PERSONAL STATEMENT

Amber L. Mosley, PhD  Area of Excellence – Research

This document summarizes my professional development during my appointment as an Assistant Professor at Indiana University School of Medicine and provides insight into my research, teaching, and service activities.

My research interests have been centered on the regulation of gene expression since beginning my training. My graduate work with Dr. Sabire Özcan at the University of Kentucky focused on histone modification changes at specific gene promoters mediated through nutrient regulated transcription factors including Rgt1 and Pdx1. During my postdoctoral training with Drs. Washburn and Workman at the Stowers Institute in Kansas City MO, I enhanced my technical repertoire obtaining extensive training in proteomics, genomics, and computational biology to facilitate global analysis of transcription mechanisms. During my postdoctoral work I identified a novel protein, Rtr1, involved in the regulation of RNA Polymerase II phosphorylation during transcription elongation. I joined the faculty at Indiana University in the Department of Biochemistry and Molecular Biology in fall of 2010 where the mechanisms through which Rtr1 regulates transcription have been a major focus of my research program. While in rank I have been a co-author on twelve peer reviewed research articles including six with trainees from my laboratory at IU School of Medicine. I have been the principle investigator on six grants (two external / five internal) including an R01 from NIH that was awarded in 2012 and a research grant from NSF that was awarded 08/01/2015. In addition to my independent research activities, I have contributed to various collaborative research projects both within and outside IU. During my appointment I have also been engaged in teaching both medical and graduate students and have participated in various service activities for the department, the School of Medicine, and IUPUI.

Research activities (area of excellence)

A. Independent Research

My overarching research interest is the regulation of RNA Polymerase II gene transcription with a focus on elongation and termination. Control of gene expression is a fundamental biological process that is often disrupted in various human diseases including cancer. We are particularly interested in the regulation of gene expression through post-translational modifications such as phosphorylation, methylation, and ubiquitylation. The main goal of my research program is to understand how changes in post-translational modifications of the transcription machinery mediate precise changes in gene expression.

Project 1: Identify the role of Rtr1 in the regulation of RNA Polymerase II termination. Rtr1 is an RNA Polymerase II (RNAPII) phosphatase that I initially characterized during my postdoctoral training. Rtr1 is conserved from yeast to humans and plays a major role in vertebrate development (unpublished findings, Mosley lab). Rtr1 also functions as a general regulator of RNAPII, the enzyme responsible for the transcription of messenger RNAs as well as other small noncoding RNAs. In our initial studies on Rtr1, we found that the phosphatase is responsible for removal of serine 5 phosphorylation on the unique C-terminus of the largest subunit of RNAPII (hence referred to as the CTD). This project, which was initially supported by the Ralph W. and Grace M. Showalter Research Trust Fund, is currently supported by
an R01 from the National Institutes of Health – National Institute of General Medical Sciences through August 2017. In this project we have three main goals: 1. Determine if Rtr1 is a global regulator of serine 5 CTD phosphorylation, 2. Characterize the role Rtr1 plays in the regulation of the transcription termination machinery, and 3. Determine the interplay between Rtr1 and elongation specific chromatin regulatory proteins. We are preparing a manuscript that shows that Rtr1 is a global regulator of RNAPII phosphorylation to address goal 1. We are currently finishing the experiments for an additional manuscript that describes the role of Rtr1 in RNAPII termination. Experiments for our third goal are also underway. These studies have led to additional spin-off projects in the laboratory such as project 3.

