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NOTES

Demonstration of Deoxyribonucleic Acid Release from Fowlpox Virus

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Treatment of fowlpox virus (FPV) with sodium lauryl sulfate (SLS) removes an outer lipoprotein coat and reveals an inner layer, with release of the deoxyribonucleic acid (DNA) molecule (J. M. Hyde, L. G. Gafford, and C. C. Randall, J. Bacteriol. **89**:1557, 1965). Although staining with uranyl acetate renders the DNA visible by electron microscopy, other methods are necessary to obtain sufficient contrast for measurements of molecular length.

Suspensions of purified FPV were treated at room temperature for 15 min with 2% SLS, and then were dialyzed at 4 C for 3 days against several changes of distilled water or Sorensen's phosphate buffer (*p*H 7.6). Specimens for electron microscopy were prepared from the dialyzed material by the protein film technique (A. K. Kleinschmidt and R. K. Zahn, Z. Naturforsch. **14b**:770, 1959; L. A. MacHattie and C. A. Thomas, Science **144**:1142, 1964). Specimen preparation from undialyzed material was unsuccessful because of precipitation of SLS with salt solutions.

Results were similar with samples dialyzed against either distilled water or buffer (Fig. 1). All particles observed were disrupted by the SLS treatment, but the degree of DNA extraction appeared to vary. The fact that free DNA fragments were not seen was taken as an indication that the molecule was not being badly broken by extraction and dialysis. Further evidence to this effect was obtained by counting the visible DNA ends per virus particle, and plotting as a modified histogram (Fig. 2). It was assumed that a single DNA end indicated the presence of another end, probably embedded within the viral particle.

Osmotic shock has been employed to release DNA from viruses (A. K. Kleinschmidt et al., Biochim. Biophys. Acta **61**:857, 1962; A. K. Kleinschmidt et al., J. Mol. Biol. **13**:749, 1965). FPV, though resistant to osmotic shock, is extremely susceptible to the action of detergents. The combination of treatment with SLS, dialysis, and specimen preparation by the protein film technique appears to be nearly ideal for the demonstration of native FPV DNA. Direct calculations of molecular weight (L. A. MacHattie, K. I. Berns, and C. A. Thomas, J. Mol. Biol. **11**:648, 1965) are expected to provide useful data for comparison of the length-measurement procedure with other methods of molecular weight determination (R. L. Soehner, G. A. Gentry, and C. C. Randall, Virology **26**:394, 1965).

