

Gibbon Menstrual Cycle & Breeding Study

Principal Investigator : Markpol Tingpalapong, DVM

Associate Investigators : Robert L. Hickman, MAJ, VC
Dennis O. Johnsen, MAJ, VC
Prayot Tanticharoenyos, DVM

OBJECTIVE: To develop methods of breeding and rearing gibbons in the laboratory environment.

DESCRIPTION: In this study the reproductive cycle of the female gibbon and semen of the male gibbon are characterized and related to other physical parameters of breeding performance with the ultimate goal of obtaining reproduction of the gibbon in a laboratory environment. This basic information is utilized in the application of artificial insemination techniques as well as natural mating methods.

PROGRESS:

Natural Breeding Study

Eight gibbon breeding pairs were kept in the large outside breeding cages continually. These breeders were selected from among mature gibbons kept indoors. Breeding potential was evaluated in these animals by regularity of the reproductive cycle in the female, good physical appearance, and normality of semen in the male as evaluated by gross and microscopic examination. Females were palpated rectally each month to detect pregnancy. Enlargement of uterus was found to be detected as early as seven months prior to the delivery in pregnant animals (B-27). There were 4 babies born during the period of this report. Pertinent data concerning these births is listed in Table 1.

Table 1.

Delivery Date	Female Number	Male Number	Baby Number
May 4, 71	B-37	S-76	Pc-8
July 26, 71	B-4	B-8	Pc-9
Oct 12, 71	B-59	B-2	Pc-10
Oct 15, 71	B-11	B-12	Pc-11

The time of ovulation of the female gibbon has been determined by direct observation of the ovaries at certain times of the female reproductive cycle. Laparotomies were performed in three animals at varying periods of times after the commencement of periodic bleeding in the females. The results of these examinations are shown in Table 2. Such examinations done previously in gibbons at periods of time between 11 and 16 days following the commencement of bleeding showed no evidence of ovulation. Thus, it appears that ovulation in the gibbon occurs shortly after the time bleeding commences as in the dog and other lower mammalian species.

Table 2.

Species	I.D. #	Date	Hours after beginning of bleeding	Observations
<u>H. lar</u>	B-66s	Jun 29, 71	45	The left ovary contained 3 mature follicles; there was evidence of follicular rupture.
<u>H. lar</u>	B-14s	Jul 1, 71	72	The left ovary contained a hemorrhagic focus, apparently the result of follicular rupture.
<u>H. piliatus</u>	B-8	Jul 12, 71	60	Enlarged fimbria horn and body of uterus, a hemorrhagic focus found on the surface of the left ovary; an atretic follicle also present.

To test this information concerning the time of ovulation sixteen female gibbons were inseminated artificially 44 times according to the schedule shown in Table 3. The females were inseminated at 48, 72, and 95 hours after bleeding commenced. Fourteen male gibbons served as semen donors. Semen was collected from these animals a total of 53 times. Three kinds of semen diluents were used: 3% Sodium Citrate 10 times, isotonic saline 24 times, and homologous serum from the semen donor 13 times. There have been no pregnancies detected in animals that have been bred artificially.

Table 3.

Hrs. after bleed	Female data																Total
	S2	S10	S20	S27	S70	S75	S92	S98	B14s	B66s	B85	B88	P2	P9	P7	DZ1	
48	1	—	1	1	1	—	1	5	1	2	1	1	1	—	—	—	16
72	1	1	1	—	—	1	—	3	1	3	3	—	—	—	3	—	17
96	2	—	—	—	—	1	—	1	1	—	4	—	—	1	—	1	11

Male data

	S5	S18	S25	S28	S69	S83	S98	S102	B39	B40	B56	B61	P16	DZ2	Total
#times semen collected	1	2	1	2	1	2	15	1	1	2	7	1	2	14	52

Pregnancy testing was done in all females that did not bleed within 1 month after insemination. Pregnosticon planotest (Organon) was evaluated for pregnancy testing in the gibbon. A positive test for pregnancy in this test is based on the presence of chorionic gonadotrophin (HCG) in the urine. When HCG is present in the urine test an agglutination reaction occurs between HCG antibody reagent and this hormone. Rectal palpation was used to confirm the result of the urine test.

Table 4.

♀ #	Artificially bred females				Naturally bred females	
	S27	S10	S20	DZ1	B59	B11
Agglutination	+	—	—	+	—	—
Rectal palpation	—	—	—	—	+	+
Delivered young	—	—	—	—	+	+

In addition, gibbons B-59 and B-11 which were pregnant animals bred naturally, were control animals for the urine test; the uterus of both animals was enlarged on palpation and each delivered a baby a few months later. The results of comparing the test for HCG and rectal palpation for pregnancy determination in the gibbon are shown in Table 4. Necropsies were performed on both S27 and DZ-1 when they died from other causes and both were found to be non pregnant. Thus it appears that this particular urine test is not reliable when used for pregnancy testing in the gibbon.