
BIOGRAPHICAL SKETCH

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NAME Scott Alexander Coonrod	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME (credential, e.g., agency login) SCOONROD			
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
Texas A&M University, College Station, TX	BS	05/84	Biomedical Science
Texas A&M University, College Station, TX	MS	08/91	Biomedical Science
Texas A&M University, College Station, TX	PhD	05/95	Veterinary Physiology
University of Virginia, Charlottesville, VA	Post-doc	01/95- 12/99	Cell Biology

A. Personal Statement

Over the last 10 years, a major focus of my lab has been to elucidate the role of peptidylarginine deiminase (PAD) enzymes in gene regulation, chromatin structure, and cancer progression. In 2004, my lab was the first to demonstrate that PAD4 regulates gene expression by citrullinating histones at transcription factor binding sites. More recently we demonstrated that PAD2, which was previously considered to be a cytoplasmic protein, localizes to the nucleus of breast cancer cells and that PAD2-catalyzed histone H3 arginine 26 (H3R26) citrullination at ER binding sites is required for ER target gene activation. In addition to our gene regulation work, we are also currently testing the effects of PAD2 modulation on tumor formation *in vivo*, with our initial study showing that transgenic overexpression of PAD2 promotes spontaneous tumor formation in mice. Another major goal of the lab to test the efficacy PAD inhibitors (developed by our long-time collaborator, Paul Thompson) in blocking tumor growth *in vitro* and *in vivo*, with the ultimate goal of identifying new breast cancer therapies. Outcomes from our initial studies have shown that PAD inhibitors display strong anti-tumor effects in cancer cell lines and in mouse models of cancer. Given my experience with PAD biology, chromatin structure, gene regulation, mouse cancer models, and breast cancer biology, I believe I am fully qualified to successfully function as the lead mentor on this project.

B. Positions and Honors

Professional Experience

1995 – 1997 Research Associate, Department of Cell Biology, University of Virginia, Charlottesville, VA
1998 – 1999 Postdoctoral Fellow, Department of Cell Biology, University of Virginia, Charlottesville, VA
2000 – 2001 Research Instructor, Department of Cell Biology, University of Virginia, Charlottesville, VA
2001 – 2003 Assistant Professor of Research, Department of Cell Biology, University of Virginia, Charlottesville, Virginia (non-tenure track)
2003 – 2007 Assistant Professor, Department of Genetic Medicine, Weill Medical College of Cornell University (tenure track)
2007 – Present Associate Professor of Epigenetics and Reproductive Biology, Baker Institute for Animal Health, College of Veterinary Medicine, Cornell University (tenured in 2007)

Federal Government and other Public Advisory Committees

Standing Member: NIH DEV1 Study Section (2010-2015)

NIH Study Section Participant:

RFA HD-02-028 Novel Approaches to Male Fertility Regulation (August 2003)

RFA HD-PAR-07-350, Female Health and Egg Quality (February 2008)

Dev 1 Study Section (Summer 09)

Dev 1 Study Section (Fall 09)

ZRG1 EMNR-H (52) Special Emphasis Panel/Scientific Review Group Dec 09.

Dev 2 Study Section Feb 4-5, 2010

DOD Breast Cancer Research Program Programmatic Review (2009-2013)

