

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

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*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<sub>1</sub>X<sub>2</sub>Y (19 species) and X<sub>1</sub>X<sub>2</sub>X<sub>3</sub>Y (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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TABLE  
Chromosome numbers reported in the subfamily Triatominae

Species	2n	First reference
TRIBU: RHODNIINI		
<i>Psammolestes coreodes</i>	22 ♂ = 20A + XY	Schreiber & Pellegrino 1950
<i>Rhodnius ecuadoriensis</i>	22 ♂ = 20A + XY	Scvortzoff et al. 1996
<i>R. nasutus</i>	22 ♂ = 20A + XY	Pérez et al. 1992
<i>R. neglectus</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Barth 1956 Koshy 1979a
<i>R. neivai</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Koshy 1979b Koshy 1979a
<i>R. pallescens</i>	22 ♂ = 20A + XY	This report
<i>R. pictipes</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Pérez et al. 1992 Koshy 1979a
<i>R. prolixus</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Schreiber & Pellegrino 1950 Koshy 1979a
<i>R. robustus</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Koshy 1979b Koshy 1979a
TRIBU: TRIATOMINI		
<i>Dipetalogaster maximus</i>	22 ♂ = 20A + XY	Ueshima 1966
<i>Mepraia spinolai</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 24 ♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub>	Schofield et al. 1996 Schofield et al. 1996
<i>Panstrongylus herreri</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	Ueshima 1966
<i>P. megistus</i>	21 ♂ = 18A + X <sub>1</sub> X <sub>2</sub> Y	Schreiber & Pellegrino 1950
<i>P. tupynambai</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	Panzera et al. 1991
<i>Paratriatoma hirsuta</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Ueshima 1966 Ueshima 1966
<i>Triatoma barberi</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 24 ♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub>	Ueshima 1966 Ueshima 1966
<i>T. brasiliensis</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Schreiber & Pellegrino 1950 Schreiber et al. 1967
<i>T. circummaculata</i>	22 ♂ = 20A + XY	Scvortzoff et al. 1996
<i>T. delpontei</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Ueshima 1966 Panzera et al. 1995
<i>T. dimidiata</i> <sup>a</sup>	22 ♂ = 20A + XY 23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	Schreiber & Pellegrino 1950 Panzera et al. 1994
<i>T. eratyrisiformis</i>	24 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> Y	Ueshima 1966
<i>T. gerstaeckeri</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	Ueshima 1966
<i>T. guasayana</i>	22 ♂ = 20A + XY	Rebagliati et al. 1995
<i>T. infestans</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Schreiber & Pellegrino 1950 Schreiber et al. 1967
<i>T. lecticularia</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Ueshima 1966 Ueshima 1966
<i>T. longipennis</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	Panzera et al. 1994
<i>T. maculata</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Schreiber & Pellegrino 1950 Schreiber et al. 1967
<i>T. matogrossensis</i>	22 ♂ = 20A + XY	Pérez et al. 1992
<i>T. mazzottii</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	Panzera et al. 1994
<i>T. melanosoma</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	This report This report
<i>T. nitida</i>	21 ♂ = 18A + X <sub>1</sub> X <sub>2</sub> Y	Schreiber & Pellegrino 1950
<i>T. patagonica</i>	22 ♂ = 20A + XY	Ueshima 1966
<i>T. pallidipennis</i> <sup>a</sup>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 22 ♂ = 20A + XY	Ueshima 1966, Panzera et al. 1994 Koshy 1979c
<i>T. peninsularis</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 24 ♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub>	Ueshima 1966 Ueshima 1966
<i>T. picturata</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	This report
<i>T. platensis</i>	22 ♂ = 20A + XY 22 ♀ = 20A + XX	Schreiber & Pellegrino 1950 Panzera et al. 1995
<i>T. protracta</i>	23 ♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 24 ♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub>	Ueshima 1966 Ueshima 1966

<i>T. pseudomaculata</i>	22♂ = 20A + XY	Schreiber et al. 1972
<i>T. rubida</i>	23♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 24♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub>	Ueshima 1966 Ueshima 1966
<i>T. rubrofasciata</i>	25♂ = 22A + X <sub>1</sub> X <sub>2</sub> Y	Manna 1950
<i>T. rubrovaria</i>	22♂ = 20A + XY 22♀ = 20A + XX	Schreiber & Pellegrino 1950 Scvortzoff et al. 1996
<i>T. sanguisuga</i>	23♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y	Payne 1909
<i>T. sinaloensis</i>	23♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 24♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub>	Ueshima 1966 Ueshima 1966
<i>T. sordida</i>	22♂ = 20A + XY 22♀ = 20A + XX	Schreiber & Pellegrino 1950 Schreiber et al. 1967
<i>T. tibiamaculata</i>	23♂ = 20A + X <sub>1</sub> X <sub>2</sub> Y 24♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub>	This report This report
<i>T. vitticeps</i>	24♂ = 20A + X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> Y 26♀ = 20A + X <sub>1</sub> X <sub>1</sub> X <sub>2</sub> X <sub>2</sub> X <sub>3</sub> X <sub>3</sub>	Schreiber & Pellegrino 1950 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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