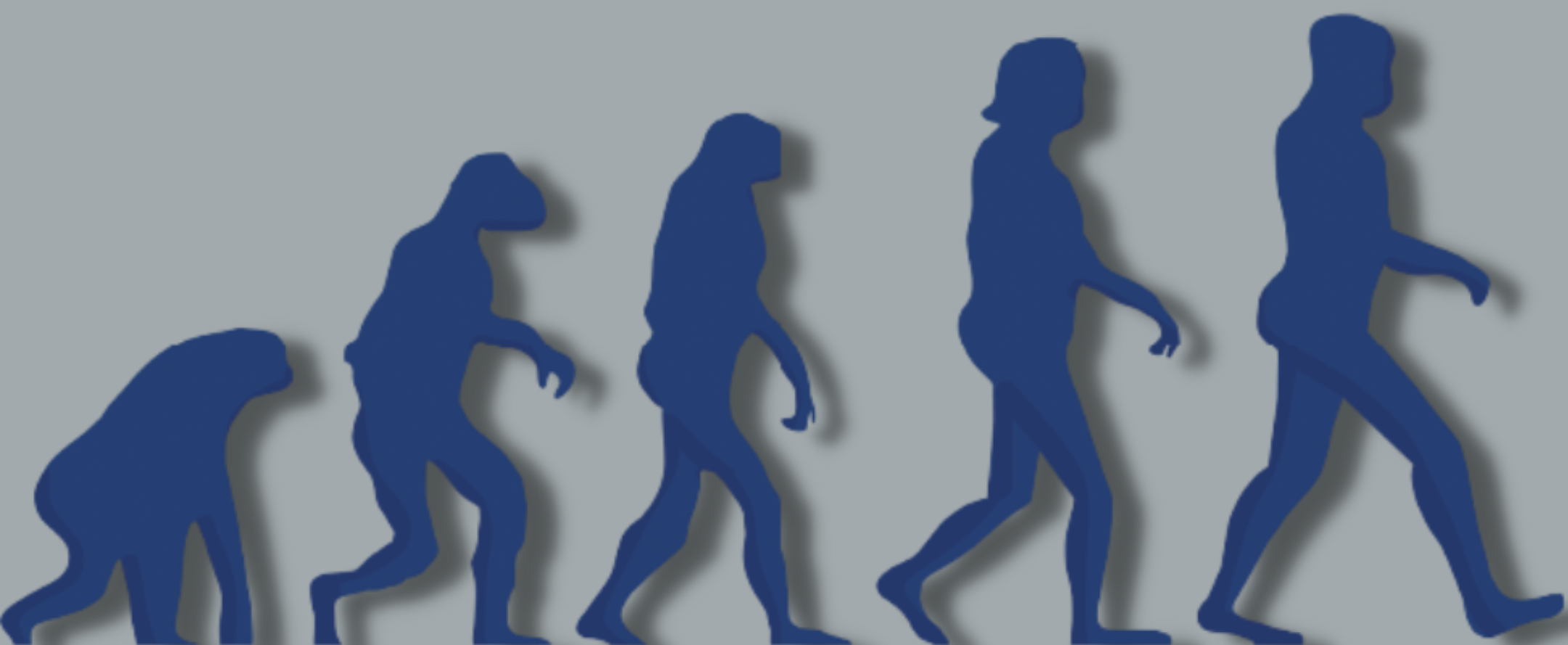
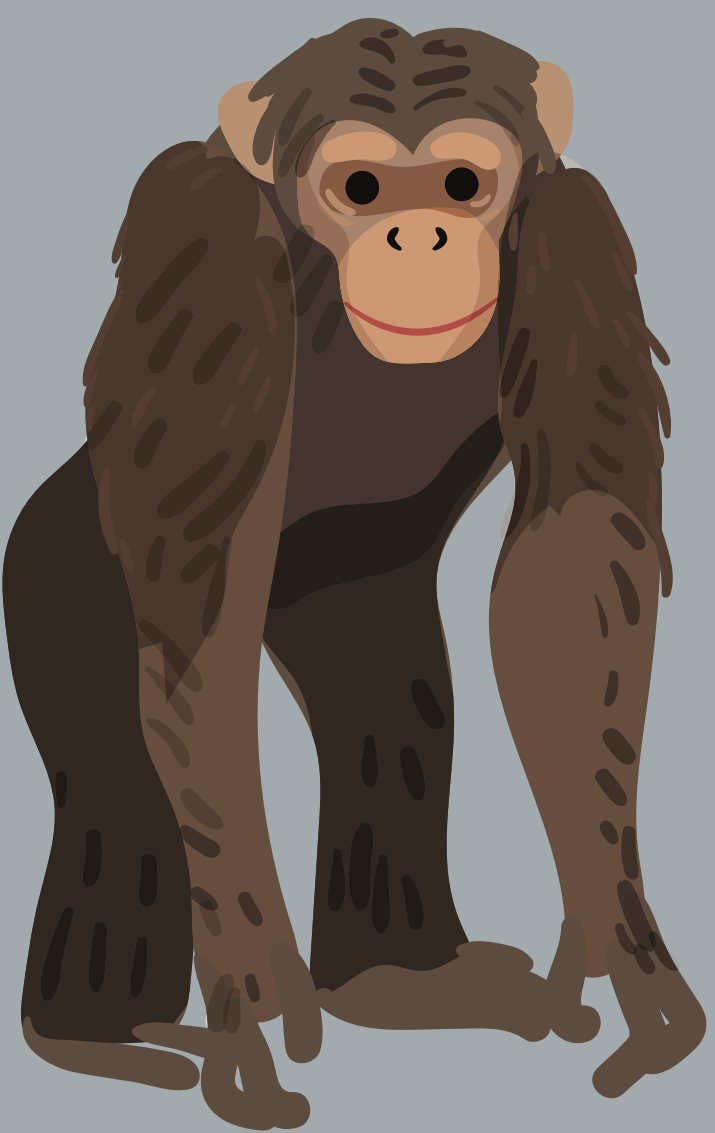
MATSON MUSEUM
OF ANTHROPOLOGY