C. Selected peer-reviewed publications (from total of 61)

1. Wang Y, Wysocka J, Sayegh J, Lee YH, Perlin JR, Leonelli L, Sonbuchner LS, McDonald CH, Cook RG, Dou Y, Roeder RG, Clarke S, Stallcup MR, Allis CD, **Coonrod SA**. (2004). Human PAD4 regulates arginine methylation levels via demethylation. *Science*. 306(5694):279-83. PMID: 15345777.
2. Lee YH, **Coonrod SA**, Kraus WL, Jelinek MA, Stallcup MR. (2005). Regulation of coactivator complex assembly and transcriptional function by protein arginine methylation and demethylation. *Proceedings of the National Academy of Sciences, USA*. 102(10):3611-6. PMID: PMC553305.
3. Wysocka J, Allis CD, **Coonrod SA**. (2006). Histone arginine methylation and its dynamic regulation. *Frontiers in Biosciences*. 11:344-55. PMID: 16146736.
4. Wang Y, Li M, Stadler S, Correll S, Li P, Wang D, Hayama R, Leonelli L, Han H, Grigoryev SA, Allis CD, **Coonrod SA**. (2009). Histone hypercitrullination mediates chromatin decondensation and neutrophil extracellular trap formation. *Journal of Cell Biology*. 184(2):205-13. PMID: PMC2654299.
5. Zhang X, Gamble MJ, Stadler S, Cherrington BD, Causey C, Thompson PR, Roberson MS, Kraus WL, **Coonrod SA**. (2011). Genome-Wide Analysis Reveals PADI4 Cooperates with Elk-1 to Activate *c-Fos* Expression in Breast Cancer Cells. *PLoS Genetics*. Jun;7(6):e1002112. PMID: PMC3107201.
6. Jones JE, Slack JL, Fang P, Zhang X, Subramanian V, Causey CP, **Coonrod SA**, Guo M, Thompson PR. (2011). Synthesis and Screening of a Haloacetamide Containing Library To Identify PAD4 Selective Inhibitors. *ACS Chemical Biology*. Epub. PMID: PMC3262960.
7. Zhang X, Bolt M, Guertin MJ, Chend W, Zhang S, Cherrington BD, Slade DJ, Dreyton CJ, Subramanian V, Bickere KL, Thompson PR, Mancini MA, Lis JT, **Coonrod SA**. (2012). Peptidylarginine deiminase 2-catalyzed histone H3 arginine 26 citrullination facilitates estrogen receptor α target gene activation. *Proceedings of the National Academy of Sciences*. (In Press) PMID: PMC3421185.
8. Cherrington BD, Zhang X, McElwee JL, Morency E, Anguish LJ, **Coonrod SA**. (2012). Potential Role for PAD2 in Gene Regulation in Breast Cancer Cells. *PLoS One*. 7(7):e41242. Epub 2012 Jul 24. PMID: PMC3404060.
9. McElwee JL, Mohanan S, Griffith OL, Breuer HC, Anguish LJ, Cherrington BD, Palmer AM, Howe LR, Subramanian V, Causey CP, Thompson PR, Gray JW, and **Coonrod SA**. (2012). Identification of PADI2 as a potential breast cancer biomarker and therapeutic target. *BMC Cancer*, 12(1), 500. PMID: PMC3571905.
10. Mohanan S, Cherrington BD, Horibata S, McElwee JL, Thompson PR, and **Coonrod SA**. (2012). Potential Role of Peptidylarginine Deiminase Enzymes and Protein Citrullination in Cancer Pathogenesis. *Biochemistry Research International*, 2012:895343. Epub 2012 Sep 16. PMID: PMC3457611.
11. Bicker KL, Anguish L, Chumanevich AA, Cameron MD, Cui X, Witalison E, Subramanian V, Zhang X, Chumanevich AP, Hofseth LJ, **Coonrod SA**, Thompson PR. (2012). D-amino acid based protein arginine deiminase inhibitors: Synthesis, pharmacokinetics, and in cellulo efficacy. *ACS Med Chem Lett*. 26;3(12):1081-1085. PMID: PMC3572853.
12. Mohanan, S., Horibata, S., McElwee, J. L., Dannenberg, A. J., & Coonrod, S. A. (2013). Identification of macrophage extracellular trap-like structures in mammary gland adipose tissue: a preliminary study. *Frontiers in Immunology*, 4, 67. PMID: PMC3600535.
13. Stadler SC, Vincent TC, Fedorov VD, Patsialou A, Cherrington CD, Wakshlag JJ, Mohanan S, Zee BM, Zhang X, Garcia BA, Condeelis JS, Brown AM*, **Coonrod SA***, Allis CD* (2013). Dysregulation of PAD4-mediated citrullination of nuclear GSK3 β activates TGF- β signaling and induces EMT in breast cancer cells *Proceedings of the National Academy of Sciences*. 110 (29):11851-6* co-corresponding authors. PMID: PMC3718105.

14. Slade DJ, Horibata S, **Coonrod SA**, Thompson PR (2014). A novel role for protein arginine deiminase 4 in pluripotency: The emerging role of citrullinated histone H1 in cellular programming. *BioEssays*. Vol:36. PMID: PMC24889365.
15. Lewallen DM, Bicker KL, Madoux F, Chase P, Anguish L, **Coonrod SA**, Thompson PR (2014). A FluoPol-ABPP PAD2 High-Throughput Screen Identifies the First Calcium Site Inhibitor Targeting the PADs. *ACS chemical biology*, 9(4), 913-921. PMID: PMC24467619.
16. Guertin MJ, Zhang X, Anquish L, Kim S, Varticovski L, Lis, JT, Hager G, **Coonrod SA** (2014) Targeted H3R26 deimination specifically facilitates Estrogen Receptor binding by modifying nucleosome structure. *PLoS Genetics*. *In Press*.