

**A NEW TRYPANOSOME, *TRYPANOSOMA HOSEI*
(PROTOZOA: TRYPANOSOMATIDAE), IN *RANA HOSEI*
(AMPHIBIA: ANURA: RANIDAE)
FROM PENINSULAR MALAYSIA**

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ABSTRACT. - A new trypanosome, *Trypanosoma hosei*, is described from a forest frog, *Rana hosei*, from Peninsular Malaysia. This species has a slender body with the kinetoplast situated near the posterior end of the body. The general appearance of *T. hosei* is similar to the trypanosomes of some freshwater fishes.

INTRODUCTION

Various morphological types of anuran trypanosome species are known from Asia, Africa, as well as North and South America. However, most of them are very different morphologically from the trypanosomes of freshwater fishes. We examined about 1000 frogs and toads belonging to 40 species from Peninsular Malaysia during the period from August 1988 to May 1990, and found many trypanosomes including several new species. Among them, one interesting species discovered in the blood of the frog *Rana hosei* is similar to the trypanosomes of freshwater fishes in having a slender body, central position of nucleus and posterior position of kinetoplast.

MATERIALS AND METHODS

Thin smears prepared from cardiac blood were fixed in absolute methanol and stained with 3% Giemsa for one hour. The smears were examined at x200 and the parasite was photographed with colour film at x500 under oil immersion for measurement. A total of 15 individuals of *T. hosei*, new species, were detected in three frogs (Table I).

***Trypanosoma hosei*, new species**
(Fig. 1)

Description. - Monomorphic trypanosome with elongated body; anterior end attenuated; posterior end usually pointed; cytoplasm finely granulated except part from posterior end to kinetoplast as shown in Fig. 1; length of body 62.9-71.7 μ m; free flagellum 8.6-15.7 μ m; length

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of posterior end to kinetoplast 1.1-4.0 μm ; kinetoplast to posterior end of nucleus 16.0-37.1 μm ; width at nucleus 5.1-8.6 μm ; length of nucleus 1.7-3.7 μm ; width of nucleus 2.3-4.0 μm ; length of kinetoplast 0.9-1.3 μm ; width of kinetoplast 0.7-1.1 μm ; posterior part of kinetoplast vacuolated.

Type Smear. - Holotype-slide No. 89101806 Type Locality: Ulu Langat, Selangor. Paratype-slide No. 89101805 Locality: Ulu Langat, Selangor; Paratype-slide No. 89090102 Locality: Field Study Centre of University of Malaya, Ulu Gombak, Selangor. Smears are provisionally deposited in the Department of Biology, Medical College of Oita, Oita, Japan.

Type Host. - *Rana hosei* Boulenger, 1912.

Etymology. - This species is named herein *Trypanosoma hosei*, new species, after the amphibian host *Rana hosei*.

Remarks. - This species is clearly distinguished from all known trypanosomes of Anura by the slender body and the posterior position of the nucleus. Only *Trypanosoma parroti* Brumpt, 1923 in *Discoglossus pictus* from Algeria bears a resemblance to *T. hosei*, new species. However, *T. parroti* is a rather small species with a body length of approximately only 30-50 μm . The kinetoplast of *Trypanosoma rugosae* Miyata, 1978 in *Rana rugosa* from Japan is also situated near the posterior end, but this species has a short body and a short free flagellum. *T. hosei* is rather similar to some trypanosomes of freshwater fishes such as *Trypanosoma sinipercae* Winitschenko, 1971, and others illustrated by Winitschenko *et al.* (1971), but none of them are identical with the present new species.

Table 1. Measurements of *Trypanosoma hosei*, new species, detected in *Rana hosei*

No.	BL	W	FF	K-N	P-K	NL	NW	KL	KW
1	62.9	6.3	13.1	20.0	1.1	2.0	3.1	1.3	0.9
2	65.7	6.3	8.6	17.1	2.3	2.3	3.4	1.1	0.9
3	63.1	5.1	11.4	19.4	2.3	2.6	2.6	0.9	1.1
4	65.1	7.7	14.6	18.3	3.1	2.1	2.9	1.0	0.9
5	65.7	6.3	10.9	20.6	4.0	2.3	2.9	0.9	0.9
6	67.1	6.3	11.4	19.4	2.3	2.6	2.7	1.1	1.0
7	68.6	5.4	10.9	23.4	1.4	2.9	2.3	1.1	0.9
8	67.1	6.0	13.7	37.1	2.0	1.9	2.3	0.9	0.9
9	69.1	8.3	14.3	20.0	2.9	1.7	3.1	1.1	0.9
10	70.9	7.1	15.7	17.1	2.3	3.7	2.6	1.1	0.9
11	71.7	7.1	11.1	16.0	1.4	2.7	2.3	0.9	0.7
12	71.4	7.4	11.7	20.0	2.9	2.6	3.7	1.3	0.9
13	68.6	7.7	9.1	21.1	2.9	2.3	3.1	1.0	1.1
14	68.6	8.3	11.4	20.0	2.6	2.7	4.0	0.9	0.9
15	68.6	8.6	11.4	18.6	1.7	2.9	3.4	1.1	1.1
MAX	71.7	8.6	15.7	37.1	4.0	3.7	4.0	1.3	1.1
MIN	62.9	5.1	8.6	16.0	1.1	1.7	2.3	0.9	0.7
AVG	67.61	6.93	11.95	20.54	2.35	2.49	2.96	1.05	0.93
STD	2.64	1.04	1.91	4.76	0.74	0.48	0.50	0.13	0.10

