

BIOGRAPHICAL SKETCH

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NAME Jeffrey R. Schelling	POSITION TITLE Professor of Medicine		
eRA COMMONS USER NAME jschelling			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Northwestern University, Evanston, IL	B.A.	1981	Biology
Case Western Reserve University, Cleveland OH	M.D.	1985	Medicine
University Hospitals, V.A. Med Ctr, Cleveland OH		1988	Internal Medicine
University of Colorado, Denver, CO		1992	Nephrology

A. Positions and Honors

- 1988 C.C.J. Carpenter award, outstanding internal medicine resident
1988 ABIM diplomate in internal medicine
1990 ABIM diplomate in nephrology
1992-94 Senior Instructor, Case Western Reserve University School of Medicine, Cleveland, OH
1994-01 Assistant Professor, Case Western Reserve University School of Medicine, Cleveland, OH
1996-02 Ad hoc reviewer, V.A. Merit Review Study Section
1999-01 Established Investigator, American Heart Association
2000-03 Member, National Peer Review Committee, Cardio-Renal Section, American Heart Association
2001 Ad hoc reviewer, NIH Study Section, Animal Models of Diabetic Complications Consortium (AMDCC)
2001 Award of Tenure, Case Western Reserve University
2001-08 Associate Professor, Case Western Reserve University School of Medicine, Cleveland, OH
2003- Director, Division of Nephrology and Hypertension, MetroHealth System, Case Western Reserve University School of Medicine, Cleveland, OH
2003-07 Ad hoc reviewer, Juvenile Diabetes Research Foundation
2004-06 Ad hoc reviewer, NIH Study Sections ZRG1 HOP-Q and ZRG1 RUS-B
2005-07 Member, National Kidney Foundation Grant Review Committee
2006 Ad hoc reviewer, NIH Study Section, Genetic Association Information Network (GAIN) RFA
2006-08 Ad hoc reviewer, National Science Foundation
2007- Editorial Board, *Am J Physiol Renal Physiol*
2008- Professor, Case Western Reserve University School of Medicine, Cleveland, OH

B. Selected Peer-Reviewed Publications

- Schelling JR**, Howard RL, Winter SD, Linas SL. Increased osmolal gap in alcoholic ketoacidosis and lactic acidosis. *Ann Intern Med* 113:580-582, 1990.
- Ullian ME, **Schelling JR**, Linas SL. Aldosterone enhances angiotensin II receptor binding and inositol phosphate responses. *Hypertension* 20:67-73, 1992.
- Schelling JR**, Hanson AS, Marzec R, Linas SL. Cytoskeleton-dependent endocytosis is required for apical type 1 angiotensin II receptor-mediated activation of phospholipase C in cultured rat proximal tubule cells. *J Clin Invest* 90:2472-2480, 1992.
- Schelling JR**, Baum KF, Teitelbaum I. Didanosine administration in an HIV-positive renal transplant patient. *Am J Kidney Dis* 22:60-63, 1993.
- Schelling JR**, Linas SL. Angiotensin II-dependent proximal tubule sodium transport requires receptor-mediated endocytosis. *Am J Physiol* 266:C669-C675, 1994.
- Schelling JR**, DeLuca DJ, Konieczkowski M, Marzec R, Sedor JR, Dubyak GR, Linas SL. Glucocorticoid uncoupling of angiotensin II-dependent phospholipase C activation in vascular smooth muscle cells. *Kidney Int* 46:675-682, 1994.

