BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Reilly, Christopher M.	Associate Professor
eRA COMMONS USER NAME creill	

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
University of New Mexico, Albuquerque, NM	B.S.	1991	Biology
Medical College of Georgia, Augusta, GA	Ph.D.	1997	Physiology/Endocrinology
Postdoctoral fellowship, MUSC Charleston, SC		2000	Immunology/Rheumatology

A. Personal Statement

It is a pleasure to be a co-investigator on the proposal submitted by Dr. Rujuan Dai titled, "EGR-TET interaction: towards understanding epigenetic regulation in lupus." The goal of the proposed research is to investigate the methylation and activation/inactivation of the EGT-TET proteins in lupus mice. Dr. Dai has previously published on how methylation affects transcription of lupus genes. In the last several of years I have formed a collaborative partnership with Dr. Dai who has extensive expertise in studying the micro RNA and epigenetics in lupus we have published several manuscripts regarding the microbiota and how this can influence autoimmunity. I have extensive experience in both immune function and murine lupus. In my studies, I have previously been awarded two R15's, an R21 and 2 R03s. My commitment to science education is evident by the number and quality of my publications. The current application builds logically on our expertise in immune activation and my expertise in lupus nephritis. I have a demonstrated record of successful and productive research projects in lupus and my expertise and experience have prepared me to lead this proposed project. In regard to my expertise specifically related to the project, I have myself several manuscripts epigenetics in lupus.

B. Positions and Honors

Positions and Employment

2000 – 2002	Assistant Professor, Division of Rheumatology, Department of Medicine, Medical University of South Carolina, Charleston, SC
2002 – 2009	Research Assistant Professor, Department of Biomedical Sciences and Pathobiology, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Polytechnic Institute and State University, Blacksburg, MD
2002 – 2006	Assistant Professor, Division of Biomedical Sciences, Edward Via Virginia College of Osteopathic Medicine (VCOM), Blacksburg, VA
2006 – Present	Associate Professor, Division of Biomedical Sciences, VCOM, Blacksburg, VA
2009 – Present	Research Associate Professor, Department of Biomedical Sciences and Pathobiology, Virginia-Maryland Regional College of Veterinary Medicine

Other Experience and Professional Memberships

1998 – 2000	President of the post-doctoral scholars association at MUSC
1997 – Present	American Association of Immunologists
2002 – Present	Internal Association of Science Medical Educators
2002 – Present	Chairman of Physiology, Division of Biomedical Sciences, VCOM, Blacksburg, VA
2002	SCORE Study Section, Grant Review Committee, National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS-NIH)
2004	NIH, MOSS Study Section, Grant Review committee
2008	Arthritis Foundation Inflammation study section member
2009	Arthritis Foundation grant reviewer

2009	NIH challenge grant review
2009	NIH grant reviewer (Cellular and Molecular Biology of the Kidney Study Section (CMBK)
2010	Reviewer or AOA abstracts for annual meeting
2011	Reviewer or AOA abstracts for annual meeting
2011	NIH NCCAM PK20 Education panel grant review panel
2010	-Present Editorial board IRSN Rheumatology
2012	Reviewer or AOA abstracts for annual meeting
2012	Reviewer for AOA grants
2012	NIH NCCAM PK20 Education panel grant review panel
2013	Reviewer or AOA abstracts for annual meeting
2014	Reviewer for AOA proposals for funding
2014	Reviewer for DoD lupus pre awards study section
2015	Reviewer for AOA grant applications
2015	AOA poster reviewer for AACOM national meeting
2015	NIH tandem study sections F07-S20L, IMM-S81A
2015	Reviewer for DoD Allergy and Immunology study section
2016	NIH ZL-I (M1) 1NIAID Investigator Initiated Program Project Applications
2016	NIH study section ZRG1 IMM-T AREA Review: Immunology
2016	NIH study section ZGR1 F07-T Fellowship: immunology

Honors

1996 – 1997	NIH Student training grant
2004	VCOM outstanding researcher of the year award

