortress.

## Back Wall

Title: Artifacts

- Notes: The knight was buried in a wooden box placed in the grave as evidenced by nails and the wood remnants. The decomposed remains of leather shoes were found at the feet. These were better preserved in some

of the other burials.

Paintings decorated the walls of the chapter house, including one of a knight and Almohad warrior fighting on horseback.

***Image:***

- Top Caption: Photo by Curious Expeditions, used under CC BY-NC-SA 2.0
- Description: A photograph of a pair of soft shoes on a transparent glass surface. The shoes are mostly a shiny soft black fabric or leather. The soles are thin and appear to be leather. Each shoe comes to a narrow curve at the toe tip. The collar of the shoe is tied off with a drawstring. On top of the shoe are tied ribbons.
- Bottom Caption: Shoes of a style similar to the degraded remains found in the grave.

## **Burial**

***Description:***

The model of this burial is neatly contained in the modern wooden box that encases the skeleton. The capture of the model is extremely detailed with visible bone textures and high contrast between light and shadowed areas. The knight was buried lying on his back with his legs outstretched and hands folded over the body, settling on the pelvic bones. The skull is tilted to the body's right, with mandible hanging agape. Foot bones are scattered at the ends of the legs. Overall, the skeleton is in excellent condition with few broken parts. Around the skeleton are many small scattered rocks, with two larger pieces next to the face and the lower left leg.

## Information Panels

Title: Shoe Remains

- Indicating: A patch of darkened soil and debris around the feet of the burial.
- Notes: The discolored soil is from the decomposed leather shoes that the knight was wearing.

Title: Preservation

- Notes: This is a modern display case with a transparent cover that protects the grave in situ (the original place) at the chapter house.

## Fortress

### ***Description:***

This model shows the central part of the fortress grounds. An angled wall encircles the buildings, including a long rectangular church against the north wall. At the center is the tallest structure, a complexly arranged keep. The church and keep are mostly intact while other side buildings around the perimeter are in various states of ruin, such as missing a roof or having crumbled walls. A tree-lined path leads into the fortress from the northeast. To the southwest is a gently sloping hill that reaches from the perimeter down to the lower level.

## Information Panels

Title: Calatrava la Nueva Central Fortress

- Notes: Scale: 1:150. North points actually to the museum's south, towards the entrance to the exhibit.

Title: The Church

- Indicating: The long intact building along the north wall.

- Notes: Constructed from volcanic rock and built in the Cistercian style.

Title: Chapter House

- Indicating: A small roofed rectangular building to the east of the central fortress.
- Notes: The burials were found here in the chapter house (sala capitular), or meeting hall.

## ***Paris Catacombs***

### **Right Wall**

- Title: 18th Century Parisians
- Date Interred: 1859
- Age: Adults
- Model Source: Benoit Rogez
- Context: The section presented here contained bones from the Magdeleine Cemetery, which was in operation from 1720 until 1794 when it was filled. Those remains were moved in night time ceremonial processions to the ossuary in 1859. Those interred included dead from several French Revolution events. As was the custom of the time, the skeletons were not kept intact, but bones were organized by type and placed into eye-pleasing arrangements.

### ***Image:***

- Top Caption: Image by Dale Cruse, used under CC BY 2.0
- Description: This photograph shows one of the skeletal arrangements in the Catacombs. Thousands of femora and tibiae are arranged with the ends facing out towards the viewer. Interspersed among them are skulls forming patterns: an arch twelve-skulls tall, and inside, a cross on a smaller square



arch.

- Bottom Caption: Another wall of human skeletal remains in the Catacombs with skulls, femora (thigh bones), and tibiae (shin bones).

## Left Wall

Title: The Site

- Notes: The Catacombs of Paris are a network of tunnels under the city used to house human remains. They are five stories (20 meters) underground and cover 11,000 square meters.

Population growth in Paris at the end of the 18th century led to an overflow of cemeteries. As a solution to the hygiene emergency, abandoned mine tunnels under the city were retrofitted to be ossuaries: storage for skeletal remains. Several cemeteries' contents were transferred to the tunnels from 1787 to 1814.

