Ohnishi, S. and R.A. Voelker. National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina. Genetic mapping of hexokinase-C in D. simulans.

In order to map hexokinase-C locus (Hex-C) genetically, a wild type stock with a variant allele ($Hex\text{-}C^6$) was crossed to a multiple marker stock for the second chromosome [net (net, 0) b (black, 43) py (polychaete, 74) sd (spread, 80) pm (plum, 103)], which carries the common allele ($Hex\text{-}C^4$). F_1 females obtained from the cross were backcrossed to males of the marker stock. These offspring were electrophoretically analyzed after scoring for visible markers. The data are summarized in Table 1.

Table 1. The summary for genetic mapping of Hex-C in D. simulans.

Visible Phenotype	$Hex\text{-}C^4/Hex\text{-}C^6$	$Hex\text{-}C^4/Hex\text{-}C^4$
sd pm	3*	31
+ +	40	0
sd +	3	14
+ pm	26	13

*These are double crossovers between sd and pm.

Hex-C was located between sd(80) and pm(103) at 86.6 (= 80 + 23 x 16/56) with the 95% binomial confidence interval extending from 83.7 to 89.2 on the second chromosome. The location corresponds to that in D. melanogaster (Jelnes 1971, 2-73.5; Mukai and Voelker 1977, 2-74.5).

References: Jelnes, J.E. 1971, Hereditas 67:291-293; Mukai, T. and R. A. Voelker 1977, Genetics 86:175-185.

O'Tousa, J. and P. Szauter. University of Washington, Seattle, Washington. The initial characterization of non-claret disjunctional (ncd): evidence that ca^{nd} is the double mutant, ca ncd.

Females homozygous for ca^{nd} show two distinct phenotypes: an abnormal eye color and aberrant meiotic chromosome behavior. Several lines of evidence have suggested that this compound phenotype is actually the result of ca^{nd} being defective at two closely linked loci, one governing eye pigment metabolism and the other meiotic chromosome behavior (see Baker and Hall 1976 for a review on the literature of ca^{nd}). We report here on the recovery of a new meiotic mutant, non-claret disjunctional (ncd) that provides strong evidence that ca^{nd} is indeed a double mutant.

ncd was isolated in a search for meiotic mutants among EMS-treated 3rd chromosomes in the laboratory of D.L. Lindsley at U.C. San Diego and analyzed by us in Seattle. Females homozygous for this mutant exhibit meiotic abnormalities similar to those of ca^{nd} / ca^{nd} females, and the mutant fails to complement ca^{nd} (Table 1). Furthermore, the ncd mutation has been mapped to the distal region of 3R where ca^{nd} is located. These results confirm that ca^{nd} and ncd are allelic; however, both ncd/ncd homozygotes and ncd/ca^{nd} compound heterozygotes have wild-type pigment. Therefore, ncd must be defective only at the ca^{nd} locus governing chromosome behavior. The recovery of ncd, then, is evidence that ca^{nd} is a double mutant with the implied constitution: ca ncd.

Table 1. The results of the crosses of the indicated females by $\widehat{XY}$, vfB; $\widehat{44}$, ci ey males.

maternal genotypes:	progeny classes: y♂♂ & B/+♀♀				vfB♂♂				y♀♀				exceptions per 10^3 ova	
	+	ci	ey	pol	+	ci	ey	pol	+	ci	ey	pol	X	4
$\frac{y;ncd;pol}{y';ncd';pol}$	45	39	1		1	25	0		0	1	2		405	650
$\frac{y;ca^{nd};pol}{y';ncd;pol}$	13	35	0		7	20	0		3	1	0		564	700
$\frac{y;ncd;pol}{y';+;pol}$	137	0	0		0	0	0		0	0	0		0	0

References: Baker, B.S. and J.C. Hall 1976, in: Genetics and Biology of Drosophila, vol. I (ed. by E. Novitski and M. Ashburner), Academic Press, NY.