**Project 2: Determine the catalytic mechanism of the CTD phosphatases Rtr1 and RPAP2.** The phosphatase Rtr1 is conserved from yeast to humans where it has been named RPAP2. Interestingly, Rtr1/RPAP2 do not have sequence or structural homology to known phosphatases. As such, the catalytic mechanism of Rtr1/RPAP2 action is currently unknown. If Rtr1/RPAP2 do represent a novel type of protein phosphatase characterization of their mechanism of action could have broad biological implications and could lead to the identification of novel protein phosphatases across all eukaryotes. To determine if yeast Rtr1 requires additional regulatory proteins for its activity in vivo, we performed extensive affinity purification studies of Rtr1 followed by in-depth statistical analysis to identify all significant interacting partners of Rtr1. These studies were published as a research article by my laboratory in Molecular Biosystems in July 2014, on which my research analyst Whitney Smith-Kinnaman was first author. In this article we determined that the serine 2 kinase complex CTDK-I is required to recruit Rtr1 to RNAPII. In addition we partnered with the Varani lab at the University of Washington and the Greenblatt lab at the University of Toronto to further characterize the molecular action of Rtr1 and RPAP2 respectively through structural and kinetic studies. The findings of the collaborative studies on yeast Rtr1 with the Varani lab were published in the Journal of Molecular Biology in August 2014. For this study, we performed in vitro kinase and phosphatase experiments using recombinant CTD substrates as well as analysis of yeast phenotypes associated with the Rtr1 E66A mutants. The results of the collaborative studies on human RPAP2 were published as a research article in Nature Structural and Molecular Biology in August 2014. A graduate student, Gerald Hunter, performed numerous in vitro phosphatase assays that were included in this study including analysis of the activity of RPAP2, RPRD1A, and RPRD1B on the small molecular substrate DIFMUP. These studies also showed that RPAP2 is inhibited by known phosphatase inhibitors and zinc. Our plans for the next steps in this project are to characterize the interactions between Rtr1/RPAP2 and their substrates through oxidative labeling studies in collaboration with the Jones lab in IUPUI Department of Chemistry.

**Project 3: Examine the role of the RNA exosome complex in the regulation of RNA Polymerase II termination.** The exosome is a multisubunit protein complex containing two 3’ to 5’ exonucleases known as Rrp6 and Dis3 in yeast. Two subunits of the exosome have been implicated in the human disease pontocerebellar hypoplasia (also known as PCH1B). However the molecular mechanisms that underlie this pathology are unknown. Our laboratory performed an in-depth molecular characterization of wild-type and RRP6 deletion yeast using a variety of functional genomics approaches. Using both RNA-sequencing and high resolution chromatin immunoprecipitation followed by sequencing, we characterized a number of molecular changes that occur in RRP6 deletion strains. We determined that the exosome component Rrp6 not only regulates RNA decay (as had been previously described) but also regulates RNAPII
transcription termination such that deletion of RRP6 caused termination defects at specific RNAPII target genes. These studies were published as a research article in PLoS Genetics in February 2015 on which my graduate student, Melanie Fox, was first author. We plan to continue these studies to determine if the regulation of RNAPII termination by the exosome occurs directly or indirectly.

Project 4: Construct an RNA Polymerase II protein-protein interaction network to identify the key proteins involved in the control of transcription elongation. During transcription elongation RNAPII interacts with a wide variety of regulatory factors that control various processes including messenger RNA processing and chromatin remodeling and post-translational modification. We are interested in further characterizing these complexes using various affinity-purification mass spectrometry approaches. Following our initial characterization of RNAPII interacting partners during my postdoctoral work, we undertook additional purifications to study the role of various elongation factors in the regulation of RNAPII. Interestingly, we found that a subset of RNAPII associated factors interact with a 10-subunit form of RNAPII that had previously only been identified using in vitro approaches. These findings were presented at a 2012 FASEB meeting on protein phosphatases and published as a research article in Molecular and Cellular Proteomics in June 2013. I was both first author and co-corresponding author on this article. We plan to continue these studies to characterize important elongation factor – RNAPII interactions during transcription elongation. This project was funded by the Ralph W. and Grace M. Showalter Research Trust Fund through June 2015 and is now funded through an NSF research grant awarded 8/01/2015. This project has become the center of educational outreach activities in the lab and we have incorporated trainees from area high schools and undergraduate campuses (with a focus on IUPUI and DePauw University undergraduates). Projects in this area have also become the focus of the thesis work for masters students through the Biochemistry MS program. This project is optimal for an outreach project because it allows students in these areas to train in biochemistry, analytical chemistry, mass spectrometry, bioinformatics, and computational biology.

B. Collaborative research

I have built a strong foundation in –omics centered research that has continued to flourish in my independent laboratory. As such, I have been involved in a number of collaborative research endeavors including a number that have already resulted in publications while in rank in journals including: Cell Reports, Elife, Journal of Biological Chemistry, and Journal of Proteome Research. I expect that these collaborative efforts will continue throughout my academic career. To highlight some of the current collaborative projects, I have provided a brief description of three of them below. A more extensive list of my collaborators will follow in my research statement.

