Acknowledgments: We thank P. Taghert for freely sharing information regarding their studies of the 39BC interval, and T. Laverty and G. Rubin for providing the P element stocks used in this study.

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Alatortsev, V.E. Institute of Molecular Genetics, Russian Academy of Sciences, Kurchatov Sq. 46, Moscow, 123182, Russia. An indication on overlapping functions of the *Vinculin* and *α-catenin* loci in *Drosophila melanogaster*.

Vinculin, a conservative protein of the cellular cytoskeletal and anchorage system, was localized in adherent contacts of cells (Geiger *et al.*, 1980; Burridge *et al.*, 1988; Geiger *et al.*, 1990). Vinculin is homologous to the other peripheral cytoplasmic protein, α-catenin, in vertebrates (Kemler, 1993). Recently the *Vinculin* and *α-catenin* genes were described in *Drosophila melanogaster* (Alatortsev *et al.*, 1997; Oda, *et al.*, 1993). Structures of the corresponding *Drosophila* proteins are compared in this note.

Alignment of the vinculin (962 amino acids) and α-catenin (935 amino acids) sequences revealed that internal repeats and proline-rich domain are unique to the *Drosophila* vinculin. However, vinculin and α-catenin contain three extended regions of homology which occupy greater parts of their sequences (Figure 1). These regions lie within the highly conservative N- and C-domains of vinculin, as well as in the central part of the vinculin sequence. Given this multiple homology, it is possible to suggest that vinculin and α-catenin have some functions in common.

Interestingly, sequence of the central part of vinculin is variable in different vinculins (Weller *et al.*, 1990). High level of similarity between vinculin and α-catenin found for central region (71.5%) reflects co-evolution of two proteins in *Drosophila* and represents a special indication on overlapping functions of the *Vinculin* and *α-catenin* genes.

