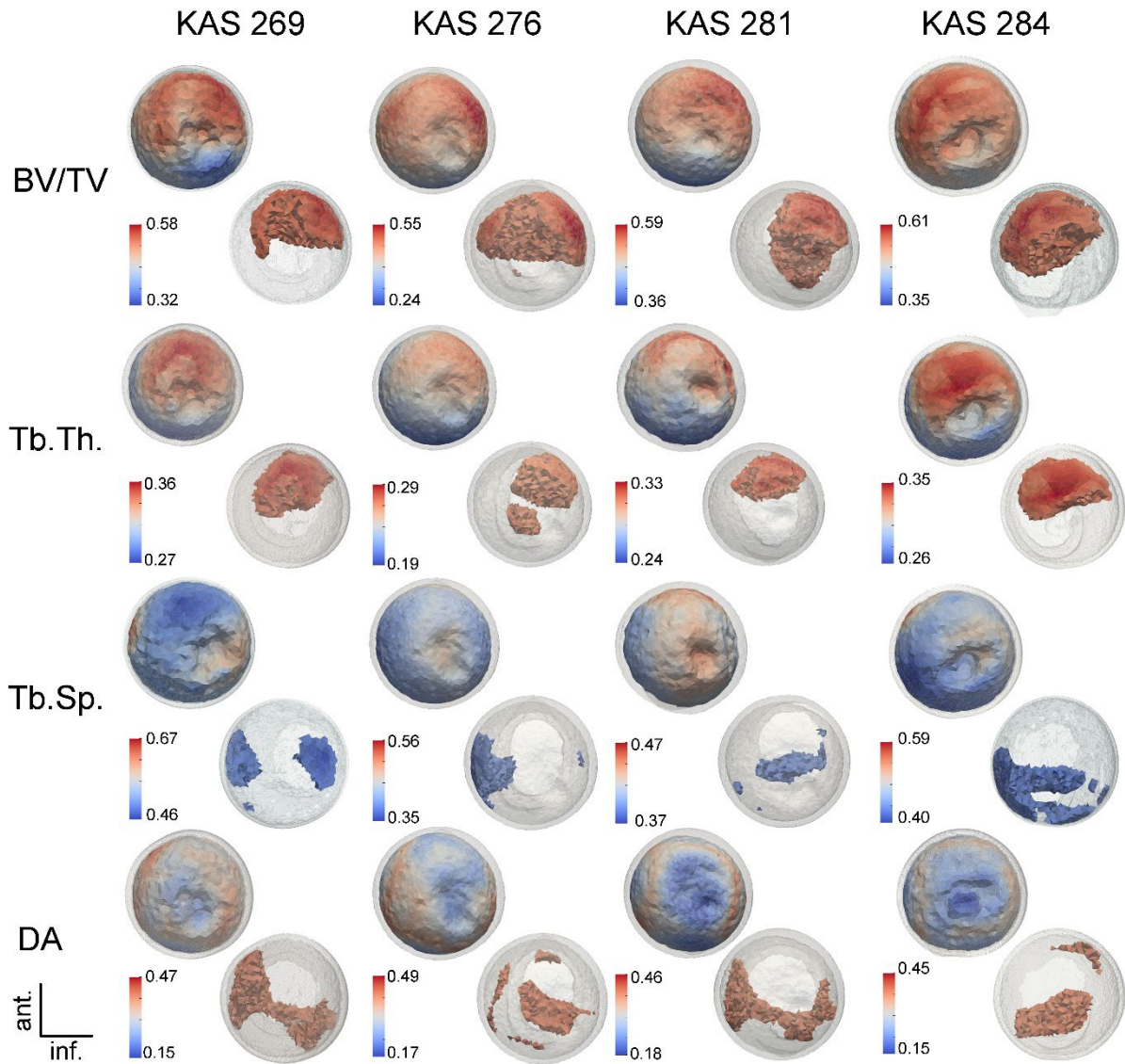


Supplementary Table S1. Composition and microCT scanning information for the investigated sample of femora and tibiae of *Macaca fuscata*.

