Note: this is an application for promotion to Associate Professor with Tenure. some of the items the P&T Committee requires have changed. Reminder that this is an example only.

APPLICANT SUMMARIZED TEACHING NICELY. RESEARCH SECTION PRESENTED SCIENCE IN AN ABBREVIATED FORM WHICH IS DESIREABLE.

Application for Promotion and Tenure

[redacted]

[redacted]

Division of Basic Medical Sciences

Mercer University School of Medicine

September 1, 2013

REQUEST FOR PROMOTION and/or TENURE

Candidate: [redacted]

Address: Division of Basic Medical Sciences, MUSM, EAST 54

Current rank, title and date of appointment: Assistant Professor of Immunology, 08/01/2009

Date and rank of previous MUSM appointments: NA

Area of professional expertise: Immunology

Joint Appointment (if so, include the department and the date of appointment):

Check the appropriate box:			**Check the appropriate Campus/Location**	
	Promotion to Assistant Professor			Atlanta
	Promotion to Associate Professor			Columbus
x	Promotion to Associate Professor with Tenure Final year candidate must apply for Tenure_2015___		x	Macon
	Promotion to Full Professor			Savannah
	Tenure Only Application Final year candidate must apply for tenure _____			Other: Specify

Please specify the areas of contribution to the mission of Mercer University School of Medicine by placing a "1" in the appropriate box (es) of primary contributions; and a "2" in the appropriate box (es) of secondary contributions:

2	Teaching
1	Research/Scholarship
2	Service-Administrative (includes Patient Care Services
	Service-Clinical
2	Service-Community-based
	Service-Library

Indicate the candidate's current faculty appointment status with Mercer University School of Medicine:

Full time	**Part time**	**Volunteer**
x		

Indicate the candidate's current track with Mercer University School of Medicine:

Academic	Research	Clinical	Community	Library
x				

Work Load Distribution:

Full time and Part time Faculty should complete the following table:

State the usual percentage allocation of the candidate's time devoted to teaching, scholarly activity, and service. For MUSM paid employees, the percentages can be based on those in the Professional Development Plan. Explain any variation in percentages in the last five years and any differences in percentages due to appointment, grants, leave, administrative duties, etc. For clinical partners, the percentages can be estimated. For full time faculty, yearly percentages should total 100%. For part time faculty, the percentages should be an estimate of the time worked by the faculty member in each category.

ACADEMIC YEAR	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
DOMAIN					
Teaching		30	30	30	30
Research/Scholarship		65	65	65	65
Service-Patient Care					
Service- Administrative		4.5	4.5	4.5	4.5
Service-Community/ Outreach		0.5	0.5	0.5	0.5
TOTAL PERCENTAGE		100	100	100	100

I certify to the best of my knowledge that the information contained in this application is true and correct.

I understand that the deliberations of the Promotion and Tenure Committee are confidential. I understand that I should not solicit any information about those deliberations from any member of the committee or anyone involved in the deliberations. I also understand that the results of committee deliberations serve as recommendations to the Dean, with the final decision made by the Provost and the Board of Trustees.

Signature [redacted] _____ Date _____08/30/13_____

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Personal Summary of Contributions to Mercer University School of Medicine

As an assistant Professor of Immunology in the Division of Basic Medical Sciences at Mercer University School of Medicine my primary responsibility has been research. My secondary responsibilities, while no less important, have been teaching and service. In this application for promotion to Associate Professor with tenure I have outlined my accomplishments in the areas of research and scholarly activity, teaching, and service to Mercer University School of Medicine.

In addition to the contributions outlined in this application, my rationale for submitting this application for promotion was influenced by my past experience and accomplishments. Before joining Mercer University School of Medicine on August 1, 2009, I had approximately seven years of experience as an assistant professor or equivalent. My first appointment as an assistant professor was at Virginia Commonwealth University (2002-2005) where I developed an independent, externally-funded research program. My work at VCU led to twelve articles in high-impact peer-reviewed journals. In 2005 I accepted a tenure-track position as an assistant professor at the University of South Carolina, School of Medicine. While at USCSOM I continued to build my research program by obtaining funds from NHLBI/NIH and publishing two additional manuscripts. As an assistant professor I gained considerable experience teaching by lecturing immunology topics to graduate and medical students. From 2007-2009, I worked in the private sector as a Senior Research Scientist at Altria Client Services. While at Altria Client Services I continued to build research skills as a leader of a large group of scientists examining the health effects of tobacco products on the inflammatory response. Taken together, prior to joining Mercer University in 2009, I accumulated substantial experience at the level of assistant professor in all areas of faculty responsibility including research, teaching, and service and with additional industry experience. In addition to my past experience, during the past four years at MUSM I have performed exemplarily in the areas of research, teaching, and service. My accomplishments at MUSM are summarized below.

Research and Scholarly Activity

Since joining the Division of Basic Medical Sciences at Mercer University School of Medicine in August of 2009 I have built a highly productive and exemplary research program publishing nine papers in peer-reviewed journal, obtaining external funding, and presenting at regional and national conferences. Importantly, this work has led to the foundation for a number of collaborative research projects all centered on understanding the role of the immune system in human disease.

A primary focus of my laboratory is the development of novel therapies for cancers including but not limited to leukemia, melanoma, and breast cancer. In this area my laboratory at Mercer has published four manuscripts, submitted eight grant applications (two funded), submitted one patent application, and presented at regional and national conferences. Through this work, my laboratory at Mercer has become well-recognized in the area of tumor immunology and leukemia research. This is evidenced by requests from numerous journals to review manuscripts, acceptance of our work for presentation at National meetings and through my serving as an ad-hoc reviewer for the Congressionally Directed Medical Research Programs study section Blood Cancer-1 and the Association for International Cancer Research Program.

A recent focus of my laboratory is examining the role of the extracellular matrix in acute lung inflammation. Here, my laboratory has focused on the interaction of CD44 isoforms with extracellular matrix components such as hyaluronic acid and osteopontin. Since joining Mercer University, this work has resulted in two published and one submitted manuscript. Taken together, these three papers have provided preliminary data used in the submission of four grants (2 local, 2 NIH). Two grants were funded. Two are pending final review, both of which were discussed and one received a highly

competitive score of 27. In addition, this work has led to my laboratory becoming nationally-recognized in the area of CD44/extracellular matrix and inflammation. This is evidenced by numerous requests for peer-review of articles, acceptance of our studies for presentations at national meeting and my serving as an ad-hoc reviewer on the NIH Study Section related to lung inflammation.

In summary, since my appointment as an assistant professor at Mercer University I worked to establish a highly productive and funded research program. I strive to develop focused areas of research the result of which has led to my becoming recognized as a leader in research areas related to understanding the influence of the immune system on human disease.

Teaching

As a faculty member at Mercer University School of Medicine I consider teaching future physicians and scientist to be a privilege and an important responsibility. I embrace this responsibility and continue to strive to become a better educator. It is my belief that to effectively teach medical students, faculty members need to play a role as tutor, resource, and advisor. As a tutor, over the past four years I participated in the BMP as a tutor in phase B, Host Defense, and Hematology phases. This experience has made me more comfortable with the small group setting which I have found it to be an ideal format for my style of teaching. My effectiveness as a tutor is evidenced through the consistently exemplary reviews from my students. As a resource, I understand that it is important to maintain an area of expertise that is up to date and medically relevant. This, in my opinion, keeps the students interested and better prepares them to understand advances in the field of science and medicine. I have participated as a resource in the host defense phase of the BMP, lecturing on antigen presentation, the immune synapse, and lymphocyte activation from 2010-present. As an advisor, it is important to serve as a guide and to encourage students through their academic and professional endeavors. Since joining Mercer University School of Medicine, I have had the pleasure of serving as an advisor to fourteen medical students. These interactions have strengthened my skills as a medical student mentor/advisor and have taught me the important role an advisor can play in the success and development of medical students.

In addition to my role as an educator of medical students at MUSM I also have had the opportunity to work with a five undergraduate and one graduate student. I feel that the willingness to introduce undergraduate as well as graduate students to medical research is critical for the development of future physicians and scientists.

Service

I have taken advantage of opportunities to make a positive and exemplary impact at MUSM through my service to the Medical School and University. I have served on numerous committees including the Research Committee where I served as Chair for two years and was recently re-elected for a new three year term. I was appointed Chair of the Institutional Biosafety Committee (IBC). Additionally, I served on a number of faculty search committees including two searches for Microbiologist on which I served as Chair. I served on a number of important ad-hoc committees including the committee to review animal care per diem rate and the committee to review the Division of Basic Medical Sciences P&T policies and procedures. Furthermore, since joining MUSM I have acted as the Director of the Flow Cytometry Core facility. While serving in these capacities I was able to have a positive influence on a number of important issues, many of which are summarized in my application for promotion to associate professor with tenure.

CURRICULUM VITAE

[redacted]

Division of Basic Medical Sciences
Mercer University School of Medicine

HOME ADDRESS:

[redacted]

CONTACT:

[redacted]

OFFICE ADDRESS:

Mercer University School of Medicine
Division of Basic Medical Sciences,
1550 College St, Macon, GA 31029

EDUCATION

PHD	2000	The George Washington University Washington, D.C.
MS	1994	Virginia Polytechnic Institute and State University Blacksburg, VA
BS	1991	Virginia Polytechnic Institute and State University Blacksburg, VA

POSTGRADUATE TRAINING AND FELLOWSHIP APPOINTMENTS

Postdoctoral Associate	2000-2002	Department of Microbiology and Immunology Virginia Commonwealth University Medical Center, VCU (Funded by individual NRSA fellowship)
Postdoctoral Associate	1999-2000	Department of Biomedical Sciences and Pathobiology, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Polytechnic Institute and State University, Blacksburg, VA

ACADEMIC APPOINTMENTS

Assistant Professor (tenure-track)	2009-present	Division of Basic Medical Sciences, Mercer University School of Medicine, Macon, GA
Assistant Professor (tenure-track)	2005-2007	Department of Pathology, Microbiology and Immunology University of South Carolina School of Medicine, Columbia, SC

Assistant Professor	2002-2005	Department of Microbiology and Immunology Virginia Commonwealth University Medical Center, VCU, Richmond, VA

RESEARCH APPOINTMENTS

Senior Research Scientist (Immune Specialist)	2007-2009	Team Leader-Systems Biosciences Health Sciences Group , Altria Client Services, Richmond, VA
Member Scientist	2006-2007	South Carolina Cancer Center, Columbia, SC
Member Scientist	2003-2005	Massey Cancer Center, Virginia Commonwealth University Medical Center, Richmond, VA

PROFESSIONAL SOCIETY MEMBERSHIPS

Full member of Sigma Xi	2010-present
Member of American Association for Cancer Research	2006-present
Full member of the Society of Toxicology	2004-present
Member of the American Association of Immunologists	2003-present

HONORS AND AWARDS

American Association of Immunologist Junior Faculty Travel Award	2012
AACR Minority Scholar Award in Cancer Research	2006
American Association of Immunologist Junior Faculty Travel Award	2004
American Association of Immunologists Minority Scientist Travel Award	2003
Building Interdisciplinary Research Careers in Women's Health Scholar	2002-2005 (BIRCWH)
Coauthor for the travel award given by the regulatory and safety evaluation specialty section at the 41st Annual Meeting of the Society of Toxicology, March 18-21, 2002. (Title: Ligation of cannabinoid receptor induces apoptosis in transformed immune cells)	2002

INVITED REVIEWER

Journal Reviewer

Journal of Immunology, Blood, Cellular Immunology, Immunobiology, International Journal of Cancer, The European Journal of Pharmacology, CANNABINOIDS, Journal of Pharmacology and Experimental Therapeutics , Neoplasia, International Journal of Oral Science, Apoptosis, Molecules, Oncogene.

Grant Reviewer

Association for International Cancer Research, ad hoc reviewer	2012
CDMRP study section Blood Cancer-1 (D-BC-1), ad hoc reviewer	2012
NIH Study Section LCMI, ad hoc reviewer	2012

Editorial Boards

Advances in Toxicology	2013-present
The Scientific World Journal	2013-present

TEACHING EXPERIENCE

Medical Students – Basic Sciences

Hematology phase. Mercer University School of Medicine	2010-present
Host Defense Resource Session, Antigen Presentation,	2010-present
Host Defense phase, Mercer University School of Medicine	2009-present
Phase B, Mercer University School of Medicine	2009
M-I Immunology lectures (immunology), University of South Carolina School of Medicine	2006
M-I Immunology lecture (tumor immunology). Department of Microbiology and Immunology, Virginia Commonwealth University Medical Center	2005

Graduate Program Teaching (Ph.D.)

Medical Microbiology (immunology lectures), University of South Carolina School of Medicine	2006
Infection and Immunity lectures. Department of Microbiology and Immunology, Virginia Commonwealth University Medical Center	2004
Cellular mechanisms in toxicology lecture,	2004

Department of Pharmacology and Toxicology,
Virginia Commonwealth University Medical Center

Advanced Immunology Lectures, 2002-2005
Department of Microbiology and Immunology,
Medical College of Virginia campus, Virginia Commonwealth University

Undergraduate Program Teaching

Recitation Leader, Introduction to Life Sciences, 2001-2002
Virginia Commonwealth University

Immunology Lecture, 1993
Department of Biology,
Virginia Polytechnic Institute and State University

Teaching Assistant, 1991-1993
General Biology Laboratory and Principles of Biology Laboratory,
Department of Biology,
Virginia Polytechnic Institute and State University

Research Mentorship

Postdoctoral Fellows

2013-present	Hao Ban, Ph.D. Mercer University School of Medicine
2008-2009	Clint Mitchell, Ph.D. Specialty Staffing c/o Altria Client Services
2007-2008	Catherine Lombard, Ph.D. Remex Specialty Staffing c/o Altria Client Services
2006-2007	James Warren, Ph.D. The University of South Carolina School of Medicine

Medical Students

2013	Matthew Carmichael (4th year medical student) Senior Elective. Project Title: The role of hyaluronic acid in SEB-induced lung injury.
2010	Charles Land, (1st year medical student) Summer Scholar from June 20th-August 5th) Project title: Targeting CD44 isoform expression in the treatment of breast cancer.

