the peripheral blood of adults or neonates showed that of milk monocytes to be significantly lower. Since phagocytosis has been shown to be important ($p < 0.001$) in the lysis of sensitized A, red cells perhaps milk monocytes are not so active because they are loaded with fat granules.

9 KINMONTH, A-L*, and Baum, J.D. University Department of Paediatrics, John Radcliffe Hospital, Oxford. THE EFFECT OF ALTERING THE TIMING OF PRE-BREAKFAST INSULIN INJECTION ON POST PRANDIAL METABOLIC CONTROL OF DIABETIC CHILDREN.

A randomised cross over study was performed on children aged 10 -16, at home, to evaluate the effect of varying the time of their morning insulin injection on the post breakfast glycaemic peak. Ethical approval was obtained and consent given by parents and children. After optimisation of diabetic control 9 children injected their insulin 30 minutes (early ='E') or 5 minutes (late ='L') before breakfast on two consecutive Saturdays. Blood was sampled over 3.5 hours at 30 minute intervals for estimation of glucose, ketones, pyruvate, lactate, alanine, free insulin and C peptide. Diet, insulin dose and exercise were kept constant on test days. The mean blood glucoses at breakfast time were 10.98 mmol/l (E) and 10.55 mmol/l (L). Subsequent blood glucoses were all lower after the early injection, the mean peak values being 16.75 (E) and 19.35 (L) at 90 minutes after breakfast. Insulin levels rose from 7 mU/l to 11.1 mU/l at breakfast time after the early injection while they were still at 7.6 mU/l after the late injection. C-peptide levels were 1/10 of those expected in normal subjects and changed in parallel with the glucose levels. Total ketones were high and rising before breakfast to peak at 0.1 mmol/l (E) and 0.4 mmol/l (L). By 3 hrs after breakfast they had fallen to normal values of 0.05 mmol/l (E) and 0.07 mmol/l (L). Other metabolites were normal and similar on the two regimes. This study suggests that giving the morning insulin injection before rather than after dressing can significantly improve post prandial metabolic control.

10 F.A.VAN ASSCHE*, L.AERTS* (Intr. by L.CORBEEL) - Dep. Obst.Gynaec.University of Leuven - Is gestational diabetes an acquired condition ?

Intravenous injection of 30mg of streptozotocin per Kg. body weight induces a mild diabetes in pregnant rats (first generation); the non-fasting blood glucose is increased and the percentage of endocrine tissue and also the percentage of granulated B cells do not increase.
The foetuses of these midly diabetic pregnant rats have an increased percentage of pancreatic endocrine tissue and there is B-cell degranulation. The modifications of the endocrine pancreas during intrauterine life causes persistent changes in later adult life (second generation), which are not perceptible in basal conditions but become apparent in situations stressing the B cell activity, such as an intravenous glucose load or pregnancy.
During pregnancy in the second generation rats have increased non-fasting blood glucose and no adaptation of the B cells is seen. This inadequate adaptation to pregnancy causes changes in the foetal endocrine pancreas of the foetuses of the third generation. From these experiments it may be concluded that gestational diabetes is an acquired condition.

11 **GY.SOLTÉSZ*, L.KLUJBER*, D.MOLNÁR*, M.KARDOS*, V.JÁSZAI* and J.MESTYÁN /Intr.by J.MESTYÁN/ Department of Paediatrics, University Medical School, Pécs, Hungary. Changes in total-, HDL-cholesterol, N-acetyl-β-glucosaminidase in relation to the quality of metabolic control judged by HbA_1 in diabetic children.**

28 diabetic children were studied. In the fasting blood samples the following substances were measured: glucose, total-cholesterol, HDL-cholesterol, triglyceride, N-acetyl-β-glucosaminidase and HbA_1. The results obtained were the following: 1. Both fasting blood glucose and urinary glucose excretion were found to be positively related to HbA_1 /r=0.77, $p < 0.001$; r=0.58, $p < 0.001$, respectively/. 2. The positive correlation between HbA_1 and total as well as HDL-cholesterol were highly significant /r=0.51, $p < 0.01$; r=0.68, $p < 0.001$, respectively/. This relationship demonstrates that poor control of juvenile diabetes is associated with an increased HDL-cholesterol concentration. 3. N-acetyl-β-glucosaminidase, a lysosomal hydrolase was found to be increased in diabetic children and directly related to the percentage of HbA_1, fasting blood glucose and HDL-cholesterol. The present examinations extend the influence of juvenile diabetes on HDL-cholesterol concentration by the observation that the poorer the metabolic control the higher the HDL-cholesterol content in the plasma.

12 I. DESCHAMPS* and J. HORS* (Intr. by H. Lestradet) Groupe de Recherche sur le Diabète et la Nutrition chez l'Enfant, Hôpital Hérold 75935 Paris, France.
HLA GENOTYPING AND RISK OF DIABETES.

