BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
Ross P. Holmes	Professor of Urology
eRA COMMONS USER NAME rholmes	

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
Australian National University, Canberra	PhD	1978	Biochemistry
University of Illinois at Champaign-Urbana	Post-Doc	1979 - 83	Nutrition

A. Personal Statement

My research has always in some way been associated with calcium and calcium fluxes across membranes with a shift towards calcium oxalate stone disease in recent years. I have had 5 papers published on calcium fluxes, two of them in Nature, and 3 papers on vitamin D. My first intra-mural grant at Wake Forest University after joining the faculty there was entitled "Genetic factors in the control of dietary calcium absorption and urinary calcium excretion." This was followed by an NIH R01 grant, "Genetic influences on urinary excretions." Although this grant identified a number of genetic and dietary influences it failed to identify any major genetic underpinnings associated with hypercalciuria, a problem that continues to this day despite the investment of millions of NIH dollars in a variety of studies. On joining the faculty at UABMC, the Executive Vice Dean and director of Nephrology, Dr. Anupam Agarwal suggested that Dean Assimos, my colleague in kidney stone research, and I should work with Ji-Bin Peng in his Division to solidify and unify our kidney stone research. I have enjoyed working with Ji-Bin who must be considered one of the leading experts on TRPV6. Ji-Bin and I are currently collaborating on a study examining the influence of the ancestral TRPV6 gene on sodium and calcium excretion in African Americans with funds provided by the Department of Urology. I believe that Ji-Bin has developed an interesting set of experiments in this application that will shed a lot of light on the role of TRPV6 in regulating calcium reabsorption in the proximal tubule. I look forward to working with Ji-Bin in determining the contribution that TRPV6 makes to renal calcium reabsorption and the development of hypercalciuria.

B. Positions and Honors

Honors

!975-77 Australian National University Postgraduate Award
2004-12 Wake Forest University Medical Center Research Excellence Award
2009 Doctor Honoris Causa, "Iulia Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

Positions and Employment

1977-79 Visiting Scientist, Harlan E. Moore Heart Research Foundation, Champaign, IL.
1979-83 Research Associate, Dept. of Food Science, University of Illinois, Urbana, IL.
1983-87 Senior Food Scientist, Dept. of Food Science, University of Illinois, Urbana IL.
1987-97 Asst. Professor of Surgery (Urology), Wake Forest University School of Medicine.
1997-02 Associate Professor of Surgical Sciences - Urology, Wake Forest University Schl Med.
2002-12 Professor of Surgical Sciences - Urology, Wake Forest University Schl of Med. Winston-Salem, NC.
2012-present Professor of Urology, University of Alabama at Birmingham

Other Experience and Professional Activities

1984 . Present Member ASNS, ASBMB, AAAS
1997 - Present Ad Hoc Member NIH Urology Special Emphasis Review Panels/ Study Sections
1998, 2003, 2005 Ad Hoc Reviewer VA Merit Review Board
1999 Co-Chair and Organizer, FASEB Summer Research Conference, "Calcium Oxalate in Biological Systems", Copper Mountain, CO.
2003 President, ROCK Society
2001 - 2004 Member NIH Urology Special Emphasis Review Panel/ UKGD Study Section
2004 - 2008 Secretary/Treasurer ROCK Society
2004 - 2009 Scientific Advisory Board of the Oxalosis and Hyperoxaluria Foundation
2010 Chair, 9th International Primary Hyperoxaluria Workshop, New York City, NY

C. Selected Peer Reviewed Publications

Lange JN, Easter L, Amoroso R, Benfield D, Mufarri PW, Knight J, **Holmes RP**, Assimos DG (2013). Internet program for facilitating dietary modifications limiting kidney stone risk. Can J Urol. 20: 6922-6.

Knight J, Deora R, Assimos DG, **Holmes RP** (2013). The genetic composition of *Oxalobacter formigenes* and its relationship to colonization and calcium oxalate stone disease. Urolithiasis 41:187-96.

Mufarrij PW, Lange JN, Knight J, Assimos DG, **Holmes RP** (2013). The effects of Oxazyme on oxalate degradation: results and implications of in vitro experiments. J Endourol. 27: 284-7.

Riedel TJ, Knight J, Murray MS, Milliner DS, **Holmes RP**, Lowther WT (2012). 4-Hydroxy-2-oxoglutarate adolase inactivity in Primary Hyperoxaluria Type 3 and glyoxylate reductase inhibition. *BBA Molecular Basis of Disease.* 1822: 1544-52.

Lange JN, Wood KD, Knight J, Assimos DG, **Holmes RP** (2012). Glyoxal formation and its role in endogenous oxalate synthesis. *Adv Urology* 2012: 819202.

Knight J, **Holmes RP**, Cramer SD, Takayama T, Salido EC (2012). Hydroxyproline metabolism in mouse models of primary hyperoxaluria. *Amer J Physiol* 302: F688-93.

Jiang J, Johnson LC, Knight J, Callahan MF, **Holmes RP**, Lowther WT. (2012) Metabolism of $^{13}C_5$-hydroxyproline in vitro and in vivo: implications for primary hyperoxaluria. *Amer J Physiol* 302: G637-43.