Graduate Students

2012-present	Harriet Hagele. Mercer University School of Medicine
2006-2007	Andrea Franco. The University of South Carolina School of Medicine

Undergraduate Students

2013-present	Eric Ennuson. Mercer University

2012-present	Gina John. Mercer University
2012-2013	Mariah Sappington. Mercer University
2011-2013	Clara Castillejo. Mercer University
2010-2012	Gabriela Law. Mercer University
2006-2007	Melisa Tanverdi, Christi Lynn, Tina Zhang. The University of South Carolina
2005-2007	Yolanda Mines. The University of South Carolina

UNIVERSITY COMMITTEES

2012-present	Institutional Biosafety Committee (Chair). Mercer University

MEDICAL SCHOOL COMMITTEES

2013-present	Ad-hoc Committee to review research space allocation and usage. Mercer University School of Medicine.
2012	Faculty Search Committee (Chair) (microbiology, 2 positions). Mercer University School of Medicine
2012	Faculty Search Committee (virology). Mercer University School of Medicine
2011-present	Ad-hoc Committee to review the Division of Basic Sciences P&T procedure. Mercer University School of Medicine
2011	Ad-hoc Committee to review Animal Care Per Diem rates (Chair). Mercer University School of Medicine
2011	Faculty Search Committee (immunology). Mercer University School of Medicine
2010	Faculty Search Committee (microbiology). Mercer University School of Medicine
2010-present	Research Committee (Chair 2011-2013). Mercer University School of Medicine
2009-present	Non-committee admissions interviewer
2006	Faculty Awards Committee. University of South Carolina School of Medicine

RESEARCH SUPPORT, PROJECTS, AWARDS

Grants Active

- CD44 isoforms as novel targets in the treatment of MRSA-induced inflammation. MEDCEN Community Health Foundation Research Grant. McKallip (PI) 10/01/2012-9/30/2013. $20,000.

- Characterizing the role of hyaluronic acid synthase isoforms in SEB-induced lung injury. Mercer University Seed Grant. McKallip (PI) 07/01/2013-06/30/2014. $4,000.

Grants, Completed

- Targeting hyaluronic acid for the treatment of SEB-induced lung inflammation. Mercer University Seed Grant. McKallip (PI) 07/01/2012-06/30/2013. $4,000.

- Isoform expression as a basis for tumor selective gene therapy. Mercer University Seed Grant. McKallip (PI),,Daines (Co-PI) 07/01/2011-06/30/2012. $5,000.

- The role of CD44 in SEB-induced acute lung injury. Mercer University Seed Grant. McKallip (PI) 07/01/2011-06/30/2012. $5,000.

- Immunotherapy of malignant melanoma: Role of CD44 isoforms. Georgia Cancer Coalition Cancer Research Award. McKallip (PI) 04/01/2010-09/30/2011. $50,000.

- The role of CD44 isoforms in immunotherapy of melanoma. NCI/NIH (K22-CA109334). McKallip (PI) 08/01/2006-05/30/2007. $152,927.

- Cannabinoid exposure and the anti-tumor immune response. South Carolina Cancer Center Seed Grant Program. McKallip (PI) 08/01/2006-05/30/2007. $25,000.

- Characterization of CD44 Isoforms Involved in LAK-mediated Tumor Killing. USC Research and Productive Scholarship Program. McKallip (PI) 04/01/2006-03/31/2007. $18,000.

- The role of CD44 isoforms in immunotherapy of melanoma. Commonwealth Health Research Fund. McKallip (PI) 2005-2006. $85,770.

- The role of CD44 isoforms in immunotherapy of melanoma. A.D. Williams Fund: McKallip (PI) 2005. $15,000.

- The effects of cannabinoid exposure on tumor growth and the anti-tumor immune response. Jeffress Memorial Trust, McKallip (PI) 2004-2005. $30,000.

- The effects of cannabinoid exposure on tumor growth and the anti-tumor immune response. NIDA Small Grants Program Subaward, McKallip (PI) 2003-2004.$13,000.

- Building Interdisciplinary Research Careers in Women's Health (BIRCWH) Scholar. NIH/NIDA K12 DA14041.McKallip (Scholar). Provided salary support (75%) and funds for supplies and travel.

- Targeting cannabinoid receptors as a novel treatment of breast cancer". American Cancer Society (IRG-100036) Subaward, McKallip (PI) 2003-2004, $15,000.
- The role of CD44 isoforms in endothelial cell damage. Individual National Research Service Award (NIH) F32 HL10455. McKallip (PI) 08/01/2000-11/10/2002, $79,789, PI: Robert McKallip.

Grants, Pending

- Targeting CD44 isoforms for the treatment of SEB-induced acute lung injury. NIH/NHLBI 1R15HL113936-01A1. McKallip (PI) 08/01/2013-07/31/2016 (under review). $471,000. **Impact score: 27**
- The role of hyaluronan in SEB-induced acute lung injury. NIH/NHLBI 1R15HL118646-01 McKallip (PI) 04/01/2013-03/31/2016 (under review/revision). $471,000. **Impact score: 50**

Grants, Submitted but Not Funded

- A novel tool for quantifying the effect of compounds on pre-mRNA splicing. NCI/NIH (1R21CA174544-01) McKallip/Daines (Co-PI) 04/01/2013-03/31/2016. $795,342.00.
- Novel therapy directed at tumor-associated alternative mRNA splicing. NCI/NIH (1RO1CA169170-01) McKallip/Daines (Co-PI) 08/01/2012- 07/31/2017.$1,948,250.00.
- Isoform expression as a basis for tumor selective gene therapy. NCI/NIH (1R21CA160106-01). McKallip/Daines (Co-PI) 07/01/2011-06/30-2014. $767,900.
- Immunotherapeutic approaches to treat melanoma: Role of CD44 isoforms. NCI/NIH (1R15CA156273-01) McKallip (PI) 12/01/2010-11/30/2013. $471,000.
- Sensitizing myeloma to TRAIL-mediated killing using naphthoquinones. NCI/NIH (1R03CA151331-01) McKallip (PI) 07/01/2010-06/30/2012. $157,000.
- Use of naturally occurring napthoquinones for sensitizing multiple myeloma to death receptor-mediated killing. NCI/NIH (1R21CA129677-01) McKallip (PI) 07/01/2007-06/30/2009. $390,500.
- Cannabinoid exposure and anti-tumor immunity. NCI/NIH (1R01CA123173-01) McKallip (PI) 07/01/2006-06/30/2011. $1,420,000.

PUBLICATIONS

Peer Reviewed Journal Articles (click on PMID number to view manuscript)

1. Uchakina, O.N., Ban, H., **McKallip, R.J.**[#] 2013. Targeting hyaluronic acid production in the treatment of leukemia: Treatment with 4-methylumbelliferone leads to reduced hyaluronic acid production and the induction of apoptosis in K562 leukemia. *Leukemia Research* Jul 19.. [Epub ahead of print] ([#]Corresponding Author). PMID:23876826

2. Daines, D.A., Sun, J., Uchakina, O.N., **McKallip, R. J.**[#] 2013. Development of a novel treatment for leukemia directed at tumor-associated mRNA splicing. *Leukemia Research* 2013 Sep;37(9):1125-31. ([#]Corresponding Author). PMID:23830513

3. Uchakina, O.N., Castillejo, C.M., Bridges, C.C., **McKallip, R.J.** [#] 2013. The role of hyaluronic acid in SEB-induced acute lung inflammation. *Clinical Immunology* Jan; 146:56-69. ([#]Corresponding Author). PMID:23246605

4. Sun, J., Law G. P., Bridges, C.C., **McKallip, R. J.**[#] 2012. CD44 as a novel target for treatment of staphylococcal enterotoxin B-induced acute inflammatory lung injury. *Clinical Immunology* Jul;144(1):41-52. Epub 2012 May 11. ([#]Corresponding Author). PMID:22659034.

5. Sun, J., Law G. P., **McKallip, R. J**.[#] 2012. Role of CD44 in lymphokine-activated killer cell-mediated killing of melanoma. *Cancer Immunology Immunotherapy* Mar;61(3):323-34 ([#]Corresponding Author). PMID:21901391.

6. Sun, J., **McKallip, R. J.**[#] 2011. Plumbagin treatment leads to apoptosis in human K562 leukemia cells through increased ROS and elevated TRAIL receptor expression. *Leukemia Research* Oct;25(10)1402-8 ([#]Corresponding Author). PMID:21741707.

7. **McKallip, R. J.**[#*], Lombard, C., Ramakrishnan. 2010. Plumbagin-induced apoptosis in lymphocytes is mediated through increased reactive oxygen species production, upregulation of Fas, and activation of the caspase cascade. *Toxicology and Applied Pharmacology* August 15; 247(1):41-52 ([#]Corresponding Author). PMID:20576514.

8. Lombard, C., Farthing, D., Sun, J., Fariss, M., **McKallip, R. J**[#*]**.** 2010. Reference moist smokeless tobacco-induced apoptosis in human monocytes/macrophages cell line MM6. *International Immunopharmacology* Sep;10(9):1029-40 ([#]Corresponding Author)(* work primarily conducted at and submitted through MUSM). PMID:20601189.

9. Mitchell, C., Piper, J., Joyce, A., **McKallip, R.J.,** Fariss, M. 2010. Role of oxidative stress and MAPK signaling in reference moist smokeless tobacco-induced HOK-16B cell death Toxicology Letters 195(1):23-30. PMID:20206247.

10. **McKallip, R. J.**[#], Jia, W., Schlomer J., Warren, J. W., Nagarkatti, M., Nagarkatti, P.S. 2006. Cannabidiol-induced apoptosis in human leukemia cells: A novel role of cannabidiol in the regulation of $p22^{phox}$ and NOX4 expression. *Molecular Pharmacology* 70(3):897-908 ([#]Corresponding Author). PMID:16754784.

11. Melencio, L., **McKallip, R.J.,** *Guan,* H., Ramakrishnan, R., Jain, R., Nagarkatti, P.S., Nagarkatti, M. 2006. Role of $CD4^{+}CD25^{+}$ T regulatory cells in IL-2-induced vascular leak. *International Immunology* Oct;18(10):1461-71. PMID:16914509.

12. Wyant, T.L. Fisher, M.T., **McKallip, R.J.,** Nagarkatti, P.S., Nagarkatti, M., Conrad, D. H. 2005. Mouse B cell activation is inhibited by CD44 cross-linking. *Immunological Investigations* 34:399-416. PMID:16304729.

13. **McKallip, R.J.**[#], Nagarkatti, M., Nagarkatti, P.S. 2005. Delta-9-tetrahydrocannabinol enhances breast cancer growth and metastasis by suppression of the antitumor immune

response. *The Journal of Immunology* 174(6):3281-9. (#Corresponding Author). PMID:15749859.

14. **McKallip, R.J**., Fisher, M., Gunthert, U., Szakal, A., Nagarkatti, P.S., Nagarkatti, M. 2005. Role of CD44 and its v7 isoform in SEB-induced Toxic Shock: CD44 Deficiency on Hepatic Mononuclear Cells Leads to Reduced Activation-induced Apoptosis Resulting in Increased Liver Damage. *Infection and Immunity* 73(1):50-61. PMID:15618140.
15. Do, Y., **McKallip, R.J**., Nagarkatti, M., Nagarkatti, P.S., 2004. Activation through cannabinoid receptors 1 and 2 on dendritic cells triggers NF-kappaB-dependent apoptosis: novel role for endogenous and exogenous cannabinoids in immunoregulation. *The Journal of Immunology.* 173(4):2373. PMID:15294950.
16. Lombard, C., **McKallip, R.J**., Nagarkatti, P.S., Nagarkatti, M. 2003. Fas Ligand-dependent and -independent mechanisms of toxicity induced by T cell lymphomas in lymphoid organs and in the liver. *Clinical Immunology* 109(2):144. PMID:14597213.
17. Do, Y., Rafi-Janajreh, A., **McKallip, R.J.**, Nagarkatti, P.S., Nagarkatti, M. 2003. Combined deficiency in CD44 and Fas leads to exacerbation of lymphoproliferative and autoimmune disease. *International Immunology* 15(11): 1327. PMID:14565931.
18. **McKallip, R.J**., Fisher, M., Szakal A., Gunthert, U., Nagarkatti, P.S., Nagarkatti, M. 2003. Targeted deletion of CD44v7 exon leads to decreased endothelial cell injury but not tumor killing mediated by interleukin-2-activated cytolytic lymphocytes. *The Journal of Biological Chemistry* 278(44):43818. PMID:12904302.
19. Mustafa, A., **McKallip, R.J**., Fisher, M., Duncan, R., Nagarkatti, P.S., Nagarkatti, M. 2002. Regulation of IL-2-induced vascular leak syndrome by targeting CD44 using hyaluronic acid and anti-CD44 antibodies. *Journal of Immunotherapy* 25(6):476. PMID:12439345.
20. Zeytun, A., **McKallip R.J.**, Fisher, M., Camacho, I., Nagarkatti M., and Nagarkatti, P.S. 2002. Analysis of 2,3,7,8-tetrachlorodibenzo-p-dioxin-induced gene expression profile in vivo using pathway-specific cDNA arrays. *Toxicology* 178(3):241. PMID:12167310.
21. **McKallip, R.J.**, Do, Y., Fisher, M.T., Robertson, J.L., Nagarkatti P.S., Nagarkatti M. 2002. Role of CD44 in activation-induced cell death: CD44 deficient mice exhibit enhanced T cell response to conventional and superantigens. *International Immunology* 14(9):1015. PMID:12202399.
22. **McKallip, R.J.**, Lombard, C., Martin, B.R., Nagarkatti, M., Nagarkatti, P.S. 2002. Delta(9)-tetrahydrocannabinol-induced apoptosis in the thymus and spleen as a mechanism of immunosuppression in vitro and in vivo. *The Journal of Pharmacology and Experimental Therapeutics* 302:451-465. PMID:12130702.
23. **McKallip, R.J.**, Lombard, C., Fisher, M., Martin, B.R., Ryu, S., Grant, S., Nagarkatti, M., Nagarkatti, P.S. 2002. Targeting of the CB2 receptor as a novel therapy to treat malignant lymphoblastic disease. *Blood* 100:627-634. PMID:12091357.

