

REPORT OF A CASE OF INHERITED POLYMASTIA IN CHIMPANZEE

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ONE PLATE (TWO FIGURES)

Accessory mammae and nipples have been observed with such frequency in man that individual cases no longer arouse scientific interest except as they may present unique characteristics. Among the other primates, however, only a few instances have been recorded, and, with two exceptions, all are for monkeys. Hartman ('27), in his report of a case of supernumerary nipple in *Macaca mulatta*, summarizes the previous observations with references to an account by Owen (1868) of an accessory nipple in an orang-utan and similar findings by Schickele (1899) and Sutton (1889) in monkeys. Zuckerman ('35) has reported a few additional cases in monkeys. The only instance of supernumerary nipples in chimpanzee is that described by Coolidge ('33) in which symmetrical accessory mammae were discovered in a wild-killed female. He states that this is the first and only case he has observed in an examination of over 600 specimens.

The subject of this report was born at the estate of Señora Rosalia Abreu, Havana, Cuba, on March 24, 1926, and was brought to the Yale Laboratories of Primate Biology at Orange Park, Florida, on May 13, 1931, as gift of Mr. Pierre Abreu. She is known as 'Cuba' and is listed as no. 46 in the laboratory records. Her mother (Mona, no. 36) is also a member of the Station colony; her father (Jim, no. 15) had been in the Philadelphia Zoological Garden for several years until his death on November 27, 1935.

In addition to the above facts it is of interest to note that Cuba is the half-sister of twins, progeny of Mona and Pan (no. 3) (Yerkes, '34). Cuba has the distinction of being the first female chimpanzee of known age to reach sexual maturity (Yerkes, '35).

The first recorded observation of accessory glandular development in Cuba appears in the laboratory records as an entry by Carlyle F. Jacobsen dated June 1, 1931. The following is a quotation from his notes: "One supernumerary nipple has developed about 5.5 centimeters below the normal nipple of the right side. It is about half the size of the normal nipple. The external development, except for size, seems to be normal, showing areola, areolar glands, and nipple."

After having been caged with a mature male (Bokar, no. 5) for about 14 months, Cuba became pregnant in August, 1934, at the age of 8 years, 4½ months. One hundred and eighty days after the estimated date of conception, a fourth rudimentary gland was discovered below the normal gland of the left side. This structure was well defined by areola and areolar glands, although the nipple was absent. The fact that it previously had escaped the notice of several observers suggests that most of its development occurred sometime during the first 6 months of pregnancy. There were no appreciable changes in its appearance during the remainder of the gestational period; it did not follow the course of proliferative development of the normal mammae.

On February 14, 1935, with the animal in an erect sitting posture the following measurements were made:

	<i>Normal</i>		<i>Accessory</i>	
	Right <i>cm.</i>	Left <i>cm.</i>	Right <i>cm.</i>	Left <i>cm.</i>
Distance from midline	8.0	7.0	8.5	6.5
Diameter of nipple	1.2	1.3	0.9	
Length of nipple	1.5	1.3	0.8	
Diameter of areola	2.5-3	2.5-3	2.0	1.9

The right supernumerary nipple was located 5.5 cm. below the normal nipple; the center of the left supernumerary gland

was 8 cm. below the left normal nipple. Extent of development of the two normal mammae was from 10 to 12 cm.; that of the lower right accessory, 7 to 9 cm. The accompanying plate shows the four mammae as they appeared on February 22, 1935.

It is improbable that the lower right accessory gland would have been functional, but the fact that Cuba refused to accept and nurse her infant, born April 11, 1935, interrupted the normal post-partum development. Four days after delivery there appeared to be slight enlargement of the normal mammae, while the accessories were unchanged.

Examination of the infant (Peter, no. 41) by M. I. Tomilin on May 1, 1935, revealed a small but very sharply defined accessory nipple, 19 mm. directly below the normal nipple of the right side, and 28 mm. from the midline. On October 15, 1935, the areola of a fourth gland, on the left side was identified. Measurements shortly after discovery showed the following spatial relationships:

	<i>mm.</i>
Distance from midline, right normal	44
Distance from midline, right accessory	41
Distance from midline, left normal	45
Distance from midline, left accessory	38
Distance from right normal to right accessory	29
Distance from left normal to left accessory	52

The similarity of spatial pattern in mother and child is evident in a comparison of measurements or the photographs shown in plate. Although examination was made of other related individuals in this chimpanzee family, no further indication of the inheritance of the condition was found.

Several cases of the inheritance of polymastia in man have been observed. Perhaps the most unusual of these is the report by Marie (1893) in which eighteen cases appeared in two generations, and by Klinkerfuss ('24) of a family in which the anomaly appeared in four generations. No observations of the hereditary nature of accessory mammae have been made for the other primates, although Zuckerman ('35) reports supernumerary nipples in three of fourteen female baboons from the same pack.

With no intention of over-emphasizing the significance of the fact that twinning and polymastia are present here within two generations of chimpanzee, it may be noted that there have been several reports of cases in man where the two characteristics were present simultaneously or in related individuals. Again, the case described by Marie (1893) furnishes the most impressive evidence, the incidence of twinning in the family being too large to account for on the basis of chance alone. Iwai ('07) reports sixteen cases of supernumerary glands in twenty-four cases of multiparous births.

The hypothesis that there should be a positive correlation between supernumerary nipples and twinning was involved in Bell's sheep-breeding experiments, which furnished conspicuous data on the question. Although it appeared for a time that the hypothesis might be correct, subsequent analysis by Castle ('24) of the complete results of Bell's work clearly showed that the supposed relation did not exist. It was equally clear, however, that the supernumerary nipple character was strongly inherited.

If there were a true genetic relationship between twinning and polymastia in the primates one should expect to find more references to the subject. It seems probable that the scarcity of such references is indicative of a chance relationship. Careful and systematic search in all cases where either characteristic is discovered may lead to more definite conclusions. Observations on monkeys and anthropoid apes especially are desirable, and, with the increase in use and breeding of these animals during recent years, the opportunities for discovering new facts are increasing steadily.

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Upper. Chimpanzee 'Cuba,' Yale Laboratories of Primate Biology, February 22, 1935. (Photograph by R. M. Yerkes and J. H. Elder.)

Lower. 'Peter,' with hair clipped to show location of accessory glands. (Photograph taken December 3, 1935, by S. D. S. Spragg.)