

**Kristin B. Linscott, PhD**

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**Education**

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University of Kentucky MD/PhD Program, Lexington, KY

- MD Candidate, University of Kentucky College of Medicine 2010-Present
- PhD, Department of Molecular and Cellular Biochemistry 2012-2017

Agnes Scott College, Atlanta, GA

- BA in Biology and in Religious Studies with a concentration in Social Justice, Summa cum Laude 2006-2010

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**Research Experience**

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**Doctoral Research:** Department of Biochemistry and Molecular Biology, University of Kentucky College of Medicine, Lexington; Research mentor, Joe Chappell, PhD 2012-2017

- The purpose of my doctoral research was to characterize a domain of squalene synthase, describe its critical role in the sterol biosynthetic pathway and begin development of protein and small molecule fungal growth inhibitors. I was responsible for all aspects of this research project, which led to a first-author publication as well as a second first-author manuscript in preparation. This work has been presented at both national and international meetings. I am co-inventor on a patent detailing the use of compounds based on my research for regulation of cholesterol metabolism.

Division of Rheumatology, University of Kentucky College of Medicine, Lexington; Research mentor, Leslie Crofford, MD 2011-2012

- The purpose of this research was to characterize one role of the adaptive immune system in myositis by identifying a ratio of M1 to M2 macrophages in muscle biopsies from patients with inflammatory myopathies compared to healthy controls. I was present during biopsies and participated in slide preparation, imaging and data analysis.

Graduate Center for Nutritional Sciences, University of Kentucky College of Medicine, Lexington; Research mentor Lisa Cassis, PhD 2010

- The purpose of this research was to identify chromatin remodeling at the androgen receptor using chromatin immunoprecipitation and determine its impact on abdominal aortic aneurism development in mice. I participated in experimental design and preliminary data analysis.

Meningitis and Vaccine Preventable Diseases Branch, Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases, Center for Disease Control and Prevention, Atlanta; Research mentor, Jennifer Dolan Thomas, PhD 2009

- I participated in the development of a Real-time PCR protocol for detection of *Neisseria meningitidis* and the surveillance of *Haemophilus influenzae* serotypes. Usual methods for identifying *N. meningitidis* do so using a capsule transport gene not present on over 16% of

isolates, and so we developed a comparative method using the gene *sodC* for increased sensitivity and specificity. I was also tasked with sequencing and identifying genes specific to different groups of nontypeable (unencapsulated) *H. influenza* which now cause the majority of invasive *H. influenza* disease among all age groups in the United States.

Department of Biology, Agnes Scott College, Atlanta; Research mentor, 2006-2009  
Srebrenka Robic, PhD

- I analyzed a bacterial enzyme, *Lactobacillus helveticus* prolyl endopeptidase, for possible treatment of Celiac Disease by cleaving the gluten peptide. While this enzyme behaved poorly in the various pH levels representative of the human intestinal tract, my work creating a model system for enzyme activity analysis led me to investigate bile acid-mediated protein destabilization.

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### Teaching Experience

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Mentored undergraduate research assistant, University of Kentucky, Lexington; 2015-2017  
Instructor, Joe Chappell, PhD

- Guided research involving the mutagenesis of tobacco 5-epiaristolochene synthase to develop novel molecular scaffolds for drug development

Teaching Assistant for the Department of Biochemistry and Molecular Biology, 2013  
University of Kentucky, Lexington; Instructor, Robert Dickson, PhD; BCH401  
Fundamentals of Biochemistry

- Responsible for tutoring students and proctoring exams
- Lectured on the subject of translation and post-translational modifications

Course Tutor, Spanish Department, Agnes Scott College, Atlanta; Instructor, 2008-2009  
Rafael Ocasio, PhD

- Responsible for tutoring students and proctoring exams

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### Leadership Experience

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MD/PhD retreat committee leader, University of Kentucky College of Medicine, Lexington 2015

- Responsible for organizing educational activities for the three day retreat, including oral research presentations, poster presentations and invited speakers as well as food preparation and social events