24. Okasha SA, Ryu S, Do Y, **McKallip RJ**, Nagarkatti M, Nagarkatti PS. 2001. Evidence for estradiol-induced apoptosis and dysregulated T cell maturation in the thymus. *Toxicology* 163:49-62. PMID:11376864.

25. Chen D, **McKallip RJ[#],** Zeytun A, Do Y, Lombard C, Robertson JL, Mak TW, Nagarkatti PS, Nagarkatti M. 2001. CD44-deficient mice exhibit enhanced hepatitis after concanavalin a injection: evidence for involvement of CD44 in activation-induced cell death. *The Journal of Immunology* 166:5889-97. ([#]co-first authorship). PMID:11342603.

26. **McKallip, R.**, R. Li, S. Ladisch. 1999. Tumor gangliosides inhibit the tumor-specific immune response. *The Journal of Immunology* 163:3718-26. PMID:10490967.

27. Li, R., D. Gage, **R. McKallip**, S. Ladisch. 1996. Structural characterization and in vivo immunosuppressive activity of neuroblastoma G_{D2}. *Glycoconjugate Journal* 13:385-9. PMID:8781969.

28. **McKallip, R.**, M. Nagarkatti, P. Nagarkatti. 1995. Immunotoxicty of AZT: Inhibitory effect of thymocyte differentiation and peripheral T cell responsiveness to gp120 of human immunodeficiency virus. *Toxicology and Applied Pharmacology* 131:53-62. PMID:7878678.

29. **McKallip, R.**, M Nagarkatti, P. Nagarkatti. 1993. Immunomodulatory Properties of AZT. *Annals of the New York Academy of Sciences* 685:464-6. PMID:8363254.

Peer-Reviewed Journal Articles Submitted

1. **McKallip, R. J.[#]**, Hagele H.F., and Uchakina O.N. 2013. Targeting hyaluronic acid production with 4-methylumbelliferone suppresses SEB-induced lung inflammation. *Toxins* (under revision) ([#]Corresponding Author).

PATENTS

- **McKallip, R.J.** & D.A. Daines. 2011. Disease-specific splice vectors and stable cell lines. Provisional patent submitted (Utility patent submitted June 2012).

INVITED LECTURES/PRESENTATIONS

- **McKallip, R. J.** The importance of the extracellular matrix in inflammation and cancer: Potential therapeutic significance of CD44 and hyaluronic acid. Presented to the Department of Biomedical Sciences, Mercer University School of Medicine, Savannah, GA March 2013.
- **McKallip, R. J.** Immunological approaches to treat cancer. Presented to the Center for Cancer Research, Laboratory of Tumor Immunology and Biology, NCI, Bethesda MD, October 2008.
- **McKallip, R. J.** Role of CD44 in lymphocyte-mediated lung injury. Presented to the Health Sciences group, PMUSA, Richmond VA, January 2007.

- **McKallip, R. J.** Immunological approaches to treat cancer. Presented to the School of Osteopathic Medicine, Ohio University, Athens OH, January, 2007.
- **McKallip, R. J.** The immunoregulatory properties of CD44: Multiple isoforms, multiple functions. Presented to the Department of Microbiology and Immunology, University of Toledo, Toledo OH, January, 2007.
- **McKallip, R. J.** The immunoregulatory properties of CD44: Multiple isoforms, multiple functions. Presented to the Department of Microbiology and Immunology, Saint Louis University, Saint Louis MO, December, 2006.
- **McKallip, R. J.** The immunoregulatory properties of CD44: Multiple isoforms, multiple functions. Presented to the Department of Microbiology and Immunology, VCU, Richmond VA, March 22, 2005

PROFESSIONAL PRESENTATIONS

National and International

- Castillejo, C.M., Uchakina, O.N., Bridges, C.C., **McKallip, R.J.** The Role of Hyaluronic Acid in SEB-Induced Acute Lung Inflammation. Poster presentation at the Experimental Biology Meeting, April 20-24, 2013 in Boston MA.
- **McKallip, R. J.,** Bridges, C.C., Law, G.P., Sun, J. Targeting CD44 in SEB-induced acute respiratory distress syndrome. Poster presentation at the 99th AAI Annual Meeting, May 4-8, 2012 in Boston MA.
- **McKallip, R. J.,** Law, G., Sun, J. Role of CD44 in LAK cell-mediated killing of melanoma. Poster presentation at the 102nd AACR Annual Meeting, April 2-6, 2011 in Orlando, FL.
- **McKallip, R. J.**, Lombard, C., Ramakrishnan, R., Warren J. W. Plumbagin-induced apoptosis in lymphocytes is mediated through increased reactive oxygen species production and activation of the caspase cascade. Platform (oral) presentation at the 46th Annual Meeting of the Society of Toxicology, March 25-29, 2007 in Charlotte, NC.
- **McKallip, R. J.**, Jia, W., Schlomer J., Warren, J. W., Nagarkatti, M., Nagarkatti, Cannabidiol-induced apoptosis in human leukemia cells: Anovel role of cannabidiol in the regulation of p22phox and NOX4 expression. Presented at the 97th AACR Annual meeting, April 1-5, 2006 in Washington, DC.
- **McKallip, R.J**., Nagarkatti, M., Nagarkatti, P.S. Exposure to THC, a marijuana cannabinoid, induces alterations in Th1/Th2 cytokine profile resulting in suppression of immunity and increased susceptibility to breast cancer. Presented at the 44th Annual Meeting of the Society of Toxicology, March 6-10, 2005.
- **McKallip, R.J.,** Nagarkatti, P.S., Nagarkatti, M. The Role of CD44 in SEB-induced Toxic Shock: CD44 deficiency leads to reduced lymphocyte apoptosis resulting in increased liver damage. Platform (oral) and poster presentation at the Experimental Biology Meeting, April17-21, 2004.

- **McKallip, R.J.,** Nagarkatti, M., Nagarkatti, P. S. The effect of cannabinoid exposure on tumor growth and the anti-tumor immune response. Presented at the 43rd Annual Meeting of the Society of Toxicology, March 21-25, 2004.
- **McKallip, R.J**., Fisher, M., Szakal, A.K., Gunthert, U., Nagarkatti, P.S., Nagarkatti, M. The role of CD44v7 exon in IL-2-induced endothelial cell injury and vacular leak syndrome. Platform (oral) and poster presentation at the 90th Anniversary Annual Meeting of the American Association of Immunologist, May 6-10, 2003.
- **McKallip, R.J**., Fisher, M., Szakal, A.K., Gunthert, U., Nagarkatti, P.S., Nagarkatti, M. Targeted deletion of CD44v7 exon leads to decreased IL-2-induced endothelial cell toxicity and vascular leak syndrome. Presented at the 42nd Annual Meeting of the Society of Toxicology, March 9-13, 2003.
- Lombard, C., **McKallip, R.J**., Nagarkatti, M., Nagarkatti, P.S. Ligation of cannabinoid receptors leads to induction of apoptosis in transformed immune cells. Platform (oral) presentation at the 41st Annual Meeting of the Society of Toxicology, March 18-21, 2002. (Won travel award from the Regulatory and Safety Evaluation specialty section).
- Zeytun, **R. J. McKallip**, M. Fisher, M. Nagarkatti1 and P. S. Nagarkatti. TCDD-induced gene expression profile suggests the involvement of death-receptor pathway leading to induction of apoptosis in the thymus. Platform (oral) presentation at the 41st Annual Meeting of the Society of Toxicology, March 18-21, 2002.
- **R. J. McKallip**, C. Lombard, B. R. Martin, M. Nagarkatti and P. S.Nagarkatti. Evidence for the induction of apoptosis in immune cells by delta-9-tetrahydrocannabinol. Platform (oral) presentation at the 41st Annual Meeting of the Society of Toxicology, March 18-21, 2002.
- **McKallip, R. J.**, Li, R., Ladisch, S. Tumor gangliosides inhibit the tumor-specific immune response. Presented at the American Association For Cancer Research National Meeting held in Philadelphia PA. April 1999.
- **McKallip, R. J.**, M. Nagarkatti, P. S. Nagarkatti. Immunomodulatory Properties of AZT. Presented at the 3rd International Conference on Drug Research in Immunological and Infectious Diseases held in Washington, D.C. June 1992.

Regional and Local Presentations

- **McKallip, R. J.,** Law, G., Sun, J. Role of CD44 in LAK cell-mediated killing of melanoma. Platform presentation at the 2011 Georgia Cancer Summit, June 16-17, 2011 in Macon, GA. Presentation given by McKallip, R.J.
- **McKallip, R. J.** Role of CD44 in lymphokine-activated killer cell-mediated killing of melanoma. Presented at the Mercer University School of Medicine Medical Center of Central Georgia Joint Research Conference, Macon, GA. September 30, 2010.

- **McKallip, R. J.** Role of CD44 in lymphokine-activated killer cell-mediated killing of melanoma. Presented at the MUSM Joint Research Conference held at Mercer University School of Medicine, Macon, GA. April 20, 2010.
- **McKallip, R. J.** Potential use of naphthoquinones for the treatment of autoimmune disorders and hematological malignancies. Presented at the University of South Carolina School of Medicine, Columbia, SC. October 16, 2006.
- **McKallip, R.J**., Fisher, M., Szakal, A.K., Gunthert, U., Nagarkatti, P.S., Nagarkatti, M. The role of CD44v7 in endothelial cell injury and vascular leak syndrome associated with IL-2 treatment of malignant melanoma and renal cell carcinoma. Presented at the 23rd Annual Seminar of Cancer Researchers in Virginia held in Charlottesville, VA March 22, 2003.
- **McKallip, R. J.,** Lombard, C, Nagarkatti, P.S., Nagarkatti, M. Ligation of CB2 induces apoptosis in normal and transformed immune cells. Presented at the Cannabinoid Discussion group meeting held in the Department of Pharmacology and Toxicology, MCV/VCU, Richmond, VA. April 2002.
- **McKallip, R. J.**, Nagarkatti, P. S., Nagarkatti, M. Role of CD44 in apoptosis following T cell activation. Presented at the 21st Annual Seminar of Cancer Researchers in Virginia held in Richmond, VA. April 2001.
- **McKallip, R. J.,** Nagarkatti, P. S., Nagarkatti, M. Targeting of cannabinoid receptors in the treatment of malignancies of the immune system. Presented at the Immune Mechanisms meeting held at the Massey Cancer Center, MCV, Richmond, VA. August 2001
- Lombard, C., **McKallip, R. J.**, Nagarkatti, P. S., Nagarkatti, M. Characterization of tumor-derived Fas-ligand and its ability to induce apoptosis in immune cells of the host. Presented at the 21st Annual Seminar of Cancer Researchers in Virginia held in Richmond, VA. April 2001.
- **McKallip, R. J.**, Nagarkatti, P. S., Nagarkatti, M. Induction of apoptosis by FasL+ tumor cell in T cells, B cells and macrophages. Presented at the 20th Annual Seminar of Cancer Researchers in Virginia held in Norfolk, VA. April 2000.
- **McKallip, R. J.**, Li, R., Ladisch, S. Tumor gangliosides inhibit the tumor-specific immune response. Presented at the Virginia Regional College of Veterinary Medicine in Blacksburg, VA. November 1999.
- **McKallip, R. J.**, Li, R., Ladisch, S. Tumor gangliosides inhibit the tumor-specific immune response. Presented at the Thirteenth Annual Advances in Pediatric Educational and Scientific Forum held at Children's National Medical Center in Washington, D.C. April 1999.
- **McKallip, R. J.**, Nagarkatti, P. S. Immunomodulation by nucleoside analog (AZT). Presented at Virginia Polytechnic Institute Biology Department seminar. December 1, 1993 (Terminal Seminar).

- **McKallip, R. J.**, Nagarkatti, P. S. Immunomodulatory Properties of AZT. Presented at the American Society for Microbiologist regional meeting held in Lexington, VA. November 1993.
- **McKallip, R. J.**, M. Nagarkatti, P. S. Nagarkatti. Immunomodulatory Properties of AZT. Presented at the 3rd International Conference on Drug Research in Immunological and Infectious Diseases held in Washington, D.C. June 1992.
- **McKallip, R. J.**, M. Rhile, P.S. Nagarkatti. Immunotoxicity of nucleoside analogs used in the treatment of AIDS. Presented at the American Society for Microbiologists regional meeting held in Blacksburg, VA. November 1991.

