

<NOTE>**Position and movement of the testes of wild chimpanzees at Mahale**

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The huge scrotum is one of the most conspicuous features of mature male chimpanzees (Figure 1). In humans, the left testis is hanging lower than the right in 57-80% of cases (1). To the best of our knowledge, however, no such report on chimpanzees has been published, even though their testes are the biggest and heaviest among primates (2).

From September to November, 2002, the first author spent seven weeks in the Mahale Mountains National Park (MMNP), Tanzania. It was his first experience to try to identify wild chimpanzees (*Pan troglodytes schweinfurthii*) in the field. He pursued male chimpanzees of M group with the help of a research assistant. While pursuing them, the huge hanging scrotum of adult males struck him as a great hindrance to walking.

A few weeks passed. Gradually he noticed



Figure 1. Masudi, a 25-year-old male, in 2002. Note his huge scrotum

that every scrotum had individual characteristics and that he could even identify several individuals by their scrotums. For example, the flabbiest scrotum with a greatly dangling left testis belonged to the oldest male, Kalunde; the hairiest scrotum with a fairly dangling right testis indicated Bonobo (Figure 2) in his early twenties; a dark-spotted scrotum with a mildly dangling left testis indicated Darwin in his middle teens. Then he began to recheck all males for both the shape of the scrotum and the movement of the testes.

Table 1 shows which testis was lower in each individual. The scrotums of the two juveniles were undeveloped and still small; the left and right testes were located at the same horizontal

Table 1. Testes in the lower level of the crotch among the Mahale chimpanzees, with special reference to hand preference

Individual name	Age in years in 2002 (in 2003)	Status in 2002	Lower testis in 2002	Hand preference** in 1998-2000	Testes-hand coincidence
Kalunde	39* (40*)	Adult	L	L	○
Masudi	25 (26)	Adult	R	R	○
Fanana	24* (25*)	Adult	R	L	×
Dogura	21* (22*)	Adult	R	R	○
Bonobo	21 (22)	Adult	R	L	×
Alofu	20 (21)	Adult	R	L	×
Carter	17 (18)	Adult	R	R	○
Pimu	14 (15)	Young	R	L	×
Darwin	14 (15)	Young	L	L	○
Primus	11 (12)	Young	R	L	×
Orion	11 (12)	Young	L	L	○
Cadmus	11 (12)	Young	R	R	○
Christmas	7 (8)	Juvenile	S	L	?
Michio	6 (7)	Juvenile	S		

R: right; L: left; S: same; *: estimated; **: after Corp & Byrne (2004)