MD/PhD admissions committee member, University of Kentucky College of 2013-2014  
Medicine, Lexington

- Responsible for organizing interview events, collecting information and opinions from both interviewees and current students in the MD/PhD program and for representing all current students during admissions committee meetings

Co-chair and founding member of the Physician Scientist Student Organization, 2010-2012  
University of Kentucky College of Medicine, Lexington

- Responsible for fostering research training and career development for medical students by providing opportunities for those interested in research to meet

and learn from successful physician scientists and researchers at the University of Kentucky who could serve as advisors and mentors

Co-chair and founding member of the Public Health Student Organization, Agnes Scott College, Atlanta	2008-2009
<ul style="list-style-type: none"><li>Responsible for promoting and encouraging healthy behaviors on campus while informing students about public health concerns and connecting the campus community with the greater Atlanta community through health activities and service</li></ul>	
Member of the Student Health Organization, Agnes Scott College, Atlanta	2007-2009
<ul style="list-style-type: none"><li>Responsible for organizing outreach events in order to address student questions related to mental and sexual health on campus</li></ul>	
Child care provider at Hagar's House, Agnes Scott College, Atlanta	2007-2009
<ul style="list-style-type: none"><li>Volunteer responsible for providing child care at the Emergency Shelter and Assessment Center for women and children thereby allowing single mothers to participate in career development programs and receive legal assistance</li></ul>	
Appalachian Service Project Summer Staff Member, Hazard Kentucky	2007
<ul style="list-style-type: none"><li>Responsible for working with teams of high school students, helping them develop meaningful relationships with families in Appalachia while guiding the construction process to make houses warmer, safer and drier</li></ul>	
Member of the Sigma Upsilon Chapter of the Biological Honor Society TriBeta, Agnes Scott College, Atlanta	2006-2009
<ul style="list-style-type: none"><li>Responsible for cultivating intellectual interest in the natural sciences through social and speaking events and the Spring Annual Research Conference (SpARC)</li></ul>	

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## Honors and Awards

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<b>Student Poster Award</b>	2016
Awarded 2 <sup>nd</sup> best graduate student poster at the Molecular and Cellular Biochemistry Departmental Retreat in Lexington, KY	
<b>Student Poster Award</b>	2015
Awarded 1 <sup>st</sup> place for best graduate student poster of the Terpnnet Conference: the 12 <sup>th</sup> International Meeting on Biosynthesis, Functions and Synthetic Biology of Isoprenoids in Vancouver, Canada	
<b>ASBMB Travel Award</b>	2013
Awarded by the American Society for Biochemistry and Molecular Biology to attend the annual meeting in Boston, MA	
<b>Introduction to Clinical Medicine Portfolio Award</b>	2011
Awarded by the University of Kentucky College of Medicine at the Academic Convocation and Awards Day for a Writing Portfolio describing patient care experiences	

<b>PSMRF Fellowship</b>	2011
The Professional Student Mentored Research Fellowship as awarded by the University of Kentucky Center for Clinical and Translational Science providing a stipend for medical students to participate in CTS research with a faculty mentor.	
<b>Bevier Internship Program</b>	2009
Awarded an internship position to work in the Meningitis and Vaccine Preventable Diseases Branch of the Center for Disease Control and Prevention in Atlanta, GA	
<b>Hubert Scholar Award</b>	2008
Awarded to students with a demonstrated commitment to public service, this award was given to support a summer internship at the Hermano Pedro hospital in Antigua Guatemala	
<b>Dean's Honor List</b>	2006-2009
Awarded to students each semester who have completed 16 semester hours with a semester GPA of at least 3.7	
<b>Letitia Pate Evans Scholarship</b>	2006-2009
Awarded by Agnes Scott College for four years to students with a competitive academic record	

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#### Peer Reviewed Journal Articles

