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NOTES/RELEASE TO BOB LEE, SCIENTIFIC RESEARCH
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Al Mitchell, Director
Information Services

NOTE TO EDITOR: The print of Dr. Dimitrij Lang with students, requested earlier, is being sent by separate mail. Lang "curriculum vitae" attached to these notes.

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DALLAS--

Diffusion-controlled adsorption of DNA onto a protein surface film has made possible (for the first time) measurement of the diffusion coefficient of high-molecular weight DNA by electron microscopy. The method has been developed by Dr. Dimitrij Lang of the Southwest Center for Advanced Studies.

The technique permits counting of individual adsorbed molecules. Thick bundling, preferential orientation and presence of artifacts are eliminated.

DNA concentration required is so low (5×10^{-8} g/ml) that the solution carrying the molecules behaves ideally in the physical-chemical sense in spite of the great length of the DNA (from T3 bacteriophage, for example).

Diffusion coefficients can be measured independently of DNA concentration, in contrast to classical methods.

The technique involves application of dried cytochrome c, on the tip of a needle, to the surface of the DNA-carrying solution. The protein film forms across the surface at molecular thickness. Carrying a positive charge (a characteristic of cytochrome c at neutral pH), the film adsorbs the negatively-charged DNA. An analysis has shown that adsorption is irreversible.

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DNA ADSORPTION -2-

Small object grids (2-3 mm diameters, for the Seimens transmission microscope) are touched to the film to pick up samples for observation. High image contrast may be accomplished by metal deposition (platinum, gold, or palladium) in a vacuum chamber, or by negative staining.

The Lang method is a further development of work begun with Drs. A. K. Kleinschmidt and R. K. Zahn at the University of Frankfurt/Main, Germany; Dr. Lang suggests that the technique may also be of interest for study of polymers other than nucleic acids.