1618 COLCHICINE AND DMSO AS PROBES FOR STUDYING PROTEINURIA IN PASSIVE HEYMANN NEPHRITIS. Lawrence S. Milner, Danny Lotan, Paul R. Goodyer, Jack S.C. Fong, and Bernard S. Kaplan. McGill University, The Montreal Children's Hospital, Department of Nephrology, Montreal, Quebec.

In previous studies, we have shown that DMSO reduces proteinuria in passive Heymann nephritis (PHN). We have now extended these studies to include the use of colchicine (C), a known inhibitor of microtubule function. In addition, colchicine alters the shape of glomerular epithelial cells. Rats were treated with saline (controls) or C (0.05 mg/kg/d i.p. x 28 days). Controls excreted 105 ± 22 and C-treated rats, 37 ± 6 mg/d, $p<0.05$. Onset of treatment during the autologous phase did not reduce proteinuria. Concomittant treatment with indomethacin abolished the beneficial effect of C. Whereas low doses of DMSO alone, and C alone reduced proteinuria, a combination of the same doses of C plus DMSO provided no added advantage over each alone. These studies demonstrate that C and DMSO can reduce proteinuria in PHN possibly via a common mechanism. We have thus identified two probes which may be useful in studying the pathogenesis of proteinuria in this model.

1619 CHEMOSENSORY FUNCTION IN CHILDREN WITH RENAL FAILURE. Merle Shapera, Donald Moel, Gary Beauchamp, Richard Cohn, and Robert Gesteland, (Spon. by Carl Hunt). Northwestern Univ., Children's Mem. Hosp., Dept. of Peds., Chicago.

Several studies performed in both adults and children with either chronic renal insufficiency (CRI) or end-stage renal disease (ESRD) receiving dialytic support have shown that these patients have abnormal taste acuity. Most of these abnormalities have been based on simple measurement of detection thresholds. The present studies examined taste and smell function in 10 CRI patients (mean creatinine 5.1 mg/dl), mean age 13.7 years; 9 ESRD patients, mean age 14.3 years; and 9 control subjects with chronic illness (C) (hospitalized child psychiatry patients) mean age 11.0 years. Two parameters of taste function were determined: 1) Intensity testing (IT) - perceived growth of intensity with increase in concentration; 2) Hedonic testing (HT) - relationship between concentration and perceived pleasantness. For IT and HT all subjects were given 5 concentrations each of NaCl (N), sucrose (S) and quinine hydrochloride (Q) in the suprathreshold range. The scaling technique utilized for IT was magnitude estimation with a tape measure and for HT was "smiley-face" scale. Data were analyzed by plotting standard psychophysical functions. Smell function was tested by UPSIT (Doty, RL: Univ. of Penn. Smell Identification Test), identification of 40 microencapsulated odors in "scratch and sniff" form. There were no differences between the 3 groups in IT; the slope of the line defined by magnitude estimation of the 5 concentrations of N, S, and Q was similar in the 3 groups. All renal patients and C patients had similar preferences and dislikes for the 5 concentrations of S and Q. However, renal patients had a substantially positive preference for higher concentrations of N compared to C patients. There were no significant differences between the 3 groups as to percent correct responses of the 40 odors in UPSIT. We conclude that patients with ESRD or CRI have normal IT, but seem to prefer N when compared to C patients. Also, ability to identify common odors is preserved in the two groups of renal patients.

†1620 **PHOSPHATE (Pi) TRANSPORT IN RENAL BRUSH BORDER MEMBRANES (BBMV) IN NEWBORN PUPPIES (P).** Eddie S. Moore, Eunice G. John, Lawrence Rufer, Christine S. Mooers, Nochik Park, and Linda Fonell. Michael Reese Hosp. & Med. Ctr., U. of Ill. College of Medicine, Dept. Pediatrics; U. of Ill. at Chicago Graduate Sch., Dept. Biological Sciences; Chicago.