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- Elliott, C., **Linscott, K.B.**, Husodo, S., Chappell, J. & Liu, J. (2018) Toward data-driven identification of Kingdom-specific protein sequence motifs. *2018 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*: 2221-2228. Doi: 10.1109/BIBM.2018.8621241
- Zuodong, J., Kempinski, C., Kumar, S., Kinison, S., **Linscott, K.B.**, Nybo, E., Janze, S., Wood, C. & Chappell, J. (2018) Agronomic and chemical performance of field-grown tobacco engineered for triterpene and methylated triterpene metabolism. *Plant Biotechnology Journal* 16(6): 1110-1124. PMID: 29069530
- Kumar, S., Kempinski, C., Zhuang, X., Norris, A., Mafu, S., Zi, J., Bell, S.A., Nybo, S.E., Kinison, S.E., Jiang, Z., Goklany, S., **Linscott, K.B.**, Chen, X., Jia, Q., Brown, S.D., Bowman, J.L., Babbitt, P.C., Peters, R.J., Chen, F. & Chappell, J. (2016) Molecular Diversity of Terpene Synthases in the Liverwort *Marchantia polymorpha*. *The Plant cell* 28(10): 2632-2650. PMID: 27650333
- Linscott, K.B.**, Niehaus, T.D., Zhuang, X., Bell, S.A. & Chappell, J. (2016) Mapping a kingdom-specific functional domain of squalene synthase. *Biochimica et biophysica acta* 1861(9): 1049-57. PMID: 27320012
- Robic, S., **Linscott, K.B.**, Aseem, M., Humphreys, E.A. & McCartha, S.R. (2011) Bile Acids as Modulators of Enzyme Activity and Stability. *The Protein Journal* 30(8): 539-545. PMID: 21965022
- Dolan Thomas, J., Hatcher, C.P., Satterfield, D.A., Theodore, M.J., Bach, M.C., **Linscott, K.B.**, Zhao, X., Wang, X., Mair, R., Schmink, S., Arnold, K.E., Stephens, D.S., Harrison, L.H., Hollick, R.A., Andrade, A.L., Lamaro-Cardoso, J., de Lemos, A.P., Gritzfeld, J., Gordon, S., Soysol, A., Bakir, M.,

Sharma, D., Jain, S., Satola, S.W., Messonnier, N.E. & Mayer, L.W. (2011) *sodC*-Based Real-Time PCR for Detection of *Neisseria meningitidis*. *PLoS ONE*. 6(5): e19361. PMID: 21573213

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### Manuscripts Submitted for Publication

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**Linscott, K.B.** & Chappell, J. (2019) Squalene synthase is involved in sterol C4-decarbocylase (Erg26) activity in the yeast sterol pathway. *Biochimica et biophysica acta*.

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### Abstracts Accepted for Oral Presentations

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**Linscott, K.B.** & Chappell, J. (2015-2016) *Mapping a Kingdom-specific Motif of Squalene Synthase for Antifungal Development*, Oral presentations for the Annual Molecular and Cellular Biochemistry Seminar, Lexington, KY

**Linscott, K.B.** (2014) *Malaria and the Golden Spice: "From Kitchen to Clinic,"* Oral presentation for the Annual Molecular and Cellular Biochemistry Seminar, Lexington, KY

**Linscott, K.B.** (2013) *Enrichment of tomato fruit with anthocyanins and the effect of consumption on cancer development in mice*, Oral presentation for the Annual Molecular and Cellular Biochemistry Seminar, Lexington, KY

**Linscott, K.B.** & Chappell, J. (2013) *A Treatment for Invasive Mycoses: mapping a unique squalene synthase domain with a putative role in a sterol biosynthetic complex*, Oral presentation at the CCTS Seminar Series for students receiving the Professional Student Mentored Research Fellowship (PSMRF), Lexington, KY

**Linscott, K.B.** & Dolan Thomas, J. (2009) *Real-Time PCR for Identification of Haemophilus influenza serotypes*, Oral presentation at the Agnes Scott College Spring Annual Research Conference, Atlanta, GA