C. Contributions to Science.

1. As a graduate student at the Medical College of Georgia, I studied the role of androgenic maintenance on erectile dysfunction under the guidance of Dr. Thomas Mills. As a graduate student, I had 7 publications, including 4 first author peer reviewed papers and a review article. My major focus of my research was how testosterone regulated erectile function. We showed in my studies that testosterone specifically helped to maintain the smooth muscle vasculature by inducing the regulation of nitric oxide production. This work was novel in several aspects; it showed that testosterone affected specifically blood flow to the penis. It showed that testosterone acted to increase nNOS to allow increased vasodilation and helped to decrease the α-adrenergic activity in the corpus cavernosum.
   a. Androgenic maintenance of the rat erectile response via a non-nitric-oxide-dependent pathway. **Reilly CM**, Lewis RW, Stopper VS, Mills TM. J Androl. 1997 Nov-Dec;18(6):588-94. PMID:9432131
   b. Androgenic regulation of NO availability in rat penile erection. **Reilly CM**, Zamorano P, Stopper VS, Mills TM. J Androl. 1997 Mar-Apr;18(2):110-5. PMID: 9154504
   c. Androgens modulate the alpha-adrenergic responsiveness of vascular smooth muscle in the corpus cavernosum. **Reilly CM**, Stopper VS, Mills TM. J Androl. 1997 Jan-Feb;18(1):26-31. PMID: 9089065
   d. Androgens and penile erection: a review. Mills TM, **Reilly CM**, Lewis RW. J Androl. 1996 Nov-Dec;17(6):633-8. Review. PMID: 9016393

2. After I was awarded my PhD, I took a postdoctoral fellowship at the Medical University of South Carolina where I continued my training in the Department of Medicine division of rheumatology under the tutelage of Dr. Gary Gilkeson. Under his guidance and training, I was able to apply my knowledge gained as a graduate student regarding signal transduction and nitric oxide to the realm of immunology and more specifically in the context of autoimmunity and SLE. Under Dr. Gilkeson's guidance, for three year as a post-doc, I was trained in immunology and rheumatology as a basic scientist. During my training as a post-doctoral fellow, I investigated the role of iNOS and regulators of this enzyme in the lupus kidney. We showed that PPAR-γ could regulate NOS expression and function and also showed how histone acetylation and deacetylation could regulate NOS expression. What is now called epigenetic we originally published a manuscript showing that histone deacetylate inhibitors could decrease lupus. In a side project while at MUSC I also showed that adult stem cells could differentiate and migrate to the kidney and act as mesangial cells. After completing a 3 year postdoc, I remained at

MUSC working closely with Dr. Gilkeson for an additional 2 years as a research assistant professor where we continued to investigate the molecular mechanisms of SLE.

a. Inhibition of mesangial cell nitric oxide in MRL/lpr mice by prostaglandin J2 and proliferator activation receptor-gamma agonists. **Reilly CM**, Oates JC, Cook JA, Morrow JD, Halushka PV, Gilkeson GS. J Immunol. 2000 Feb 1;164(3):1498-504. PMID: 10640767
b. Modulation of renal disease in MRL/lpr mice by pharmacologic inhibition of inducible nitric oxide synthase. **Reilly CM**, Farrelly LW, Viti D, Redmond ST, Hutchison F, Ruiz P, Manning P, Connor J, Gilkeson GS. Kidney Int. 2002 Mar;61(3):839-46. PMID: 11849435
c. Histone deacetylase inhibitors modulate renal disease in the MRL-lpr/lpr mouse. Mishra N, **Reilly CM**, Brown DR, Ruiz P, Gilkeson GS. J Clin Invest. 2003 Feb;111(4):539-52. PMID: 12588892
d. Hematopoietic origin of glomerular mesangial cells. Masuya M1, Drake CJ, Fleming PA, **Reilly CM**, Zeng H, Hill WD, Martin-Studdard A, Hess DC, Ogawa M. Blood. 2003 Mar 15;101(6):2215-8. Epub 2002 Nov 14. PMID: 12433693

