tion suggesting that the placental barrier is not impermeable to certain antigens. However, little is known about placental transfer of antigens in normal pregnancies. For this reason leukocyte cultures from random cord blood samples were incubated with various antigens, and transformation was assayed by tritiated thymidine (TdR^3H) uptake.

Analysis of variance of the response of triplicate cultures revealed that a ratio of 3:1 or greater of uptake of TdR^3H by stimulated to unstimulated cultures was statistically significant ($p < 0.01$). The number of newborns tested that manifested such a significant *in vitro* response was 5/21 with streptolysin 0, 5/15 with Type I pneumococci, 4/17 with Group A type 12 streptococcal cell wall extract, 2/14 with *E. coli*, and 3/9 with *S. enteritides* endotoxin. Examinations of metaphases in cord blood cultures from male infants revealed that the response of cord blood lymphocytes to these antigens could not have been due to the passage of maternal cells across the placenta. This 14–33% incidence of significant stimulation of cord blood lymphocytes by these common bacterial antigens is therefore either due to inborn cellular immunity or to transplacental transfer from the maternal circulation and prenatal sensitization of the fetus by these antigens. (Supported by: NIH Grant No. HD-04273.)

8 *Cell-mediated Immune Response* in vitro. SAMUEL P. GOTOFF and SOMSAK LOLEKHA. Dept. of Ped., The Abraham Lincoln Sch. of Med., Univ. of Illinois, Chicago.

Studies of the mechanism of cell-mediated immune responses have been hampered by the lack of *in vitro* systems. While the inhibition of macrophage migration model has advanced our understanding of delayed hypersensitivity reactions, the technique is complex and cumbersome. We have recently developed a simple test for measuring cell-mediated immune responses which depends on the aggregation of peritoneal exudate cells (PEC) in suspension cultures.

PEC from guinea pigs with delayed hypersensitivity aggregate when the cells are cultured with the appropriate antigen. Diphtheria toxoid, PPD, egg albumin and keyhole limpet hemocyanin have been used in this system. Aggregation appears at 6 h and reaches a maximum at 24–48 h which is comparable to the time course of cutaneous delayed hypersensitivity reactions. This *in vitro* model also correlates with another cell-mediated response, allograft rejection. PEC from strain 13 guinea pigs previously grafted with skin from strain 2 animals aggregate in the presence of strain 2 cells. Aggregation does not occur with mixtures of PEC from guinea pigs of the same strain or different strains without prior grafting.

Peripheral blood leukocytes, spleen cells or lymph node cells from sensitized animals cultured with antigen synthesize a factor which causes aggregation of PEC from nonsensitive guinea pigs. The aggregating cells are macrophages, and the titer of macrophage aggregation factor (MAF) is determined by serial dilution. Macrophage aggregation *in vitro* provides a simple semiquantitative test for cell-mediated immune reactions and permits further analysis of the mechanism involved.

9 *A Mechanism for Inhibitory Effects of Diverse Compounds on* in vitro *Antigenic Lymphocyte Stimulation and Histamine Release From Leukocytes.* CHARLES D. MAY, Dept. of Ped., New York Univ. Sch. of Med., New York, NY.

Ethanol (E), nicotinamide (N), cyclic 3′,5′adenosine monophosphate (AMP) and theophylline (T) are examples of dissimilar compounds found to inhibit the fundamental cellular responses of antigenic histamine release and lymphocyte stimulation. As glucose is a prime source of energy and intermediates essential to cellular responses, the effects of the compounds on glucose utilization by leukocytes were determined, and corresponding inhibition of glucose metabolism was revealed. The molar concentrations required for comparable degrees of inhibition were closely similar for the two cellular responses and glucose utilization. To ascertain loci of inhibitory actions, the effects on conversion of glucose labeled with ^{14}C at various sites to $^{14}CO_2$ were compared in suspensions of intact leukocytes and extracts of leukocytes devoid of cell membrane or nuclei. E and N were inhibitory mainly with intact cells and appear to affect glucose transport across the cell membrane. AMP and T also inhibited conversion by cell-free extracts and thus enzyme systems within the cell. Inhibition of glucose utilization by leukocytes is a common property of inhibitors of cellular responses, including E, N, AMP, T, and we found likewise for cortisol, colchicine, and chloroquine. The loci of action of the diverse compounds in the complex steps in utilization of glucose by leukocytes differ.

The *in vitro* systems employed to compare cellular responses with glucose utilization are useful in fundamental studies and also convenient for screening of compounds for activity in these processes.

10 *Isoimmune Neonatal Neutropenia Due to a New Neutrophile-specific Antibody.* EVA RADEL, DAN G. HANDELSMAN and PARVIZ LALEZARI, Depts. of Ped. and Hematol., Montefiore Hospital and Medical Center and Albert Einstein Coll. of Med., New York (introduced by Laurence Finberg).

Maternal isoimmunization to fetal leukocytes has been implicated in instances of neonatal neutropenia. However, leukoagglutinins often exist in pregnant women and are not associated with clinical symptomatology in the newborn. It has therefore been suggested that when neutropenia, sepsis, and maternal leukoagglutinins coexist, the latter are coincidental and the neutropenia is the result, and not the cause, of sepsis.

A newborn infant, in whom sepsis was suspected, had almost complete absence of circulating polymorphonuclear neutrophiles, persisting for 5 weeks. An antibody was detected in the serum of both mother and infant which agglutinated the neutrophiles of the infant and father. It did not react with eosinophiles, lymphocytes, platelets, or with the mother's neutrophiles. Two neutrophile-specific antigens have been described previously in association with neonatal neutropenia. Neutrophile typing of the family and unrelated donors demonstrates that this antibody is distinct and thus constitutes a third neutrophile-specific antigen. The more common leukoagglutinins which react with many types of cells may be benign, but antibodies specifically directed against neutrophiles may produce profound neutropenia and may thus predispose the neonate to severe infection.

11 *An X-linked Recessive 'Malignant' Reticuloendotheliosis.* JOHN M. FALLETTA, DONALD J. FERNBACH, DON B. SINGER, Baylor Coll. of Med., NOMIE