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# *STRELKOWELLA URUNBASIENSIS* GEN. ET SP. N. (SUCTORIA, ALLANTOSOMATIDAE) FROM THE HINDGUT OF THE YAKUT HORSE

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***Strelkowella urunbasiensis* gen. et sp. n. (Suctoria, Allantosomatidae) from the Hindgut of the Yakut Horse. Kornilova O. A.** — The new suctorian species presumably belonging to the family Allantosomatidae was recognized in digesta-samples from Yakut horses. The ciliate has actinophores, thus the new genus *Strelkowella* gen. n. is created for it. *Strelkowella urunbasiensis* sp. n. (type species of the genus) is the allantosomid with tentacles crowning, 6 actinophores (three actinophores on each end of the body). Commonly 6 equal capitate tentacles encircle the end of each actinophore. This new species was often observed adhered to the body of *Cycloposthium ponomarevi* and *C. dentiferum* (Ciliophora, Entodiniomorphida).

Key words: ciliates, suctorians, Allantosomatidae, Podophryida, *Strelkowella urunbasiensis* sp. n., endosymbionts, Protozoa, horse, *Equus.*

***Strelkowella urunbasiensis* gen. et sp. n. (Suctoria, Allantosomatidae) из кишечника якутской лошади. Корнилова О. А.** — Обнаружена новая суктория семейства Allantosomatidae в содержимом кишечника якутской лошади. Предложен новый род *Strelkowella* gen. n., так как в отличие от других аллантосомид, данная инфузория имеет актинофоры. Типовой вид — *Strelkowella urunbasiensis* sp. n., это аллантосомида, у которой щупальца расположены на 6 актинофорах (по 3 актинофора на обоих концах тела). Щупальца (обычно по 6) увенчивают конец каждого актинофора. Новая суктория часто обнаруживается прикрепленной к телу *Cycloposthium ponomarevi* и *C. dentiferum* (Ciliophora, Entodiniomorphida).

Ключевые слова: инфузории, суктории, Allantosomatidae, Podophryida, *Strelkowella urunbasiensis* sp. n., эндосимбионты, Protozoa, лошадь, *Equus.*

## Introduction

The first endosymbiotic suctorian *Allantosoma intestinalis* Gassovsky, 1919 from the intestine of horse *Equus caballus* L. was described by Gassovsky (1919) in Russia, St-Petersburg (Petrograd at that time). Later, the replacement name *A. intestinale* (Aescht, 2001) was applied to it. This species with tentacles in two fascicles on each end of body is widely-spreaded in equides (Kornilova, 2003) and induced the name of the whole family Allantosomatidae Jankowski, 1978 (Jankowski, 1978; Dovgal, 2002).

T. Hsiung (1928) described two species in the genus — *A. dicorniger* Hsiung, 1928 and *A. brevicorniger* Hsiung, 1928. A. Strelkow (1939) found three species — *A. cucumis* Strelkow, 1939, *A. biseriale* Strelkow, 1939 and *A. lineare* Strelkow, 1939. Imai (1979) described *Allantosoma japonensis* Imai, 1979, which was renamed later as *A. japonense* (Aescht, 2001).

According to the revised classification by Jankowski (1967, 1978) five species of suctorians were distributed among two new genera: *Arcosoma* Jankowski, 1967 with only two tentacles (*A. dicorniger, A. brevicorniger, A. lineare*) and *Allantoxena* Jankowski, 1978 with tentacles in the rows (*A. biseriale* and *A. japonense*) (Dovgal, 2002; Kornilova, 2003). According to new feminine gender name *Allantoxena — A. japonense* has to be *Allantoxena japonensis* (Imai, 1979) and the author accepts this name at present paper.

At the end of XX century, *Allantosoma multisuctores* Van Hoven, Gilchrist, Stenson, 1998 — the new suctorian species in rhinoceros was found (Van Hoven et al., 1998). I. Dovgal (2002) revised the taxonomy of that allantosomid and suggested the new genus *Vanhovenia* Dovgal, 2002. *Vanhovenia multisuctores* is clearly distinguishable from the other allantosomids by numerous ingestory tentacles scattered uniformly over the entire body. Thus the known allantosomides have different number and position of tentacles, but do not have actinophores.

