Chromosome Numbers in the Triatominae (Hemiptera-Reduviidae): a Review

Francisco Panzera/+, Ruben Pérez*, Sonia Hornos*, Yanina Panzera, Rosario Cestau*, Verónica Delgado, Paula Nicolini

Sección Genética Evolutiva, Facultad de Ciencias, Universidad de la República, Tristán Narvaja 1674, 11200 Montevideo, Uruguay *Departamento de Genética, Facultad de Medicina, General Flores 2125, 11800 Montevideo, Uruguay

The chromosome numbers of 46 out of the 122 currently recognized species of Triatominae (Hemiptera, Reduviidae) are summarized. We present the number of autosomes, the sex mechanism and the first reference for each karyotype.

Key words: Chagas disease - cytogenetics - holocentric chromosomes -Triatominae

The subfamily Triatominae (Hemiptera-Reduviidae) includes 122 species of hematophagous insects and is divided into five tribes and 15 genera. Schofield (1994) lists 118 species of Triatominae, to which should now be added *Belminus laportei* (Lent et al. 1995), *Rhodnius stali* (Lent et al. 1993), *Triatoma melanosoma* (Lent et al. 1994), and *T. gomeznunezi* (Martínez et al. 1994).

Triatomines present holocentric chromosomes, which do not have a morphologically differentiated centromere. This feature, together with their small size, hindered the progress in studies of their cytogenetics, which, for a long time, were restricted to descriptions of chromosome number and sex mechanism with conventional staining.

In spite of their medical importance as vectors of Chagas disease, chromosomal studies are limited to a small number of species. Previous revisions reported the chromosome complements (haploid and diploid) of 29 species (Ueshima 1966, 1979). The purpose of this report is to summarize the chromosome numbers of the 46 cytogenetically studied species up to date (Table). Four of them are described for the first time in this paper (*Rhodnius pallescens*, *Triatoma melanosoma*, *T. picturata* and *T. tibiamaculata*).

Table shows that triatomines have a high chromosomal homogeneity. The most common number of autosomes (A) is 20, with only three exceptions: *Triatoma nitida* and *Panstrongylus megistus* (both with 18 A) and *T.rubrofasciata* (22 A). Three sex mechanisms are found in the males: XY (25 species), X_1X_2Y (19 species) and $X_1X_2X_3Y$ (2 species). In order to verify these multiple sex mechanisms it would be necessary to confirm them in females.

At present, species differentiation (Pérez et al. 1992), intraspecific variations (Panzera et al. 1992) and evolutionary relationships (Panzera et al. 1995) can all be better studied with the aid of banding techniques and the detailed analysis of meiotic chromosome behaviour. This cytogenetic approach is a useful tool for clarifying taxonomic uncertainties, particularly in those groups of epidemiological importance. These studies may allow the differentiation of morphologically similar species such as those belonging to the *phyllosoma* complex and *sordida* group. On the other hand, different populations within a given species can be identified. This could be the case for *T. brasiliensis* and *T. infestans* from Bolivia, where sylvatic and domestic populations may be distinguished on the basis of their cytogenetic differences.

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+Corresponding author. E-mail: panzera@ibiol.edu.uy.
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TABLE

