centric autosomes, rather than dissociation of metacentrics.

Interpretation of this cytogenetic situation in terms of the role of chromosomal rearrangements in evolution demands a knowledge of the degrees of reproductive isolation between races. Chromosomal differences of the magnitude found here must create reproductive barriers between races. This partial isolation could lead to speciation. The expected reduction in the fertility of hybrids should impose restrictions on gene flow between races and should also promote selection for secondary reproductive isolating mechanisms. At present, there are few indications of significant barriers between races. Laboratory crosses between individuals of different karyotypes have produced viable $F_1$ hybrid progeny which are reasonably fertile. In the field, zones of overlap between races have been discovered in certain areas. Within these zones, mating is apparently random, and involves chromosome hybrids as well as the parental races.

*Didymuria* offers one more example of a species with a geographic pattern of differentiation of chromosomal types. This kind of pattern has been described in a variety of organisms (*4*). A common picture is emerging of species or species complexes which consist of several chromosomal forms, occupying contiguous areas with zones of overlap. In the zones of overlap hybridization is possible, but because of the karyotypic differences involved hybrids will be of somewhat reduced fecundity. Mainly on the basis of his detailed studies in the *viatica* group of wingless grasshoppers (*4*), White has proposed a model of "stasipatric" speciation, in which chromosomal rearrangements are of prime importance as initiators of speciation (*5*). He has compared this to the "saltational" model of speciation (*6*), in which structural reorganization of the karyotype is also the main factor. It is clear that many of the instances of chromosome variation in both plants and animals are highly significant in relation to a general mode of speciation in which chromosomal differentiation is the basic and primary process. This is one of the strategies of speciation probably employed much more widely than is usually supposed.

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## Mites and Commercial Extracts of House Dust

Abstract. *North American and European house dust mites have been found in the dusts used in the manufacture of commercial extracts of house dust.*

Allergy to house dust is widespread and has been managed for years by the use of house-dust extracts, which are prepared from dust collected by vacuum sweepers. Thus the dust is not just material floating in air, but most is dust from vacuumed surfaces. In some cases dusts from beds, overstuffed furniture, and daybeds are preferred (*1*). In the preparation of extracts, dust samples are washed in ether and then extracted with water or buffered aqueous saline. These extracts can then be used for skin testing or the management of house-dust allergy in sensitized patients.

The allergenic component of house dust is associated with mites of the genus *Dermatophagoides* (*2*). The original report indicated that *Dermatophagoides pteronyssinus* (Trouessart, 1897) was responsible. In Columbus, Ohio, the most common mite associated with house dust was *D. farinae* Hughes, 1961 (*3*). It is suggested that both species be called "house-dust mites" and that they be differentiated from each other by referring to them as "European" and "North American," respectively.

Dusts used in the manufacture of commercial extracts were passed through 1.000-, 0.500-, 0.250-, and 0.125-mm sieves. The dust retained by all sieves was examined for mites. Two 0.5-g samples were examined upon receipt of the samples. The remainder of the sample was then incubated for from 2 to 3 months at room temperature with relative humidity of 75 percent maintained by an aqueous solution

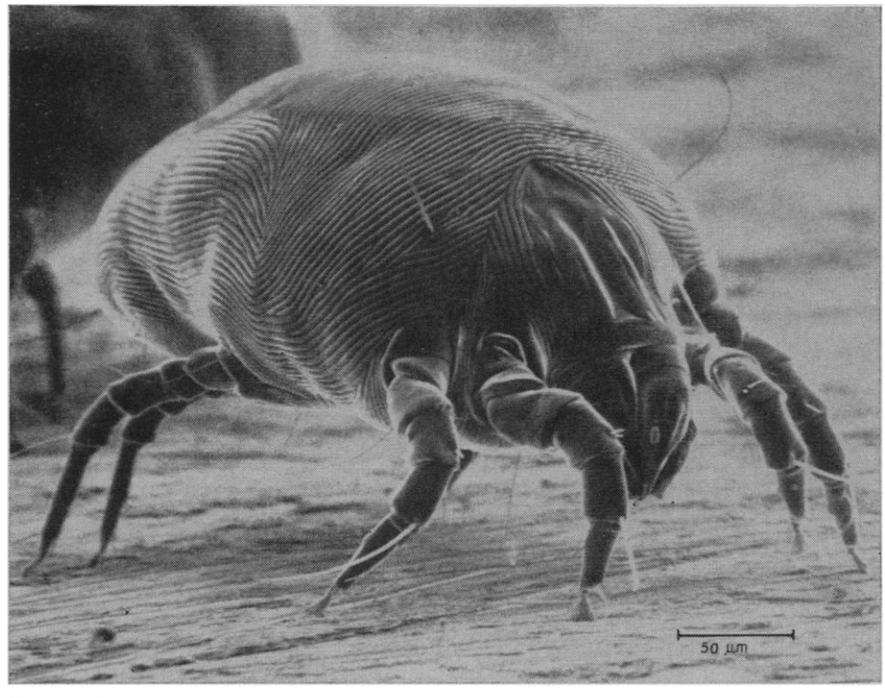


Fig. 1. The protonymph of the North American house-dust mite *Dermatophagoides farinae* Hughes, 1961 (× 300).

of saturated NaCl. After incubation a second pair of 0.5-g samples was examined. In all, 77 dusts were studied.