Surwey of the endosymbiont ciliates from the intestine of Yakut horse (native in East Siberia) revealed the presence of suctorian, which differs from all other allantosomids with respect of the disposition of tentacles at the end of actinophores and is described here as new genus and new species.

**Material and methods**

The samples of intestinal digesta were collected from 8 Yakut horses (5 colts and 3 fillies 7–8 months old) that were slaughtered in Khangalasski Region of Sakha Republic (Yakutia), near village Urun-Bas (61.5° N, 128.5° E) in November 2001. Yakut horses are keeping free-pasturing in the mixed birch-larch forest and flood-lands of Lena River without additional feeding all year round. There is a severe continental climate with amplitude of air-temperature from — 65°C in winter to +35°C in summer. There are no stables or sheds for horses. The slaughtering took place in "field conditions" with air-temperature — 35°C.

Sets of samples from caecum, ventral ascending colon, dorsal ascending colon, and descending colon were collected. Samples of digesta were taken within 25–30 min after the horse had been slaughtered and while the carcass was still warm. 10 ml of digesta was immediately added to 10 ml of warm 4% formalin.

In 2 horses, the new suctoria were found. They were observed by the light microscope. Some part of material was stained with Mayer's hematoxylin. For measurements of specimens, minimum and maximum values are given, followed by the arithmetic mean and standard deviation in parentheses.

## ***Strelkowella*** Kornilova, **gen. n.**

Type species: *Strelkowella urunbasiensis* Kornilova, sp. n.

Body elongate-cycloid with spherical macronucleus and 6 actinophores (three actinophores on each end of body). Tentacles crown the edge of actinophore.

Etymology. Generic name *Strelkowella* was selected to commemorate Alexander A. Strelkow, the famous Russian ciliatologist who described many ciliates in the intestine of equides.

## ***Strelkowella urunbasiensis*** Kornilova, **sp. n.** (fig. 1–3)

Type host. Yakut horse *Equus caballus* L.

Type locality. East Siberia, Khangalasski Region of Sakha Republic (Yakutia), near the village Urun-Bas (61.5° N, 128.5° E).

Location in the host: *S. urunbasiensis* formed about 1% of the total ciliate population in the ascending ventral colon (300/1 ml digesta), and rarely occured in the ascending dorsal colon. It was not found in the caecum and in the descending colon.

Type material (syntype N 475) is deposited in the intestinal protozoa collection of the Department of Zoology, Herzen State Pedagogical University of Russia, St.-Petersburg.

Etymology. Species name *urunbasiensis* refers to the place Urun-Bas ("White Head" in Yakut language), where suctoria was found in Yakut horses.

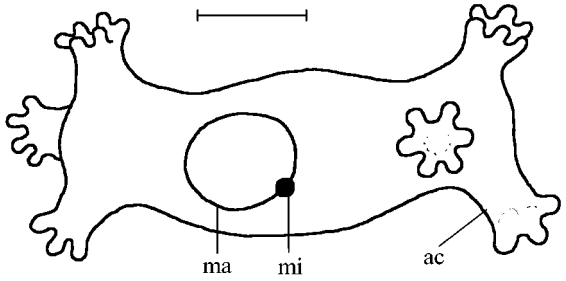


Fig. 1. Microscope projection drawing of *Strelkowella urunbasiensis* from the colon of Yakut horse: ma — macronucleus, mi — micronucleus, ac — actinophore with tentacles. Scale bar 10 mkm.

Рис. 1. *Strelkowella urunbasiensis* из кишечника якутской лошади: ma — макронуклеус, mi — микронуклеус, ac — актинофор со щупальцами. Масштабная линейка 10 мкм.

