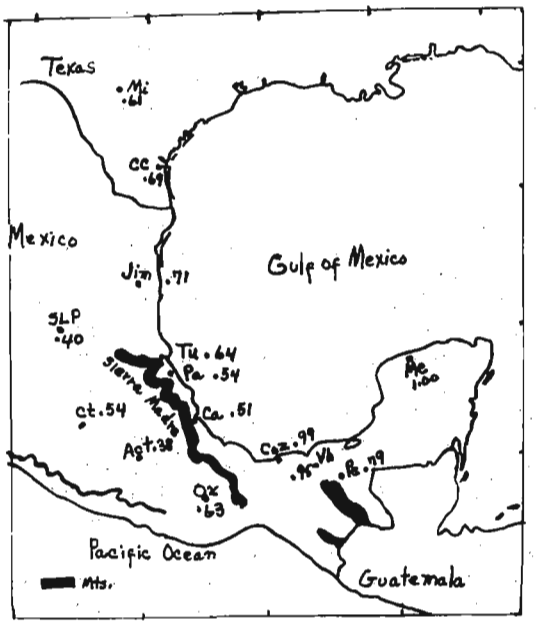
Pipkin, S.B. and C. Rhodes. Howard University, Washington, D.C. Frequency of the D. melanogaster allele, $Adh^{II}$, in natural populations of Mexico.

Drosophila collections were made at 13 stations in Mexico and two in South Texas, using fruit-baited traps during the period June 15 - July 13, 1972. Species other than D. melanogaster and D. simulans, females of which are indistinguishable, were separated from one another immediately. Upon return from the collection trip, single fly assays of alcohol dehydrogenase were made using electrophoresis at 250 V for 25 min. on noble agar gels (method of Ursprung and Leone, 1965), followed by formazan staining with 2-butanol as substrate. In cultures where both D. melanogaster and D. simulans were present, only D. melanogaster males were assayed. An attempt was made to score at least 50 flies for each station in the first 3 generations after collection. However, enzyme level was so low in certain cultures that 10 cultures consisting of 3 females each were prepared and assays made of the pooled progeny. The $Adh^{II}$ allele specifies subunits with from 1/2 to 1/4 or less the specific activity of those coded by $Adh^{I}$ (Pipkin and Hewitt, 1971). For the most part the frequency of the $Adh^{II}$, allele in the populations studied can be related to temperature. Thus Fig. 1 shows that along the gulf coast region $Adh^{II}$ increases from .61 (Mico, Texas) to .69 (Corpus Christi, Texas) to .71 at Jiminez (near Cuidad Victoria) and .99 at Coatzocoalcos. Similarly in the interior high plateau region of central Mexico, $Adh^{II}$ increases from .40 at San Luis Potosi to .54 at Cuatla (near Mexico City) to .63 at Oaxaca City in the mountains. A small collection at Acatlán (southern tip of state of Puebla) gave a lower frequency of .38 for $Adh^{II}$. The frequencies of $Adh^{II}$ at 3 stations located beside the Sierra Madre Oriental (mountains) approximated corresponding frequencies in stations of about the same latitude in central Mexico, possibly because of gene flow from the cooler regions. (Tuxpan, .64; Paplantia, .54; and Cardel, near Vera Cruz, .51). $Adh^{II}$ frequencies varied little in the coastal region from Coatzococalcos (.99) to Villa Hermosa (.95) to Merida where $Adh^{II}$ reached fixation in the population sampled. However at Palenque, located in the edge of the mountains of Chiapas, the frequency of $Adh^{II}$ dropped to .79, reflecting apparently gene flow from mountain populations.




References: Pipkin, S.B. and N.E. Hewitt 1971, DIS 46:66-67; Ursprung, H. and J. Leone 1965, J. Exp. Zool. 160:147-154. (Laboratory assays were supported by NIH grant 18409-02; collection trip, courtesy of Alan C. Pipkin, Sr.)

Minamori, S. Hiroshima University, Japan. Extrachromosomal element delta correlates with "segregation distortion" phenomenon.

It has been known that Segregation-distorter gene (SD, II-55.0) in D. melanogaster is recovered in functional sperm much more often than the expected 50% when heterozygous for an $SD^{+}$ gene (Sandler, Hiraizumi and Sandler 1959). On the other hand, an SD-bearing second chromosome SD-5 was observed to retain an extrachromosomal element denoted by delta r which was assumed to be a copy of a gene locating on that chromosome ($Da^{r}$, 24.9; Minamori 1971 ; Minamori and Sugimoto, in press). The correlation of delta r to the distortion phenomenon was examined with SD-5 chromosomes. Second chromosomes recovered from SD-5/I-521(SD $Da^{r}$/$SD^{+}$ $Da^{+}$) females were individually tested for their sensitivity to the killing action of delta r (sensitive chromosome retains delta r; the original SD-5 is sensitive) and for their recovery from heterozygous males for the chromosome and a cn bw chromosome. The distribution of k values (the ratio of the chromosome among the total chromosomes recovered) of sensitive and insensitive chromosomes are separately shown in the follow-