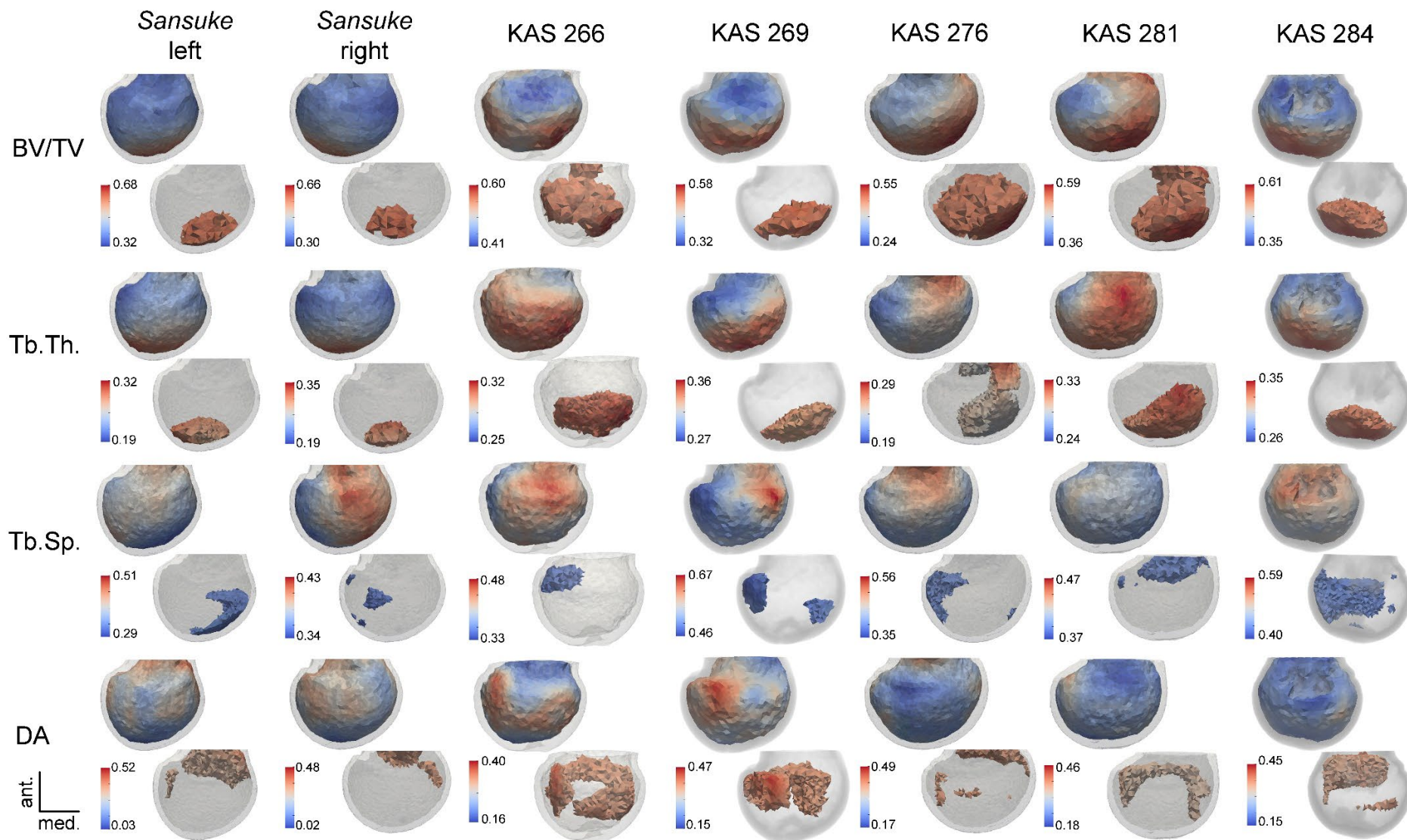
Specimen	Sex	Element	Side	Collection ^a	Scan location ^b	Voxel size (μm)
<i>Sansuke</i>	male	femur & tibia	left and right	PRI	ESRF	46x46x43
KAS 266	male	femur & tibia	right	PRI	LPA	42 & 55
KAS 269	male	femur & tibia	right	PRI	LPA	42 & 59
KAS 276	male	femur & tibia	right	PRI	ESRF	46x46x43
KAS 281	female	femur & tibia	right	PRI	LPA	42 & 59
KAS 284	male	femur	right	PRI	LPA	42
KAS 309	male	tibia	right	PRI	ESRF	46x46x43

^aPRI = Primate Research Institute of Kyoto University, Japan.