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Figure 1 (next page). Alignment of amino acid sequences of the *Drosophila* vinculin (Dmvincp) and α-catenin (Dmcatp) produced with the help of the GENEBEE program (Brodsky *et al.*, 1995). Standard parameters were used. Only regions with reliable homology are shown. The meaning of signs at the top of the alignment is following: ' ' - the average weight of column pair exchanges is less than weight matrix mean value; '.' - is less than mean value plus one SD; '+' - is less than mean value plus two SD; '*' - is more than mean value plus two SD.

```
                                                    + +..  . ++  + ++* .++. +
Dmvincp (  46)                                  ... VGRDTINSSDDKILRQDMPSALHRV
Dmcatp  (  86)                                  ... IQKGEQIAYENPDITQEMLTAVDEV

                . ..+ +. +.   ..+*.+.  * .++ ..*.+* ....**+  +  +++ ++.. . +
Dmvincp (  81) EGASQLLEEASDIVRSDPYSGPARKKLIEGSRGILQGTSSLLLCFDESEVRKIIQECKRV
Dmcatp  ( 121) KKTGDAMSIAAREFSEDPCSSLKRGNMVRAARNLLSAVTRLLILADMVDVHLLLKSLHIV

                 + *.  .  .. ++*++ ++++..  ..+ ++.. *+.+*...  .+ *.   . +*.
Dmvincp ( 141) LDYLAVAEVINTMEQLVQFLKDLSPCLSKVHREVGAREKELTHQVHSEILVRCLEQVKTL
Dmcatp  ( 181) EDDLNKLKNASSQDELMDNMRQFGRNAGELIKQAAKRQQELKDPQLRDDLAAARAMLKKH

                ..+*+ . *+*++  + +
Dmvincp ( 201) APILICSMKVYIHIVEQQ ...
Dmcatp  ( 241) STMLLTASKVYVRHPELD ...

                           ...*. ..+ .++ .*  +*+ .+..++++++ +.*++..+** +
Dmvincp ( 449)             ... GSGPAAKQAAKQLTQKLYELKAAIQNALVNRIVQDFMDVSTPLKQ
Dmcatp  ( 380)             ... DNSPGLSRAIDQMCRKTRDLRRQLRKAVVDHVSDSFLETTTPLLD

                +.++.   ...  *+.. .  ..+ + + + +. ...* .....    +       .+++
Dmvincp ( 494) FTEAVLQPEGTPGREQNfNQKSNNLQAFSDRASKTSRMVAAGGACGNKKIaeillsSAAQ
Dmcatp  ( 425) LIEAAKSGNEKKVREKS-EIFTKHAEKLVEVANLVCSMSNNEDGVKMVRY------AAAQ

                +++* *++*.+..*    *.+*.+++++ . ++...  +  + .  ++ +. .+*+ .++
Dmvincp ( 554) VDSLTPQLISAGRIRMNYPGSKAADEHLQNLKQQYADTVLRMRTLCDQATDPADFIKTSE
Dmcatp  ( 478) IESLCPQVINAASILTVRPNSKVAQENMTTYRQAWEVQVRILTEAVDDITTIDDFLAVSE

                .*+   .. *  +++. +...+ .....*.   .*+  +...+ ++ +  +*+.*+ .+.
Dmvincp ( 614) EHMQVYAKLCEDAIHARQPQKMVDNTSNIARLINRVLLVAKQEADNSEDPVFTERLNAAA
Dmcatp  ( 538) NHILEDVNKCVMALQVGDARDLRATAGAIQGRSSRVCNVVEAEMDNYEPCIYTKRVLEAV

                . *
Dmvincp ( 674) NRL ...
Dmcatp  ( 598) KVL ...

                     .+. ++ .*....++**  +*+* +++  +.+  +. .**.   ..++*..+**
Dmvincp ( 799)    ... GLHQEVRQWSSKDNEIIAAAKRMAILMARLSElvLSDSRGS---KRELIATAKK
Dmcatp  ( 728)    ... TFDSEVAKWDDTGNDIIFLAKHMCMIMMEMTD--FTRGRGPlktTMDVINAAKK

                *.++...+.+*.++++ +*.+...+.+**.  +**.    ++.* +.+*+.+ .  *.
Dmvincp ( 850) IAEASEDVTRLAKELARQCTDRRIRTNLLQVCERIPTIGTQLKILSTVKATMLGAQGS--
Dmcatp  ( 780) ISEAGTKLDKLTREIAEQCPESSTKKDLLAYLQRIALYCHQIQITSKVKADVQNISGEli

                 .. +... *+ .+.+**..+  +++ .  ++.* .* . .+.. + *
Dmvincp ( 908) DEDREATEMLVGNAQNLMQSVKETVRAAEGASIK-IRSDQTSNR-LQW ...
Dmcatp  ( 840) VSGLDSATSLIQAAKNLMNAVVLTVKYSYVASTKyTRQGTVSSPiVVW ...
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Singh, S.R., and B.N. Singh. Department of Zoology, Banaras Hindu University, Varanasi, India. Female remating in *Drosophila ananassae*.

Drosophila females store large amounts of sperm after mating and mate repeatedly, sometimes before sperm already stored are exhausted. Female remating results in sexual selection on males. Thus it is of considerable evolutionary significance. Female remating has been reported in several species of *Drosophila: D. melanogaster, D. pseudoobscura, D. silvestris* and *D. subobscura* (Dobzhansky and Pavlovsky, 1967; Anderson, 1974; Milkman and Zeitler, 1974; Cobbs, 1977; Gromko and Pyle, 1978; Craddock and Johnson, 1978; Loukas *et al.*, 1981). The phenomenon of multiple mating is important because it is associated with sperm usage (Parker, 1970). In *D. melanogaster*, studies on sperm competition in relation to sperm displacement have been carried out and interesting results have been reported by various investigators (Prout and Bundgaard, 1977; Gromko and Pyle, 1978; Griffiths *et al.*, 1982; Harshman and Prout, 1994).

Drosophila ananassae is a cosmopolitan and domestic species. This species occupies unique status in the whole of the genus *Drosophila* due to certain peculiarities in its genetic behavior (Singh, 1985). Extensive work on population genetics, behavior genetics, male recombination and mutagenesis have been carried out by numerous investigators in *D.*