when samples of these pure cultures were added to 1 ml. of sterile saliva and incubated overnight, they were found to remove most of the sialic acid, as measured by the method of Warren⁸.

It therefore seems that those organisms capable of growing on sterile saliva-agar are also capable of producing neuraminidase. This is confirmed by further subculturing with sterile liquid saliva when the specific loss of sialic acid can be easily assayed by chemical methods. The marked loss in reactivity of the incubated saliva to the periodic acid-Schiff reaction⁹ indicated that at least some of the other glycoprotein carbohydrates had also been lost, but at the present time this has been confirmed for fucose only. The most surprising aspect of this work from our point of view is that most of the oral bacteria, of which there are many different genera present¹⁰, seem to be able to produce neuraminidase and presumably the other complementary extracellular glycosidases when presented with an environment suitable for their elaboration.

A more precise identification of the organisms involved and an attempt to produce a more easily available synthetic medium for demonstrating the presence of these enzymes is now being undertaken.

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S. A. LEACH
M. L. HAYES

School of Dental Surgery,
University of Liverpool.

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DNA Base Composition of *Toxoplasma gondii* grown in vivo

THE nature and taxonomy of the parasite *Toxoplasma gondii* are uncertain. A relationship to *Besnoitia* and *Sarcocystis* has been suggested¹ and classification with Sporozoa has been proposed^{2,3}. The problems have been discussed in detail⁴.

Phylogenetic relations of protozoa may be reflected in their DNA base compositions⁵, and information on DNA base composition may be particularly useful where relationships among Sporozoa are being examined because of their apparently polyphyletic origins⁴. This study was undertaken to provide such information for *Toxoplasma*.

Toxoplasma (RH strain) were obtained from albino mice infected by the method of Blaker⁶. Dying animals were killed by spinal dislocation, and peritoneal exudates collected in heparinized buffered saline (0.5 mg of heparin [75 USP units]/ml. of 0.1 molar phosphate buffer, pH 7.0, made isotonic by the addition of 3.5 g of sodium chloride/l.). Cells were washed once in the same buffer, resuspended in saline-EDTA⁷ and leucocytes removed by filtration⁸ through a sintered glass filter (Corning, medium coarse porosity, 15–25 μ maximum pore size; a medium porosity filter, 10–15 μ , did not allow *Toxoplasma* to pass). The procedure also removes some *Toxoplasma* but has no effect on

the viability of parasites as shown by mouse inoculation. Microscopic inspection of filtrates showed *Toxoplasma* and very few erythrocytes; leucocytes were rarely observed. Cells were lysed with sodium dodecyl sulphate and the DNA partially purified⁷. The DNA base composition was determined by density gradient centrifugation⁹.

The DNA base compositions of organisms representing several subclasses of protozoa have been reported and most cluster in groups which reflect their taxonomic position: Phytomastigophora^{5,10,11} range from 66 to 58 per cent guanine plus cytosine (*Euglena*, 46 per cent); Zoomastigophora^{5,12,13}, 59–50 per cent; Holotricha^{5,10,14}, 35–29 per cent (*Tetrahymena patula*, 22 per cent); and Rhizopoda⁵, 22 per cent.

DNA from *Toxoplasma* has a density of 1.712 g/cm³ (*Escherichia coli* DNA taken as primary reference, 1.710 g/cm³), and a guanine plus cytosine content of about 53 per cent. This value is close to that reported¹⁵ for the Haemosporidium, *Anaplasma* (about 50 per cent guanine plus cytosine), and also falls within the range of values reported for flagellates. A conclusive statement on the position of *Toxoplasma* cannot be made, however, until additional data for the Sporozoa become available for comparison.

HAROLD NEIMARK
ROBERT G. BLAKER

Department of Microbiology and Immunology,
College of Medicine,
State University of New York,
Brooklyn, New York.

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Uncoating and Development of Vaccinia Virus in Miniature Cells induced with an Extract from Marine Algae

DISSECTION of individual cells by microsurgery into nucleate and anucleate cytoplasm provides an effective means for the delineation of nuclear participation during virus infection¹. Recently, we described² the formation of aberrant cells and mitotic anomalies after treatment of tissue cultures with a biologically active concentrate derived from marine algae. The induced abnormalities included mixed populations of micronucleate and miniature cells. The sequence of their formation was recorded by time-lapse, phase cinematography. Micronucleation presumably occurred by a process similar to that obtained with colchicine³. Following metaphase, miniature cells were formed by multiple cytokinesis. Three to eight or more discrete daughter cells were usually produced from each mother cell thus affected. Each miniature cell con-