COLCHICINE AND DMSO AS PROBES FOR STUDYING PROTEIN-URIA IN PASSIVE HEYMANN NEPHRITIS. Lawrence S. 1618 **1010** <u>Milner, Danny Lotan, Paul R. Goodyer, Jack S.C. Fong,</u> <u>and Bernard S. Kaplan.</u> 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 1.p. x 28 days). Controls excreted 105 \pm 22 and C-treated rats, 37 \pm 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.

CHEMOSENSORY FUNCTION IN CHILDREN WITH RENAL FAILURE. Mente Shapera, Donald Moel, Gary Beauchamp, Richard Chen, and Robert Cesteland, (Spon. by Carl Hunt). Northwestern Univ., Children's Mem. Hosp., Dept. of Peds., Chicago. Several studies performed in both adults and children with either for cread insufficiency (CRI) or end-stage renal disease (ESRD) registring dialytic support have shown that these patients have abnor-mal taste and smell function in 10 CRI patients (mean creatinine 5.1 mg/dl), mean age 11.0 years. Two parameters of taste func-tion was determined: 1) Intensity testing (III) - perceived growth of intensity with increase in concentration; 2) Hedonic testing (HI) -relationship between concentration and perceived pleasantness. For Nucrose (S) and quinine hydrochlorid (Q) in the suprathreshold range. The scaling technique utilized for II was magnitude estimation with a perceive and for II was "smilley-face" scale. Data were analyzed by SDIT (Doty, KL: Univ. of Penn. Smell Identification Test), identification of 40 micronences between the 3 groups in IT; the slope of the line defined by magnitude estimation for the 5 concentra-tions had similar references and dislikes for the 5 concentra-tions of the Stime of the Stime of the Stime that ally positive to fue the defined by magnitude estimation of the 5 concentra-tions of S and Q. However, renal patients had a substantially positive there were no significant differences between the 3 groups in IT; the slope of S and Q. Mowever, renal patients had a substantially positive there were no significant differences between the 3 groups as to per-tions of S and Q. However, renal patients had a substantially positive there were no significant differences between the 3 groups as to per-tions of S and Q. However, renal patients had a substantially positive there were no significant differences between the 3 groups as to per-tions of S and Q. However, renal patients had substantis for the S concentra-tions of S and Q. Howev CHEMOSENSORY FUNCTION IN CHILDREN WITH RENAL FAILURE.

PHOSPHATE (Pi) TRANSPORT IN RENAL BRUSH BOR-DER MEMBRANES (BBMV) IN NEWBORN PUPPIES (P). **†1620 1020** Eddie S. Moore, Eunice G. John, Lawrence Rufer, Christine S. Moores, 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 extra-

vesicular 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±0.7b	10.2+0.5
O-Na ⁺	P	6.6±0.5ª	6.9±0.5°	7.4±0.3C	
	D	3.3±0.5	3.0+0.5	3.9+0.5	5.3 - 7.1
² Na ⁺ -Dep	P	3.7	5.5	3.6	
	D	6.8	13.1 ^c	12.8°	4.6
1Na+-gradi	ent	(G) ([Na ⁺]o<[N	[a ⁺];)		

²Na⁺-dependent (Dep) [(Na⁺-G)-(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/ $15 \cdot mg$ protein. The results suggest that-non-Na⁺-Dep active PiU may explain in part low UPiV in young infants.

PHOSPHATE (Pi) UPTAKE IN FETAL LAMB (FL) RENAL BRUSH BORDER MEMBRANES (BBMV). Lawrence Rufer, 1621

1621 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 centri-fugation, 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±0.80	16.0 ⁺ 1.5 ^a	11.0+1.18	9.5+0.78
	E	4.4+1.9	9.1+1.1	5.9+0.5	5.9+0.5
O-Na ⁺	FL	8.5+1.3b	12.3±0.5°	7.9 ⁺ 1.1 ^c	6.5±0.3b
	E	2.4-0.6	3.4-0.3	3.4 ± 0.3	3.4 ± 0.3
² Na ⁺ -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); In FL remained intear with EM (substrate) 0.1-3.0 mMol (r-3.9, b(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 sug-gest 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.

INCREASED PERITONEAL PROTEIN LOSS IN PEDIATRIC PERITO-NEAL DIALYSIS. Bruce Z.Morgenstern, W.Keith Pyle, Alan 1622 **IU22** B.Gruskin, Bruce A.Kaiser, Sharon A.Perlman, Martin S. Polinsky, H.Jorge Baluarte. St.Christopher's Hosp. for Children, 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 charac teristics 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(\pm SD)MTAC and RC for urea were 17.7 \pm 7.9 ml/min/1.73m² and 0.14 \pm 0.08 respectively,for creatinine 11.6 \pm 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 \pm 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

PREDICTIVE FACTORS AFFECTING FIRST PEDIATRIC CADAVERIC TRANSPLANT SURVIVAL. Bruce Z. Morgenstern, H. Jorge **†1623 1023** 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 survi-val(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 are 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 ! explanatory variables:sex,age,race, 25 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 exami-nation 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 Åg match and ≥ 5 trans. In summary, Åg matching acts as an initiator in pediatric cadaveric transplantation and ≥ 5 trans act as a promotor of graft function.