† **991** IMMUNOSUPPRESSION BY PSEUDOMONAS AERUGINOSA. Thomas B. Issekutz, C. Terrence Gillespie and Jeanette M. Stoltz (Spon. by Richard B. Goldbloom), Dalhousie University, Izaak Walton Killam Hospital for Children, Dept. of Pediatrics, Halifax, Nova Scotia, Canada.

P. aeruginosa has been shown to suppress cell-mediated immunity in experimental animals, and infections with this bacterium frequently occur in immunocompromised patients. Our goal was to examine the in vitro response of peripheral blood mononuclear cells (PBMC) from normal subjects and C.F. patients to killed P. aeruginosa. Pseudomonas stimulated the proliferation of T lymphocytes, specifically the surface Ig $T8^-$ subset of T helper cells. However, the stimulation of PBMC from both groups of subjects showed a wide variation which suggested that P. aeruginosa may also possess inhibitors of T cell proliferation. P. aeruginosa, added in coculture experiments to PBMC stimulated with S. aureus, Strep. pyogenes or tetanus toxoid, suppressed the proliferation to these latter antigens. This suppression was not affected by depletion of $T8^+$ suppressor cells. It was reduced by the partial depletion of adherent monocytes from PBMC, and the suppression was restored when monocytes were added back to the cultures. Monocytes pulsed with P. aeruginosa, but not with S. aureus, suppressed the antigen-induced proliferation of PBMC. The monocyte suppression was unlikely to be mediated by prostaglandins since it was not inhibited by indomethacin. Thus, P. aeruginosa can induce monocytes to suppress antigen-stimulated T lymphocyte proliferation in vitro. These suppressor cells may facilitate the growth of this organism in some disorders such as cystic fibrosis.

992 AMILORIDE SUPPRESSES BLASTOGENESIS AND IMMUNOGLOBULIN PRODUCTION BY HUMAN PERIPHERAL BLOOD MONONUCLEAR CELLS (PBMs). Stanley C. Jordan, D. Yamaguchi, R. Sakai and L. Bahn. UCLA Sch. Med., Div. Pediatric Nephrology Los Angeles, California.

Changes in intracellular pH (pHi) and sodium ion (Na+) occur during mitogenic activation of murine lymphocytes. A sodium/hydrogen (Na+/H+) antiport exists in murine lymphocytes and has the potential to regulate both the Na+ and H+ content of lymphocytes. Amiloride (A), an inhibitor of the Na+/H+ antiport, was used to determine if inhibition of Na+/H+ antiport would result in a functional change in human PBM mitogenesis. We studied the effect of (A) on DNA synthesis and immunoglobulin (Ig) production by normal human PBMs activated in vitro by the polyclonal lymphocyte activators, PWM and PHA, and by alloantigen stimulated PBMs (irradiated HLA-DR+ Raji cells). A dose dependent inhibition of (^{3}H)-thymidine incorporation was observed in cells incubated with (A) in concentrations ranging from 1um-100um. Mean reductions of control values in mitogen-activated and alloantigen-activated cells at 100um of (A) were 40% and 84%, respectively. Production of IgG and IgM determined by an ELISA system was similarily inhibited by (A). (A) was not cytotoxic and did not affect unactivated PBMs. Na+/H+ antiport was demonstrated in cells using dimethylcarboxyfluorescin. In summary: a) Na+/H+ antiport activity exist in human PBMs, is dependent on extracellular Na+ and is (A)-sensitive; b) (A) exerts a dose dependent inhibition of DNA synthesis and Ig production by mitogen and alloantigen activated PBMs; c) (A) may exert its immunosuppressive effect by inhibiting Na+/H+ antiport.

993 MARROW TRANSPLANTATION (BMT) FROM A HETEROZYGOUS CARRIER DONOR IN CHRONIC GRANULOMATOUS DISEASE (CGD). N.Kamani, C.S.August, A.R.Rausen, G.D'Angio, S.D.Douglas. Dept. of Peds., U. of Pa. Sch. of Med., Children's Hosp. of Phila., Phila., Pa.

An 18-year-old boy with chronic granulomatous disease (CGD) underwent allogeneic BMT from his 15-year-old HLA-identical sister who was a carrier of CGD. Severe, recurrent pyogenic infections during childhood led to growth stunting. A non-functional esophagus necessitated total dependence on parenteral hyperalimentation after a failed gastrostomy. He was prepared for BMT with cyclosphosphamide 120 mg/kg followed by total body irradiation (333 rad x 3). The intra-transplant course was uneventful and hematopoietic reconstitution was prompt. Repeated analyses of bone marrow chromosomes disclosed only female karyotypes. By two months post BMT neutrophil function (nitroblue tetrazolium dye reduction, bactericidal function and superoxide anion and H_2O_2 production) had become equivalent to his heterozygote donor. He remained free of infection until 7 months post BMT when he developed idiopathic interstitial pneumonitis that resolved during therapy with erythromycin, trimethoprim-sulfa and steroids. Two weeks later, he developed massive upper gastrointestinal bleeding leading to acute renal failure and death. Three weeks earlier his neutrophil function had been slightly better than his donor. This case illustrates that BMT from a heterozygous donor can be used to reconstitute neutrophil function in patients with CGD.

