Wortman, M. Berriman, V. Wood, N. de la Cruz, P. Tonellato, P. Jaiswal, T. Seigfried, and R. White 2004, Nucleic Acids Res. 32(Database issue): D258-261; Hochberg, Y., and Y. Benjamini 1990, Stat. Med. 9(7): 811-818; Hughes, C.M., O. Rozenblatt-Rosen, T.A. Milne, T.D. Copeland, S.S. Levine, J.C. Lee, D.N. Hayes, K.S. Shanmugam, A. Bhattacharjee, C.A. Biondi, G.F. Kay, N.K. Hayward, J.L. Hess, and M. Meyerson 2004, Mol. Cell 13(4): 587-597; Irizarry, R.A., B.M. Bolstad, F. Collin, L.M. Cope, B. Hobbs, and T.P. Speed 2003, Nucleic Acids Res. 31(4): e15; Johnston, R., B. Wang, R. Nuttall, M. Doctolero, P. Edwards, J. Lu, M. Vainer, H. Yue, X. Wang, J. Minor, C. Chan, A. Lash, T. Goralski, M. Parisi, B. Oliver, and S. Eastman 2004, Genome Biol. 5(3): R19; Papaconstantinou, M., Y. Wu, H.N. Pretorius, N. Singh, G. Gianfelice, R.M. Tanguay, A.R. Campos, and P.A. Bedard 2005, Mol. Cell Biol. 25(22): 9960-9972; Scacheri, P.C., S. Davis, D.T. Odom, G.E. Crawford, S. Perkins, M.J. Halawi, S.K. Agarwal, S.J. Marx, A.M. Spiegel, P.S. Meltzer, and F.S. Collins 2006, PLoS Genet. 2(4): e51; Schuettengruber, B., D. Chourrout, M. Vervoort, B. Leblanc, and G. Cavalli 2007, Cell 128(4): 735-745; Smyth, G.K., 2004, Stat. Appl. Genet. Mol. Biol. 3: Article3; Yokoyama, A., Z. Wang, J. Wysocka, M. Sanyal, D.J. Aufiero, I. Kitabayashi, W. Herr, and M.L. Cleary 2004, Mol. Cell Biol. 24(13): 5639-5649; Zhang, Y., D. Sturgill, M. Parisi, S. Kumar, and B. Oliver 2007, Nature 450(7167): 233-237.

Quantitative courtship acts of 3LA inversion homo- and heterokaryotypes of *Drosophila ananassae.*

Jayaramu, S.C., S.N. Hegde, and S.R. Ramesh. Department of studies in Zoology, University of Mysore, Manasa Gangothri, Mysore -570006, Karnataka.

The relationship between inversions, morphological traits and fitness characters has been well documented in *Drosophila*. However, the relationship between inversion and behavioural traits has not been studied. Therefore, the present study has been carried out to find out the effect of inversions on courtship acts in *Drosophila ananassae*. Homozygous 3LA inversion stock of *D. ananassae* was established from the females collected at a semi-domestic locality of Mysore, India. This stock was maintained at 22ºC ±1ºC and relative humidity of 70% for ten generations. Before starting the experiments, the inversion heterokaryotypes were generated by crossing males with homokaryotic inversion with normal female or vice versa. When the progeny appeared, the virgin females and bachelor males were isolated, kept separately, aged for five days and used for observation of courtship behaviour. The courtship behaviour of males and females was observed by confining one male and a female of a given type in an Elens-Wattiaux mating chamber. A total of fifteen pairs of the following combinations were studied: a. both male and female heterokaryotypic; b, male homokaryotypic and female heterokaryotypic; c, both male and female homokaryotypic; and d, male heterokaryotypic and female homokaryotypic. The courtship elements were quantified following the procedure of Hegde and Krishna (1997). Following courtship elements such as tapping, scissoring, vibration, circling, licking, ignoring, extruding and decamping were analyzed. The data gathered were subjected to one way ANOVA.

In the present study, it is noticed that, except tapping and wing vibration, courtship acts such as scissoring, circling, licking, ignoring, extruding and decamping were lesser in crosses involving homokaryotypic male and female than in crosses involving heterokaryotypic male and females with 3LA inversion. This suggests that the inversion heterokaryotypes perform greater courtship acts than homokaryotypes. Studies have shown that flies which perform greater courtship acts during courtship

had greater mating success, inseminated more females, and showed greater adaptability than flies with lesser activity during courtship (Hegde and Krishna, 1997). This is in conformity with earlier work of Da Cunha (1955) and Dobzhansky and Wallace (1953). They also found that heterozygote individuals have better adaptability than the homozygotes.

It is also noticed that crosses involving homokaryotypic male and heterokaryotypic female and homokaryotypic female and heterokaryotypic male showed erratic changes in the courtship acts (Table 1). This is because the courtship acts of homo and heterokaryotypes are different.

Therefore, these studies suggest that the heterokaryotype of 3LA inversion has greater courtship activities than homokaryotype.

Table 1. Quantitative courtship acts of 3LA inversion homo and heterokaryotypes of *Drosophila ananassae* (Values are Mean **±** SE).

Parameters	Both male and female heterokaryotypic	Male homokaryotypic and female heterokaryotypic	Both male and female homokaryotypic	Male heterokaryotypic and female homokaryotypic	F.value
Taping	11.7333 ± 1.0931	13.0667 ± 1.0577	15.2667 ± 1.0711	11.2667 ± .9535	2.941*
Scissoring	16.2667 ± 1.4124	10.6667 ± .8146	10.6000 ± .9248	15.5333 ± .9704	8.382 ***
Vibration	9.6667 ± 1.0764	12.4667 ± 1.2979	12.6000 ± 1.0226	11.0000 ± 1.1297	1.481
Circling	5.8000 ± .5872	1.8667 ± .4563	2.2667 ± .3446	6.6000 ± .6817	20.512***
Licking	12.8000 ± 1.0565	3.9333 ± .5973	4.2000 ± .5790	9.8000 ± .9572	27.825***
Ignoring	6.8000 ± .7051	7.2000 ± .5952	1.7333 ± .3446	4.9333 ± 1.0395	12.122***
Extruding	2.1333 ± .3763	1.4000 ± .2895	.7333 ± .2282	2.2000 ± .2960	5.239**
Decamping	3.4000 ± .4557	3.4000 ± .4557	1.0667 ± .3305	2.0000 ± .2582	8.842***

*P<0.05; **P<0.02; ***P< 0.001.

Acknowledgments: The authors are thankful to the Professor and Chairman, Department of Studies in Zoology, University of Mysore, for providing facilities and to Dr. M.S. Krishna for help during the investigation.

References: Da Cunha, A.B., 1955, Advances in Genetics 7: 93-138; Dobzhansky, Th.., and B. Wallace 1953, Proc. Natl. Acad. Sci. 39: 16-71; Hedge, S.N., and M.S. Krishna 1997, Anim. Behav. 54: 419-426.

Erratum

In J.A. Smith and E.C. Liebl (2005), Identification of the Molecular Lesions in Alleles of the *Drosophila* Abelson Tyrosine Kinase, Dros. Inf. Serv. 88: 20-22, we failed to acknowledge our sources of funding. This material was based upon work supported by the Anderson Summer Research Assistantship Fund of Denison University and the National Science Foundation under Grant No. 0344053.