

Lerner *et al.*¹¹ have isolated a skin-lightening hormone, melatonin, from the bovine pineal gland, and found it to antagonize the skin-darkening effect of melanocyte-stimulating hormone, secreted by the neurohypophysis. Wurtman *et al.*¹² reported that pinealectomy in young female rats led to pituitary and gonadal hypertrophy, which was reversible by injection of pineal extract. These findings and our earlier reports^{1,2} on the presence of neurohumours and associated enzymes in the bovine pineal gland tend to support the view that the pineal satisfies certain criteria for physiological function, and further investigation into the nature of this function is necessary.

This research was aided in part by grant B940 from the National Institute of Neurological Diseases and Blindness and in part by grant M-1204 from the National Institutes of Mental Health. We are indebted to Dr. D. Howie, pathologist at the Fairfield State Hospital, for autopsy material, and to Dr. V. L. Loosanoff, U.S. Fish and Wildlife Service, Milford, Conn., for supplying us with the *Venus mercenaria*.

NICHOLAS J. GIARMAN
DANIEL X. FREEDMAN

Departments of Psychiatry and Pharmacology,
Yale University School of Medicine,
New Haven, Connecticut.

LUIS PICARD-AMI
Fairfield State Hospital,
Newtown, Connecticut.

¹ Giarmán, N. J., and Day, S. M., *Biochem. Pharmacol.*, **1**, 235 (1958)

² Giarmán, N. J., Day, S. M., and Pepeu, G., *Fed. Proc.*, **18**, 394 (1959).

³ Amin, A. H., Crawford, T. B. B., and Gaddum, J. H., *J. Physiol.*, **126** (1954).

⁴ Twarog, B. M., and Page, L. H., *Amer. J. Physiol.*, **175**, 157 (1958).

⁵ Paasonen, M. K., and Giarmán, N. J., *Arch. Internat. Pharmacodyn.*, **114**, 189 (1958).

⁶ Paasonen, M. K., Maclean, P. D., and Giarmán, N. J., *J. Neurochem.*, **1**, 326 (1957).

⁷ Costa, E., and Aprison, M. H., *J. Nerv. Men. Dis.*, **126**, 284 (1958).

⁸ Kitay, J. I., and Altschule, M. D., "The Pineal Gland" (Harvard University Press, Cambridge, Mass., 1954).

⁹ Altschule, M. D., *N. Eng. J. Med.*, **257**, 919 (1957).

¹⁰ Farrell, G., Koletsky, S., and Lapham, L. W., *Fed. Proc.*, **18**, 44 (1959).

¹¹ Lerner, A. B., Case, J. D., Takahashi, Y., Lee, T. H., and Mori, W., *J. Amer. Chem. Soc.*, **80**, 2587 (1958).

¹² Wurtman, R. J., Altschule, M. D., and Holmgren, U., *Amer. J. Physiol.*, **197**, 108 (1959).

HÆMATOLOGY

Evidence for a New Allele in the Kidd Blood Group System in Indians of Northern Mato Grosso, Brazil

A NEW phenotype in the Kidd blood group system, *Jk* (*a-b-*), has recently been recognized in a Filipina of Spanish and Chinese ancestry¹. This phenotype is extremely rare in Whites and Negroes; its incidence in Asian people or their descendants has not as yet been determined. We recently had the opportunity to study the blood groups of a number of Brazilian Indians indigenous to the northern part of Mato Grosso in the region of the headwaters of the Upper Xingu River. Because of the peculiar geographical features defining this area, these Indians live in virtual isolation, and because of tribal customs, marriage is exclusively between first cousins. The present communication reports the frequency of the phenotype *Jk* (*a-b-*) and evidence for a new allele, *Jk*, in a sample of this population.

Venepuncture specimens were collected in sterile vacuum tubes containing acid-citrate-dextrose solution, and shipped by air to New York, where the testing was performed 3-5 weeks after the initial collection. It was possible to obtain 88 specimens from representatives of four linguistic groups. The names of these groups and the distribution of the phenotypes of the Kidd system are shown in Table 1. Because of the heretofore reported rarity of the phenotype *Jk* (*a-b-*), detailed re-testing was performed on the five specimens found to be *Jk* (*a-b-*). The cells were tested with three different anti-*Jk^a* sera, two anti-*Jk^b* sera, and with the serum of Mrs. Santos, the patient reported by Pinkerton *et al.*¹. In all instances negative results were obtained.

Table 1. DISTRIBUTION OF PHENOTYPES OF THE KIDD BLOOD GROUP SYSTEM IN 88 INDIANS OF MATO GROSSO

Name of tribe	Number tested	Phenotypes			
		<i>Jk</i> (<i>a-b-</i>)	<i>Jk</i> (<i>a+b-</i>)	<i>Jk</i> (<i>a-b+</i>)	<i>Jk</i> (<i>a+b+</i>)
Carib	13	2	7	2	2
Arawak	19	0	4	7	8
Tupi	43	1	19	10	13
Trumai	13	2	4	6	1
Total	88	5	34	25	24

Calculations of gene frequencies based upon the hypothesis that only two alleles exist in the Kidd system yielded results that were internally inconsistent. The results were then recalculated on the assumption that three alleles exist, using Bernstein's method as described by Mourant². The agreement between the observed and theoretical frequencies shown in Table 2 provides further evidence for the presence of a third gene, *Jk*, in the Kidd blood group system. It appears likely that this gene, though rare in Caucasians, is common in Asians and their descendants.

Table 2. PHENOTYPE AND GENE FREQUENCIES

	Phenotypes (per cent)				Genes (per cent)		
	<i>Jk</i> (<i>a-b-</i>)	<i>Jk</i> (<i>a+b-</i>)	<i>Jk</i> (<i>a-b+</i>)	<i>Jk</i> (<i>a+b+</i>)	<i>Jk</i>	<i>Jk^a</i>	<i>Jk^b</i>
Observed	5.68	38.64	28.41	27.27	0.2453	0.4185	0.3362
Expected	5.55	38.05	27.80	28.14			

This work was performed in part during tenure of one of us (R. T. S.) as Visiting Fulbright Lecturer, University of Bahia School of Medicine, Salvador, Bahia, Brazil.

We thank Dr. A. Cahan and Dr. F. H. Allen, jun., for the anti-sera supplied and Dr. L. C. Dunn for his critical comments. We acknowledge the co-operation of the Serviço de Proteção aos Índios, the Fundação Brazil Central, the Fulbright Commission and U.S. Information Service, U.S. Embassy, Rio de Janeiro.

RICHARD T. SILVER

Department of Medicine,

JANE M. HABER

Blood Bank,

AARON KELLNER

Department of Pathology,

New York Hospital—Cornell Medical Center.

¹ Pinkerton, F. J., Mermod, L. E., Liles, B. A., Jack, jun., J. A., and Noades, J., *Vox Sang.*, **4**, 155 (1959).

² Mourant, A. E., "The Distribution of the Human Blood Groups", 216 (Blackwell Scientific Publications, Oxford, 1954).