Starting in 1810, the Paris Mine Inspection Service rearranged the bones into patterns and added structures, exhibits, and signage for visitors. While most of the tunnels under Paris are closed to visitors today, the ossuary is open for tours.

### **Image:**

- Top Caption: Print by George Cruikshank, scan by The British Museum, used under CC BY-NC-SA 4.0
- Description: This colorized cartoon shows a humorous scene set in the Catacombs. A group of tourists is scared by someone holding a skull on a stick from the shadows. The age of the cartoon is shown by the clothing of the characters. The men are in coats and hats, bearing torches and lanterns while two aghast women in the background are wearing frilled dresses.
- Bottom Caption: "'Life" among the Dead!! or Dick Wildfire, Squire Jenkins &

the Halibut family in the Catacombs.'

## **Burial**

### ***Description:***

This extensive burial is presented as a U-shaped niche around seven feet (2.13 m) wide and deep with walls made out of human bones, encased in modeled walls in the gray hue of the rest of the museum. The low rock ceiling is cramped for a typical adult male. Modern light fixtures illuminate the niche, showing the array of bones. The walls are made of human femora and tibiae with skulls interspersed. Skulls line the top layer of the wall along with loose piles of long bones. At the inner wall is a stone plaque with engraving in French and a single skull embedded in the center between the plaque and its supporting pillar. The text states:  
"OSSEMENTS DE LANCIEN CIMETIERE DE LA MAGDELEINE (RUE DE LA VILLE LEVEQUE N° 1 et 2). DEPOSES EN 1844 DANS L'OSSUAIRE DE L'OUEST ET TRANSFERES DANS LES CATACOMBES EN SEPTEMBRE 1859."

## **Information Panels**

Title: Decoration

- Notes: Most bones stacked seen here were femora with the distal knee joint end facing out. Tibiae were also visible. Skulls were embedded as embellishments. Other bones were placed behind this exterior wall.

Title: Translation

- Notes: The plaque states "Bones from the former Magdeleine cemetery (La Ville Leveque Street numbers 1 and 2). Deposited in 1844 in the western ossuary and transferred to the catacombs in September 1859"

## Credits

The credits pages are located behind the centerpiece statue in the Centerpiece Hall. An orange button flips through the information.

- Environment, primate models, and text by Dr. Keith Chan.
- This program is presented with the CC-Attribution-NonCommercial-ShareAlike 3.0 license. You may display this app and modify its code for your non-commercial use. Development partially funded by MiraCosta College, Oceanside, California.
- The information presented is one common view of the scientific evidence, but not necessarily the only one.
- Contact me: drkeithcchan@gmail.com
- Github: <https://github.com/chekeichan/anVRopomotron>
- Stay up to date: <http://www.keithcchan.com/tag/anvropomotron>

## ***Model Sources***

All models are used under Creative Commons or similar licenses. Models have been converted to low poly for VR presentation.

## **Scale Model Hall**

- Crystal structure of monoclonal human anti-rhesus D Fc and IgG1 t125(yb2/0) in the presence of EDTA
  - NIH 3D Print Exchange (Public Domain)
  - <https://3dprint.nih.gov/discover/3dpx-007943>

## **Human Evolution Hall**

- Neanderthal Composite reference

- Sawyer, G. J., & Maley, B. (2005). Neanderthal reconstructed. *The Anatomical Record Part B: The New Anatomist*, 283B(1), 23–31.

## **VR Grab Lab: List sorted by table**

### ***Early Primate Fossils***

- *Sahelanthropus tchadensis*
  - svtlille (CC-Attribution)
  - <https://sketchfab.com/3d-models/sahelanthropus-tchadensis-1771d060561f4c74b651ee2>
- *Australopithecus aethiopicus*
  - Geoffrey Marchal (CC-Attribution-NonCommercial)
  - <https://sketchfab.com/3d-models/paranthropus-aethiopicus-b45efcb8b6fa459bb7f0e5726ac1d3e7>
- *Australopithecus platyops*
  - Geoffrey Marchal (CC-Attribution-NonCommercial)
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- Catacombs of Paris - room (VR ready)
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## Burial Chamber

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