PROFESSIONAL ACTIVITIES

- Founding Member and Organizer, Infectious Disease Interest Group (iDIG), Mercer University School of Medicine, June 2013-present.
- Director of Flow Cytometry Core Facility. Mercer University School of Medicine, 2009-present.
- Faculty Advisor, Mercer University School of Medicine.
    - Class of 2014-Samuel Franklin, Caryn Robertson, Michael Simms
    - Class of 2015-Antonia Ashade, Alyssa Thielman, Shayla Thomas
    - Class of 2016-Chelsey Bayer, Ulysses Davila, Michelle Payne
    - Class of 2017-Taylor Bergman, Michael Lowrey, Sheetal Patel, Lauren Spradley, Laruren Weigel
- National Board of Medical Examiners Question-Writing Workshop. November 29, 2012, Mercer University School of Medicine, Macon, GA.
- P&T Workshop 6-2-2011, 6-18-2013
- Georgia Research Alliance / Centers for Disease Control and Prevention / CDC Foundation Collaboration Roundtable**,** February 26, 2010, CDC Atlanta, GA (extramural).
- Keynote speaker at the American Cancer Society's Relay for Life event held on May 30, 2003 in Mechanicsville, VA
- Chair of the "Cell Proliferation and Death" scientific session at the Twenty-third Annual Seminar of Cancer Researchers in Virginia, March 22, 2003
- Guest speaker at the 2003 American Cancer Society's Daffodil Days kickoff campaign

COMMUNITY ACTIVITIES

- Monroe County Parks and Recreation Tee-Ball Coach (2013)
- Second grade Sunday School Teacher (Fall 2011-present), Mabel White Baptist Church.

- AWANA group Leader (Fall 2011-Summer 2012), Mabel White Baptist Church.
- Scientific Inquiry Lesson-Given to 3rd grade class at T.G. Scott Elementary School, Forsyth GA (9/3/2011)
- Scientific Inquiry Lesson-Given to 4th grade class at T.G. Scott Elementary School, Forsyth GA (9/3/2010)
- Monroe County Parks and Recreation Soccer Coach (2011)
- AWANA group Leader (Fall 2010-Summer 2011), Mabel White Baptist Church.
- Career Day at T.G. Scott Elementary, Forsyth GA, October 2009

Teaching

I. Philosophy and Goals of Teaching

As a faculty member of a medical school, training and teaching medical, graduate, and undergraduate students is an important and rewarding responsibility. Therefore, I have and continue to make considerable efforts to develop the skills and experience necessary to become an effective mentor and instructor. Prior to joining the faculty at Mercer University School of Medicine I had extensive experience supervising a number of rotating students, mentoring undergraduate and graduate students as well as postdoctoral fellows in my laboratory. In addition, I participate in the teaching of a number of courses to medical as well as graduate students at the University of South Carolina. My participation in the Biomedical program at MUSM has greatly influenced and shaped my current teaching philosophy. Specifically, I feel that to best teach medical students, faculty members need to play a role as a tutor, a resource, and as an advisor.

As a tutor, it is important to act as a guide and facilitator. In this role I challenge the students to develop and use problem solving skills. This is best accomplished when the learning that happens during the tutorial sessions is self-directed, building on individual and the combined knowledge of the group. I have found that in any group of students you have a diverse set of backgrounds with differing strengths and weaknesses. I encourage the students to use their strengths to help the overall efforts of the group and to quickly identify their weaknesses so that they can benefit from the group's knowledge and experience. To me, the role of an effective tutor is to facilitate, staying out of the discussion as much as possible while ensuring the students stay on track. When the group falls off track, I believe it is better to lead them in the right direction by asking relevant questions rather than giving them the answers. Although many of the medical students begin medical school at MUSM uneasy with problem-based learning (PBL) format, they eventually realize that not only are they learning the basic sciences necessary to succeed in medical school but they are developing important skills necessary to become effective practicing physicians.

As a resource, I feel that it is important to maintain an area of expertise that is up to date and medically-relevant. Although most of the education in the small group PBL format is self and/or group-directed, self-learning some of the more difficult basic science concepts in the area of immunology may be, in certain cases, outside the realm of what can be reasonably expected. Therefore, it is important to function as an effective resource for the students. To accomplish this, I actively seek out the advice of senior faculty members and continue to integrate the newest technologies into my presentations. Furthermore, it is important to incorporate the latest advances in areas of science into my lectures. This keeps the students interested and better prepares them to understand advances in the field of science and medicine. Since starting at MUSM, I have participated as a resource in the host defense phase of the BMP, lecturing on antigen presentation, the immune synapse, and lymphocyte activation from 2010-present.

As an advisor, it is important to serve as a guide and encourage students through their academic and professional endeavors. Many students find that adjusting to medical school is difficult and, in many cases, personal study habits that were successful in their undergraduate studies are not effective in medical school. Many students need to be mentored regarding the expectations and realities of medical school. This is often best established by having a faculty

member with whom they can comfortably discuss these topics. The ability of faculty members to effectively serve as mentors/advisors to students plays an important role in the ultimate success of the student. Setting a good example by displaying high standards, hard work ethic while being available to discuss issues concerning the student teaches these future educators and physicians the importance of being a good mentor/advisor. Since joining Mercer University School of Medicine, I have had the pleasure of serving as an advisor to fourteen medical students. These interactions have strengthened my skills as a medical student mentor/advisor and have taught me the important role an advisor plays in the success and development of medical students.

In summary, my current teaching philosophy has been heavily influenced by my experiences at MUSM. Being an effective teacher, in addition to being able to effectively communicate subject matter to students, requires the ability to teach students the importance of self-directed learning and the responsibility they have concerning their education and their future role in the community. To accomplish these goals as an educator you must facilitate/guide the students through the challenges associated with developing the skills to become an effective self-learner, serve as an expert resource with the ability to teach difficult concepts, and serve as a mentor/advisor with the role of guiding medical students through personal and professional issues that they may encounter during their education.

II. EDUCATIONAL CONTRIBUTIONS (2009-2013)

A. Instructional Responsibilities

1.Medical Student Teaching

PBL Tutor

Phase	Contact Hours/ year	Learners	2009-10	2010-11	2011-12	2012-13
Phase B	*45*	*MS-1*	*X*			
Host Defense	*45*	*MS-1*	*X*	*X*	*X*	*X*
Hematology	*45*	*MS-1*		*X*	*X*	*X*

2. Experience with Various Instructional Methods

Prior to joining Mercer University School of Medicine I was an assistant professor at the University of South Carolina School of Medicine (2005-2007) and at the Medical College of Virginia (2003-2005). During this time I was responsible for teaching medical students about various aspects of the immune response. These lectures covered topics in basic immunology and tumor immunology. In addition, I was responsible for presenting material to various groups of graduate students. These lectures covered material such as basic function of the immune system, role of the immune response in infection, tumor immunology, and immunotoxicology. Such experiences gave me a strong background in the field of immunology and help prepare me for teaching immunology at MUSM.

Since joining MUSM I have made considerable progress in my knowledge and understanding of the immune system. Importantly, I have made significant progress in my ability to understand and relate the material in a medically-relevant manner. The unique problem-based learning format at MUSM keeps the students interested and engaged while encouraging students and instructors alike to think about the immune response in relation to situations seen in patients.

While at MUSM I have tutored in the Host Defense and Hematology phase of the BMP. These two phases have immunology components that play an important role in the overall education of the medical students in the field of immunology. In addition, I provided necessary insight as one of the two immunology discipline representatives and as the primary immunology representative on the Macon campus. I am also responsible for the immunology sections for the musculoskeletal, renal, and neuroscience phases. These are responsibilities I take seriously and continue to work towards improving my familiarity with all aspects of the immunology discipline. I continuously review the primary text to ensure I am familiar with all the material the students cover. As the field of immunology rapidly advances and expands, I put considerable effort into maintaining and incorporating important findings in the field into any resource presentations as well as into the immunology sections of the phases for which I am responsible.

B. CURRICULUM DEVELOPMENT

Item	**Course**	**Dates**	**Description**	**Role**
Study Guide	*Renal Phase*	*2011-present*	*Responsible for maintaining and updating Immunology section*	*Discipline Representative*
Study Guide	*Musculoskeletal phase*	*2011-present*	*Responsible for maintaining and updating Immunology section*	*Discipline Representative*
Study Guide	*Neuroscience*	*2013-present*	*Responsible for maintaining and updating Immunology section*	*Discipline Representative*

C. LEARNER ASSESSMENT

Item	**Course**	**Frequency/**	**Learners**	**Role**
SOCA	*Phase B*	*1/year 2009*	*MS-1*	*Oral Examiner*
SOCA	*Host Defense*	*1 group of students /year from 2009-2013*	*MS-1*	*Oral Examiner*
SOCA	*Hematology*	*1 group of students/year*	*MS-1*	*Oral Examiner*

		from 2010-2013		
Multiple Choice questions	*Renal, Musculoskelatal*	*From 2010-2013*		*Developed new questions; revised existing questions*
PBL group performance	*Host Defense*	*1 group of students/year from 2009-2013*	*MS-1*	*Assessed student performance during group*
PBL group performance	*Hematology*	*1 group of students /year from 2010-2013*	*MS-1*	*Assessed student performance during group*
Immunology discipline remediation	*Immunology Discipline*	*1 student 2012* *5 students 2013*	*MS-1, MS-2*	*Developed written and oral immunology exams; advised students*

D. ADVISING/MENTORING

1. Undergraduate Students

	Name	**Dates**	**Degree/ Field of Study**	**Department/ Institution**	**Comments (Research Focus)**
1	*Eric Ennuson*	*2013-present*	*B.S.*	*CLA/Mercer*	*Nicotine and the anti-tumor immune response*
2	*Gina John*	*2013-present*	*B.S.*	*CLA/Mercer*	*Hyaluronic synthase and cancer*
3	*Mariah Sappington*	*2012-2013*	*B.S.*	*CLA/Mercer*	*Role of osteopontin in acute lung injury*
4	*Clara Castillejo*	*2011-2013*	*B.S.*	*CLA/Mercer*	*Role of hyaluronic acid in acute lung inflammation*
5	*Gabriela Law*	*2010-2012*	*B.S.*	*CLA/Mercer*	*Role of CD44 in acute lung inflammation*

2. Graduate Students

	Name	Dates	Degree/ Field of Study	Department / Institution	Comments (Thesis Title)
1	*Harriet Hagele*	*2013-present*	*M.S./ Biomedical Sciences (immunology)*	*Division of Basic Medical Sciences/MUSM*	*The role of CD44 and the extracellular matrix in acute lung inflammation*

3. Medical Students

	Name	Dates	Program	Department / Institution	Comments
1	*14 first and second year medical students*	*8/2010-present*	*Academic advisor*	*Biosciences/ MUSM*	*Served as academic advisor*
2	*Matthew Carmichael*	*2013*	*Senior Elective*	*MUSM*	*Supervised senior elective in basic research*
3	*Charles Land*	*Summer 2010*	*Summer Scholars*	*Basic Sciences*	*Supervised summer scholar's project entitled:* Targeting CD44 isoform expression in the treatment of breast cancer

4. Postdoctoral Fellows

	Name	Dates	Program	Department / Institution	Project Title
1	*Hao Ban*	*2013-present*	*Basic Sciences*	*BMS/MUSM*	*Influence of hyaluronic acid on lymphocyte activation and signaling*

III. PROFESSIONAL DEVELOPMENT

	Course/ Activity/Description	Dates	Location	# of hours
1	*NBME Question writing workshop*	*November 29, 2012*	*Macon, GA*	*4 hours*

IV. Evaluation of Teaching (Representative comments are provided. Complete evaluations are available upon request)

1. Host Defense

Course	**Learner**	**Number of Learners**	**Years Taught**
Host Defense	MS-1	29	4 years (2010-2013)
Would you choose to have Dr. McKallip as a tutor?		1. Yes = 27 No=1	

Sample Comments:	Dr. McKallip was the best tutor I have had thus far. He was WONDERFUL, actually. I felt like he was always well prepared and kept us very focused. He has a great sense of humor and would slow us down if we were getting off track. (From 2010 evaluation) I thought he was very helpful, encouraging, and willing to step in and clarify during group sessions. He definitely let us lead, but didn't use that as a way to disengage as I have seen in other groups. He would catch when we were wrong about things and provided clarifications and guidance when needed. That's how a tutor session should be run! (From 2010 HD evaluation) Dr. McKallip was an outstanding tutor. I especially appreciated his clarifications on topics with which our group had difficulty, his thorough understanding of immunological concepts facilitated our group throughout the phase. (From 2011 HD evaluation) Dr. McKallip is a great tutor and facilitator, especially for the Host Defense phase. He allowed us to discuss topics we felt were most important and guided our discussions to focus on the most pertinent aspects of these topics (From 2011 HD evaluation) Dr. McKallip was very knowledgeable and was a great help to us during group discussion. He greatly enhanced our ability to grasp the subject matter. (From 2012 HD evaluation) Dr. McKallip was an excellent tutor in every regard. (From 2012 HD evaluation) At this point, I have had two stellar tutors: Dr. Walker for Phase A and Dr. McKallip for Host Defense. They differed drastically in their approach. Dr. Walker was very actively involved. Dr. McKallip, of course, was also involved in the group process but he served more as a guide/manager than as a participant. He chimed into the discussion when he needed to clarify some sort of misunderstanding we had about the material, to help us decide what we should be reading/reviewing in preparation

	for our next meeting, or simply to tell us the time for tangential discussions was over and we needed to get back on task, otherwise, he was relatively hands off. Honestly, I think he maintained the perfect balance, he was involved enough that we never really missed a beat in our discussions, but not so involved that he was lecturing. I felt incredibly well prepared for this MDE, especially the immune portion, in large part due to his management of our group. (from HD 2013 evaluations) Dr. McKallip was a good tutor and was definitely helped guide our group, particularly pertaining to immunology. I think that he did a good job ensuring that our group covered the proper topics. He also valued to input from each and every person and helped guide the discussions in a way that would be most productive. (From HD 2013 evaluations)