WALKING WITH OUR ANCESTORS



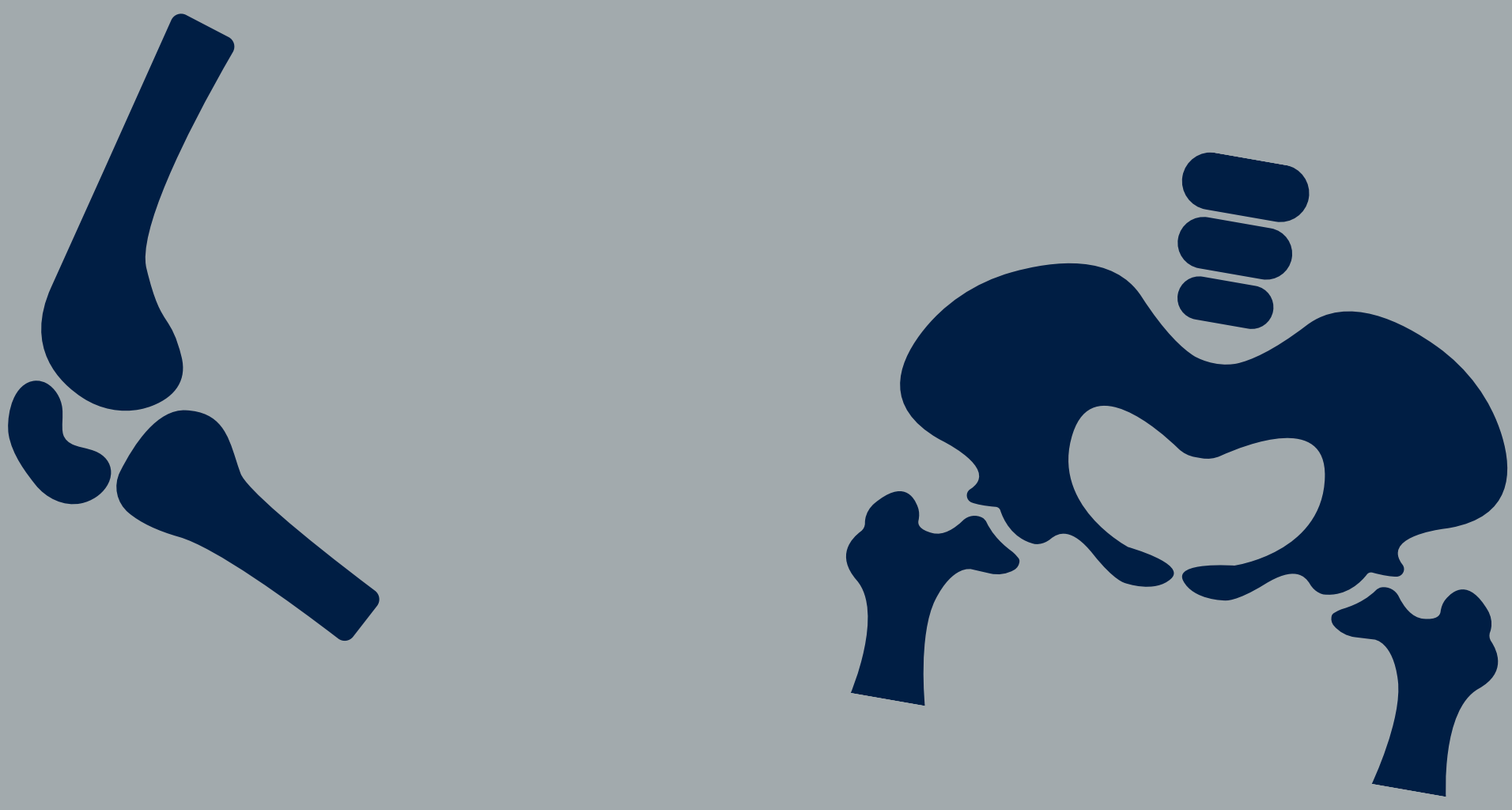
Overview

One of the most significant traits that distinguish humans from other primates is bipedalism, or two-legged walking. Although other primates occasionally walk on two feet, only humans habitually stand upright and walk with a striding gait. When did bipedalism evolve? What kind of locomotion was characteristic of the common ancestor that we share with our closest primate relative, the chimpanzee? Under what conditions did bipedalism arise in the hominin lineage?



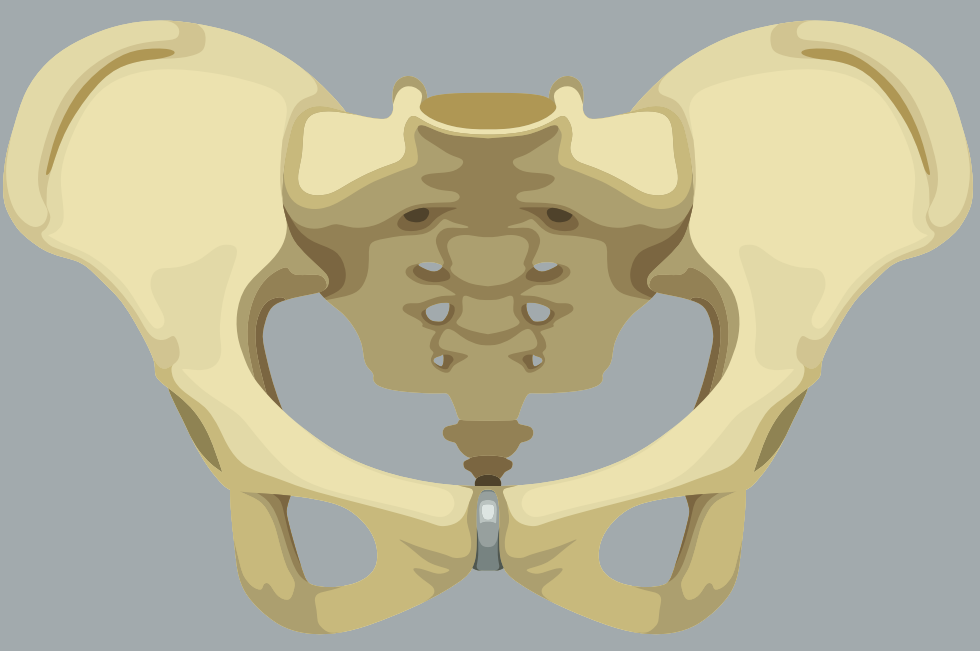
Leg Bone Connected to the Hip Bone

During bipedal walking, humans place their supporting lower leg and foot toward the midline under their center of mass to minimize side-to-side movement. Therefore, the human femur runs at an angle from the laterally flared pelvis to the centrally placed knee. In quadrupedal chimps and macaques, the femur extends straight down from the hip to the knee.



The Pelvis

The fan-like blades (ilia) at the top of chimp and macaque pelves are long and narrow, and point to the front. The lower part of their pelvis (ischia) project down and backward. As a result, the muscles that attach the long pelvis to the lower limbs generate strong forces to propel the animal forward. In contrast, human pelves are short and squat, which helps balance. Shortening the ilia brings the center of mass closer to the hip joints. The iliac blades are rotated forward and flare outward. Key hip muscles (lesser gluteals) stabilize the pelvis, preventing humans from dipping side to side during walking. Others (gluteus maximus) keep the trunk erect while running.



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