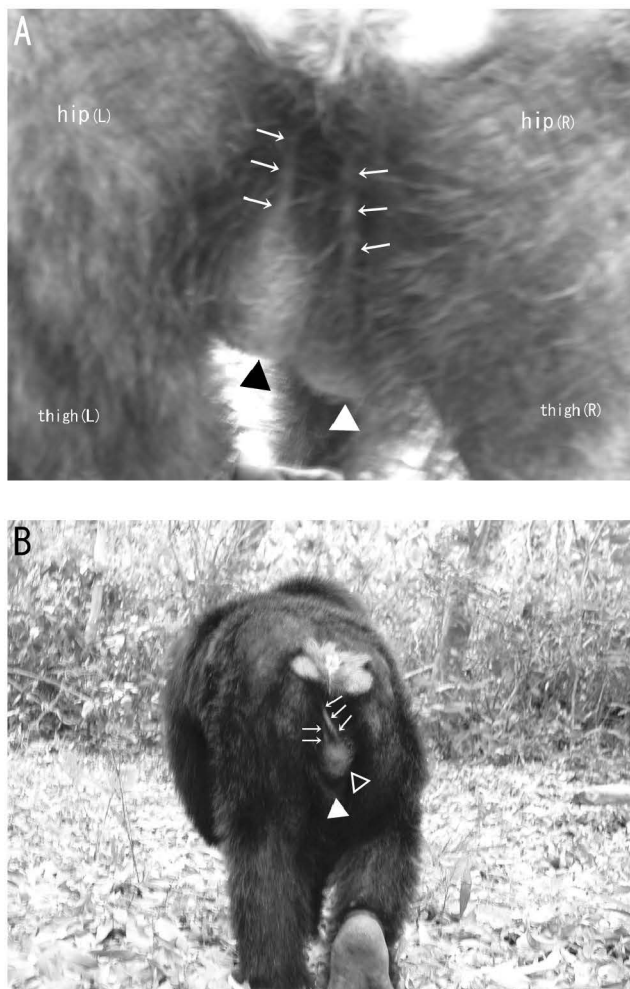


Figure 2. Bonobo, a 21-year-old male, in 2002.

(A) Testes of Bonobo in static state when he is quadrupedally standing. Note that the right testis () is lower than the left (). Arrows indicate the deferent canals. In chimpanzees, testes and deferent canals can be seen through the scrotum.

(B) Bonobo's testes in dynamic state while walking. The upper testis sways more widely than the lower. Since the upper testis twists caudally, the lower moves cranially. The swinging motion of the testes corresponds to his steps. Compare figs. 2A and 2B in the relative location of and .

level in their crotch. Among twelve mature males, seven full adults and five young adults, no individual showed fair symmetry in the position of his testes. It is reasonable that the testes of a sexually mature male should be alternatively situated in his crotch. If both of big testes were located at the same level, he might experience difficulty walking due to the maximized width of his scrotum.

After returning to Japan, the first author asked the last author to observe the testes of the Mahale chimpanzees during his research in

MMNP in 2003, to examine whether any secular change or inter-observer error can be detected. The last author was asked to record the location of the testes when the chimpanzee is standing and walking. To keep his observations unbiased, he was not disclosed the details of the first author's observations until he finished his work.

In the beginning of August, 2003, the last author departed for Mahale and came back to Japan in the middle of December, 2003. Then he gave to the first author a sequential list of the records taken during August and September. His results were compared with those of the first author and a beautiful similarity between them was found. No secular change has happened, at least not within the last year; the positional difference between the testes in mature males is so evident that little inter-observer error can be found.

The main points revealed by our investigations can be summarized as follows:

1. Mature male chimpanzees at Mahale have big scrotums and testes (Figure 1).
2. Testes and deferent canals can be easily seen through the skin of the scrotum of a living body (Figure 2A).
3. The testes of a mature male are asymmetric in the crotch (Figure 2A). The positional difference is so obvious that little inter-observer error can be found.
4. The upper testis sways more widely than the lower testis. When walking, the upper twists caudally and the lower moves cranially (Figure 2B). The swinging motion of the testes corresponds with walking steps.
5. The relative position of the testes remains unchanged from morning to night. No secular changes occur at least for one year.
6. The positional difference between the testes becomes apparent at about nine to ten years of age (Table 1). The difference in position is relatively small in younger chimpanzees, and it tends to increase gradually with age. However, because the number of individuals examined in this study was very small, further study is needed to verify the accuracy of the above two statements.

Next we propose that the shape of the scrotum, including the asymmetric position of the testes, can be used as a new trait in the individual

identification for mature male chimpanzees. Such a noteworthy trait has at least two advantages. It can easily be checked from behind an individual as seen in Figure 2. This manner may be especially helpful when one is tracking a target. This trait also has a discrete nature, just right or left, that is easy to remember.

Among the twelve mature male chimpanzees of M group, nine have a right dangling testis, and three have a left dangling testis, respectively (Table 1). This ratio seems contrary to the ratio seen in humans (1). However, the number of individuals examined in our investigations is too small to derive any conclusions now.

At least four possibilities might explain why the matured testes are asymmetrical: 1) the asymmetrical distribution of internal organs; 2) the asymmetrical morphology and function of the brain; 3) hand preference; and 4) foot preference. The data on the hand preference of Mahale chimpanzees has already published (3). No relationship can be recognized between the testes and the hands (Table 1). Further studies are needed to learn the cause of the asymmetry of the testes.

References

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