Alevi and de Azeredo Oliveira, Entomol Ornithol Herpetol 2013, 2:3
http://dx.doi.org/10.4172/2161-0983.1000e105

Entomology, Ornithology & Herpetology

Editorial Open Access

The Importance of Cytogenetic in the Study of Triatomines - An Editorial Review

Kaio Cesar Chaboli Alevi* and Maria Tercília Vilela de Azeredo Oliveira

Department of Biology, Institute of Biosciences, Humanities and the Exact Sciences, Sao Paulo State University, Brazil

Triatomines belong to the Hemiptera order and Triatominae subfamily [1]. The Triatominae subfamily is be composed of 146 species hematofagous [2,3] and potential vectors of *Trypanosoma cruzi*, etiologic agent of Chagas disease.

Classic cytogenetic studies means of technique Lacto-acetic orcein and C-banding, are considered important tools taxonomic in Triatominae subfamily, as they allow for the clarification of many problems, as the reorganization of Brasiliensis subcomplex [4-6], in the description and revalidation of species [7,8] in the study of cryptic speciation [9] and differentiation of species morphologically related [10,11]. However, in 2005, molecular cytogenetic studies, using the technique of in situ hybridization (FISH) have been initiated in triatomines [12].

The probes used in FISH (45S and 28S) allow taxonomic and evolutionary studies in these vectors. Currently, of the 146 described species only 46 present studies with the FISH technique, distributed in eight genus: *Psammolestes* (1), *Dipetalogaster* (1), *Eratyrus* (1), *Panstrongylus* (3), *Mepraia* (2), *Meccus* (3), *Triatoma* (23), *Rhodnius* (12) [12-17]. Intraspecific variation was also observed with FISH in *T. infestans* and *R. ecuadoriensis* [16,17]. New studies are necessary to the understanding of evolution of these insects.

Even after the emergence of molecular cytogenetics of triatomine, classical cytogenetics is still of great taxonomic importance because they are simple techniques that allow solving big problems, as mentioned above. Thus, increasingly the cytogenetics of triatomines is an important cytotaxonomic and evolutionary tool directly aiding in the understanding of these insects of great importance in public health.

References

1. Lent H, Wygodzinsky P (1979) Revision of the Triatominae (Hemiptera:Reduviidae) and their significance as vector of Chagas's disease. Bull Am Mus Nat Hist. 163: 123-520.
2. Alevi KCC, da Rosa JA, de Azeredo Oliveira MTV (2013) Mini Review: Karyotypic Survey in Triatominae Subfamily (Hemiptera, Heteroptera). Entomol Ornithol Herpetol. 2: 106.
3. Jurberg J, Cunha V, Cailleaux S, Raigorodschi , Lima MS, et al. (2013). Triatoma pintodiasi sp. nov. do subcomplexo T. rubrobaria (Hemiptera, Reduviidae, Triatominae). Rev Pan-Amaz Saude. 4: 43-56.
4. Alevi KC, Mendonça PP, Pereira NP, Rosa JA, Oliveira MT (2012) Karyotype of Triatoma melanocephala Neiva and Pinto (1923). Does this species fit in the Brasiliensis subcomplex? Infect Genet Evol 12: 1652-1653.
5. Alevi KC, Mendonça PP, Succi M, Pereira NP, Rosa JA, et al. (2012) Karyotype and spermatogenesis in Triatoma lenti (Hemiptera: Triatominae), a potential Chagas vector. Genet Mol Res 11: 4278-4284.
6. Alevi KC, Mendonça PP, Pereira NP, Guerra AL, Facina CH, et al. (2013) Distribution of constitutive heterochromatin in two species of triatomines: Triatoma lenti Sherlock and Serafim (1967) and Triatoma sherlocki Papa, Jurberg, Carcavallo, Cerqueira & Barata (2002). Infect Genet Evol 13: 301-303.
7. Frías-Lasserre D (2010) A new species and karyotype variation in the bordering distribution of Mepraia spinolai (Porter) and Mepraia gajardoi Frías et al (Hemiptera: Reduviidae: Triatominae) in Chile and its parapatric model of speciation. Neotrop Entomol 39: 572-583.
8. Jurberg J, Galvão C, Lent H, Monteiro F, Macedo C, et al. (1998) Revalidação de Triatoma garciabesi Carcavallo, Cichero, Martínez, Prosen & Ronderos (1967) (Hemiptera-Reduviidae). Ent Vect. 5: 107-122.
9. Silistino-Souza R, Alevi KCC, Castro NFC, Freitas MN, Papa MD, et al. (2013). Entoepidemiology of Chagas disease in northwest São Paulo and cytogenetic analysis of its main vector, Triatoma sordida (Hemiptera: Triatominae). Gen Mol Res., in press.
10. Alevi KC, Mendonça PP, Pereira NP, Fernandes AL, da Rosa JA, et al. (2013) Analysis of spermiogenesis like a tool in the study of the triatomines of the Brasiliensis subcomplex. C R Biol 336: 46-50.
11. Alevi KCC, Mendonça PP, Pereira NP, Rosa JA, Azeredo-Oliveira MTV (2013) Heteropyknotic filament in spermatids of Triatoma melanocephala and T. vitticeps (Hemiptera, Triatominae). Taylor & Francis Online.
12. Severi-Aguiar GD, de Azeredo-Oliveira MT (2005) Localization of rDNA sites in holocentric chromosomes of three species of triatomines (Heteroptera, Triatominae). Genet Mol Res 4: 704-709.
13. Severi-Aguiar GD, Lourenço LB, Bicudo HE, Azeredo-Oliveira MT (2006) Meiosis aspects and nucleolar activity in Triatoma vitticeps (Triatominae, Heteroptera). Genetica 126: 141-151.
14. Morielle-Souza A, Azeredo-Oliveira MTV (2007) Differential characterization of holocentric chromosomes in triatomines (Heteroptera, Triatominae) using different staining techniques and fluorescent in situ hybridization. Genet Mol Res. 6: 713-720.
15. Bardella VB, Gaeta ML, Vanzela AL, Azeredo-Oliveira MTV (2010) Chromosomal location of heterochromatinand 45S rDNA sites in four South American triatomines (Heteroptera:Reduviidae). Comp Cytogenet. 4: 141-149.
16. Panzera Y, Pita S, Ferreiro MJ, Ferrandis I, Lages C, et al. (2012) High dynamics of rDNA cluster location in kissing bug holocentric chromosomes (Triatominae, Heteroptera). Cytogenet Genome Res 138: 56-67.
17. Pita S, Panzera F, Ferrandis I, Galvão C, Gómez-Palacio A, et al. (2013) Chromosomal divergence and evolutionary inferences in Rhodniini based on the chromosomal location of ribosomal genes. Mem Inst Oswaldo Cruz 108.

***Corresponding author:** Kaio Cesar Chaboli Alevi, Instituto de Biociências, Letras e Ciências Exatas, IBILCE – UNESP,Rua Cristovão Colombo, 2265, Jardim Nazareth 15054-000 – São José do Rio Preto, SP- Brazil, Tel : (17) 32212380 Ramal: 2378; E-mail : kaiochaboli@hotmail.com

Received November 10, 2013; **Accepted** November 12, 2013; **Published** November 20, 2013

Citation: Alevi KCC, de Azeredo Oliveira MTV (2013) The Importance of Cytogenetic in the Study of Triatomines - An Editorial Review. Entomol Ornithol Herpetol 2: e105. doi:10.4172/2161-0983.1000e105