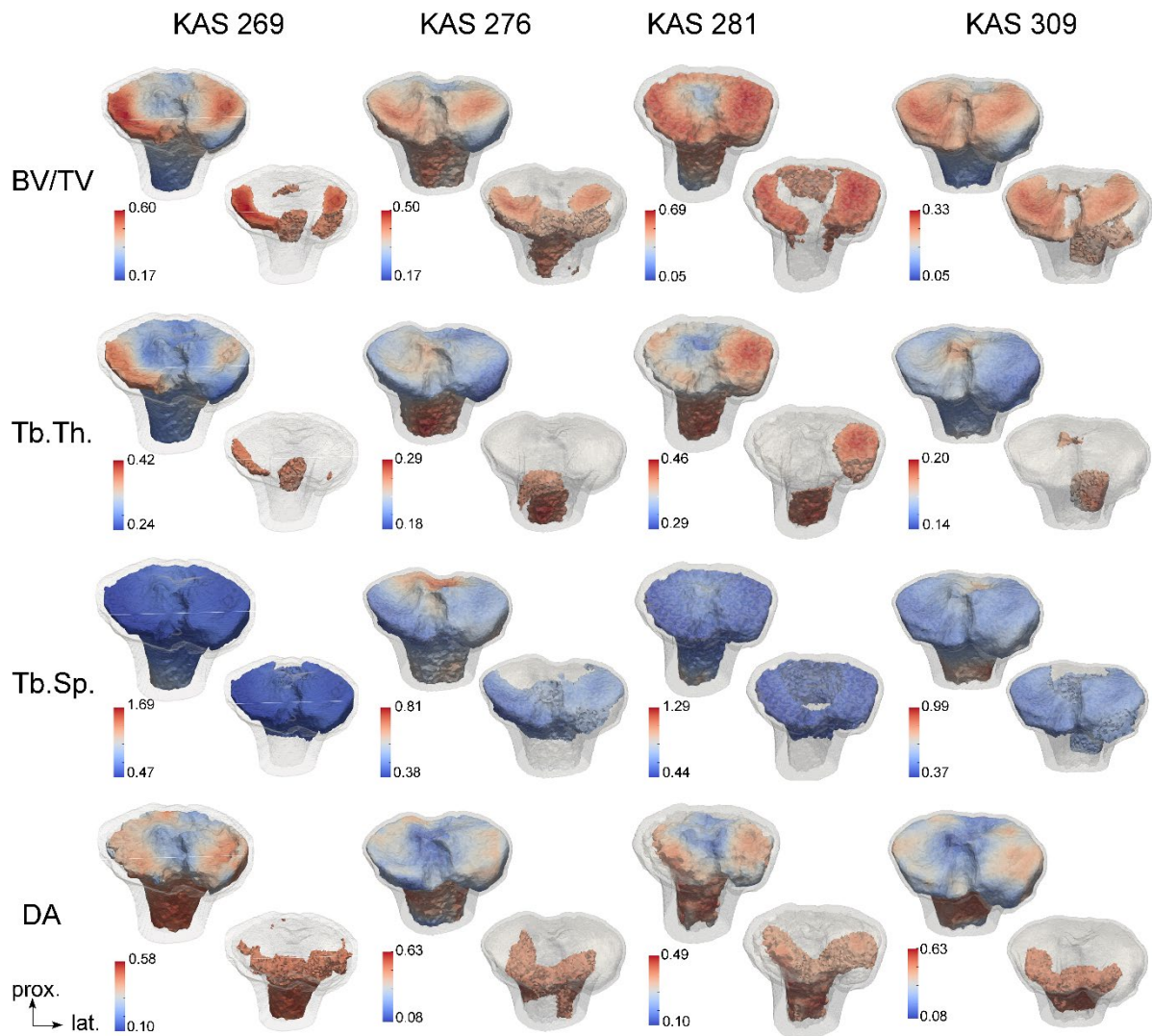
^bESRF = European Synchrotron Radiation Facility (medical beam line ID 17), Grenoble, France;
LPA = Laboratory of Physical Anthropology, Kyoto University (ScanXmate A080s system), Japan.



Supplementary Figure S1. The upper rows represent the virtual morphometric maps, in medial view, of all trabecular bone volume (BV/TV, %), trabecular thickness (Tb.Th., mm), degree of anisotropy (DA) and trabecular spacing (Tb.Sp., mm) values in the femoral heads (only subchondral layer is therefore visible) in the right femur of wild *Macaca fuscata* (KAS 269, KAS 276, KAS 281, KAS 284). The lower rows represent the deeper portion of the femoral head of the values higher than 80% of the range of variation for the BV/TV, Tb.Th, and DA and the values lower than 20% of the range of variation for the Tb.Sp. For each individual chromatic scale ranging from the minimum value (blue) to the maximum value (red).



Supplementary Figure S2. The upper rows represent the virtual morphometric maps, in superior view, of all trabecular bone volume (BV/TV, %), trabecular thickness (Tb.Th., mm), degree of anisotropy (DA) and trabecular spacing (Tb.Sp., mm) values in the femoral heads (only subchondral layer is therefore visible) in the left and right femora of the bipedally-trained macaque *Sansuke* and the right femur of wild *Macaca fuscata* (KAS 266, KAS 269, KAS 276, KAS 281, KAS 284). The lower rows represent the deeper portion of the femoral head of the values higher than 80% of the range of variation for the BV/TV, Tb.Th, and DA and the values lower than 20% of the range of variation for the Tb.Sp. For each individual chromatic scale ranging from the minimum value (blue) to the maximum value (red). The left femur of *Sansuke* has been mirrored as a right femur.



Supplementary Figure S3. The upper rows represent the virtual morphometric maps, in medial view, of all trabecular bone volume (BV/TV, %), trabecular thickness (Tb.Th., mm), degree of anisotropy (DA) and trabecular spacing (Tb.Sp., mm) values in the proximal tibiae (only subchondral layer is therefore visible) in the right proximal tibia of a wild *Macaca fuscata* (KAS 269, KAS 276, KAS 281, KAS 309). The lower rows represent the deeper portion of the proximal tibia of the values higher than 80% of the range of variation for the BV/TV, Tb.Th, and DA and the values lower than 20% of the range of variation for the Tb.Sp. For each individual chromatic scale ranging from the minimum value (blue) to the maximum value (red).