Virginia-Maryland College of Veterinary Medicine

BIOMEDICAL & VETERINARY SCIENCES GRADUATE PROGRAM

ANNOUNCES

The Doctor of Philosophy Seminar and Examination of

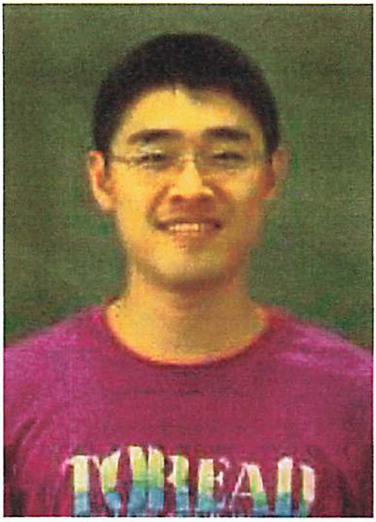
Xiaofeng Liao

"Treatment of Systemic Lupus Erythematosus by Nutrition and Dendritic Cell Targeting"

Tuesday, July 11, 2017

3:00 PM **Heritage Room**

Vita/Bio



Xiaofeng Liao is a PhD Candidate in the Biomedical and Veterinary Sciences (BMVS) Program at Virginia Polytechnic Institute & State University. He received a B.S. degree in Life Sciences from the University of Science and Technology of China in 2011. He joined BMVS program in 2012 and his current research involves understanding the pathogenesis of systemic lupus erythematosus (SLE) in Dr. Xin M. Luo's laboratory.

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Stamps Family Charitable Foundation, Inc.
Internal Research Competition (IRC) Grants
One Health Medicine Grants
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Publications

Zhang H, **Liao X**, Sparks JB, Luo XM. (2014) Dynamics of gut microbiota in autoimmune lupus. *Applied and Environmental Microbiology* 80(24):7551-60.

Liao X, Ren J, Wei CH, Ross AC, Cecere TE, Jortner BS, Ahmed SA, Luo XM. (2015) Paradoxical effects of all-trans-retinoic acid on lupus-like disease in the MRL/lpr mouse model. *PLoS One* 10(3):e0118176.

Liao X, Li S, Settlage RE, Sun S, Ren J, Reihl AM, Zhang H, Karyala SV, Reilly CM, Ahmed SA, Luo XM. (2015) **Cutting edge**: Plasmacytoid dendritic cells in late-stage lupus mice defective in producing IFNa. *Journal of Immunology* 195: 4578-82.

Liao X, Reihl AM, Luo XM. (2016) Breakdown of immune tolerance in systemic lupus erythematosus by dendritic cells. *Journal of Immunology Research* 5(suppl 39): 1-15.

Liao X, Pirapakaran T, Luo XM. (2016) Chemokines and chemokine receptors in the development of lupus nephritis. *Mediators of Inflammation* 2016: 6012715.

Liao X, Makris MR, Luo XM. (2016) Fluorescence-activated cell sorting for purification of plasmacytoid dendritic cells from the mouse bone marrow. *Journal of Visualized Experiments* 117. doi: 10.3791/54641.

Theus MH, Sparks JB, **Liao X**, Ren J, Luo XM. (2017) All-trans-retinoic acid augments the histopathological outcome of neuroinflammation and neurodegeneration in lupus-prone MRL/lpr mice. *Journal of Histochemistry and Cytochemistry* 65(2): 69-81.

Vieson MD, Gojmerac AM, Khan D, Dai R, van Duzer JH, Mazitschek R, Caudell DL, **Liao X**, Luo XM, Reilly CM. (2017) Treatment with a selective histone deacetylase 6 inhibitor decreases lupus nephritis in

NZB/W mice. *Journal Histology and Histopathology* Feb 28:11885. doi: 10.14670/HH-11-885.

Mu Q, Zhang H, **Liao X**, Lin K, Liu H, Edwards MR, Ahmed SA, Yuan R, Li L, Cecere TE, Branson DB, Kirby JL, Goswami P, Leeth CM, Read KA, Oestreich KJ, Vieson MD, Reilly CM, Luo XM. (2017) Control of lupus nephritis by changes of gut microbiota. *Microbiome* (Accepted for publication)

Liao X, Ren J, Reihl A, Pirapakaran T, Sreekumar B, Cecere TE, Reilly CM, Luo XM. (2017) The pathogenic role of renal-infiltrating CD11c+ cells in lupus nephritis. *Clinical & Experimental Immunology* (In revision)

Presentations

Poster presentation at 2017 Annual Meeting of the American Association of Immunologists (AAI): The pathogenic role of murine renal-infiltrating CD11c+ cells in lupus nephritis by promoting CD4+ T cell responses.

Poster presentation at 2016 Annual Meeting of the American Association of Immunologists (AAI): Plasmacytoid Dendritic Cells in Late-Stage Lupus Mice Defective in Producing IFN-alpha.

Poster presentation at 2014 Annual Meeting of the American Association of Immunologists (AAI): Paradoxical effects of all-trans-retinoic acid on lupus-like disease in the MRL/lpr mouse model.

Lay Language Abstract

Systemic lupus erythematosus (SLE) is an autoimmune disease involving the inflammatory damages of multiple organs. Lupus nephritis (LN) as the manifestation in the kidney occurs in more than 50% of SLE patients and is a major cause of morbidity and mortality in this disease. Current treatments consist of immunosuppressants that always lead to compromised immune responses with increased risks of infections as the major side effect. To minimize this side effect, it is crucial to develop new treatments that are more natural and specific. My first project was to determine whether vitamin A as a supplement could ameliorate SLE. It turned out to be effective at attenuating LN, but at the same time the nutrient caused massive inflammation in other peripheral organs such as the brain and lungs. This suggests that we need to be cautious when recommending vitamin A supplementation to lupus patients. In order to identify more specific targets in the treatment of SLE, my second and third projects focused on dendritic cells (DCs) that are essential for lupus pathogenesis. I found that plasmacytoid DCs (pDCs), known to be pathogenic in SLE, were in fact defective at promoting inflammation at the late stage of disease, suggesting that pDCs might not be a good target of intervention. In contrast, monocyte-derived conventional DCs turned out to be highly pathogenic especially for the development of LN and could be a potential therapeutic target. Altogether, my investigations have increased our understanding of the pathogenesis of SLE.

Examination Graduate Committee

Major Advisor/Chair:

Dr. Xin M. Luo, PhD
Assistant Professor, VMCVM – Immunology

Graduate Advising Committee Members:

Dr. S. Ansar Ahmed, DVM, PhD
Associate Dean, Research and Graduate Studies
Professor – Immunology

Dr. Thomas E. Cecere, DVM, PhD, Diplomate ACVP
Assistant Professor – Anatomic Pathology

Dr. Isis Kanevsky – Principal Scientist at Pfizer

Dr. Liwu Li, PhD
Adjunct Professor VMCVM
Professor, Department of Biology LSI, VT

External Examiner

Dr. Diane Kamen, M.D., MSCR
Associate Professor
Medical University of South Carolina
In the Division of Rheumatology

Seminar:
"Got Microbiota and Dietary Influences on Systemic Lupus Erythematosus"

Wednesday July 12, 2017
9:30 AM Heritage Room