Renal Pi excretion (UPiV) is low in newborn infants and is not correlated with a low GFR. To further investigate UPiV in neonates, we measured Pi uptake (PiU) by Millipore filtration in BBMV in 7 P at 10 days of age and in 3 adult dogs (D). BBMV were prepared by differential centrifugation and transport after 1h incubation in extravesicular media (EM) with [sucrose] from 0.3 to 1.0 osm varied inversely with [1/osm] (r=.95, p<.05) indicating PiU into osmotically active BBMV. Results, x, ±SEM, nMol/mg protein: (a-p<.01; b-p<.005; c-p<.001)

		1 minute	2 minutes	3 minutes	1 hour
Na^+-G	P	10.3 ±1.5	11.5±1.3	11.0±0.9	9.8±0.2
	D	10.1±0.9	16.2±0.7[a]	16.7±0.7[b]	10.2±0.5
O-Na^+	P	6.6±0.5[a]	6.9±0.5[c]	7.4±0.3[c]	—
	D	3.3±0.5	3.0±0.5	3.9±0.5	5.3±7.1
$^2Na^+$-Dep	P	3.7	5.5	3.6	—
	D	6.8	13.1[c]	12.8[c]	4.6

$^1Na^+$-gradient (G) ($[Na^+]_o<[Na^+]_i$)
$^2Na^+$-dependent (Dep) [$(Na^+-G)-(0-Na^+)$]

Na^+-G PiU at 15s in P remained linear with EM [substrate] 0.1-3.0 mMol (r=0.99, p<.001); however, 0-Na^+ PiU was saturated at 1.0-2.0 mMol with an apparent Km of 0.84 mMol and Vmax of 382.2 nMol/15·mg protein. The results suggest that non-Na^+-Dep active PiU may explain in part low UPiV in young infants.

1621 **PHOSPHATE (Pi) UPTAKE IN FETAL LAMB (FL) RENAL BRUSH BORDER MEMBRANES (BBMV).** Lawrence Rufer, Eddie S. Moore, Christine S. Mooers, and Nochik Park. Dept. of Pediatrics, Michael Reese Hosp. & Med. Ctr.; Dept. of Biol. Sci., University of Illinois at Chicago Graduate School; Chicago.

We investigated Pi uptake (PiU) in BBMV in 9 FL and 6 ewes (E) at 100-165 days' gestation. BBMV were prepared by differential centrifugation, and PiU was measured by Millipore filtration. PiU after 1h incubation in extravesicular media (EM) with [sucrose] from 0.3-1.0 osm varied inversely with [1/osm] (r-0.94, p<.01), indicating PiU into osmotically active BBMV. Results, x, ±, nMol/mg protein: (a-p<.01; b-p<.005; c-p<.001)

		.25 min	Peak	5 min	1h
$1Na^+$-G	FL	10.6±0.8[b]	16.0±1.5[a]	11.0±1.1[a]	9.5±0.7[a]
	E	4.4±1.9	9.1±1.1	5.9±0.5	5.9±0.5
O-Na^+	FL	8.5±1.3[b]	12.3±0.5[c]	7.9±1.1[c]	6.5±0.3[b]
	E	2.4±0.6	3.4±0.3	3.4±0.3	3.4±0.3
$^2Na^+$-Dep	FL	2.1	3.7	3.0	3.0
	E	1.1	5.3	2.8	3.8

1-Na^+-gradient ($[Na^+]_o>[Na^+]_i$); 2-Na^+-dependent [$(Na^+-G)-(0-Na^+)$]. In FL, Na^+-G PiU varied directly with EM pH from 6.5-8.5 (r-.79, p<.01) and was 1.6-fold greater at pH 6.5 than at pH 8.5. Na^+-G PiU at 15s in FL remained linear with EM [substrate] 0.1-3.0 mMol (r-.99, p<.001); however, 0-Na^+ PiU was saturated at 0.8 mMol with an apparent Km of 0.39 mMol and Vmax of 48.4 nMol/15s·mg protein. The results suggest significant differences between mechanisms of renal Pi handling in FL compared to E with non-Na^+-Dep active PiU also present in FL. This may explain in part low renal Pi excretion in early life.

