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## THE MEANING OF SEXUAL DIMOPHISM IN PRIMATES

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In mammal and bird species, males are larger than females in their body size, although some exceptions are known. The bulk of primate species exhibit dimorphism in body weight to some degrees. Logically, there may be three possible origins of sexual dimorphism, namely (1) bigger males have been selected, (2) smaller females have been selected, and (3) both mechanisms have operated simultaneously (Pickford, 1986). Almost all researchers ascribed the origin to the first mechanism.

To explain the sexual dimorphism in primates, Leutenegger & Kelly (1977) proposed a hypothesis that the development of canine and body size of males has been caused by the competition among males to obtain sexual access to females. As an objection to this, Clutton-Brock et al. (1977) pointed out that the correlation of socionomic sex ratio with sexual dimorphism can be noticed, but, if the data of monogamous species are excluded, such correlation comes to be unclear. Leutenegger & Cheverud (1982) pointed out that variation in body-weight dimorphism can be almost entirely attributed to body weight. Rowell and Chism (1986) argued that the origin of sexual dimorphism may be obtained through natural selection other than the process of sexual selection. Leigh (1992) analyzed detailed pattern of variation in the ontogeny of primate body size dimorphism and suggested that primates have evolved a number of developmental pathways that lead to similar levels of adult dimorphism, and expected that male patterns of growth respond primarily to sexual selection, but that female patterns of growth respond to natural selection.

As shown here, there have been proposed two types of hypotheses and, indeed, there is little consensus whether body weight dimorphism have their origins in sexual selection or in natural selection. Anyhow, there are great variations in social and ecological patterns in primates, so that it is quite difficult to obtain clear correlation between any factors from data of species in various taxonomic groups.

For an approach to the problem, cross-specific analyses among some closely related species should be performed as attempted by Leutenegger & Lubach (1987). There are some perspectives of sexual differences other than body-weight dimorphism, such as penis and testicular morphology, breasts, and sex skin. Considering these various aspects of evolution together with the origin of body-size dimorphism in some specific taxonomic group will offer fruitful argument on the phenomena.

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