

**BIOMEDICAL & VETERINARY SCIENCES
GRADUATE PROGRAM**



ANNOUNCES

The Doctor of Philosophy Seminar and Examination of

Jingjing Ren

**“The Role of Histone Deacetylase 6 Inhibition on
Systemic Lupus Erythematosus”**

**Thursday, August 8th, 2019
2:00 pm
VMIA Classroom 220**

Bio



I was born in a town named Hougang, a land of fish and rice in the south of China. I graduated as a MD specialized in plastic surgery in Anhui Medical School in China. My 4 years of Ph.D. study focused on delineating the role of Histone deacetylase 6 (HDAC6) on systemic lupus erythematosus and developing a potential novel therapy for the disease. After I graduate, I plan to get postdoc training at Yale School of Medicine.

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Lay Language Abstract

Systemic lupus erythematosus (SLE) is a chronic inflammatory autoimmune disease by which immune cells mistakenly attacks healthy self-cells in different organs. Kidney inflammation occurs in nearly 50% of patients with lupus resulting in kidney damage leading to end stage renal disease. Lupus nephritis (LN) is major cause of morbidity and mortality associated with SLE. Current treatments for LN consist primarily of immunosuppressants that block the immune response and leave the patients with unwanted side effects including an increased risk of infection. To circumvent the unwanted side effects, we explored a novel mechanism to target the immune response. My project was to determine whether histone deacetylase 6 (HDAC6) inhibition would suppress the autoimmune inflammatory response in lupus. We found that inhibition of HDAC6 was effective at attenuating early LN, probably by down-regulating innate immune response, which suppressed subsequent adaptive immune responses downstream. HDAC6 inhibition affected the innate immune response by inhibiting type I interferon production by plasmacytoid dendritic cells. HDAC6 inhibition affected the cell mediated immune response by decreasing T helper cell and B cell activation. To determine the mechanism by which HDAC6 inhibits blocks cell activation, we used RNAseq to reveal HDAC6 inhibition on multiple signaling events associated with the induction of lupus disease. These results suggest that HDAC6 could be a potential therapeutic target in the early stage of LN.

Publications

- Ren J, et al.** & Reilly CM. 2019 Selective Histone Deacetylase 6 Inhibition Normalizes B Cell Activation and Germinal Formation in a Model of Systemic Lupus Erythematosus. (Submitted)
- Ren J, et al.** & Reilly CM. 2018 Dec; doi: 10.3390/ijms19124007 The impact of protein acetylation/deacetylation on systemic lupus erythematosus. Int J Mol Sci
- Ren J, et al.** & Luo XM, Reilly CM. 2018 Jan; doi: 10.1111/cei.13046 Selective HDAC6 inhibition decreases early stage of lupus nephritis by down-regulating both innate and adaptive immune responses. Clinical and experimental Immunology.
- Liao X, **Ren J**, Reihl A, Pirapakaran T, Sreekumar B, Cecere TE, Reilly CM, Luo XM. 2017 July 19; doi: 10.1111/cei.13017. Renal-infiltrating CD11c+ cells are pathogenic in murine lupus nephritis through promoting CD4+ T cell responses. Clinical & Experimental Immunology
- Theus MH, Sparks JB, Liao X, **Ren J**, Luo XM. 2016 Nov 16; pii: 0022155416679638. All-Trans-Retinoic Acid Augments the Histopathological Outcome of Neuroinflammation and Neurodegeneration in Lupus-Prone MRL/lpr Mice. J Histochem Cytochem
- Liao X, Li S, Settlege RE, Sun S, **Ren J**, Reihl AM, Zhang H, Karyala SV, Reilly CM, Ahmed SA, Luo XM. 2015 Nov 15;195(10):4578-82. Cutting Edge: Plasmacytoid Dendritic Cells in Late-Stage Lupus Mice Defective in Producing IFN-alpha. Journal of immunology
- Liao X, **Ren J**, Wei CH, Ross AC, Cecere TE, Jortner BS, Ahmed SA, Luo XM. 2015;10(3):e0118176. Paradoxical effects of all-trans-retinoic acid on lupus-like disease in the MRL/lpr mouse model. PloS one

Presentations

- Poster presentation at the 2019 Annual Research recognition Day of the Edward Via College of Osteopathic Medicine (VCOM)

- Oral presentation at the 2017 Annual Meeting of the American Association of Immunologists (AAI)
- Poster presentation at the 2017 Annual Research recognition Day of the Edward Via College of Osteopathic Medicine (VCOM) – Virginia Campus
- Poster presentation at the 2016 and 2017 Annual Meeting of the American Association of Immunologists (AAI)
- Poster presentation at the Annual Research Symposium of Virginia-Maryland college of Veterinary Medicine (2016, 2017 and 2018)

Awards and Academic Achievements

- Second prize of poster presentation at the 2019 Annual Research recognition Day of the Edward Via College of Osteopathic Medicine (VCOM) – Virginia Campus (2019)
- AAI Trainee Poster Award (2017)
- AAI Trainee Abstract Award (2016)
- Graduate Student Assembly (GSA) Travel Fund Program (TFP) award, Virginia Tech (2016-2017)

Examination Graduate Committee

Major Advisor/Chair:

Xin M. Luo, Ph.D.

Associate professor

Department of Biomedical Sciences and Pathobiology

College of Veterinary Medicine, Virginia Technical Institute and State University

Graduate Advising Committee Members:

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Professor

Department of biochemistry and Physiology

Virginia College of Osteopathic Medicine

Research Associate Professor

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Thomas E. Cecere, DVM, Ph.D., Diplomate ACVP

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