1622 INCREASED PERITONEAL PROTEIN LOSS IN PEDIATRIC PERITONEAL DIALYSIS. Bruce Z.Morgenstern, W.Keith Pyle, Alan B.Gruskin, Bruce A.Kaiser, Sharon A.Perlman, Martin S. Polinsky, H.Jorge Baluarte. St.Christopher's Hosp. for Children, Temple University School of Medicine, Philadelphia, PA.

Significant protein loss through the peritoneum of children on peritoneal dialysis(PD)has been well documented. To investigate this phenomenon,8 children(mean age 10yrs,range 1-19)were studied. A single 8-hour isotope-labelled exchange was performed and timed dialysate samples were obtained. Data were analyzed by the model of Pyle. The model determines the diffusive and convective characteristics of the peritoneum:the mass transfer area coefficient (MTAC)and the reflection coefficient(RC). The MTAC is an area permeability product(ml/min)and the RC is the fraction of solute reflected at the membrane during the convection associated with ultrafiltration. The mean(±SD)MTAC and RC for urea were 17.7±7.9 ml/min/1.73m^2 and 0.14±0.08 respectively,for creatinine 11.6±7.0 and 0.28±0.01, for uric acid 7.7±3.9 and 0.44±0.16, for glucose 9.4±2.9 and 0.49±0.17, and for idealized total protein(T.P.)0.12± .15 and 0.95±0.03. When compared with adult means, excepting T.P., these were not statistically significant. The MTAC for T.P. was larger than in adults($p<0.03$),and the RC for T.P.was smaller than in adults($p<0.01$). This increased MTAC together with the lower RC signify that protein losses in children exceed those in adults. These data imply a greater large molecular weight solute removal in children on PD,resulting in effective clearance of uremic toxins. This may account for the low frequency of clinically manifest uremia-related morbidity,e.g.peripheral neuropathy,in children on PD,despite relatively elevated serum BUN and creatinine concentrations.

†1623 PREDICTIVE FACTORS AFFECTING FIRST PEDIATRIC CADAVERIC TRANSPLANT SURVIVAL. Bruce Z.Morgenstern, H.Jorge Baluarte, Eugene L.Sobel, Bruce A.Kaiser, Martin S. Polinsky, Sharon A.Perlman, Alan B.Gruskin. St.Christopher's Hosp. for Children. Dept.of Peds.,Temple Univ.Sch.of Med., Phila., PA.

Transplantation remains the optimal replacement therapy for children with end stage renal disease. Cadaveric allograft survival(surv)has improved over the past decade. We reviewed our experience with 61 first cadaveric transplants performed from 1972 through 1982. Twenty-three recipients(38%)were female and 38(62%) were male;the mean age was 11.2 yrs.(range 2-19). Forty-two (69%) were white,18(29%)black,and 1(2%)hispanic. Thirty-five(57%)had received at least 5 random donor blood transfusions(trans). Thirty (50%)were matched for a minimum of 2 HLA A and B antigens (Ag). Proportional hazards analysis(Cox's model)was used to examine 5 explanatory variables:sex,age,race, ≥5 trans,and number(no.)of Ag matches. Sex,age,and race did not affect graft surv. In this population,trans alone did not improve transplant surv($p>0.2$).The no. of Ag matches was positively correlated with graft surv.(B=-0.3, $p<0.02$).The combination of trans and Ag matching provided excellent allograft surv(94% at 1 yr.67% 5 yrs).This prompted an examination of the data including a variable termed AgTrans, a first-order interaction of no. of Ag matches and trans status. AgTrans was the strongest factor associated with prolonged surv.(B=-0.47, $p<0.001$).Use of the model predicts that at the time at which graft surv.would be 50% with <5 trans and no Ag matches, it would increase to 68% with a 2 Ag match,and increase further to 85% with both a 2 Ag match and ≥5 trans.In summary,Ag matching acts as an initiator in pediatric cadaveric transplantation and ≥5 trans act as a promotor of graft function.