3. In 2002, I accepted a position at the Virginia College of Osteopathic Medicine in the Department of Biomedical Sciences and at the Virginia-Maryland Regional College of Veterinary Medicine at Virginia Tech where I continued my research in lupus examining epigenetics and nanomedicine. I was awarded my first R15 studying the role of cerium oxide nanoparticles in SLE. Our studies showed various aspects of nanoceria. Our specific contributions showed how nanoceria could act as a scavenger of superoxide and decrease inflammation in lupus mice. We also showed detailed the distribution patters and clearance of nanoceria injected into a rodent.
   a. Protonated nanoparticle surface governing ligand tethering and cellular targeting. Vincent A, Babu S, Heckert E, Dowding J, Hirst SM, Inerbaev TM, Self WT, **Reilly CM**, Masunov AE, Rahman TS, Seal S. ACS Nano. 2009 May 26;3(5):1203-11. doi: 10.1021/nn9000148. PMID: 19368374
   b. Anti-inflammatory properties of cerium oxide nanoparticles. Hirst SM, Karakoti AS, Tyler RD, Sriranganathan N, Seal S, **Reilly CM**. Small. 2009 Dec;5(24):2848-56. doi: 10.1002/smll.200901048. PMID: 19802857
   c. Bio-distribution and in vivo antioxidant effects of cerium oxide nanoparticles in mice. Hirst SM, Karakoti A, Singh S, Self W, Tyler R, Seal S, **Reilly CM**. Environ Toxicol. 2013 Feb;28(2):107-18. doi: 10.1002/tox.20704. Epub 2011 May 26. PMID: 21618676
   d. Catalytic nanoceria are preferentially retained in the rat retina and are not cytotoxic after intravitreal injection. Wong LL, Hirst SM, Pye QN, **Reilly CM**, Seal S, McGinnis JF. PLoS One. 2013;8(3):e58431. doi: 10.1371/journal.pone.0058431. Epub 2013 Mar 11. PMID: 23536794

4. As I continued to investigate epigenetics, I was awarded my second R15 to investigate miRNA in the lupus mouse. To date, we have 4 publications from these specific studies. As epigenetics plays a role in disease processes, we examined if urinary microRNA's would alter disease progression in lupus mice. We hypothesized that as mice become diseased, microRNA levels in the urine would change. We further sought to determine if we could predict how specific therapeutics would alter microRNA urinary output. This could potentially be of use as a biomarker for specific therapy. One candidate microRNA we found increased was Let-7a. We conducted studies to further examine the role of Let-7a in SLE. We found that miRNA-let-7a through E2F specifically decreased cell proliferation and IL-6 production though its interaction on NFKB. The results of these studies have been published in the appropriate peer reviewed journals.

   a. MicroRNA-let-7a promotes E2F-mediated cell proliferation and NFκB activation in vitro. Chafin CB, Regna NL, Caudell DL, **Reilly CM**. Cell Mol Immunol. 2014 Jan;11(1):79-83. doi: 10.1038/cmi.2013.51. Epub 2013 Nov 18. PMID: 24001203
   b. Cellular and urinary microRNA alterations in NZB/W mice with hydroxychloroquine or prednisone treatment. Chafin CB, Regna NL, Hammond SE, **Reilly CM.** Int Immunopharmacol. 2013 Nov;17(3):894-906. doi: 10.1016/j.intimp.2013.09.013. Epub 2013 Oct 9. PMID: 24121037
   c. MicroRNA-let-7a expression is increased in the mesangial cells of NZB/W mice and increases IL-6 production in vitro. Chafin CB, Regna NL, Dai R, Caudell DL, **Reilly CM**. Autoimmunity. 2013 Sep;46(6):351-62. doi: 10.3109/08916934.2013.773976. PMID: 24001203

d. MicroRNAs implicated in the immunopathogenesis of lupus nephritis. Chafin CB, **Reilly CM.** Clin Dev Immunol. 2013;2013:430239. doi: 10.1155/2013/430239. Epub 2013 Jul 7. Review. PMID: 23983769

A complete list of my 62 peer reviewed publications can be found at:
http://www.ncbi.nlm.nih.gov/sites/myncbi/1jefe-5wb2pk8/bibliography/45795288/public/?sort=date&direction=descending

D. Research Support

Completed Research Support in the last three years

Alliance for Lupus Research-Investigator Award
PI Rujuan Dai March 2102-March 2014
Role Co-I

NIH-R01 Prolonged Inhibition of Pathologic Neovascularization by Catalytic Antioxidants
PI James McGinnis
Role Co-I 2/1/2012-2/1/2017

NIH R15 National Institute of Arthritis and Musculoskeletal Diseases
Title "micro RNA expression in NZB/W mice"
Role PI 2/1/2013-1/31/17