2. Hematology

Course	**Learner**	**Number of Learners**	**Years Taught**
Hematology	MS-1	19	3 years (2011-2013)
Would you choose to have Dr. McKallip as a tutor?		1. Yes = 19 No=0	
Sample Comments:	Dr. McKallip was able to steer the group in the right direction, always making sure that we understood the material presented and indicating the degree to which we needed to understand. (From Hematology 2011 evaluations) Dr. McKallip was a wonderful tutor. He was prepared for group every day, and always worked to keep us on topic. He is extremely smart and we were fortunate to have him guiding us. (From Hematology 2011 evaluations) He gave us the long end of the rope. He let us figure out how we wanted to do things and then made sure we did. Without any nudging we were all participating and it was a synergistic group. He helped foster a comfortable, fun, learning environment. I enjoyed this phase and felt like I learned a lot. (From Hematology 2012 evaluations) Dr. McKallip is an excellent tutor. He always came into class with a good attitude and was supportive of the student discussion. He facilitated equal discussion of group topic which helped for a well-rounded discussion. (From Hematology 2012 evaluations) I really enjoyed having Dr. McKallip as a tutor. He allowed a good bit of autonomy as far as the group process is concerned, but never hesitated to step in when he felt we were off track in any manner. (From Hematology 2013 evaluations) Dr. McKallip was a great tutor; allowed the group to lead but gave us guidance. (From Hematology 2013 evaluations)		

3. Resource Evaluations

COMBINED CAMPUSES (Mac & Sav) 1st Yrs. Class of 2016

Phase: Host Defense **Time: 1:30 – 3:00 pm** **Date: 11-19-12**

Resource Session (Topic): Immunology **Presenter: Dr. McKallip**

1. The material presented facilitated my understanding of the topic.

   agree 20 somewhat agree 4 somewhat disagree disagree

2. The material was presented in a clear manner.

   agree 22 somewhat agree 2 somewhat disagree disagree

3. This session covered material I was having difficulty with.
   agree 19 somewhat agree 4 somewhat disagree 1 disagree

4. The material presented helped clear up a misunderstanding I had on the topic.
   agree 19 somewhat agree 3 somewhat disagree 2 disagree

5. I would recommend that students in next year's class attend this session.
   agree 19 somewhat agree 5 somewhat disagree disagree

6. My time would have better spent in independent study.
   agree somewhat agree 2 somewhat disagree 8 disagree 14]

Comments/suggestions for improvement:

- Helpful – good pace – receptive to student questions
- Very slow! Suggest condensing same material or leaving it for clarification if further questions
- Good – maybe be a little more excited
- Needs more pizazz
- I appreciated the brevity of this resource and he got straight to the point.
- Thank you Dr. McKallip! This was helpful!
- So helpful!
- Great overview of these topics

SAVANNAH CAMPUS 1st Yrs. Class of 2015

Phase: Host Defense **Time: 1:30 - 3:30 p.m.** **Date: 11-21-11**

Resource Session (Topic): Lymphocyte / T Cell Activation **Presenter: Dr. McKallip**

1. The material presented facilitated my understanding of the topic.

   agree 6 somewhat agree 7 somewhat disagree 1 disagree

2. The material was presented in a clear manner.

   agree 8 somewhat agree 5 somewhat disagree 1 disagree

3. This session covered material I was having difficulty with.

   agree 3 somewhat agree 9 somewhat disagree 2 disagree

4. The material presented helped clear up a misunderstanding I had on the topic.

   agree 3 somewhat agree 10 somewhat disagree 1 disagree

5. I would recommend that students in next year's class attend this session.

   agree 5 somewhat agree 7 somewhat disagree 1 disagree 1

6. My time would have better spent in independent study.

   agree 1 somewhat agree 4 somewhat disagree 4 disagree 5

Comments/suggestions for improvement:

- The material covered is not conceptually difficult, but if a student were confusing any of these processes, the resource would be helpful. Having already read and understood these topics, the resource served as a good review.
- Less direct slide reading and more explanation

COMBINED (SAV & MAC) CAMPUSES 1st Yrs. Class of 2014

Phase: Host Defense Time: 1:30 – 3:30 Date: 11-22-10

Resource Session (Topic): Immunology-Antigen Presentation, Synapse, and Lymphocyte Activation

Presenter: Dr. McKallip

1. The material presented facilitated my understanding of the topic.

   agree 17 somewhat agree 7 somewhat disagree 2 disagree

2. The material was presented in a clear manner.

   agree 18 somewhat agree 8 somewhat disagree disagree

3. This session covered material I was having difficulty with.
   agree 12 somewhat agree 13 somewhat disagree 1 disagree

4. The material presented helped clear up a misunderstanding I had on the topic.
   agree 13 somewhat agree 10 somewhat disagree 3 disagree

5. I would recommend that students in next year's class attend this session.
   agree 17 somewhat agree 6 somewhat disagree 3 disagree

6. My time would have better spent in independent study.
   agree 2 somewhat agree 8 somewhat disagree 5 disagree 11

Comments/suggestions for improvement:

- Try to speak with more enthusiasm, please! Appreciate the overview, though. Thank you!
- It was not helpful because I hadn't read it yet.
- Too much from Abbas, needed diff. figures
- Maybe go into a little more depth and don't just read off of the power point. As a general overview, however, it was very useful!
- The material was presented the same as in the book. It didn't really help clear things up, but the material was just presented again exactly like the book.
- Thank you for the resource! Very helpful!

RESEARCH AND SCHOLARLY ACTIVITY

IF YOU MUST ADD SCIENCE, SUMMARIZE AS THIS APPLICANT DID

I. Research Philosophy and Goals (click on blue italicized writing to view manuscript)

I feel privileged to have been given the opportunity to develop a career in the medical sciences. As an undergraduate student at Virginia Polytechnic Institute University and State University I was first exposed to the field of immunology. This initial spark led to my pursuing a Master's degree in Immunology and a Ph.D. in Molecular and Cellular Oncology and ultimately to the development of an independent research program centered on understanding the role of the immune system in human disease. My research goals are built on the philosophy that discoveries in the basic medical sciences are critical for achieving advancements in understanding and treating human disease.

Since joining the Division of Basic Medical Sciences at Mercer University School of Medicine in 2009 I have established an exemplary research program and developed new collaborative research programs. To this end, I have built a highly productive research program that has published nine papers in peer-reviewed journal, obtained external funding, and presented at regional and national conferences. This work has led to the building of the foundation for a number of collaborative research programs all centered on understanding the role of the immune system in human disease.

A primary focus of my laboratory is the development of novel therapies for cancers including but not limited to leukemia, melanoma, and breast cancer. In this area my laboratory at Mercer has published four manuscripts, submitted eight grant applications (two funded) and presented at regional and national conferences. Three of the manuscripts report on the effect of novel therapies on chronic myelogenous leukemia survival. In the initial manuscript published in the journal *Leukemia Research* we demonstrated that exposure to the natural quinone plumbagin led to apoptosis in CML through the upregulation of the death receptor DR5. In a second paper, published in *Leukemia Research* we examined the effect of the hyaluronic acid synthase inhibitor 4-MU on the induction on the growth and survival of CML and demonstrated that 4-MU led to reduced production of hyaluronic acid and subsequent induction of apoptosis. In the third paper published in the journal *Leukemia Research*, we tested a novel therapy that was based on tumor-associated splicing of pre-mRNA. Here we characterized the unique expression of two CD44 isoforms and then used this information to develop toxin-linked constructs that relied on proper splicing for activity. These toxin-linked splicing vectors were then shown to induce apoptosis in a tumor-selective fashion. The fourth paper which was published in the journal *Cancer Immunology and Immunotherapy* we demonstrated the potential importance of CD44 in IL-2-induced immune-mediated killing of melanoma. Through this work, my laboratory at Mercer has become well-recognized in the area of tumor immunology and leukemia research. This is evidenced by requests from numerous journals to review manuscripts, acceptance of our work for presentation at national meetings and through my serving as an ad-hoc reviewer for the Congressionally Directed Medical Research Programs study section Blood Cancer-1 and the Association for International Cancer Research Program.

A newer focus of my laboratory is examining the role of the extracellular matrix in acute lung inflammation. Here, my laboratory has focused on the interaction of CD44 isoforms with extracellular matrix components such as hyaluronic acid and osteopontin. Since joining Mercer University, this work has resulted in two publications and a third manuscript submitted for review in the journal *Toxins*. In our initial study published in the journal *Clinical Immunology* we examined the influence of CD44 in staphylococcal enterotoxin B (SEB)-mediated acute lung injury and demonstrated that deletion or blocking of CD44 led to significant protection from SEB-induced lung injury. In a second manuscript published in the journal *Clinical Immunology* we studied the potential influence of the CD44 ligand and

extracellular matrix component hyaluronic acid on SEB-induced lung injury and demonstrated that SEB exposure led to a significant increase in hyaluronic acid and that blocking hyaluronic acid led to significant protection from SEB-induced lung injury. In the third journal, submitted to the journal *Toxins* we determined the potential effectiveness of using the hyaluronic acid synthase inhibitor 4-MU for the treatment/prevention of SEB-induced lung injury and demonstrated that 4-MU was effective at preventing lung injury. Taken together, these three papers have provided preliminary data used in the submission of four grants (2 local, 2 NIH). Two grants were funded and two are pending final review. Both grants under review at NIH were scored, one of which received a competitive impact score of 27. In addition, this work has led to our laboratory becoming nationally-recognized in the area of CD44/extracellular matrix and inflammation. This is evidenced by numerous requests for peer-review of articles, acceptance of our studies for presentations at national meeting and my serving as an ad-hoc reviewer on the NIH Study Section related to lung inflammation.

In summary, since my first appointment as an assistant professor at Mercer University I have established a highly productive and funded research program. Strategically, I strive to develop focused areas of research which has led to my becoming recognized as a leader in research areas related to understanding the influence of the immune system on human disease. Several eminent scientists familiar with my field of research have been asked to evaluate my past and current contributions as a researcher and scholar. These include Dr. Ursula Gunthert, Universität Basel, Dr. Stephan Ladisch, The George Washington University, Dr. Monsour Haeryfar, Western University, and Dr. Michael Oldham, Virginia Commonwealth University.

II. Hypotheses of Research and Scholarly activity

Current research in my laboratory is focused on understanding the various roles CD44 has in human diseases including inflammation and cancer. This work has led to the formation of the hypotheses described below.

A. <u>Development of a novel treatment for cancer directed at tumor-associated mRNA splicing</u>. Alternative mRNA splicing plays an important role in the development and/or progression of various cancers. A number of studies report the unique expression and function of isoforms in specific cancers, suggesting a possible role for variant proteins in tumorigenesis. For example, CD44 isoform 6 (CD44v6) expression occurs in human breast cancer tissue, while the expression of CD44v6 on normal breast tissue is not detectable. CD44 is also differentially expressed in a number of other cancers, including but not limited to head and neck cancer, pancreatic cancer, and prostate cancer, as well as a number of gynecologic malignancies. In addition to CD44, other splice variant proteins such as MDM2, BRCA1/BRCA2, PSA, and numerous members of the FGF receptor family have been reported to be differentially expressed in tumor cells when compared to their normal counterparts. The production of these unique isoforms is tightly regulated and relies on the inclusion of variant exons into unique proteins by alternative splicing of pre-mRNA. **We aim to take advantage of this tumor-specific phenotype to develop a novel therapeutic based on alternative splicing. Specifically, we hypothesize that develop a therapy that contains a toxin gene fused to two variant exons that are preferentially expressed by tumor cells, but not by normal cells, a "splice-activated suicide vector" will lead to a highly effective, tumor-specific therapy (Fig. 1).** Since tumor cells express the CD44v6 isoform, we will construct and test the efficacy of fusions of the catalytic domains of *Pseudomonas aeruginosa* exotoxin A (PE), *Vibrio cholerae* RtxA toxin (RTX), *Haemophilus influenzae* VapC-1 ribonuclease, and *V. cholerae* cholera toxin (CT) to a truncated variant 6 protein, which consists of two exons (Exon 5 and Exon 10,

hereinafter called the "5-10 protein") that are spliced together in frame in the CD44v6 protein, but not in standard CD44. With this approach, which has led to a utility patent application by Mercer University, we combine the tumor-specific splice-activated vector with the truncated active toxins, allowing us to develop highly selective toxin-based therapies with little to no bystander cell killing. This is significant, since theoretically this technology could be engineered to treat any cancer that expresses tumor-associated variant/isoform proteins. Furthermore, this therapy could be personalized to an individual patient based on their tumor's expression of variant isoforms.

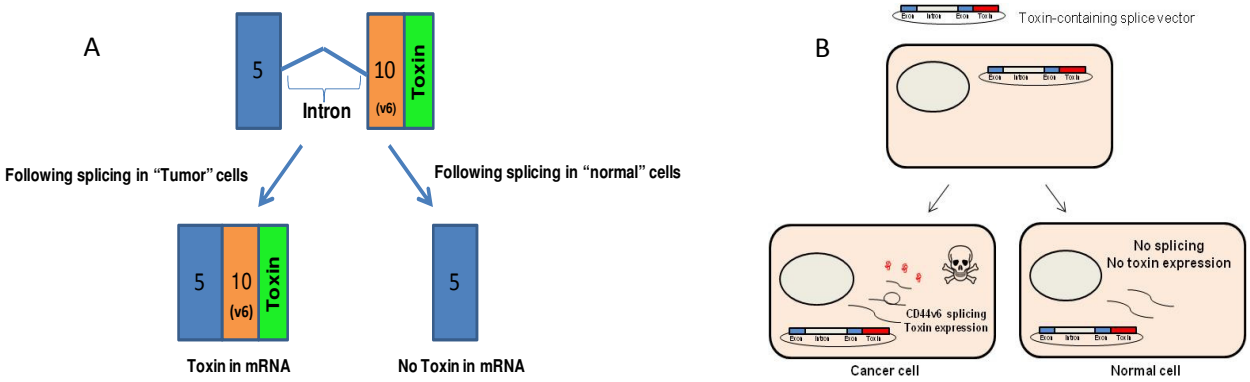

Figure 1. Leveraging tumor-associated alternative splicing of pre-mRNA to produce a toxin fusion. We have developed a CD44v6-toxin fusion that is expressed when alternatively spliced in CD44v6-positive tumor cells following transfection (A) and does not express in CD44v6-negative "normal" cells (B).