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- Schelling JR**, Gentry DJ, Dubyak GR. Annexin II inhibition of G protein-regulated inositol trisphosphate formation in rat aortic smooth muscle. *Am J Physiol* 270:F682-F690, 1996.
- Schelling JR**, Nkemere N, Konieczkowski M, Martin KA, Dubyak GR. Angiotensin II activates the β 1 isoform of phospholipase C in vascular smooth muscle cells. *Am J Physiol* 272:C1558-C1566, 1997.
- Schelling JR**, Nkemere N, Kopp JB, Cleveland RP. Fas-dependent fratricidal apoptosis is a mechanism of tubular epithelial cell deletion in chronic renal failure. *Lab Invest* 78:813-824, 1998.
- Huang S, Konieczkowski M, **Schelling JR**, Sedor JR. Interleukin-1 stimulates Jun N-terminal/stress-activated protein kinase by an arachidonate-dependent mechanism in mesangial cells. *Kidney Int* 55:1740-1749, 1999.
- Singh R, Wang B, Shirvaikar A, Khan S, Kamat S, **Schelling JR**, Konieczkowski M, Sedor JR. The IL-1 receptor and Rho associate to drive cell activation in inflammation. *J Clin Invest*, 103:1561-1570, 1999.
- Schelling JR**, Cleveland RP. Involvement of Fas-dependent apoptosis in renal tubular epithelial cell deletion in chronic renal failure. *Kidney Int*, 56:1313-1316, 1999.
- Khan S, Cleveland RP, Koch C, **Schelling JR**. Hypoxia induces renal tubular epithelial cell apoptosis in chronic renal disease. *Lab Invest* 79:1089-1099, 1999.
- El-Meanawy MA, **Schelling JR**, Iyengar S, Sedor JR. Use of serial analysis of gene expression to generate kidney expression libraries. *Am J Physiol* 279:F383-F392, 2000.
- Covic A, **Schelling JR**, Iyengar S, Sedor JR. Plasma C-peptide concentration does not discriminate between type I and type II diabetes in the context of end stage renal disease. *Kidney Int* 58:1742-1750, 2000.
- Zarif L, Covic A, Iyengar S, Sehgal AR, Sedor JR, **Schelling JR**. Inaccuracy of clinical phenotyping parameters for hypertensive nephrosclerosis. *Nephrol Dial Transplant* 15:1801-1807, 2000.
- Covic AMC, Iyengar SK, Olson JM, Sehgal AR, Constantiner M, Jedrey J, Kara M, Sabbagh E, Sedor JR, **Schelling JR**. A family-based strategy to identify genes for diabetic nephropathy. *Am J Kidney Dis* 37:638-647, 2001.
- Khan S, Konieczkowski M, Koepke A, Jarad G, Schlessman K, Wang B, **Schelling JR**. Apoptosis and JNK activation are differentially regulated by Fas expression level in renal tubular epithelial cells. *Kidney Int* 60:65-76, 2001.
- Miao H, Wei B-R, Peehl DM, Li Q, Alexandrou T, **Schelling JR**, Rhim JS, Sedor JR, Burnett E, Wang B. EphA receptor tyrosine kinase activation inhibits Ras/MAPK pathway. *Nature Cell Biol* 3:527-530, 2001.
- Iyengar SK, **Schelling JR**, Sedor JR. Approaches to understanding susceptibility to nephropathy: From genetics to genomics. *Kidney Int* 61(S1):61-67, 2002.
- Schelling JR**, El-Meanawy MA, Barathan S, Dodig T, Iyengar SK, Sedor JR. Generation of the kidney transcriptome using serial analysis of gene expression (SAGE). *Exp Nephrol* 10:82-92, 2002.
- Jarad G, Wang B, Khan S, DeVore J, Miao H, Wu KL, Nishimura SL, Wible BA, Konieczkowski M, Sedor JR, **Schelling JR**. Fas activation induces renal tubular epithelial cell β 8 integrin expression and function in the absence of apoptosis. *J Biol Chem* 277:47826-47833, 2002.
- Schelling JR**, Sinha S, Konieczkowski M, Sedor JR. Myofibroblast differentiation: Specialized membrane domains and cell phenotype. *Exp Nephrol* 10:313-319, 2002.
- Wu KL, Khan S, Lakhe-Reddy S, Wang L, Jarad G, Miller RT, Konieczkowski M, Brown AM, Sedor JR, **Schelling JR**. Renal tubular epithelial cell apoptosis is associated with caspase cleavage of the NHE1 Na^+/H^+ exchanger. *Am J Physiol* 284:F829-F839, 2003.
- Iyengar SK, Fox KA, Schachere M, Manzoor F, Slaughter ME, Covic AM, Orloff SM, Hayden PS, Olson JM, **Schelling JR**, Sedor JR. Linkage analysis of candidate loci for end stage renal disease due to diabetic nephropathy. *J Am Soc Nephrol* 14:S195-S201, 2003.
- Jarad G, Simske JS, Sedor JR, **Schelling JR**. Nucleic acid-based techniques for post-transcriptional regulation of molecular targets. *Curr Opin Nephrol Hypertens* 12:415-421, 2003.
- El-Meanawy MA, **Schelling JR**, Barathan S, Iyengar SK, Sedor JR. Serial analysis of gene expression (SAGE). *Methods Mol Med* 86:257-74, 2003.
- Srichai MB, Konieczkowski M, Barathan S, Hayden PS, Khan S, Mundel P, Lee SB, Bruggeman LA, **Schelling JR**, Sedor JR. A WT1 co-regulator controls podocyte phenotype by shuttling between adhesion structures and nucleus. *J Biol Chem* 279:14398-14408, 2004.
- Jarad G, Lakhe-Reddy S, Blatnick J, Koepke M, Khan S, El-Meanawy MA, Sedor JR, **Schelling JR**. Renal phenotype is exacerbated in *Os* and *lpr* double mutant mice. *Kidney Int* 66:1029-1035, 2004.

