

## Studies on the Growth, Development, and Reproduction of Gibbons in Captivity

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**OBJECTIVE:** To collect information on the growth, development and reproduction of gibbons in captivity, and to collect normal biological data which may be useful in biomedical research.

**BACKGROUND:** A colony of gibbons (*Hylobates lar*) is maintained at SMRL for use in essential medical research projects of the laboratory. An active breeding program has been conducted for the past several years, and 28 young have been born in the colony. Physiological and hematological observations are made on a regularly scheduled basis.

**PROGRESS:** Vaginal swabs were taken daily from nine adult gibbons and the time of menstruation was recorded. Fifty-two menstruations were observed. The duration of menstruation was 1-4 days, with 58 percent of these lasting only one day. The interval between menses was 17-120 days with the most common interval being 17-25 days. This information is similar to that recorded in previous annual reports. Information concerning copulation behavior and fetal development is being collected and will be reported when sufficient data are collected to allow interpretation. Since the last reporting period five gibbons were born in the colony. Birth data are listed in Table 1.

Table 1. Newborn Gibbons 1974-1975

Baby Number	Date of Birth	Parents	
		Female	Male
Pc 24	13 Sep 74	B-7	P-16
Pc 25	30 Oct 74	B-6	B-12
Pc 26	6 Jan 75	B-4	B-8
Pc 27	20 Feb 75	B-11	B-64
Pc 28	17 Mar 75	B-59	B-12

Colony-born gibbons have been examined monthly from birth to adulthood, and the sequence of tooth eruption has been recorded. Table 2 summarizes these observations to date.

Table 2. Tooth Eruption in Colony-born Gibbons—Mean Months  $\pm$  1 S.D.

Tooth	Decidua	Permanent
1st incisor	1.0 (2)*	14.6 $\pm$ 1.5 (6)
2nd incisor	1.5 (2)	20.4 $\pm$ 2.2 (5)
Canine	3.4 $\pm$ 1.3 (7)	48.0 (1)
1st premolar	3.4 $\pm$ 0.5 (9)	31.0 (1)
2nd premolar	5.9 $\pm$ 1.3 (10)	41.0 (1)
1st molar	15.1 $\pm$ 1.6 (8)	41.0 (1)
2nd molar	18.0 (2)	41.0 (1)

\*Numbers in parentheses represent total number of determinations

Blood Samples have been collected from all gibbons within the SMRL colony quarterly as a screening procedure for early detection of granulocytic leukemia and other diseases. This procedure has resulted in a large accumulation of hematologic data which have been compiled and are presented in Tables 3 and 4. Although many of the older gibbons in the colony were inoculated with varicous experimental agents during the late 1960's, the values presented represent samples taken from animals that were free of clinical evidence of experimental or spontaneous disease. The immature gibbons have not been used experimentally.

**SUMMARY:** Five gibbons were born in the breeding colony of eight mating pairs during the year. Observations on normal growth and development of colony born gibbons are presented and normal hematologic values in young and in mature gibbons are reported. These studies are continuing.

Table 3. Summary of Hematologic Findings in Mature Captive Gibbons—Mean Values  $\pm$  1 S.D.

Parameter		Non-splenectomized		Splenuctomized	
		Male	Female	Male	Female
RBC $\times 10^6$		7.70 $\pm$ 1.36 (385)*	8.02 $\pm$ 1.4 (260)	7.60 $\pm$ 1.29 (368)	7.12 $\pm$ 1.28 (384)
WBC $\times 10^3$		11.32 $\pm$ 4.16 (489)	11.35 $\pm$ 5.76 (477)	12.46 $\pm$ 4.05 (426)	13.95 $\pm$ 4.92 (443)
PCV (%)		48.92 $\pm$ 5.93 (496)	48.13 $\pm$ 5.72 (339)	48.65 $\pm$ 4.93 (388)	46.77 $\pm$ 4.90 (507)
Hb (gm/100 ml)		14.74 $\pm$ 1.97 (439)	14.17 $\pm$ 1.78 (354)	14.53 $\pm$ 1.82 (321)	14.23 $\pm$ 1.70 (358)
Differential in percentage	Lymphocytes	53.19 $\pm$ 12.28 (493)	48.01 $\pm$ 16.52 (428)	51.21 $\pm$ 23.01 (410)	57.70 $\pm$ 33.31 (437)
	Neutrophils	43.47 $\pm$ 17.56 (491)	47.03 $\pm$ 19.78 (457)	39.92 $\pm$ 17.58 (404)	38.20 $\pm$ 15.10 (434)
	Basophils	1.05 $\pm$ 1.06 (491)	1.20 $\pm$ 1.18 (457)	1.18 $\pm$ 0.99 (404)	1.34 $\pm$ 1.33 (434)
	Eosinophils	2.29 $\pm$ 2.38 (491)	3.05 $\pm$ 3.06 (457)	2.48 $\pm$ 2.38 (404)	2.21 $\pm$ 2.17 (434)
	Monocytes	3.61 $\pm$ 2.29 (491)	4.00 $\pm$ 2.83 (457)	3.65 $\pm$ 2.60 (404)	3.41 $\pm$ 2.35 (434)
	Bands	1.18 $\pm$ 1.07 (491)	1.15 $\pm$ 0.70 (457)	1.21 $\pm$ 0.68 (404)	1.14 $\pm$ 0.60 (434)

\* Numbers in parentheses represent total number of determinations.

Table 4. Summary of Hematologic Findings in Immature Captive Gibbons (< 4 years old) — Mean  $\pm$  1 S.D.\*

Parameter		Value
RBC $\times 10^6$		7.18 $\pm$ 1.07 (49)**
WBC $\times 10^3$		9.87 $\pm$ 1.58 (119)
PCV (%)		44.75 $\pm$ 4.48 (124)
Hb (gm/100 ml)		14.20 $\pm$ 1.57 (43)
Differential in Percentage	Lymphocytes	64.33 $\pm$ 13.39 (105)
	Neutrophils	31.19 $\pm$ 12.65 (105)
	Basophils	1.02 $\pm$ 0.78 (105)
	Eosinophils	2.44 $\pm$ 3.14 (105)
	Monocytes	3.41 $\pm$ 2.13 (105)
	Bands	0.60 $\pm$ 0.32 (105)

\* Values from both sexes included.

\*\* Numbers in parentheses represent total examinations performed.