B. **<u>Immunotherapeutic approaches to treat melanoma</u>.** It is estimated that approximately 50,000 new cases of malignant melanomas are diagnosed each year in the United States. Due to the widespread growth of the metastatic lesions, surgical treatment is usually ineffective and many of these tumors are resistant to current chemotherapeutic agents. Therefore, there is great need for finding new adjuvant therapies. IL-2 therapy of malignant melanoma has shown limited success. Unfortunately, high dose IL-2-therapy only leads to a slight increase in survival and can have severe life-threatening side effects, which significantly hamper its usefulness. More recently investigators have been exploring the efficacy of adoptively transferring IL-2-stimulated lymphocytes into melanoma patients in conjunction with high dose IL-2 treatment. This approach initially showed significant promise, increasing the response rate from 24% in patients treated with high dose IL-2 alone to 33% in patients treated with the combination of adoptively transferred IL-2-stimulated lymphocytes and high dose IL-2 treatment. Although some progress has been made in the treatment of malignant melanoma using immunotherapy, significantly improved strategies are needed to more successfully treat this disease.

In a recent paper from my laboratory we demonstrated that following exposure to IL-2 there is a significant increase in the expression of CD44, that lymphocytes expressing high levels of CD44 have potent cytolytic activity, and that knocking out CD44 expression led to reduced effectiveness of IL-2 immunotherapy. Little is known about the role of CD44 expressed by activated lymphocytes in the interactions with melanoma. **In the current study we will examine the role of CD44 in the interaction between IL-2-activated lymphocytes and melanomas and we will test the hypothesis that lymphocytes expressing high levels of CD44 (CD44^{hi}) are responsible for mediating lysis of melanoma tumor cells and that this increase in CD44**

expression is directly due to increased expression of CD44 isoforms (Fig 2). Furthermore, we will examine the potential use of the CD44^{hi} cells in the treatment of melanoma.

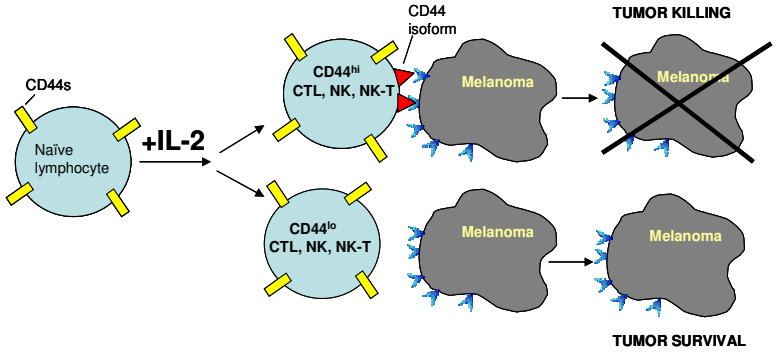

Figure 2. Schematic representation of the role of CD44 isoforms in CD44^{hi}-expressing cells in the killing of melanoma cells. We propose that stimulation with IL-2 leads to increased expression of specific CD44 isoforms and the subsequent generation of a CD44^{hi} population. We propose that CD44^{hi} but not CD44^{lo} cells express the CD44 isoforms responsible for increased interactions with and killing of melanoma tumor cells

C. **<u>The role of the extracellular matrix in immune-mediated acute lung injury.</u>** Infection with *Staphylococcus aureus* is a major problem in both the community as well as the hospital setting. This is in large part due to the development of hospital-acquired methicillin-resistant *Staphylococcus aureus* (HA-MRSA) and more recently community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA). In the hospital setting *S. aureus* is the leading cause of hospital infections, with a mortality rate of approximately 20%. In fact it is estimated that MRSA infections will result in more annual fatalities than those related to HIV. In addition, MRSA has become frequent in otherwise healthy individuals. Community-acquired MRSA has been reported worldwide and is associated with life-threatening disease (1). Clinically, infection with MRSA can result in bacteremia, pneumonia, cellulitis, osteomyelitis, endocarditis, and toxic shock syndrome/sepsis. Those infections resulting in pneumonia or toxic shock syndrome/sepsis have high mortality rates of approximately 32% and 56% percent, respectively (2). *S. aureus* infection related diseases are often a consequence of exposure to superantigens such as staphylococcal enterotoxin B (SEB) which bind to MHC class II molecules on antigen presenting cells and specific β-chains of the T cell receptor leading to clonal activation of up to 40% of naïve T and possibly NKT cells (3). Activation of these lymphocytes leads to the release of high concentrations of pro-inflammatory cytokines such as IL-1β, IL-2, IL-6, TNF-α, KC, and MIP-2 which can lead to endothelial cell injury, acute lung injury (ALI), acute respiratory distress syndrome (ARDS), and vascular collapse (shock)(4). Currently, there are no known effective treatments for these conditions (5).

In previous work, we demonstrated that activation of lymphocytes with IL-2 led to a significant increase in expression of CD44 isoforms and that deletion of CD44v7 or treatment with anti-CD44v7 mAbs led to a significant decrease in vascular damage. In addition, we reported that CD44v7 expression is elevated in splenocytes following exposure to SEB and that CD44v7 plays an important role in SEB-induced liver damage. In a recently published paper examining a possible role of CD44 in SEB-induced vascular damage we revealed that following SEB exposure there is a significant increase in CD44 expression in BALF cells, that CD44KO mice were resistant to SEB-induced vascular damage and that treatment with anti-CD44 mAbs conferred significant

protection to SEB-exposed mice, suggesting that CD44 might be a novel target for treatment of SEB-induced ALI (8). Furthermore, in a second paper we demonstrated that SEB exposure leads to increased levels of hyaluronic acid in the lungs and that treatment with a hyaluronic acid blocking peptide could confer significant protection to SEB exposed mice. **We propose to extend these studies in human PBMCs and in a mouse model that is highly relevant to the response seen in humans and to test the central hypothesis that SEB exposure differentially regulates lymphocyte expression of CD44 (standard or isoforms) and hyaluronic acid by the lung endothelium which play a significant role in the development of ALI/ARDS (Figure 3).** We will also explore the possibility of targeting CD44 isoforms and/or hyaluronic acid expression as novel treatments for SEB-induced ALI/ARDS.

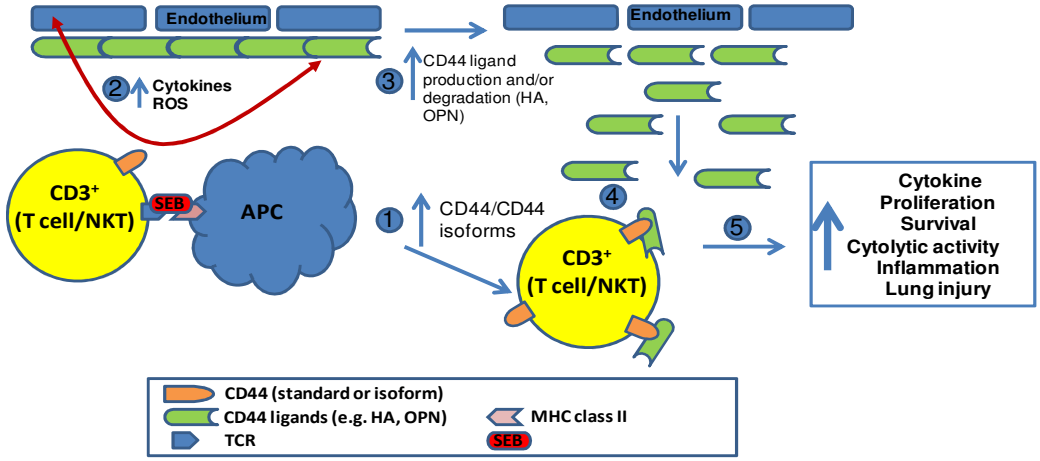

Figure 3. Role of CD44/CD44 isoforms in the SEB-induced inflammatory response. We propose that SEB exposure leads to increased expression of CD44/CD44 isoforms (1). In addition, SEB exposure leads to increased cytokine and/or ROS production by T/NKT cells (2) which cause lung epithelial cells to increase production and/or degradation of CD44 ligands (e.g. OPN, HA) (3) which interact with CD44/CD44 isoforms (4). This interaction then leads to increased inflammation and lung injury (5)

III. Future Direction of Scholarly Activity

The future direction of my scholarly activity is directly related to conducting work to directly test the hypotheses listed above. The Aims of each of these projects is listed below.

A. **<u>Development of a novel treatment for cancer directed at tumor-associated mRNA splicing</u>.** This work is being done is collaboration with Dayle Daines, Ph.D. at Old Dominion University. To date, this work has resulted in the submission of a number of grants to NIH, the submission of a utility patent, and one publication. We plan to continue this work by addressing the aims listed below with the ultimate goal of publishing the findings and securing external research funds to support the project. This work was supported with funds from the Mercer University Seed Grant program.

1. Identification of minimal splice unit. In this aim, we will determine the minimal and most efficient intron size that is required for optimized transfection and expression of the toxin fusion following alternative splicing.

2. Development of efficient and effective toxin-linked splice vectors. We will construct and test the efficacy of splice vectors that contain the catalytic portion of various toxins. The efficacy of these constructs will be tested both *in vivo* and in CD44v6 and/or CD44v8-expressing cell lines *in vitro* using assays for cell death and/or apoptosis.

3. Testing effectiveness of toxin-linked splice vectors in combination with established therapeutics. Toxin-linked vectors will be tested for their ability to prevent tumor growth *in vitro* and *in vivo*. Specifically, we will examine the effect of toxin-linked splice vectors in combination with standard first-line therapies.

B. **Immunotherapeutic approaches to treat melanoma.** This work is being done is collaboration with Ursula Gunthert, Ph.D. from Basel University. To date, this work has resulted in the submission of a grant application to NIH and one publication. We plan to continue this work by addressing the aims listed below with the ultimate goal of publishing the findings and securing external research funds to support the project. This work was supported with funds from the Georgia Cancer Coalition and the Mercer University Seed Grant program.

1. **Determining the nature and role of CD44 expression in the lysis of melanoma by IL-2-activated lymphocytes**. Following stimulation with IL-2 lymphocytes will be separated into $CD44^{lo}$ and $CD44^{hi}$ populations and then tested for their ability to lyse melanoma targets. In addition, the expression profile and functions of CD44 isoforms on $CD44^{lo}$ and $CD44^{hi}$ lymphocytes following activation will be examined. Finally, the phenotype of the $CD44^{hi}$ and $CD44^{lo}$ cells will be determined by FACS analysis.

2. **Determining the mechanisms of signaling through lymphocyte-expressed CD44.** We will determine the specific ligand(s) on melanoma tumor cells responsible for the interaction with lymphocyte-expressed CD44. Secondly, we will determine the signaling pathway involved in CD44-mediated lymphocyte activation. In addition we will examine the effect of signaling through CD44 on pathways known to be involved in lymphocyte activation and survival. Finally, we will examine the possibility that CD44 is directly involved in the formation of an immunological synapse between the activated lymphocyte and the tumor targets.

3. **Evaluation of the possible use of adoptively transferred $CD44^{hi}$ cells for the treatment of melanoma *in vivo*.** Following stimulation of naïve splenocytes with IL-2 *in vitro* we will determine whether adoptively transferred $CD44^{hi}$ immune cells can act as an effective treatment of melanoma in the B16F10 melanoma and a human xenotransplant model. The role of the specific isoforms will be further examined by deleting or reducing the expression of specific CD44 isoforms using siRNA and KO technologies and examining the effect on lymphocyte migration and tumor growth and metastasis.

C. **The role of the extracellular matrix in immune-mediated acute lung injury.** This work is being done is collaboration with Mansour Haeryfar, Ph.D. at Western University. To date, this work has resulted in the submission of three grant applications to NIH and two publications. We plan to continue this work by addressing the aims listed below with the ultimate goal of publishing the findings and securing external research funds to support the project. This work is supported

by funds from a MEDCEN Community Health Foundation Research Grant and was supported with funds from the Mercer University Seed Grant program.

1. **Define the nature and role of CD44 in SEB-induced ALI/ARDS.** In human PBMCs and a humanized mouse model CD44 isoform expression will be characterized following SEB exposure. In addition, CD44KO mice as well as siRNA techniques will be used to examine the influence of CD44 isoforms on SEB-induced ALI/ARDS. Furthermore, we will examine the mechanistic influence of the identified isoforms by examining their role in SEB-induced cytokine production and cell migration.

2. **Targeting CD44 for treatment of SEB-induced ALI/ARDS.** We will determine whether targeting CD44 and/or CD44 ligands is effective in treating/preventing SEB-induced ALI/ARDS. Examples of approaches include testing the use of CD44 isoform-specific mAbs, and CD44 isoform-specific binding peptides. In addition, we will examine the ability to target CD44 ligands, such as hyaluronic acid (HA) and osteopontin (OPN), for treating/preventing SEB-induced ALI/ARDS.

