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                                                 + +..  . ++  + ++* .++. +
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.*

ananassae (Tobari, 1993; Singh, 1996). We have initiated studies on multiple mating in *D. ananassae* and report the results of preliminary study on female remating in this species.

Virgin females and males were collected from a wild laboratory stock of *D. ananassae* and aged for seven days. One female and one male were transferred to a food vial without etherization and the pair was observed. Courtship time and duration of copulation were recorded for each mated pair. After termination of copulation, the male was aspirated out and a fresh virgin male was transferred to the vial containing the mated female. The pair was observed and if the remating did not occur until evening, female and male were separated. Again next day in the morning, the mated female was kept in a food vial with a virgin male and the pair was observed. Out of 8 mated females, remating was observed in 5 females. In 3 females, remating was observed on the 6th day and in 2 females remating occurred on the 2nd day. Duration of copulation was recorded for all the females in both the matings. Interestingly, the duration of copulation was shorter in the second mating as compared to the first mating for all the five remated females.

Experiments will be conducted to study the phenomenon of multiple mating in *D. ananassae* with particular reference to its frequency in different populations, reproductive consequences and genetic basis.

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Pérez, M.; N. Castillo-Marín, and L. A. Quesada-Allué. Instituto de Investigaciones Bioquímicas, Fundación Campomar and University of Buenos Aires, Patricias Argentinas 435, Buenos Aires (1405), Argentina. ß-alanyl-dopamine synthase in *Drosophila melanogaster* and *Ceratitis capitata* melanic mutants.

Melanic cuticle mutants have been described and genetically characterized in a number of insects (Czapla *et al.*, 1990; Roseland *et al.*, 1987) including *Drosophila* (Hodgetts and Konopka, 1973; Hodgetts and Choi, 1974). We recently studied a *Ceratitis capitata* mutant, *niger*, that shows a melanic puparium cuticle and was found to be defective for the enzyme conjugating ß-alanine and dopamine to synthesize ß -alanyl-dopamine [NBAD] (Wappner *et al.*, 1996a). This molecule seems to be the main sclerotizing and pigmentation agent in brown insect cuticles (Kramer and Hopkins, 1987). When the NBAD synthase is not functional (Wappner *et al.*, 1996a; this note) or when ß-alanine is not available, like in the *Ceratitis* mutants *Dark pupa* and *Black pupa* (Wappner *et al.*, 1996b), the redundant dopamine substrate (that cannot be conjugated with ß-alanine) enters the melanine pathway, thus giving raise to a black cuticle. *Drosophila* e^1 (*ebony*) (FlyBase FBgn0000527) shows a shining black adult cuticle and is unable to use ß-alanine for tanning the puparium. *ebony* was postulated to be defective in NBAD synthase (Wright, 1987; Hodgetts and Konopka, 1973) but no proof was available, since the data on the direct measurement of the enzyme activity in the wild type were not further substantiated in a publication. Based on both the melanic phenotype and abnormal behaviour (Kyriacou *et al.*, 1978) we previously suggested that *Drosophila* e^1 and *Ceratitis nig* (*niger*) might be mutants corresponding to related genes (Wappner *et al.*, 1991). Here we report confirmative preliminary results related to these questions.

Wild type (Oregon R), *black* and *ebony* strains of *Drosophila melanogaster* were grown in Carolina's blue food. Wild type (Arg.17), *Dark pupae* and *niger* strains of *C. capitata* were grown in carrot-corn-yeast medium (Quesada-Allué *et al.*, 1994). The flies were maintained at 21°C in a D/L regime of 8/16 hs.

The Standard assay for NBAD synthesis contained 1.0 mM ATP, 10 mM $MgCl_2$, 0.1 mM dopamine, 10 µM ß-alanine and 0.01 µCi of [^{14}C]-ß-alanine in 50 mM Na-tetraborate-Boric acid buffer, pH 8.3. The reaction was started with 10 µL of the enzymatic preparation (see Wappner *et al.*, 1996) in a final volume of 50 µL. Radioactive [^{14}C]ß-alanine-containing catecholamines were isolated and measured as previously described (Mason and Weinkove, 1983; Wappner *et al.*, 1995). The different reaction products were separated from substrates and identified in C_{18}-reverse phase HPLC or in silica gel-TLC (Solvent I = Methyl-ethyl-ketone:propionic acid:Water [40:13:11]).

Table 1 shows that crude extracts of *Drosophila melanogaster* wild type and *Ceratitis* w.t. were able to synthesize a [^{14}C]-ß-alanine-containing substance behaving in acid alumina as a diphenolic cathecolamine and further co-