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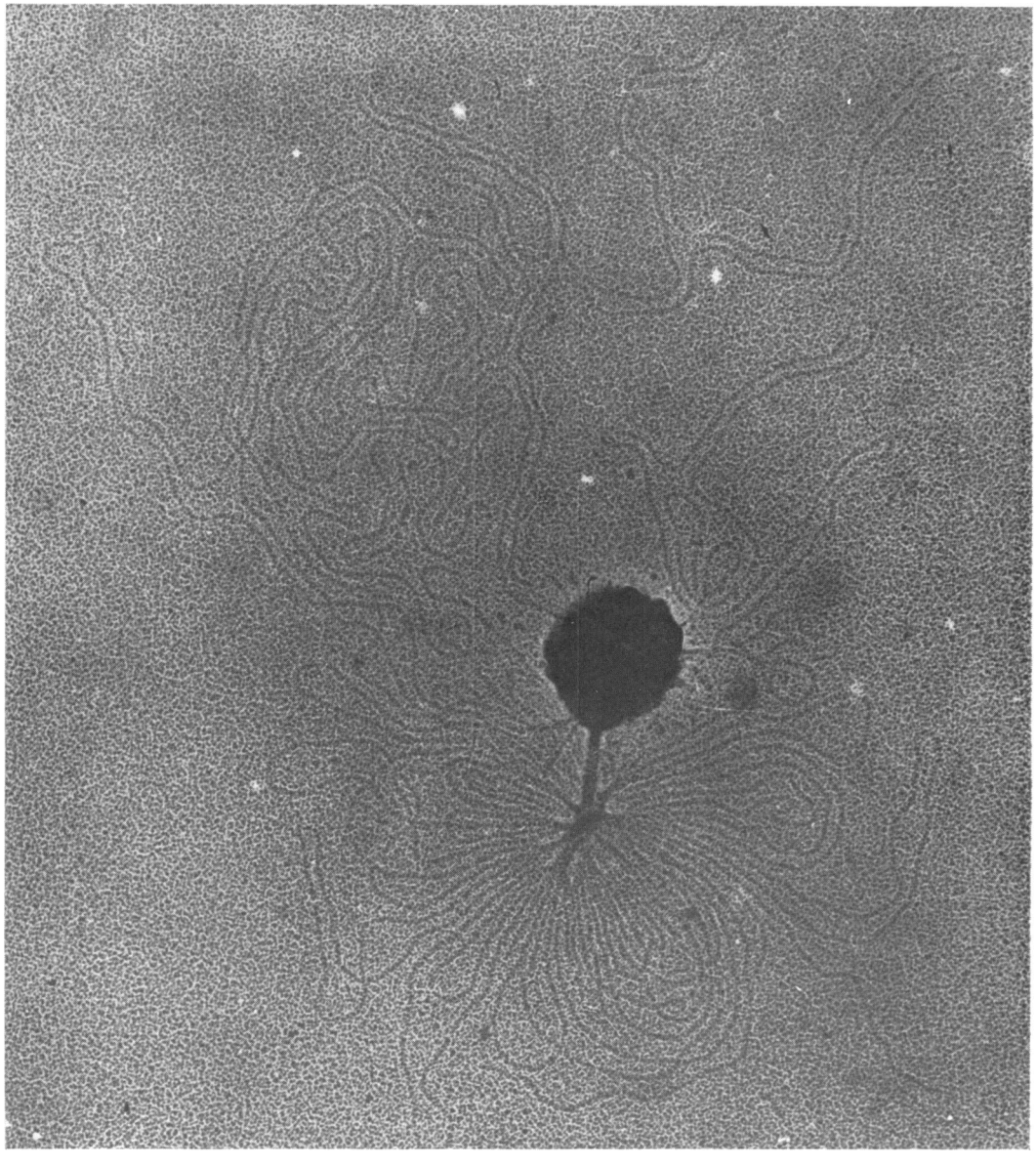

FIG. 1. *Fowlpox virus particle releasing DNA after exposure to SLS. The DNA was frequently extruded in a configuration closely resembling a bacteriophage tail. Sample was dialyzed against phosphate buffer and prepared by the Kleinschmidt technique.* × *85,000.*

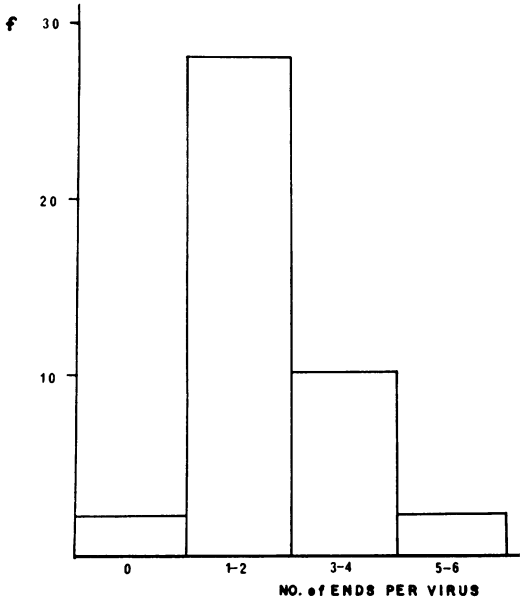

FIG. 2. *Number of DNA ends associated with individual FPV particles. Specimens were prepared from FPV-SLS mixture dialyzed against distilled water.*