Five different HLA-loci were tested in 53 families with one or more diabetic children. The alleles B15, B18, Cw3, Cw5, BfF1, DRw3, DRw4 were increased in diabetics, and significantly higher frequencies were found for several haplotypes with stronger linkage disequilibrium than in the control population. The strongest associations occured with the DRw3 and DRw4 alleles, suggesting the existence of several "high risk axes" carrying the diabetogenic gene (s) closely linked to the DR-locus. The excess of HLA-identity in multiple affected siblings of 12 families is in agreement with a recessive transmission. Yet the lack of homozygosity does not support a single-gene hypothesis. Moreover, the highly signficant excess heterozygosity DRw3/DRw4 in diabetics (32 %, $p < 0.001$) provides evidence for a pseudorecessive mechanism, two complementary acting genes being linked to each of the DR-alleles. In conclusion, the low frequency of DRw3/DRw4 heterozygotes in healthy siblings of diabetics (10 %) and their absence in controls, attribute the highest risk of diabetes to related as well as unrelated carriers of this combination. (Relative risk = 5.3 and 46.6, respectively)

13 J.L. CHAUSSAIN, P. GEORGES*, D. GENDREL*, A. BRIJAWI* and J.C. JOB . Hôpital Saint-Vincent de Paul, Paris, France.
Interest of the measure of serum branched-chain amino-acids (BCA) in the diagnosis of hyperinsulinism in infancy.

Fasting values of BCA (valine, leucine and isoleucine) were measured by column chromatography in the sera of 27 normal children aged 2 days to 9 years, 14 children with ketotic hypoglycemia (KH) aged 1 to 7 years, and in 12 sera from 5 infants aged 15 days to 2 years with documented hyperinsulinism. In normal and KH children, each individual BCA and their sum were highly significantly negatively correlated with blood glucose (BG) values ranging between 0.11 and 0.92 g/l ($r = 0.61$, $p < 0.001$). In infants with hyperinsulinism BCA concentrations were significantly lower ($p < 0.001$) than in the other groups without correlation with BG values (ranging from 0.13 to 0.51 g/l), and with plasma insulin concentrations (ranging from 9 to 85 µU/ml). In all the children studied, the sum of BCA was highly significantly correlated with blood beta OH butyrate measured by enzymatic method in the same time ($r = 0.75$, $p < 0.001$). The association low BG-low BCA during fast seems characteristic of hyperinsulinic states, and the measurement of fasting BCA in these infants offers a simple way of diagnosis, avoiding the technical difficulties of beta OH butyrate determination.

14 G.DAHLQUIST*, (St.Görans's Childrens Hospital, S-112 81 Stockholm), J.GENTZ, L.HAGENFELDT*, A. LARSSON*, H.LÖW*, B.PERSSON, R.ZETTERSTRÖM, Stockholm. Ketotic hypoglycemia-a clinical trial of several unifying ethiological hypotheses.

After the informed consent by parents and children we have studied 15 children referred to our clinic because of suspected ketotic hypoglycemia. The patients were investigated according to a program designed to test several hypotheses - old and newpostulated to explain the ethiology of ketotic hypoglycemia. The plasma levels of glucose, FFA, glycerol, β-HBA, alanine, cortisol and insulin as well as the urinary excretion of nitrogen, 3-methylhistidine and cathecolamines and an i.v. glucose tolerance test were measured before and after a classical ketogenic provocation test. Out of the 15 children 6 will fill the criteria of ketotic hypoglycemia at the time of the study. The most remarkable finding in these 6 children in contrast to the other children studied was that they did not decrease their peripheral glucose utilization (measured as Kg) during starvation. These 6 children seemed to be more "advanced" in their adaptation to ketogenic diet in all other parameters studied. The children with ketotic hypoglycemia did not differ from the other children in plasma level of cortisol or urinary excretion of nitrogen, urea, 3-methyl-histidine and catechalamines. - We favour the concept that the children with ketotic hypoglycemia represent the tail of the gaussian curve in the normal physiological development of the adaptation to starvation.

15 CORNILLIE F.*, LAUWERYNS J.*, CORBEEL L., BOEL M.*, EECKELS R.*, VAN DE WALLE J.* (Departments of Pathology, Pediatrics and Anesthesiology, University of Leuven). Acquired ultrastructural abnormalities of bronchial cilia in recurrent airway infections and bronchiectases as compared with the findings in Kartagener syndrome.
Electron microscopic studies revealing a lack of the dynein arms of the microtubular doublets of bronchial cilia and sperm tails suggest that Kartagener syndrome is a special manifestation of a hereditary disease, now referred to as the immotile cilia syndrome (Eliasson et al. N Engl J Med 297: 1, 1977). Anomalies of the bronchial cilia were observed in 5 patients with recurrent pulmonary infections. Patient 1 had Kartagener syndrome and an absence of the outer dynein arms in most ciliae, although occasional shortened and even normal arms were seen. Patient 2 and 3 had unilateral bronchiectases without family history of Kartagener syndrome. Serial studies of the bronchial epithelium showed a bilateral lack of the inner dynein arms and incomplete outer arms. These abnormalities persisted after recovery from acute pulmonary infection. In patients 4 and 5 with recurrent pulmonary infections without bronchiectases, many shortened outer dynein arms were observed, but these anomalies disappeared after recovery. In all 5 patients additional striking ciliary anomalies were found: megacilia, fused cilia, nude cilia and completely disorganized axo-