Collaborative project 1 with Dr. Peter Roach, IU School of Medicine: Analysis of mouse skeletal muscle ubiquitylome by affinity purification – mass spectrometry. In this project, I am working to optimize chromatography conditions to analyze protein ubiquitylation using liquid chromatography coupled to mass spectrometry. I currently receive 5% salary support for this project, which is funded by an R01 to Dr. Roach through NIH – NINDS. We are also currently preparing a manuscript for submission on our chromatography studies.
Collaborative project 2 with Dr. Brian Strahl, University of North Carolina- Chapel Hill: Determine the role of PAF complex phosphorylation in the regulation of histone modifications and transcription elongation. The PAF complex is a five subunit RNAPII transcription elongation factor that is responsible for crosstalk between RNAPII and chromatin. We are currently studying the role of PAF complex phosphorylation on its function and will soon prepare a manuscript on this topic. **Our portion of this project was supported by a Biomedical Research Grant from IU School of Medicine.**

Collaborative project 3 with Drs. Stephen Frye, Ian Davis, and Samantha Pattenden, University of North Carolina – Chapel Hill: Analysis of the interactome of the human methyltransferase G9a and chemoproteomics of small molecule inhibitors. The human methyltransferase G9a is responsible for histone H3 K9 di- and tri-methylation, an important epigenetic regulator of gene expression. **We have recently published a paper in the Journal of Biological Chemistry for which I performed extensive interactome analysis of G9a in various conditions.** Our chemoproteomics work on mass spectrometry analysis of small molecule binding proteins is ongoing as we optimize the purification conditions for mass spectrometry analysis.

C. Research summary and future plans

In summary, I spent approximately 70% of my time on research efforts since my initial appointment in the Department of Biochemistry at IU. During this time, I have successfully obtained external funding from NIH and NSF and received multiple internal grants to help develop new research directions for which we plan to also seek external funding in the future. During this time I contributed to 13 peer reviewed publications, three of which I was corresponding author. We also have an additional three manuscripts currently under review/revision and another in preparation. My research group will continue to investigate the role of the phosphatase Rtr1 in the regulation of RNA Polymerase II function. Additionally, we will pursue additional areas of research including: the role and regulation of various elongation factors, the role of the RNA exosome in RNAPII termination, and the role of post-translational modifications in the regulation of these processes.

Teaching activities

The diverse nature of the research in my laboratory provides many educational opportunities for trainees from diverse backgrounds. **My main educational objective is to make -omic and computational sciences exciting and approachable for trainees from all backgrounds both in the laboratory and in the classroom.** During my appointment at IUPUI, I have established a strong record as a mentor and an educator. I hope to further develop these skills to become a leader in my research area and university while serving as a strong role model and mentor. I have been the primary mentor for two PhD students, six masters students, five undergraduates, and two high school students. Four of the six masters students in my laboratory have already successfully completed their thesis and defense. Additionally, I have hosted eleven rotation students through the Indiana University School of Medicine BioMedical Gateway Program and served on twenty-two thesis committees for masters and PhD students.

From spring 2011 through spring 2013, I gave seven total one-hour lectures in G848: Bioinformatics, Genomics, and Proteomics with an average teaching evaluation score of 4.6
(scale of 1-5, 5 being the highest) before taking over as course director in Spring 2015. As course director I reformatted the course content to focus on next-generation sequencing approaches and protein/peptide mass spectrometry based proteomics. This includes practical course content such as an introduction to using genome browsers. We integrated bioinformatics topics within lectures that cover the software packages and statistical approaches used to address specific biological questions using these technologies. I also taught a lecture in G825 "Advanced Topics in Molecular Biology" on RNA processing in 2011 and acted as co-course director for G825 in 2013 in which I taught five lectures. Teaching evaluation scores are not available for G825, but I received several student comments in the 2013 course (copies of evaluations are in the appendix) including, "Dr. Mosley is a passionate & engaging presenter, & it was a pleasure to have her as a teacher. Overall, this was an interesting & extremely valuable course, & I would recommend it to anyone." I also taught lectures in the first semester IBMG course G716 "Molecular Biology and Genetics" on yeast genetics and system biology (2 total lectures) in 2011-2013. In fall 2014, I taught two additional lectures as an introduction to high-throughput sequencing in G716. My average teaching evaluation scores in G716 are 4.1 (scale of 1-5, 5 being the highest).

In addition to my lectures, I served as a facilitator for the case based medical student course X604 "Clinical Problem Solving". I received evaluations for the 2011-2012, 2012-2013, and 2013-2014 academic years and have received improving scores each year. Specifically, in 2011-2012 my mean teaching evaluation score for X604 was 4.68 (the average score in this year within my discipline was 4.56, while the average score within my school was 4.28). In 2012-2013 my overall effectiveness score was 4.83 (the average score in this year within my discipline was 4.65, while the average score within my school was 4.25). In 2013-2014 my overall effectiveness score was 5.0 (the average score in this year within my discipline was 4.56, while the average score within my school was 4.28). I received many positive comments about my role as a facilitator, which is reflected in my above average teaching scores from each year. For example, "She was a wonderful CPS preceptor. Very knowledgeable in her area, and even though she is not a clinician we still learned a lot from her about the process and had the opportunity to develop skills which will be very useful to us in the future."