Chromosome numbers reported in the subfamily Triatominae

Species	2n	First reference
TRIBU: *RHODNIINI*		
Psammolestes coreodes	22♂ = 20A + XY	Schreiber & Pellegrino 1950
Rhodnius ecuadoriensis	22♂ = 20A + XY	Scvortzoff et al. 1996
R. nasutus	22♂ = 20A + XY	Pérez et al. 1992
R. neglectus	22♂ = 20A + XY	Barth 1956
	22♀ = 20A + XX	Koshy 1979a
R. neivai	22♂ = 20A + XY	Koshy 1979b
	22♀ = 20A + XX	Koshy 1979a
R. pallescens	22♂ = 20A + XY	This report
R. pictipes	22♂ = 20A + XY	Pérez et al. 1992
	22♀ = 20A + XX	Koshy 1979a
R. prolixus	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	22♀ = 20A + XX	Koshy 1979a
R. robustus	22♂ = 20A + XY	Koshy 1979b
	22♀ = 20A + XX	Koshy 1979a
TRIBU: *TRIATOMINI*		
Dipetalogaster maximus	22♂ = 20A + XY	Ueshima 1966
Mepraia spinolai	23♂ = 20A + X_1X_2Y	Schofield et al. 1996
	24♀ = 20A + $X_1X_1X_2X_2$	Schofield et al. 1996
Panstrongylus herreri	23♂ = 20A + X_1X_2Y	Ueshima 1966
P. megistus	21♂ = 18A + X_1X_2Y	Schreiber & Pellegrino 1950
P. tupynambai	23♂ = 20A + X_1X_2Y	Panzera et al. 1991
Paratriatoma hirsuta	22♂ = 20A + XY	Ueshima 1966
	22♀ = 20A + XX	Ueshima 1966
Triatoma barberi	23♂ = 20A + X_1X_2Y	Ueshima 1966
	24♀ = 20A + $X_1X_1X_2X_2$	Ueshima 1966
T. brasiliensis	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	22♀ = 20A + XX	Schreiber et al. 1967
T. circummaculata	22♂ = 20A + XY	Scvortzoff et al. 1996
T. delpontei	22♂ = 20A + XY	Ueshima 1966
	22♀ = 20A + XX	Panzera et al. 1995
T. dimidiata[a]	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	23♂ = 20A + X_1X_2Y	Panzera et al. 1994
T. eratyrusiformis	24♂ = 20A + $X_1X_2X_3Y$	Ueshima 1966
T. gerstaeckeri	23♂ = 20A + X_1X_2Y	Ueshima 1966
T. guasayana	22♂ = 20A + XY	Rebagliati et al. 1995
T. infestans	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	22♀ = 20A + XX	Schreiber et al. 1967
T. lecticularia	22♂ = 20A + XY	Ueshima 1966
	22♀ = 20A + XX	Ueshima 1966
T. longipennis	23♂ = 20A + X_1X_2Y	Panzera et al. 1994
T. maculata	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	22♀ = 20A + XX	Schreiber et al. 1967
T. matogrossensis	22♂ = 20A + XY	Pérez et al. 1992
T. mazzottii	23♂ = 20A + X_1X_2Y	Panzera et al. 1994
T. melanosoma	22♂ = 20A + XY	This report
	22♀ = 20A + XX	This report
T. nitida	21♂ = 18A + X_1X_2Y	Schreiber & Pellegrino 1950
T. patagonica	22♂ = 20A + XY	Ueshima 1966
T. pallidipennis[a]	23♂ = 20A + X_1X_2Y	Ueshima 1966, Panzera et al. 1994
	22♂ = 20A + XY	Koshy 1979c
T. peninsularis	23♂ = 20A + X_1X_2Y	Ueshima 1966
	24♀ = 20A + $X_1X_1X_2X_2$	Ueshima 1966
T. picturata	23♂ = 20A + X_1X_2Y	This report
T. platensis	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	22♀ = 20A + XX	Panzera et al. 1995
T. protracta	23♂ = 20A + X_1X_2Y	Ueshima 1966
	24♀ = 20A + $X_1X_1X_2X_2$	Ueshima 1966

T. pseudomaculata	22♂ = 20A + XY	Schreiber et al. 1972
T. rubida	23♂ = 20A + X_1X_2Y	Ueshima 1966
	24♀ = 20A + $X_1X_1X_2X_2$	Ueshima 1966
T. rubrofasciata	25♂ = 22A + X_1X_2Y	Manna 1950
T. rubrovaria	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	22♀ = 20A + XX	Scvortzoff et al. 1996
T. sanguisuga	23♂ = 20A + X_1X_2Y	Payne 1909
T. sinaloensis	23♂ = 20A + X_1X_2Y	Ueshima 1966
	24♀ = 20A + $X_1X_1X_2X_2$	Ueshima 1966
T. sordida	22♂ = 20A + XY	Schreiber & Pellegrino 1950
	22♀ = 20A + XX	Schreiber et al. 1967
T. tibiamaculata	23♂ = 20A + X_1X_2Y	This report
	24♀ = 20A + $X_1X_1X_2X_2$	This report
T. vitticeps	24♂ = 20A + $X_1X_2X_3Y$	Schreiber & Pellegrino 1950
	26♀ = 20A + $X_1X_1X_2X_2X_3X_3$	Schreiber & Pellegrino 1950

A: autosomes
a: two different sex mechanisms are reported for the same species. Analysis of individuals (males and females) from natural populations over the whole distribution range is necessary to clarify chromosomal data.

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