BL: Body length; W: Width at nucleus; FF: Free flagellum; K-N: Distance from kinetoplast to posterior edge of nucleus; P-K: Posterior end of body to kinetoplast; NL: Length of nucleus; NW: Width of nucleus; KL: Length of kinetoplast; KW: Width of kinetoplast

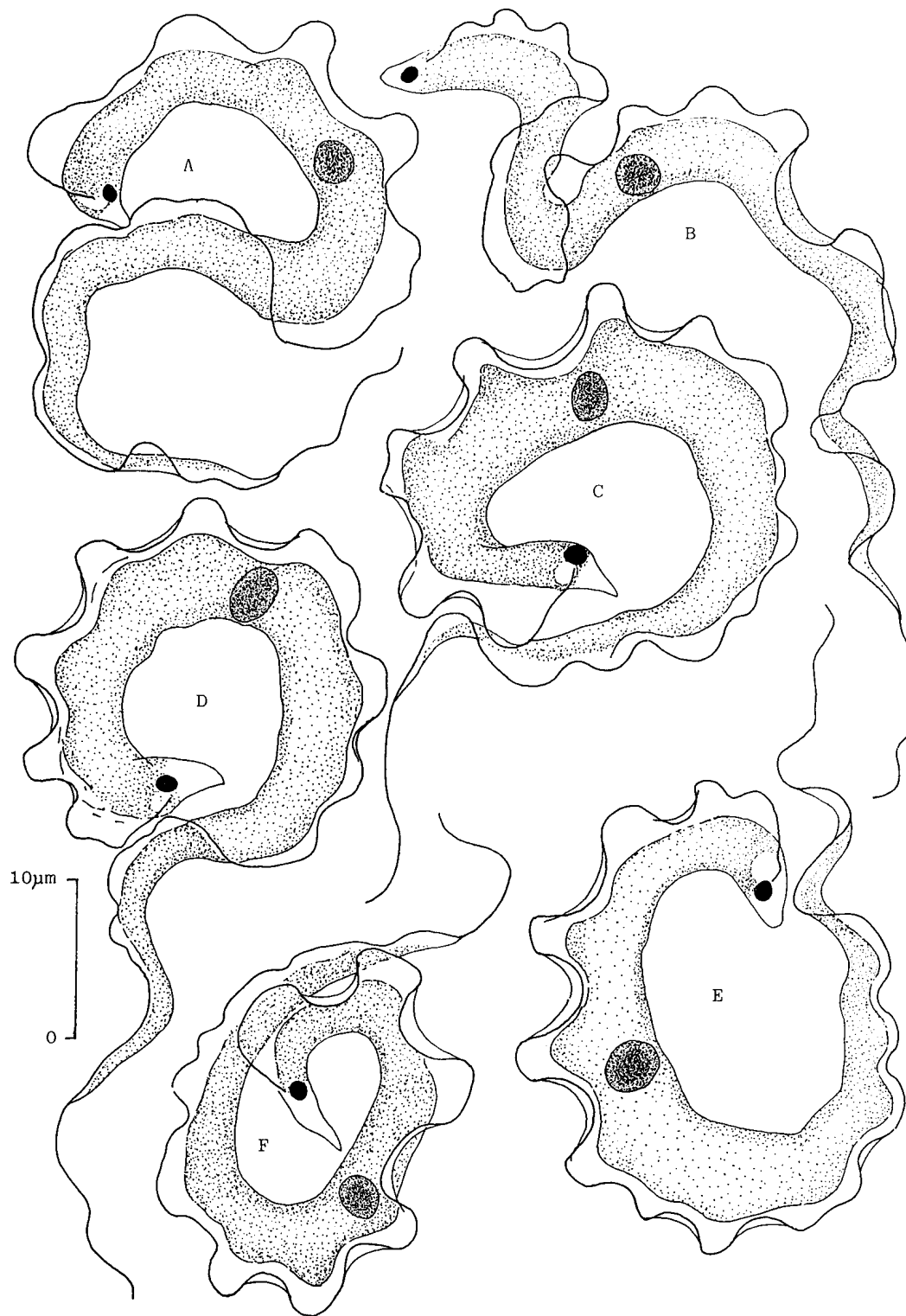


Fig. 1. *Trypanosoma hosei*, new species. A, C, D, E - from blood smear No. 89101806; B, F - from blood smear No. 89090102

DISCUSSION

About 60 species of anuran trypanosomes have been described from various parts of the world (Miyata, 1986). However, many species probably still await discovery, because some 90% of the known anuran fauna have not been examined for the presence of trypanosomes. In this respect, the examination of more than one thousand blood smears from frogs and toads collected in Peninsular Malaysia has revealed the presence of several new species. *Trypanosoma hosei*, new species, is very interesting because it is very similar morphologically to those known from freshwater fishes. Miyata (1988) had suggested that all known trypanosomes of vertebrates might have been derived phylogenically from an ancestral frog trypanosome, and the morphology of *T. hosei* seems to support this opinion.

We examined about 60 individuals of *Rana hosei* collected from various localities of Peninsular Malaysia. *Rana hosei* is found at night on tree twigs or rocks near streams in tropical rain forests and was not observed near human settlements. At least six trypanosome species were detected in this frog. Some of them appear conspecific with species found in *Rana chalconota* and *Rana erythraea*.

However, *T. hosei* or *T. hosei*-like species have not been found in other frogs and toads. Even in *R. hosei* this trypanosome is rather rare and only detected in one of 14 *R. hosei* from Gombak and two of four from Ulu Langat.

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