**Linscott, K.B.** (2009) *The Hardest Part: Lessons from health outreach programs in Antigua Guatemala*, Oral presentation at the Agnes Scott College Spring Annual Research Conference, Atlanta, GA

**Linscott, K.B.** & Robic, S. (2008) *Enzyme Therapy for the Treatment of Celiac Disease*, Oral presentation at the Agnes Scott College Spring Annual Research Conference, Atlanta, GA

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### Abstracts Accepted for Poster Presentations

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**Linscott, K.B.**, Bunch, M., Radulescu, A., & Psychogios, A. (2019) *A case of 16p11.2 deletion syndrome associated with severe familial obesity*. Poster presentation at the ACMG Annual Clinical Genetics Meeting, Seattle, WA

Srivastava, P., **Linscott, K.B.** & Psychogios, A. (2019) *Female Restricted X-linked Epilepsy and Mental Retardation (EFMR) likely caused by a novel PCDH19 gene variant and cellular adhesion interference: a case report and review of the literature*. Poster presentation at the ACMG Annual Clinical Genetics Meeting, Seattle, WA

**Linscott, K.B.** & Chappell, J. (2017-2018) *The role of a kingdom specific domain within squalene synthase and its potential for antifungal therapeutic development*, Poster presentation at the University of Kentucky Clinical and Translational Sciences Spring Research Symposium, Lexington, KY

**Linscott, K.B.** & Chappell, J. (2016) *Characterizing a Kingdom specific domain within squalene synthase for production of an antifungal therapeutic*, Poster presentation at the 2016 University of Kentucky Natural Products Consortium Symposium, Lexington, KY

**Linscott, K.B.**, Niehaus, T.D., Zhuang, X., Bell, S.A. & Chappell, J. (2015) *Identification of a Kingdom specific domain within squalene synthase as a target for Antifungal Therapeutics*, Poster presentation at the 12<sup>th</sup> International Meeting on Biosynthesis, Functions and Synthetic Biology of Isoprenoids, Vancouver, Canada

**Linscott, K.B.**, Niehaus, T.D. Zhuang, X., Bell, S.A. & Chappell, J. (2015) *Characterizing the role of a Kingdom specific domain of squalene synthase*, Poster presentation at the University of Kentucky Natural Products Consortium Symposium, Lexington, KY

**Linscott, K.B.**, Niehaus, T.D. & Chappell, J. (2014) *Mapping regulatory domains in sterol biosynthetic complexes for infectious disease treatment*, Poster presentation at the AOA MD/PhD Research Symposium, Lexington, KY

**Linscott, K.B.**, Niehaus, T.D. & Chappell, J. (2013) *Mapping unique interaction domains in sterol biosynthetic complexes for the treatment of invasive mycoses*, Poster presentation at the South Central Regional MD/PhD Conference in Louisville, KY, the AOA MD/PhD Research Symposium in Lexington, KY, the meeting of the American Society for Biochemistry and Molecular Biology in Boston, MA, and the meeting of the American Physician Scientists Association, Chicago, IL

**Linscott, K.B.**, Crofford, L., Horbinski, C., Peterson, C. & Hanaoka B. (2012) *The Role of the Innate Immune System in Muscle Regeneration for Patients with Idiopathic Inflammatory Myopathies*, Poster presentation at the South Central Regional MD/PhD Conference in Louisville, KY and the AOA MD/PhD Research Symposium, Lexington, KY

**Linscott, K.B.**, Ali, K. & Cassis, L.A. (2011) *Determining the Role of Epigenetic Mechanisms in Androgen Promotion of Angiotensin II-induced Abdominal Aortic Aneurisms*, Poster presentation at the AOA MD/PhD Research Symposium, Lexington, KY

**Linscott, K.B.** & Robic, S. (2009) *Enzyme Therapy for the Treatment of Celiac Disease*, Poster presentation at the Agnes Scott College Spring Annual Research Conference, Atlanta, GA

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### Professional Memberships

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American Physician Scientists Association (APSA)

2011-Present

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### References

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