Knight J, Hinsdale M, **Holmes RP** (2012). The glycolate and 2-phosphoglycolate content of tissues measured by ion chromatography coupled with mass spectrometry. *Anal Biochem* 421: 121-4.

Lange JN, Wood KD, Mufarrij PW, Callahan MF, Easter L, Knight J, **Holmes RP**, Assimos DG. (2012) The impact of dietary calcium and oxalate ratios on stone risk. *Urology* 79: 1226-9.

Maalouf NM, Adams Huet B, Pasch A, Lieske JC, Asplin JR, Siener R, Hesse A, Nuoffer JM, Frey FJ, Knight J, **Holmes RP**, Zerwekh JE, Bonny O. (2011). Variability in urinary oxalate measurements between six international laboratories. *Nephrol Dial Transplant*. 26 (12):3954-9.

Jiang J, Knight J, Easter LH, Neiberg R, **Holmes RP**, Assimos DG (2011). Impact of Dietary Calcium and Oxalate, and Oxalobacter Formigenes Colonization on Urinary Oxalate Excretion. *J Urol*. 186:135-9.

Knight J, Jiang J, Wood, KD, **Holmes RP**, Assimos DG (2011). Oxalate and sucralose absorption in idiopathic calcium oxalate stone formers. *Urology.* 78(2):475.e9-475.e13

Knight J, Assimos DG, Callahan MF, **Holmes RP** (2010). Metabolism of Primed, Constant Infusions of [1,2-$^{13}C_2$] Glycine and [1-$^{13}C_1$] Phenylalanine to Urinary Oxalate. *Metabolism: clinical and experimental*. 60: 950-6.

Knight J, Assimos DG, Easter L, **Holmes RP** (2010). Metabolism of Fructose to Oxalate and Glycolate**.** *Horm Metabol Res.* 42(12):868-73.

Passman CM, **Holmes RP**, Knight J, Easter L, Pais V, Assimos DG. (2009). Effect of soda consumption on urinary stone risk parameters. *J Endourol.* 23(3):347-50.

Knight J, Easter LH, Neiberg R, Assimos DG, **Holmes RP** (2009). Increased protein intake on controlled oxalate diets does not increase urinary oxalate excretion. *Urol Res* 37: 63-8.

Knight, J, Jiang J, Assimos DG, **Holmes RP** (2006). Hydroxyproline Ingestion and urinary oxalate and glycolate excretion. *Kid. int.l* 70 (11): 1929-34.

Knight, J, **Holmes RP** (2005). Mitochondrial hydroxyproline metabolism: Implications for Primary Hyperoxaluria. *Am J Nephrol*. 25 (2):171-5

D. Research Support

Ongoing Research Support

1U54DK083908-05 (D.S. Milliner) 9/8/09 - 6/30/14
NIH/NIDDK
Consortium for hereditary causes of nephrolithiasis and renal failure
The goals are: (1) Establish and expand registries and collaborate with patient organizations for the rapid dissemination of knowledge. (2) Stimulate generation of testable hypotheses regarding mechanisms of renal injury in these diseases through registry findings, tissue resources, and pilot projects. (3) Develop cohorts of well-characterized patients for future clinical studies. (4) Attract and train investigators to rare diseases research in nephrology.
Role: Co-Investigator

RO1DK083527-03 (Lowther/Holmes) 6/1/10 – 5/31/15
NIH/NIDDK
Hydroxyproline catabolism and hyperoxaluria
The goals of this project are to examine the metabolism of intravenously infused $^{13}C_5$-hydroxyproline in normal subjects and individuals with Primary Hyperoxaluria and in mouse hyperoxaluric models.
Role: Co-PI

RO1DK087967-04 (J. Knight) 2/1/11 – 1/31/16
NIH/NIDDK
Oxalate handling and Oxalobacter formigenes colonization in a mouse model
The goals of this project are to establish a mouse model colonized with O. formigenes to study the effect of the diet on population dynamics, to examine intestinal oxalate secretion in the model, and to study bacterial and host factors important in gut colonization.
Role: Co-Investigator

RO1 DK73732-09 (R.P.Holmes) 7/1/11 – 3/31/15
NIH/NIDDK
Endogenous Oxalate Synthesis
The goals of this project are to identify the pathways that contribute to endogenous oxalate synthesis in cultured cells and in human subjects.
Role: PI

RO1 DK54468-11A1 (R.P. Holmes) 1/17/14 - 12/30/17
NIH/NIDDK
Mitochondrial metabolism in Primary Hyperoxaluria
This study will examine mitochondrial dysfunction associated with Primary Hyperoxaluria
Role: PI

Completed Research Support (within last 3 yrs)

RO1 DK62284-08 (D.G. Assimos) 6/01/2002 – 3/31/2013
NIH/NIDDK
Dietary oxalate and kidney stone formation
This study examined the handling of dietary oxalate in humans.
Role: Co-Investigator

Oxalosis and Hyperoxaluria Foundation (R.P. Holmes) 4/1/11 – 9/30/13
Phenotypic changes associated with PH3
The goals of this project are to study in cultured cells the expression of cDNAs mutated to contain mutations identified in HOGA of PH3 patients
Role: PI