

BIOMEDICAL & VETERINARY SCIENCES
GRADUATE PROGRAM



ANNOUNCES

The Doctor of Philosophy Seminar
and Examination of

Daniel E. Rothschild

**“Negative Regulation of Inflammation: Implications for
Inflammatory Bowel Disease and Colitis Associated Cancer”**

Friday September 21, 2018

1:00 pm

VMIA Classroom 220

Bio



Daniel is a current D.V.M/Ph.D. student who is originally from Nevada City, CA. He obtained his B.S. in Molecular Environmental Biology from UC Berkeley in 2010. Following his undergraduate degree, he worked as a Research Associate at the Buck Institute for Research on Aging studying novel therapeutics to treat breast cancer in the lab of Chris Benz, M.D. Daniel has spent over three years working with his advisor, Dr. Irving C. Allen and is currently in his second year of the D.V.M curriculum. In his free-time he enjoys playing tennis, ice hockey and taking his dog Stella to the beach.

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NIH R03 and K01 grants awarded to Dr. Irving C. Allen

Lay Language Abstract

Inflammation is a tightly regulated physiologic process that is employed by body systems such as the gastrointestinal (GI) tract to handle pathogenic insult, aid in wound healing, and help prevent infections. When abnormal inflammatory responses occur, this can lead to the progression of severe diseases such as ulcerative colitis and Crohn's disease. When inflammation persists in the GI tract, such as in inflammatory bowel disease, this can predispose patients to the development of inflammation-associated colorectal cancer. In order to improve the treatment options for patients afflicted with these maladies, this dissertation is aimed at studying the signaling pathways of the innate immune system that regulate such inflammatory responses. Furthermore, this body of work encompasses a detailed method for isolating and culturing intestinal stem cells, which can be applied in personalized medicine for patients with intestinal diseases. This method was utilized in this dissertation to study genetically modified intestinal stem cells, and can further be used to investigate the interactions of intestinal epithelial cells with pyogenic bacteria that contribute to inflammatory maladies in the GI tract.

Publications

1. **Rothschild, D. E.**, McDaniel, D. K., Ringel-Scaia, V. M., and Allen, I. C. (2018) Modulating inflammation through the negative regulation of NF-kappaB signaling. *Journal of leukocyte biology*
2. **Rothschild, D. E.**, Zhang, Y., Diao, N., Lee, C. K., Chen, K., Caswell, C. C., Slade, D. J., Helm, R. F., LeRoith, T., Li, L., and Allen, I. C. (2017) Enhanced Mucosal Defense and Reduced Tumor Burden in Mice with the Compromised Negative Regulator IRAK-M. *EBioMedicine* 15, 36-47
3. Eden, K., **Rothschild, D. E.**, McDaniel, D. K., Heid, B., and Allen, I. C. (2017) Noncanonical NF-kappaB signaling and the essential kinase NIK modulate crucial features associated with eosinophilic esophagitis pathogenesis. *Dis Model Mech* 10, 1517-1527
4. Scott, G. K., Chu, D., Kaur, R., Malato, J., **Rothschild, D. E.**, Frazier, K., Eppenberger-Castori, S., Hann, B., Park, B. H., and Benz, C. C. (2016) ERpS294 is a biomarker of ligand or mutational ERalpha activation and a breast cancer target for CDK2 inhibition. *Oncotarget*

5. **Rothschild, D. E.**, Srinivasan, T., Aponte-Santiago, L. A., Shen, X., and Allen, I. C. (2016) The Ex Vivo Culture and Pattern Recognition Receptor Stimulation of Mouse Intestinal Organoids. *Journal of visualized experiments : JoVE*
6. McDaniel, D. K., Jo, A., Ringel-Scaia, V. M., Coutermarsh-Ott, S., **Rothschild, D. E.**, Powell, M., Zhang, R., Long, T. E., Oestreich, K., Riffle, J. S., Davis, R. M., and Allen, I. C. (2016) TIPS pentacene loaded PEO-PDLLA core-shell nanoparticles have similar cellular uptake dynamics in M1 and M2 macrophages and in corresponding in vivo microenvironments. *Nanomedicine*
7. Brickler, T., Gresham, K., Meza, A., Coutermarsh-Ott, S., Williams, T. M., **Rothschild, D. E.**, Allen, I. C., and Theus, M. H. (2016) Nonessential Role for the NLRP1 Inflammasome Complex in a Murine Model of Traumatic Brain Injury. *Mediators Inflamm* 2016, 6373506
8. Williams, T. M., Leeth, R. A., **Rothschild, D. E.**, McDaniel, D. K., Coutermarsh-Ott, S. L., Simmons, A. E., Kable, K. H., Heid, B., and Allen, I. C. (2015) Caspase-11 attenuates gastrointestinal inflammation and experimental colitis pathogenesis. *American journal of physiology. Gastrointestinal and liver physiology* 308, G139-150
9. Williams, T. M., Leeth, R. A., **Rothschild, D. E.**, Coutermarsh-Ott, S. L., McDaniel, D. K., Simmons, A. E., Heid, B., Cecere, T. E., and Allen, I. C. (2015) The NLRP1 inflammasome attenuates colitis and colitis-associated tumorigenesis. *Journal of immunology* 194, 3369-3380

Presentations

1. **Daniel E Rothschild**, Yao Zhang, Na Diao, Christina K Lee, Keqiang Chen, Clayton C Caswell, Daniel J Slade, Richard F Helm, Tanya LeRoith, Liwu Li and Irving C Allen. Poster presentation at American Association of Immunologists (AAI) Annual Symposium in May, 2017 in Washington D.C.
2. **Daniel E Rothschild**, Yao Zhang, Na Diao, Christina K Lee, Keqiang Chen, Clayton C Caswell, Daniel J Slade, Richard F Helm, Tanya LeRoith, Liwu Li and Irving C Allen. Graduate School Annual Research Symposium for poster presentation 2017.
3. **Daniel E Rothschild**, Yao Zhang, Na Diao, Christina K Lee, Keqiang

Chen, Clayton C Caswell, Daniel J Slade, Richard F Helm, Tanya LeRoith, Liwu Li and Irving C Allen. Poster presentation at 28th Annual BMVS research symposium at Virginia Maryland College of Veterinary Medicine.

4. **Daniel E Rothschild**, Clayton C Caswell, Tanya LeRoith, Liwu Li and Irving C Allen. Graduate School Annual Research Symposium for poster presentation 2016.

5. **Daniel E Rothschild** and Irving C Allen. Poster at 27th Annual BMVS research symposium at Virginia Maryland College of Veterinary Medicine.

Awards and Academic Achievements

Awarded a \$1000 grant from the Graduate Research Develop Program for application related to ex vivo microinjection of organoids-2017

American Association of Immunology (AAI) Travel Award-2017

Gold Poster Presentation at the Graduate Student Assembly Research Symposium- 2017

VT Graduate Research Development Program Award- 2016

Silver Poster at the Graduate Student Research Symposium-2016

Examination Graduate Committee

Major Advisors/Co-Chairs:

Irving Coy Allen, PhD, MBA
Assistant Professor
Biomedical Sciences and Pathobiology
& Pathobiology

Graduate Advising Committee Members:

Nick Dervisis, D.V.M, Ph.D., DACVIM (Oncology)
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Associate Professor, Department of Small Animal Clinical Sciences
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