994 ASPIRIN AND FOOD-ADDITIVE SENSITIVITY IN CHILDREN WITH CHRONIC RECURRENT URTICARIA/ANGIOEDEMA. N. Kamani and G.B. Kolski. (Spon. by S.D. Douglas) Dept. of Peds., U. of Pa., Sch. of Med., Children's Hosp. of Phila., Phila., Pa.

Hypersensitivity to aspirin, tartrazine and other food-additives have long been known to be of etiological significance in children with chronic recurrent urticaria and angioedema, but oral challenges have not been used to detect the incidence of adverse responses to these agents. Ten children with chronic recurrent urticaria aged 6-18 years were evaluated in open-graded challenges with aspirin and food-additives. Criteria for admission to the study included ability to perform spirometry, lack of any identifiable etiologic factors, and a history of urticaria episodes of longer than eight weeks duration. Pre-study evaluation included CBC, complement levels IgE, urinalysis, ANA and appropriate skin tests. Patients were off antihistamines and on salicylate-free diets at the time of the challenge. Responses were evaluated with clinical observation and sequential spirometric analysis. Hypersensitivity was seen in 4/9 patients tested to aspirin, 3/8 to tartrazine, 0/6 to benzoates and 0/4 to metabisulfites. Typical positive responses were noted 3-4 hours post-challenge suggesting a non-IgE mediated response. Changes in spirometric parameters preceded onset of clinical symptoms and were found to be more sensitive indicators of hypersensitivity even in non-asthmatic subjects. In patients with positive challenges, pre-and post-challenge complement levels were unchanged. Aspirin and tartrazine avoidance was successful in 3/4 ASA-sensitive patients and 2/3 tartrazine sensitive patients.

995 EFFECT OF VITAMIN E ON PHAGOCYTOSIS IN CHILDREN WITH CYSTIC FIBROSIS (CF) Florence Kanakoudi-Tsakalides, Sanda Nousia-Arvanitakis and Persa Augoustidou-Savopoulou.
Department of Pediatrics, University of Thessaloniki, Greece.

Phagocytic function,mainly polymorphonuclear intracellular bactericidal activity (PIBA), was investigated in relation to serum vitamin E level in children with CF and normal individuals. Twenty three patients with CF and pancreatic insufficiency aged 3 months to 14 years were compared to 23 age and sex matched controls. The following parameters were studied: serum vitamin E level,chemotaxis,yeast opsonization and PIBA against staphylococus aureus. In children with CF, both vitamin E levels and PIBA were significantly ($P < 0.001$) lower (0,65 ± 0,65 and 0.13 ± 0,09, respectively) as compared to values found in the controls (8,96± 2,86 and 0.06 ± 0,04 , respectively). No further phagocytic impairment was detected in either group. These data support the concept that vitamin E deficiency in CF may contribute to infections with staphylococcus aureus and/or pseudomonas aeruginosa, the most frequent bacterial causes of infection in individuals with deficient bactericidal activity.

● **996** LYMPHOID DEVELOPMENT OF FETAL INTESTINAL TRANSPLANTS IN SYNGENEIC RATS. Anand G. Kantak, Randall M. Goldblum, Marshall A. Schwartz, Charles T. Ladoulis, Srinivasin Rajaraman, and Armond S. Goldman. The University of Texas Medical Branch, The Departments of Pediatrics, Surgery and Pathology, Galveston, Texas.

Because small intestines are inaccessible to experimental manipulation, the development of mucosal immunity has been difficult to study. We thus conducted a longitudinal study of fetal intestinal transplants in syngeneic Fisher strain rats. Fetal jejunum and ileum (6-8 cm) were transplanted to dorsal fascia of syngeneic adults. Three weeks later the intestinal length was >2.5 cm. in 70% of recipients. Each week, part of each transplant was resected and evaluated for IgA containing plasma cells (IgA P.C.). Peyer's patches, lymphoid follicles, and lacteals were present. The number of intraepithelial lymphocytes (I.E.L.) and IgA P.C. were:

	WEEKS AFTER TRANSPLANTS					
	1	2	3	4	5	6
I.E.L./100 epithelial cells	0	0	1	3	10	10
IgA P.C./5µm section	0	0	4	15	125	120

Following secondary immunization of the transplants with cholera toxin, the number of specific antibody containing cells (ACC) in intestinal transplants and in situ intestines increased ten and five fold, respectively. In contrast, no ACC developed in the transplants after intraperitoneal immunization. Thus, this study suggests that fetal intestinal transplants behave as part of the mucosal immune system. Further study of this model may provide insight into the development of mucosal immunity.