- Wu KL, S Khan, Lakhe-Reddy S, Jarad G, Obejero-Paz CA, Mukherjee A, Konieczkowski M, Sedor JR, **Schelling JR**. The NHE1 Na⁺/H⁺ exchanger recruits ERM proteins to regulate Akt-dependent cell survival. *J Biol Chem* 279:26280-26286, 2004.
- Schelling JR**, Sedor JR. The metabolic syndrome as a risk factor for chronic kidney disease: More than a fat chance? *J Am Soc Nephrol* 15:2773-2774, 2004.
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- Constantiner M, Sehgal AR, Humbert L, Arce L, Constantiner D, Sedor JR, **Schelling JR**. A dipstick protein and specific gravity algorithm accurately predicts pathologic proteinuria. *Am J Kidney Dis* 45:833-841, 2005.
- Rico M, Mukherjee A, Konieczkowski M, Khan S, **Schelling JR**, Sedor JR. WT1-interacting protein and ZO-1 translocate into podocyte nuclei after puromycin aminonucleoside treatment: Translating cell junction disassembly into altered gene expression. *Am J Physiol Renal Physiol* 289:F431-F441, 2005.
- O'Connor AS, **Schelling JR**. Diabetes and the kidney. *Am J Kidney Dis* 46:766-773, 2005.
- Ziembicki J, Tandon R, **Schelling JR**, Sedor JR, Miller RT, Huang C. Mechanical force-activated phospholipase D is mediated by G_{α12/13}-Rho and calmodulin-dependent kinase in renal epithelial cells. *Am J Physiol Renal Physiol* 289:F826-F834, 2005.
- Sedor JR, **Schelling JR**. Association of metabolic syndrome in non-diabetic patients with increased risk for chronic kidney disease: The fat lady sings. *J Am Soc Nephrol* 16:1880-1882, 2005.
- Lakhe-Reddy S, Khan S, Konieczkowski M, Jarad G, Wu KL, Reichardt LF, Takai Y, Bruggeman LA, Wang B, Sedor JR, **Schelling JR**. β8 integrin binds RhoGDI-1 and activates Rac1 to inhibit mesangial cell myofibroblast differentiation. *J Biol Chem* 281:19688-19699, 2006.
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- Tandon R, Levental I, Huang C, Byfield F, Ziembicki J, **Schelling JR**, Bruggeman LA, Sedor JR, Janmey P, Miller RT. HIV infection changes glomerular podocyte cytoskeletal composition and results in distinct cellular mechanical properties. *Am J Physiol Renal Physiol* 292:F701-F710, 2007.
- Waldman M, **Schelling JR**, Chung-Park M, Madaio MP, Sedor JR. Immune-mediated and other glomerular diseases. In Alpern R and Hebert S (eds): *The Kidney: Physiology and Pathophysiology*. Raven, New York, Chapter 84, 2007, pp. 2399-2446.
- Iyengar SK, Abboud HE, Goddard KA, Saad MF, Adler SG, Arar NH, Bowden DW, Duggirala R, Elston RC, Hanson RL, Ipp E, Kao L, Kimmel PL, Klag MJ, Knowler WC, Nelson RG, Nicholas SB, Pahl MV, Parekh RS, Rasooly RS, Rich SS, Scavini M, **Schelling JR**, Sedor JR, Sehgal AR, Shah VO, Smith MW, Winkler CA, Zager PG, Freedman BI, on behalf of the Family Investigation of Nephropathy and Diabetes Research Group: Genome-wide scans for diabetic nephropathy and albuminuria in multi-ethnic populations: The FIND Study. *Diabetes* 56:1577-1585, 2007.
- McKenzie LM, Hendrickson SL, Briggs WA, Dart RA, Korbet SM, Mokrzycki MH, Kimmel PL, Ahuja TS, Berns JS, Simon EE, Smith MC, Trachtman H, Michel DM, **Schelling JR**, Cho M, Zhou YC, Binns-Roemer E, Kirk GD, Kopp JB, Winkler CA. NPHS2 variation in sporadic focal segmental glomerulosclerosis. *J Am Soc Nephrol* 18:2987-2995, 2007.
- Bleyer AJ, Sedor JR, Freedman BI, Iyengar SK, O'Brien A, Russell G, **Schelling JR**. Risk factors for development and progression of diabetic kidney disease and treatment patterns among diabetic siblings of diabetic patients with kidney failure treated by dialysis. *Am J Kidney Dis* 51:29-37, 2008.
- Schelling JR**, Abboud HE, Nicholas SB, Pahl MV, Sedor JR, Adler SG, Arar NH, Bowden DW, Duggirala R, Freedman BI, Goddard KAB, Hanson RL, Ipp E, Iyengar SK, Jun G, Kao WHL, Kimmel PL, Klag MJ, Knowler WC, Nelson RG, Parekh RS, Quade SR, Rich SS, Saad MF, Scavini M, Smith MW, Taylor K, Winkler CA, Wang D, Zager PG, Shah VO, on behalf of the Family Investigation of Nephropathy and Diabetes Research Group. Genome-wide scans for estimated GFR in multi-ethnic diabetic populations: The Family Investigation of Diabetes and Nephropathy. *Diabetes* 57:235-243, 2008.
- Schelling JR**, Abu Jawdeh BG. Regulation of cell survival by Na⁺/H⁺ exchanger-1 (NHE1). *Am J Physiol Renal Physiol* 295:F625-F632, 2008.