IV. Unfunded Projects:

A. Hyaluronic acid synthase isoforms and SEB-induced lung injury.

In preliminary studies examining a role of HA in SEB-induced lung inflammation, we demonstrated that SEB exposure led to a significant increase in the levels of HA in the bronchoalveolar lavage fluid (BALF). In addition, we demonstrated that SEB exposure led to an increase in the expression of hyaluronic acid synthase (HAS) mRNA. Furthermore, we demonstrated that treatment with the HA-binding peptide, Pep-1 led to a significant reduction in SEB-induced lung permeability. Together, these results suggest that modulation of HA production may play an important role in regulating the acute inflammatory response in the lungs. Hyaluronic acid can exist in units ranging from a low molecular weight form (LMW-HA) of approximately 10^5 Da to a high molecular weight form (HMW-HA) of up to 10^7 Da. There is a significant body of evidence suggesting that increased levels of lower molecular weight HA may play an important role in exacerbation and maintenance of the inflammatory response. Production of hyaluronic acid is regulated through the activity of hyaluronic acid synthase (HAS). To date, three HAS isoforms, HAS1, HAS2, and HAS3, have been identified. Furthermore, it has been shown that control of HA size and rate of synthesis may be related to the activity of specific HAS isoforms. In collaboration with Mark Lauer, Ph.D. at the Cleveland Clinic, we propose the following hypothesis: **that SEB exposure differentially regulates HAS isoform activity in the lungs which plays a significant role in the development of acute lung inflammation (Figure 4).** We will test our central hypothesis by testing the following sub-hypotheses:

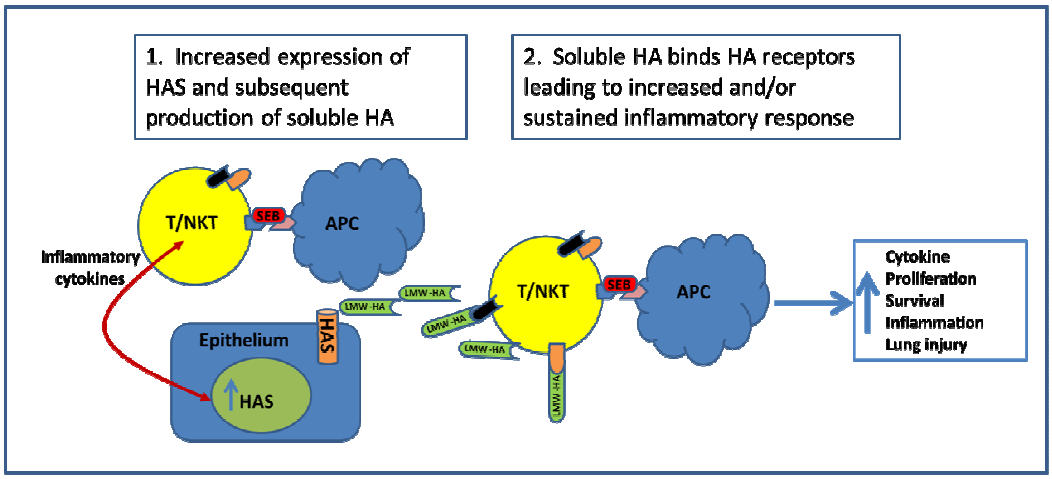

Figure 4. Regulation and role of HAS in the SEB-induced inflammatory response. We propose that SEB exposure leads to increased inflammatory cytokines which cause lung epithelial cells to increase expression of HAS resulting in increased production of soluble HA (1). The soluble HA is then able to interact with HA receptors such as CD44/TLR leading to increased inflammation and lung injury (2)

Sub-hypothesis 1. Specific SEB-induced HAS isoform expression influences the quantitative and qualitative properties of lung HA. Using a humanized mouse model, we will examine the effect of SEB exposure on HAS isoform expression in the lungs. Furthermore, we will examine the influence of HAS isoforms on the concentrations and molecular weight of HA produced in the lungs of HAS isoform KO mice. These results will be further characterized in a human PBMC/epithelial co-cultures by specifically targeting HAS isoforms using siRNA.

Sub-hypothesis 2. HAS isoform expression plays a functional role in SEB-induced acute lung inflammation. Using HAS isoform KO mice, we will examine the role of specific HAS isoforms in the development of SEB-induced acute lung inflammation. In addition, we will examine the effectiveness of targeting HAS expression/activity for the treatment and/or prevention of SEB-induced lung injury. The effects of HAS isoform deletion on SEB-induced vascular permeability, cell proliferation, cell survival/apoptosis, cell signaling, and cytokine production will be examined.

V. Accomplishments in Scholarships

Listed below are three of the major contributions my laboratory has made in the area of Research and Scholarship. Described in these accomplishments are important contributions made in understanding the role of CD44 in human disease which has been a focus of my work since joining Mercer University School of Medicine.

A. Development of a novel treatment for cancer directed at tumor-associated mRNA splicing. In collaboration with Dr. Dayle Daines, my laboratory has initiated work using unique pre-mRNA splicing patterns seen in cancer cells to develop a novel tumor therapy. Thus far our technology has been tested in breast cancer and leukemia cells and has been based on unique CD44 isoform expression. This work has resulted in the submission of a utility patent application, the submission of numerous grants to NIH and the recent publication demonstrating its application in the treatment of chronic myelogenous leukemia (see linked publication).

B. Immunotherapeutic approaches to treat melanoma. We have shown that stimulation of lymphocytes with IL-2 leads to increased expression of CD44 and that CD44 expression plays an important role in the ability of IL-2-activated lymphocytes to recognize and kill melanoma cells (see linked publication). This initial publication has led to our current research project where we are actively characterizing the expression of CD44 isoforms with the hopes of identifying unique CD44 isoforms that can be used to identify and then enrich highly active tumor-specific lymphocytes that can be used to treat melanoma.

C. The role of the extracellular matrix in immune-mediated acute lung injury. The extracellular matrix was thought to be relatively inert. However, it is becoming increasing clear that the interactions with components of the extracellular matrix can have a significant impact numerous biological processes. Work from my laboratory has clearly established a link between the extracellular matrix component hyaluronic acid and CD44 in acute lung inflammation following exposure to staphylococcal enterotoxin B. Importantly, we provided evidence that hyaluronic acid and/or CD44 may be novel therapeutic targets for the treatment/prevention of MRSA-related acute lung injury (see linked publications, CD44, HA).

ADMINISTRATIVE SERVICE

I. Philosophy and Goals of Administrative Service

Good leadership plays a vital role in the success of any venture. An effective leader has the ability to understand the scope of the project, develop goals and then efficiently leverage his/her resources to complete the assigned task. Although simply stated, the development of this leadership skill set is a difficult task and often comes from experience afforded by opportunities and a willingness to serve in leadership roles. As an assistant professor at Mercer University School of Medicine I am grateful to have had the opportunity to serve in a number of leadership roles. These opportunities have strengthened my leadership skills and have had a significant impact on my ability to provide exemplary service to Mercer University and have played an important role in my success as a teacher and researcher.

II. Leadership/Administrative Responsibilities

A. Chair of Research Committee

ACTIVITY	
Description of Leadership Role	Chair of MUSM Research Committee • Led the research committee in conducting duties of the Research Committee. • Communicated Research Committee deliberations to the Dean and Executive council.
Duration of Service	Committee Member, 2010-present Chair, 2011-2013
Outcomes, Accomplishments, and/or Significant Impact	• Co-authored a white paper outlining potential strategies for fostering collaborative research at MUSM • Led efforts to advise the Dean on new policy on MUSM Research Stipend Credit Policy. • Led RC efforts to advise the Human Resource Department on the development of a new salary policy for MUSM postdoctoral scientist. • Organized the Joint Research Conference held on May 7th, 2013 in the Medical School Auditorium, MUSM Macon Campus. • Led efforts to advise the Dean on equipment needs of research faculty.

B. Chair of Ad Hoc Committee to review animal per diem rates

ACTIVITY	
Description of Leadership Role	Chair of Ad Hoc Committee • Led committee in review and discussion of MUSM's animal care per diem rates.
Duration of Service	8/2011-11/2011
Outcomes, Accomplishments, and/or Significant Impact	• Compiled list of rates of animal care per diems from similar institutes • Recommended new set of rates for

	animal care which were subsequently adopted by MUSM.

C. Chair of Institutional Biosafety Committee

ACTIVITY	
Description of Leadership Role	Chair of MUSM Institutional Biosafety Committee • Worked with the Director of Environmental Health and Safety Office to evaluate applications to work with potential biologically hazardous material
Duration of Service	10/2012-present
Outcomes, Accomplishments, and/or Significant Impact	• Evaluated numerous applications for working with potential biohazards. • Continued to discuss and update MUSM scientists on current issues of biosafety

D. Chair of Microbiology Faculty Search Committee

ACTIVITY	
Description of Leadership Role	Chair of search committee • Led discussion of potential candidates • Led interviews of potential candidates • Presented candidates to the faculty
Duration of Service	7/2012-3/2013
Outcomes, Accomplishments, and/or Significant Impact	Work from our committee led to the successful hiring of two new microbiology faculty members in 2013.

E. Director of the Flow Cytometry Core Facility

ACTIVITY	
Description of Leadership Role	Director of the Flow Cytometry Core Facility • Promote the use of flow cytometry • Maintain Instrument • Provide guidance for developing assays for use in various investigators research
Duration of Service	8/2009-present
Outcomes, Accomplishments, and/or Significant Impact	MUSM has a fully functional flow cytometry facility that is available for use by Mercer investigator. Since acting as director of the flow facility numerous investigator have incorporated flow cytometric assays into their research. This service plays a vital role in the research infrastructure of MUSM.

GOOD CITIZENSHIP

I. PHILOSOPHY AND GOALS OF CITIZENSHIP TO MUSM AND REPRESENTING MUSM

As a faculty member of MUSM, I feel that being a good citizen to MUSM and the community is an important responsibility that comes with various rights, privileges, and duties. In order to enjoy the rights and privileges associated with citizenship I feel that it is important to be exemplary and contribute over and beyond the minimum requirements associated with the duties of citizenship. This is best accomplished by actively participating and volunteering to meet both formal and informal needs of MUSM and the community. Formally, I have made efforts to participate in numerous committees associated with MUSM functions and also to regularly attend and participate in faculty meetings. Informally, I make every reasonable effort to help meet the needs of member of the MUSM and local community. Examples of informal needs at MUSM could be as simple as loaning equipment and or materials, reviewing grant and/or manuscripts prior to submission, or mentoring graduate and/or undergraduate students. Examples of informal communities needs could be as simple as pet sitting to giving a science lecture to elementary school students. No matter how simple or complicated the task, by actively participating and volunteering to meet the formal and informal needs of MUSM and the local community I feel that good citizens help to strengthen the community in which they live which ultimately allows the community to continue to enjoy the rights and privileges associated with citizenship.

II. CONTRIBUTIONS

A. University, Medical School, and Hospital Committees.

ACTIVITY	
Description of Committee	*Ad-hoc Committee to review research space allocation and usage. Mercer University School of Medicine. Role: member*
Duration of Service	*2013-present*
Outcomes, Accomplishments, and/or Significant Impact	*The committee is analyzing current needs and use of research space and will make recommendation on how to use available resources.*

ACTIVITY	
Description of Committee	*Institutional Biosafety Committee. Mercer University. Role: Chair*
Duration of Service	*2012-present*
Outcomes, Accomplishments, and/or Significant Impact	*The committee works to ensure that all necessary precautions are taken to accommodate the safe use of biological agents. This entails reviewing any new research proposal to ensure that it complies with biosafety standards.*

ACTIVITY	
Description of Committee	*Faculty Search Committee (microbiology). Role: Chair*
Duration of Service	*2012*
Outcomes, Accomplishments, and/or Significant Impact	*The committee worked to identify candidates for two open microbiology faculty positions. Once identified the committee performed initial phone interviews, coordinated on-site visits, and presented summaries of the candidates' visits to the faculty for their consideration.*

ACTIVITY	
Description of Committee	*Faculty Search Committee (virology). Role: member*
Duration of Service	*2012*
Outcomes, Accomplishments, and/or Significant Impact	*The committee worked to identify candidates for an open virology faculty position. Once identified the committee performed initial phone interviews, coordinated on-site visits, and presented summaries of the candidates' visits to the faculty for their consideration.*

ACTIVITY	
Description of Committee	*Faculty Search Committee (Immunology). Role: member*
Duration of Service	*2011*
Outcomes, Accomplishments, and/or Significant Impact	*The committee worked to identify candidates for an open immunology faculty position to teach in the new Master's program. Once identified the committee performed initial phone interviews, coordinated on-site visits, and presented summaries of the candidates' visits to the faculty for their consideration.*

ACTIVITY	
Description of Committee	*Faculty Search Committee (microbiology). Role: member*
Duration of Service	*2010*
Outcomes, Accomplishments, and/or Significant Impact	*The committee worked to identify candidates for an open microbiology faculty position to teach in the new Master's program. Once identified the committee performed initial phone interviews, coordinated on-site visits, and presented summaries of the candidates' visits to the faculty for their consideration.*

ACTIVITY	
Description of Committee	*Ad-hoc Committee to review the Division of Basic Sciences P&T procedures*
Duration of Service	*2011-present*
Outcomes, Accomplishments, and/or Significant Impact	*The committee is reviewing the current policy for P&T and will make any recommendations for changes to the faculty of the Division of Basic Medical Sciences.*

ACTIVITY	
Description of Committee	*Ad-hoc Committee to review MUSM's animal care per-diem rates. Role: Chair*
Duration of Service	*2011*
Outcomes, Accomplishments, and/or Significant Impact	*The committee is reviewing the existing animal care-per diem rates to other similar institutions and recommended changes to the existing rates. These suggested rates were subsequently adopted by MUSM.*

ACTIVITY	
Description of Committee	*Research Committee. Role: member (2010-present), Chair (2011-2013)*
Duration of Service	*2010-present*
Outcomes,	• Co-authored a white paper outlining potential strategies for

Accomplishments, and/or Significant Impact	fostering collaborative research at MUSM • Led efforts to advise the Dean on new policy on MUSM Research Stipend Credit Policy. • Led RC efforts to advise the Human Resource Department on the development of a new salary policy for MUSM postdoctoral scientist. • Organized the Joint Research Conference held on May 7th, 2013 in the Medical School Auditorium, MUSM Macon Campus. Led efforts to advise the Dean on equipment needs of research faculty.