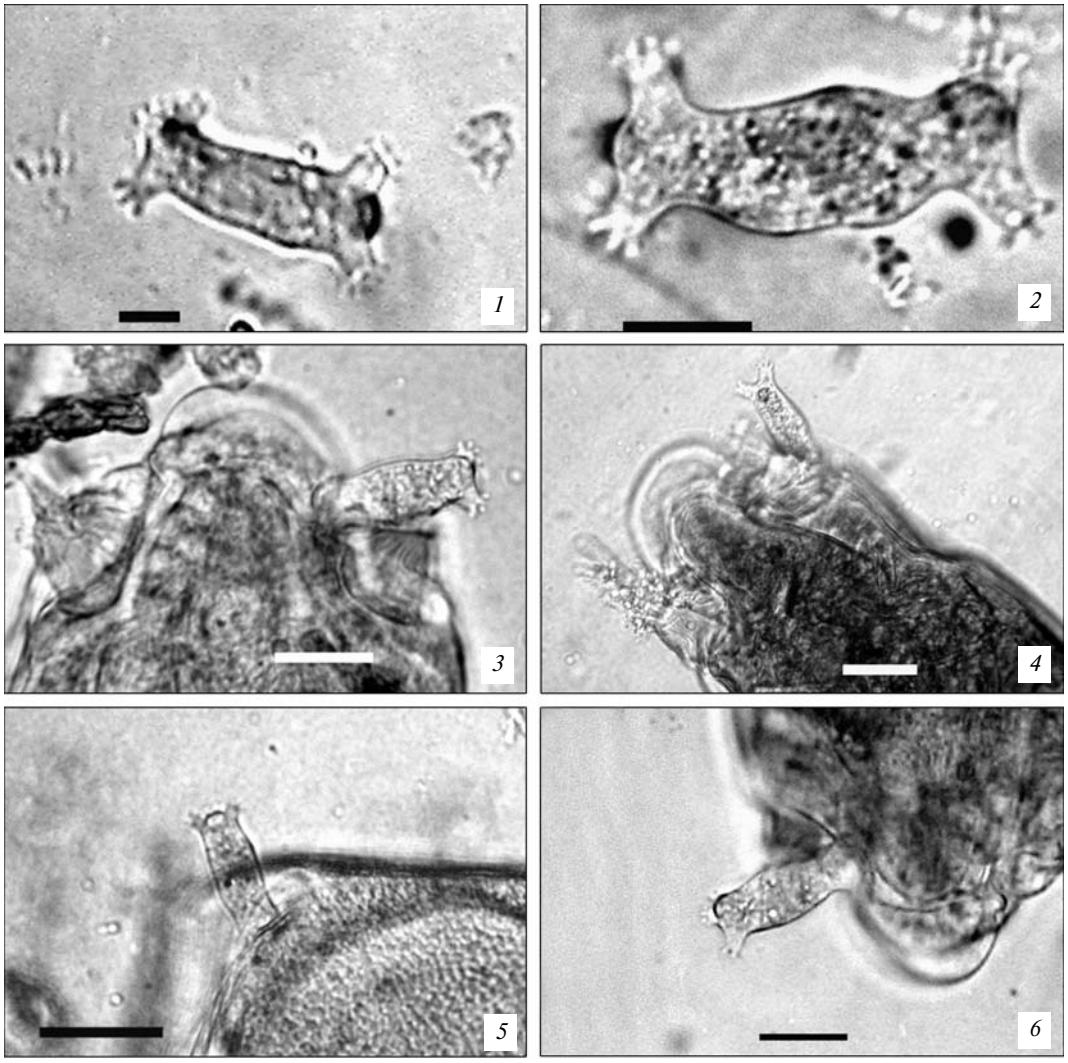


Fig. 2. Photomicrographs of specimens of *Strelkowella urunbasiensis* from the colon of Yakut horse: *1–2* — free specimens; *3–6* — specimens sticking to *Cycloposthium* sp. Scale bars: *1, 2* — 10 mkm; *3, 4, 6* — 20 mkm; *5* — 40 mkm.