Live and dead whole mites and insects as well as numerous fragments were found and identified. The live insects were usually recovered from the 1.000-mm sieve where they were found crawling on the larger pieces of dust. Dead mites and fragments were found most commonly in the 0.250- and 0.125-mm sieves. The most common arthropod found was *Dermatophagoides farinae* (Fig. 1). The next most common was *D. pteronyssinus*. Other organisms were (i) migrants such as clover mites (6 samples), (ii) stored-product or nidicolous species such as some species of *Dermatophagoides* itself, or (iii) predators of these species such as mites of the genus *Cheyletus* (9 samples).

Of the 77 samples, 64 were collected from human habitations and 13 were from other sources. Of the dust from nonhuman sources 5 samples were infested with *D. farinae*. Of these samples the largest number of mites found per gram was 34. Of the 64 samples from human sources, 39 contained house-dust mites: 21 had *D. farinae* only, 5 *D. pteronyssinus* only, 11 *D. farinae* and *D. pteronyssinus*, 1 *D. farinae* and *D. evansi*, and 1 *D. pteronyssinus* and *D. chelidonis*. Both *D. evansi* and *D. chelidonis* have been found most commonly in birds' nests. Not only was *D. farinae* found in more samples (33 of 39 positives), but it was also found in greater numbers: up to 69 per gram as opposed to 9 per gram for *D. pteronyssinus*.

The 64 samples of house dust were obtained from Connecticut, New York, New Jersey, Georgia, Washington, California, Nebraska, Wisconsin, and Illinois. No differences were noted in dusts from different geographic areas.

If this survey is truly representative of the mite fauna of dust from which commercial house-dust extracts are prepared, and there is no reason to believe that it is not, one may conclude that more than half (61 percent in this survey) of the extracts used contain extracts of mites of the genus *Dermatophagoides*. If all companies follow the practice of testing each dust for its capability of producing extracts to which patients with clinical house-dust allergy are sensitive, then the number of extracts containing mite extract will exceed 90 percent. Thus, house dust allergy has been, and is now being, detected and treated with extracts of mites of the genus *Dermatophagoides*. This is another example of a case in which specific treatment was developed before the precise cause of the condition was known.

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## Lymphomas in Mice: Failure of Induction after a Graft-versus-Host Reaction

Abstract. *A mild graft-versus-host reaction induced in (BALB/cJ × DBA/2J)$F_1$ mice by the administration of parental spleen cells that differ at several weak histocompatibility loci did not influence the development of lymphomas in these animals. Rous sarcoma virus also failed to induce tumors in the runt and control animals. Breast carcinomas, presumably due to contamination of the inoculums with mammary tumor virus, occurred in those experimental groups given parental cells, whether or not they were viable or immunologically competent. We found no evidence that the immunologic process—as represented by the graft-versus-host reaction—is causally related to the induction of neoplasia.*

It has been postulated that the stimulation of immunocompetent cells may be one of the causes of neoplastic proliferation (*1*, *2*). The graft-versus-host disease (GVHD), induced in $F_1$ hybrid mice by the administration of parental spleen cells, has been considered the ideal system for examination of the possible role of immunologic responses in the induction of cancer in that it provides a genetically defined model of a strong and prolonged antigenic stimulus (*2*). With this system, Schwartz and Beldotti and their co-workers (*3*) and Walford and Hildemann (*4*) found that 50 percent of the mice developed lymphomas after the injection of adult spleen cells into histoincompatible $F_1$ hybrid hosts. The histoincompatibility was strong (H-2 difference) in the case of Schwartz *et al.* who decreased the usually high mortality of recipient mice by treatment with amethopterine (*3*). The parental spleen cells that Walford and Hildemann injected differed only at the weak H-1 histoincompatibility locus (*4*). In neither study was virus etiology completely ruled out.

That the tumors were of host rather than donor origin (*3*) raised some doubt whether an immunologic reaction caused the induction of these neoplasms. Thus, the question was reexamined in studies on a donor-recipient combination between the extremes represented by mice with a strong difference at the H-2 locus (*3*) and by coisogenic mice that differed only at the weak H-1 locus (*4*).

The strains of mice used, DBA/2J and BALB/cJ (both from Jackson Laboratory), are identical at the H-2 locus. Injection of adult DBA/2J spleen cells into newborn (BALB/cJ × DBA/2J)$F_1$ hybrid mice ($CDF_1$) induced a mild, long-term GVHD, due to several weak histocompatibility differences at the H-1 (*5*), H-7 (*6*), and possibly at other, as yet poorly defined, loci.

Cells teased from spleens were gently dispersed in Ringer solution with a fine Pasteur pipette and pushed through a 26-gauge needle to insure single-cell suspension, which was then diluted to contain the desired number of cells in 0.1 ml fluid. The entire procedure was carried out at 4°C. Some portions disrupted by three cycles of freezing and thawing served as control nonviable material. The doses to induce GVHD in newborn $CDF_1$ mice were four weekly intraperitoneal injections of spleen cells from male DBA/2J mice ($4 \times 10^6$ cells per gram of body weight). Two groups of mice (groups 11 and 12 of Table 1) received double amounts of parental spleen cells with each injection.

Liver tissue was finely minced, with scissors, in Ringer solution and kept for 5 minutes at room temperature to allow large fragments to settle. The supernatant was decanted and diluted to con-