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Kao WHL, Klag MJ, Meoni LA, Reich D, Bertier-Schaad Y, Li M, Coresh J, Patterson N, Powe NR, Fink NE, Sadler J, Weir M, Adler S, Kamp K, Kohn OF, Leehey DJ, Nicholas S, Pahl M, **Schelling JR**, Sedor JR, Thornley-Brown D, Winkler C, Smith MW, Parekh RS. MYH9 is associated with nondiabetic end-stage renal disease in African Americans. *Nat Genet* 40:1185-92, 2008.

Kopp JB, Smith MW, Johnson RC, Freedman BI, Bowden DW, Oleksyk T, McKenzie LM, Ahuja TS, Cho ME, Dart RA, Kimmel PL, Korbet SM, Michael DM, Mokrzycki MH, **Schelling JR**, Simon E, Trachtman H, Vlahou D, Kajiyama H, Nelson GW, Winkler CW. MYH9 is a major-effect risk gene for focal segmental glomerulosclerosis. *Nat Genet* 40:1175-1184, 2008.

Abu Jawdeh BG, Kanso A, **Schelling JR**. Evidence-based approach for prevention of radiocontrast-induced nephropathy. In review.

Khan S, Lakhe-Reddy S, McCarty JH, Sorenson CM, Sheibani N, Reichardt LF, Wang B, Sedor JR, **Schelling JR**. Mesangial cell $\beta 8$ integrin regulates PECAM-1-dependent cytoprotective surveillance of the glomerular endothelial cell. In review.

C. Other Support

Active

R01 DK072348 (Schelling)

7/1/08 – 4/30/13

NIDDK

Mechanisms of glomerular disease progression

The major goal of this grant is to characterize the role of the $\beta 8$ integrin in mesangial cell function.

1-07-CR-56 (Schelling)

1/1/07 – 12/31/09

American Diabetes Association

Regulation of diabetic nephropathy progression

The goal of this grant is to enroll new patients and maintain the longitudinal cohort and phenotyping for future genetic studies.

R01 DK067528 (Schelling)

7/1/05 – 6/30/10

NIDDK

Mechanisms of tubular atrophy in renal disease

The major goal of this grant is to determine the role of the NHE1 Na^+/H^+ exchanger as a survival factor and target of apoptosis in the pathogenesis of tubular atrophy.

R01 DK064719 (Sedor)

9/1/03 – 6/30/09

NIDDK

Mechanisms of glomerular scarring

The major goal of this grant is to characterize the role of WT1-interacting protein (WTIP) in glomerular disease pathophysiology.

2T32 DK07470 (Sedor)

7/1/03 – 6/30/09

NIDDK

CWRU Training Grant

The major goal of this grant is to train post-doctoral nephrology fellows for careers in biomedical research.