Рис. 2. Микрофотографии *Strelkowella urunbasiensis* из кишечника якутской лошади: *1–2* — неприкрепленные особи; *3–6* — особи, прикрепившиеся к *Cycloposthium* sp. Масштабная линейка: *1, 2* — 10 мкм; *3, 4, 6* — 20 мкм; *5* — 40 мкм.

## Description

Body is elongate-cycloid with ingestory suctorial tentacles crowning 6 slightly-extensible actinophores (three actinophores on each end of body). Commonly 6 equal capitate tentacles encircle the end of each actinophore. The spherical macronucleus with small micronucleus is situated at the centre of the body. No obvious contractile vacuoles could be seen (fig. 1; 2, *1*, *2*).

Body length 25–46 (35.8 ± 1.2) mkm; width (diameter) 8–18 (13.1 ± 0.6) mkm and length to width ratio 2.25–3.93 (2.78 ± 0.10) (n = 40).

This new species was often observed adhered to the body of *Cycloposthium ponomarevi* Kornilova, 2001 and *C. dentiferum* Gassovsky, 1919 (Entodiniomorphida, Ciliophora) (fig. 2, *3–6*). The suctorian usually adhere by single actinophore with tentacles (fig. 3, *1*) or by few ones (fig. 3, *2–5*).

