[1, 5], and asbestos cement [6] and the absence of such in antigorite [1], sivol [11], and cement [1] have been demonstrated. If these data are compared with the results of the microbial test in vivo, almost complete coincidence of mutagenic and carcinogenic effects will be noted for the IMD studied. This coincidence was not found only for sivol and cement, and accordingly, the results for these dusts with respect to ME in the in vivo test, must be regarded as falsely positive for the prediction of carcinogenicity. We know that the in vivo microbial test sometimes gives false positive predictions in relation to certain chemical substances also [12].

The use of the in vivo microbial test can thus reveal ME and can predict, with greater probability, the potential carcinogenicity of IMD, as a new object for applied genetics.

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TEST OF GENOMIC DNA OF BACTERIOPHAGE FD 103 REVEALS HYPERVARIABLE REGIONS OF HUMAN GENOME

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The bacteriophage with diameter FD 103 of E. coli is related to the bacteriophage with diameter M13, which contains a cluster of tandem repeating sequences of DNA hybridized with hypervariable regions of the human genome [1]. It was shown in the present investigation that blot-hybridization of the DNA with diameter FD 103 with human chromosomal DNA also reveals multiple interindividual hypervariability of DNA restriction fragments, which are inherited in accordance with Mendel's laws. The genetic replica of the DNA of an individual, detectable by hybridization with DNA with diameter FD 103, is similar, but not identical, to the genetic replica revealed by means of DNA M13mp19 (Fig. 1). The differences are characteristic of high-molecular weight restriction fragments of DNA (5000 base pairs) and may be due to mutational noncoincidences in clusters of tandem repeating sequences of DNA with diameter M13

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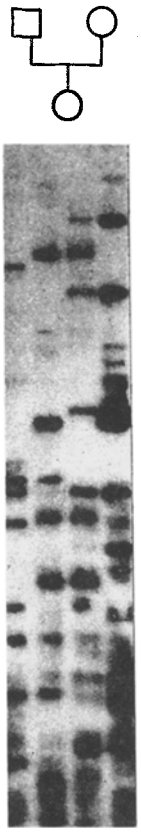

Fig. 1. Blot hybridization of ^{32}P-labeled DNA with diameter FD 103 with Hae III hydrolysates of human DNA. Interindividual polymorphism and inheritance of fragments are shown.

and with diameter FD 103 (four nucleotides are replaced), or by differences in the structure of other components of genomes with diameter FD 103 and M13mp19.

The large genomic probe FD 103 (about 10,000 base pairs), labeled along its whole length with random scattered primers or synthetic oligonucleotides, can be used as a sensitive marker for human genotyposcopy: for obtaining individual DNA replicas, for analysis of paternity and maternity, for evaluation of the heterogeneity of cell populations during transplantations of cells and tissues, for example, of bone marrow cells, and for genic mapping of chromosomal loci responsible for inherited diseases.

1 μg DNA (200 ml of blood) is sufficient for the analysis.

EXPERIMENTAL METHOD

Single-stranded DNA with diameter of 103 and M13 was labeled with ^{32}PdA with the aid of random dN6 primers and a Klenow fragment of DNA-polymerase. The ^{32}P-labeled probes, without denaturation, were blot-hybridized with Hae III-hydrolysates of human DNA, fractionated in 0.7% agarose gel, in a solution of: 0.5M sodium phosphate, 7% SDS, 60°C, for 18 h. The sample was washed off with 1 × SSC, 60°C, 2 h, 0.1% SDS.

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