ACTIVITY	
Description of Committee	*Admissions Committee. Role: Non-Committee interviewer*
Duration of Service	*2009-present*
Outcomes, Accomplishments, and/or Significant Impact	*Interviewed candidates applying for admission to MUSM. Drafted reviews for consideration by the Admissions Committee.*

B. Professional Societies/Organizations.

ACTIVITY	
Society/Organization	*Sigma Xi (Full Member)*
Duration of Service	*2010-present*
Outcomes, Accomplishments, and/or Significant Impact	*Participated in numerous society events including various presentations and election of officers*

ACTIVITY	
Society/Organization	*American Association for Cancer Research (Member)*
Duration of Service	*2006-present*
Outcomes, Accomplishments, and/or Significant Impact	*Participated in numerous society events including various presentations, election of officer, and presenting research at national meetings*

ACTIVITY	
Society/Organization	*Society of Toxicology*
Duration of Service	*2004-present*
Outcomes, Accomplishments, and/or Significant Impact	*Participated in numerous society events including election of officers and presenting at national meetings*

ACTIVITY	
Society/Organization	*American Association of Immunologist*
Duration of Service	*2003-present*
Outcomes, Accomplishments, and/or Significant Impact	*Participated in numerous society events including election of officers and presenting at national meetings*

C. Community-based Activities.

III. ACTIVITY	
Description of Community Engagement (include name of Organization	*AWANA Club Leader, Mabel White Baptist Church*
Duration of Service	*Fall 2010-Suumer 2011; Fall 2011-Summer 2012*
Outcomes, Accomplishments, and/or Significant Impact	*Led Students through activities associated with AWANA including learning bible verses and through church-related activities*

ACTIVITY	
Description of Community Engagement	*Life Group Leader, Mabel White Baptist Church*
Duration of Service	*Fall 2011-present*
Outcomes, Accomplishments, and/or Significant Impact	*Taught second grade students at Mabel White Baptist church. Duties included implementing the second grade curriculum as well as leading students in community-based outreach*

ACTIVITY	
Description of Community Engagement	*Scientific inquiry lesson, TG Scott Elementary*
Duration of Service	*9/3/2010 and 9/3/2011*
Outcomes, Accomplishments, and/or Significant Impact	*Taught 3rd and 4th grader a lesson on scientific inquiry. Students learned how the basic of hypothesis-driven research*

ACTIVITY	
Description of Community Engagement	*Career Day at T.G. Scott Elementary*
Duration of Service	*10/2009*
Outcomes, Accomplishments, and/or Significant Impact	*Introduced students to a career in the sciences and highlighted research at Mercer University*

ACTIVITY	
Description of Community Engagement	*Monroe County Parks and Recreation Tee ball coach*
Duration of Service	*4/2013-7/2013*
Outcomes, Accomplishments, and/or Significant Impact	*Coached 6 and under tee ball team. Players learned the basic of baseball and participated in recreational tee ball games.*

ACTIVITY	
Description of Community Engagement	*Monroe County Parks and Recreation Soccer coach*
Duration of Service	*9/2011-11/2011*
Outcomes, Accomplishments, and/or Significant Impact	*Coached 8 and under soccer team.*

Validation

I. Area of General and Focal Professional Experience

Research has been my primary professional focus. In addition, I have gained valuable professional experience as a teacher.

My research has focused on understanding the role of CD44 in human disease emphasizing on the role of CD44, CD44 isoforms, and CD44 ligands on the response of immune cells in the inflammation as well as the tumor setting.

My general area of teaching is immunology. I have tutored in the host defense phase for 4 years and have given resource session on basic immunology to the medical students for 3 years. In addition, I have served as the immunology discipline representative for 3 phases including Renal, Musculoskelatal, and Neuroscience.

II. Evidence of Recognition of Professional Experience

A. Local

I received 4 Seed grants from Mercer University to study the role of CD44 and/or its ligands in the immune response to melanoma or staphylococcal enterotoxin B. In addition, I was awarded a MEDCEN grant to study the role of CD44 isoforms in SEB-induced lung injury. Receipt of these grants serves as validation and recognition of my expertise in the area of the immunomodulatory properties of CD44.

My exemplary contributions in the area of teaching immunology were recognized by consistently receiving outstanding tutor evaluations from the students. Many of the comments from the students give credence to my abilities to teach immunology.

B. State

Recognition of my professional expertise in Georgia is evidenced by my receiving a Georgia Cancer Coalition Cancer Research Award for my work examining the role of CD44 isoforms in immunotherapy of malignant melanoma and an invitation to give a talk on this work at the 2011 Georgia Cancer Summit. My proficiency in the area of research was also recognized in Virginia where I received grants from the Commonwealth Health Research Fund, the A.D. Williams Fund, and from the Jeffress Memorial Trust.

C. Regional

Not applicable

D. National/International

Recognition of my professional expertise comes from my receipt of grants from NIH, requests for my participation in the peer review of numerous research manuscripts, my participation as an ad-hoc grant reviewer for three separate organizations, by invitations to present my work at various national meetings and my receiving research-based awards from organizations such as the American Association of Immunologists and the American Association for Cancer Research. Examples of these recognitions are listed below.

a. NIH Grants

i. The role of CD44 isoforms in immunotherapy of melanoma. NCI/NIH (K22-CA109334). McKallip (PI) 08/01/2006-05/30/2007. $152,927.

ii. The role of CD44 isoforms in endothelial cell damage. Individual National Research Service Award (NIH) F32 HL10455. McKallip (PI) 08/01/2000-11/10/2002, $79,789, PI: Robert McKallip.

b. Journal Reviewer

Journal of Immunology, Blood, Cellular Immunology, Immunobiology, International Journal of Cancer, The European Journal of Pharmacology, CANNABINOIDS, Journal of Pharmacology and Experimental Therapeutics , Neoplasia, International Journal of Oral Science, Apoptosis, Molecules.

c. Grant Reviewer

i. Association for International Cancer Research, ad hoc reviewer, 2012

ii. CDMRP study section Blood Cancer-1 (D-BC-1), ad hoc reviewer, 2012

iii. NIH Study Section LCMI, ad hoc reviewer,2012

d. Presentations at National Meetings

i. Castillejo, C.M., Uchakina, O.N., Bridges, C.C., McKallip, R.J. The Role of Hyaluronic Acid in SEB-Induced Acute Lung Inflammation. Poster presentation at the Experimental Biology Meeting, April 20-24, 2013 in Boston MA.

ii. McKallip, R. J., Bridges, C.C., Law, G.P., Sun, J. Targeting CD44 in SEB-induced acute respiratory distress syndrome. Poster presentation at the 99th AAI Annual Meeting, May 4-8, 2012 in Boston MA.

iii. McKallip, R. J., Law, G., Sun, J. Role of CD44 in LAK cell-mediated killing of melanoma. Poster presentation at the 102nd AACR Annual Meeting, April 2-6, 2011 in Orlando, FL.

iv. McKallip, R. J., Lombard, C., Ramakrishnan, R., Warren J. W. Plumbagin-induced apoptosis in lymphocytes is mediated through increased reactive oxygen species production and activation of the caspase cascade. Platform (oral) presentation at the 46th Annual Meeting of the Society of Toxicology, March 25-29, 2007 in Charlotte, NC.

e. Awards from National Organizations

i.	American Association of Immunologist Junior Faculty Travel Award	2012
ii.	AACR Minority Scholar Award in Cancer Research	2006
iii.	American Association of Immunologist Junior Faculty Travel Award	2004
iv.	American Association of Immunologists Minority Scientist Travel Award	2003

Tenure

I. Quality of Teaching

A. Evidence of high standards of teaching through evaluations by students

As a faculty member of a medical school I feel that training and teaching medical students is an important and rewarding responsibility. Therefore, I have and continue to develop the skills and expertise necessary to become an effective tutor and instructor. Evidence for my effectiveness and for the high standards I place on teaching is provided by my tutor and resource evaluations. Examples of my evaluations are provided in the Teaching section of my application for promotion.

B. Peer-review of teaching evaluation

Since my joining Mercer University no opportunities for peer-review of my teaching were offered.

C. Evidence of improvement

The small group PBL format of teaching medical students is a unique feature of Mercer University School of Medicine which differs dramatically from the teaching style of more traditional medical schools. During the last four years I have tutored in the Host Defense phase and for the last three years I have tutored in the Hematology phase. During this time I have become more comfortable and more effective as a tutor using this format. Evidence for my improvement as a tutor is provided by my student evaluations found in the Teaching section of my application for promotion.

II. Education and Experience

A. Evidence of continual education in areas of proficiency

Knowledge about the immune system is rapidly evolving. Therefore it is imperative that faculty members responsible for teaching immunology stay up to date with advances is the field. In order to remain current, I continue to attend national research meetings that specifically address new findings relevant to the general immunology field as well as my research interest. Examples of these meeting include the Experimental Biology meeting held in Boston, MA in 2013, the American Association of Immunologist meeting held in Boston, MA in 2012, and the American Association for Cancer Research held in Orlando, FL, in 2011. In addition I was one of the founding members and organizers of the infectious disease interest group (iDIG) in the Division of Basic Medical Sciences which acts as a forum for discussing recent findings in the area of infectious disease through biweekly journal club meetings.

B. Evidence of developing expertise

Evidence for my continued development of expertise as an immunologist comes from numerous requests to review manuscripts and from my participation as an ad-hoc grant reviewer for three different immune-based or cancer-based organizations. In addition, I

continue to collaborate with eminent national and international scientists on a number of immune-based and cancer-based research projects.

C. Evidence of disseminating skills and expertise

An important mechanism for disseminating skills and expertise is through providing opportunities for exposure and training students in your area of expertise. Since joining Mercer University I have provided opportunities for numerous undergraduate, graduate, postdoctoral fellows and medical students to gain exposure to research in biomedical sciences specifically examining the role of the immune response in human disease. To date, five undergraduates, one graduate, two medical students, and one postdoctoral fellow have worked in my laboratory. This work has resulted in students receiving national awards, presenting at national conferences, and co-authorship on four manuscripts. Since working in my laboratory three of the students have graduated and are currently enrolled in graduate and/or medical school.

III. Professional Achievement and Scholarship

A. Evidence of professional achievement and scholarship external to MUSM

An important measure of scholarly achievements is through peer-review of your research, which primarily involves critical evaluation of manuscripts and grant proposals. To date, I have published 29 papers in peer-reviewed journals 9 of which have been published since I joined MUSM. Of these 9 manuscripts I served as first and/or corresponding author on 8 manuscripts. In addition, I have submitted numerous grants for review by external organizations including NIH, the Georgia Cancer Coalition, the MEDCEN Community Health Foundation, the American Cancer Society, Commonwealth Research Fund, the Jeffress Memorial Trust, and the A.D. Williams Fund. Of these submissions, I have been awarded 10 external grants. In addition, of the grants not currently funded, I have received competitive scores suggesting the possibility of future funding. Through my work I have become recognized in the fields of lung inflammation, immunotoxicity, and leukemia research which is evidenced by numerous requests to review manuscripts and grants related to these fields.

IV. Responsible Participation in Group Efforts, Cooperation with Colleagues, and Collegiality

Evidence for my responsible participation in group efforts, my cooperation with colleagues and my collegiality can be found in my numerous interactions with faculty members of MUSM. For example, I was one of the founding members of the infectious disease interest group. I participated on numerous faculty search committees. I also was a member of several ad-hoc committees, including the committee to review animal care per-diem rates, the committee to review the Division of Basic Medical Sciences P&T policy, and the committee to review research space allocation and usage. In addition, I actively search out opportunities to collaborate with MUSM investigators as evidenced by co-authorship on three manuscripts, the submission of grants as Co-PI with MUSM researchers and the submission of a patent application.

V. Professional Responsibility and Service to the School and Community

A. Evidence of responsibility and service to the university

I served as the chair of the Institutional Biosafety Committee since 2012.

B. Evidence of responsibility and service to the school.

I served on numerous committee including the Research Committee (2010-present) during which I acted as the Chair from 2011-2013. In addition, I served on 5 faculty search committees, including serving as Chair of two committees searching for microbiologists. I also served on several ad-hoc committees including the committee to review animal care per-diem rates, the committee to review the Division of Basic Medical Sciences P&T policy, and the committee to review research space allocation and usage. In addition, I served as a non-committee admissions reviewer from 2009-present.

C. Evidence of responsibility and service to the community

I place great importance on serving the community. To this end, I served at Mabel White Baptist Church as an AWANA group leader from 2010-2012, as a Life Group Leader from 2011-present, and as a Camp Impact Instructor in 2013. In addition, I served the community through my participation as a soccer and tee ball coach in 2011 and 2013, respectively. Finally, I served the community by participating in numerous elementary school activities, including presenting lessons on scientific inquiry (2010-2011) and presenting at career day at T.G. Scott Elementary (2009).