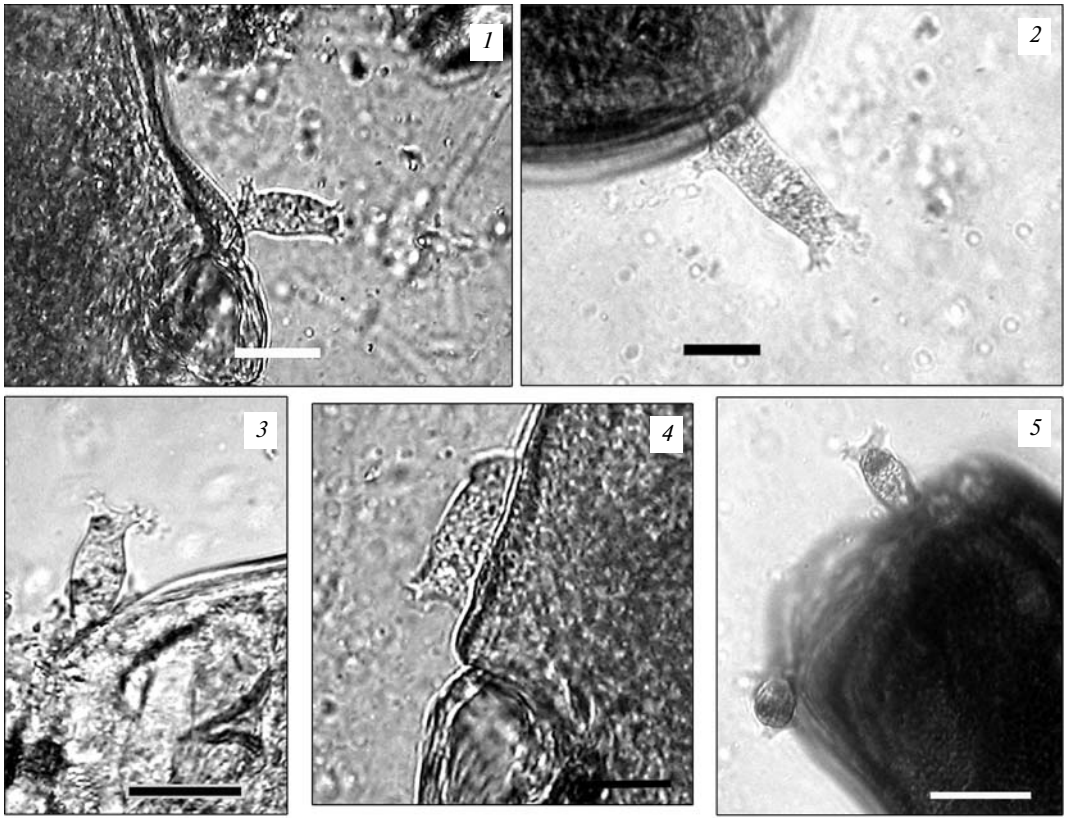


Fig. 3. Photomicrographs of specimens of *Strelkowella urunbasiensis* with different types of adhering. *1* — specimen adhered by single actinophore with tentacles; *2* — specimen adhered by two actinophores with tentacles; *3* — specimen adhered by three actinophores with tentacles, *4* — specimen adhered by actinophores, situated on the opposite ends of suctoria; *5* — two suctories occuring on one host-specimen. Scale bars: *1, 3, 5* — 40 mkm; *2, 4* — 20 mkm.

Рис. 3. Микрофотографии *Strelkowella urunbasiensis* с разными способами прикрепления: *1* — особь, прикрепившаяся при помощи одного актинофора; *2* — особь, прикрепившаяся при помощи двух актинофоров; *3* — особь, прикрепившаяся при помощи трех актинофоров; *4* — особь, прикрепившаяся при помощи актинофоров, расположеннных на противоположных концах тела суктории; *5* — две суктории, прикрепившиеся одновременно к одной инфузории-хозяину. Масштабная линейка: *1, 3, 5* — 40 мкм; *2, 4* — 20 мкм.

Remarks. *Strelkowella urunbasiensis* is the first known allantosomid with actinophores. This fact requires the revision of the family Allantosomatidae, because the absence of actinophores is characteristic in the family diagnosis. Nevertheless *S. urunbasiensis* has common allantosomid features: sac-like unflattened body, capitate tentacles, inhabitance in digestive tract of mammals.

Revised key to the family Allantosomatidae Jankowski, 1978, is presented to include the new genus *Strelkowella*. The key is based on the number, length and position of tentacles.

**Key to species and genus of the family Allantosomatidae**
**Таблица для определения видов и родов семейства Allantosomatidae**

1 (16). Actinophores absent.
2 (15). Tentacles confined to each end of body.
3 (10). More than two tentacles.
4 (7). Tentacles in two fascicles on each end of body. ..... Genus *Allantosoma* Gassovsky, 1919
5 (6). Tentacles scattered uniformly on rounded ends of body. ... *Allantosoma intestinale* Gassovsky, 1919
6 (5). Tentacles settle down on detached narrowed ends of body. The majority of tentacles turn to ventral side of body. ..... *Allantosoma cucumis* Strelkow, 1939
7 (4). Tentacles in two rows on each end of body. ..... Genus *Allantoxena* Jankowski, 1978

8 (9). All tentacles (4–14) in rows on ends of body and lined closely to each other. ..... ..... *Allantoxena biseriale* Strelkow, 1939
9 (8). Four tentacles are situated symmetrically on somewhat lateroventral sides, rest of tentacles (12–16) lined on ends of body. ..... *Allantoxena japonensis* Imai, 1979
10 (3). One tentacle confined to each end of body. ..... Genus *Arcosoma* Jankowski, 1967
11 (12). Tentacles stretch along body axis. ..... *Arcosoma lineare* Strelkow, 1939
12 (11). Tentacles turned to ventral side of body.
13 (14). Tentacles long (length of each tentacle consisting 30–50% of body length). ..... ..... *A. dicorniger* Hsiung, 1928
14 (13). Tentacles are short (length of each tentacle less than 15% of body length). ..... ..... *A. brevicorniger* Hsiung, 1928
15 (2). Tentacles scattered uniformly over entire body surface. ..... Genus *Vanhovenia* Dovgal, 2002; *Vanhovenia multisuctores* (Van Hoven et al., 1998)
16 (1). Tentacles in fascicles on actinophores on both ends of body. ..... ..... Genus *Strelkowella* gen. n.; *Strelkowella urunbasiensis* sp. n.

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