**Service activities**

I have been involved in many service activities at all levels while in rank. In addition to hosting a number of seminar speakers for my department seminar series, I served on two department committees and organized our Biochemistry research day in fall 2014. At the school level, I have been an active participant in campus and phone interviews for the MD/PhD and IBMG programs. I also served as a member of the IUSM Awards Committee since Fall of 2013. In 2014, I was appointed to the IUSM MSTP admissions committee and also participated in MD/PhD applicant screening. In 2014-2015, I served on a faculty search committee for a joint position between the IU Cancer Center and the Department of Biochemistry. At the campus level, I served on two faculty search committees for the IUPUI School of Science, Department of Chemistry for an Analytical Chemist (2011-2012) and Bioanalytical Chemist (2014-2015). I was also elected to the IUPUI Faculty Council for 2014-2016 and serve on the campus Research Affairs Committee. Finally, I served as a grant reviewer for the internal IUCRG and RSFG programs and externally for the Medical Research Council of the United Kingdom. I have also participated in manuscript reviews for Trends in Genetics, Nucleic Acids Research, Molecular and Cellular Proteomics, and BBA – Gene Regulatory Mechanisms.
Journal Assessment for Amber Mosley

Prior to arriving at IUSM, Dr. Mosley was a co-author on twelve peer-reviewed original research articles published in various discipline appropriate journals including Molecular Cell, Molecular and Cellular Proteomics, Molecular Endocrinology, and Journal of Proteome Research from 2002-2010. During her time at IUSM, Dr. Mosley has maintained a strong publication record through both independent and collaborative publications. Her group has contributed to 12 peer reviewed studies during the past five years. Trainees from the Mosley lab appear as co-authors on six of those in-rank publications. The journals in which her in-rank manuscripts appear and their impact factors (as calculated by Thomas Reuters) as well as other relevant information are listed below:


PLoS Genetics is the #2 journal in total citations over the last three years in the category of Molecular Biology journals (out of 364) according to Scopus (information retrieved 07/2015). The h-index for PLoS Genetics is 128.

**Molecular and Cellular Proteomics (MCP, 2013 impact factor: 7.254)**

MCP is the top ranked journal in the field of proteomics when ranked by impact factor. It also ranks as the #30 most highly cited biochemistry journal (out of 392) according to Scopus. MCP has an h-index of 133.

**Journal of Molecular Biology (JMB, 2014 impact factor: 4.333)**

JMB is ranked as #30 out of 364 journals by number of citations (last three years) with a focus on Molecular Biology according to Scopus. It has an h-index of 218.

**Nature Structural and Molecular Biology (NSMB, 2013 impact factor: 11.633)**

NSMB is the 24th ranked Molecular Biology journal out of 364 by number of citations per Scopus (over the last three years, information retrieved 07/2015). NSMB has an h-index of 209.

**Journal of Proteome Research (2013 impact factor: 5.001)**

JPR is the second highest ranked proteomics specific journal according to impact factor. It is also the 24th ranked biochemistry journal (out of 392) based on the number of citations over the past three years as retrieved by Scopus. JPR has an h-index of 116.

**Journal of Biological Chemistry (2013 impact factor: 4.6)**

JBC is the most highly cited journal in the areas of Molecular Biology (out of 364 journals) and the second most highly cited journal in the area of Biochemistry (out of 392 journals) over the last three years according to Scopus. The h-index for JBC is 417.

**Cell Reports (2014 impact factor: 8.358)**
Cell Reports is an open access online only journal from Cell Press started in 2013. It ranks as #10 out of 207 journals in number of citations in the last three years in journals with a general focus on biochemistry, genetics, and molecular biology (miscellaneous). The h-index for Cell Reports is 34.

**Molecular Biosystems (2013 impact factor: 3.183)**

Molecular Biosystems ranks 34th in biotechnology journals (232 total journals) by number of total citations over the last three years. It has an h-index of 55.

**eLife (2013 impact factor: 8.519)**

eLife is an open access online only journal started in 2013. It ranks as #26 in number of citations in the last three years in journals with a general focus on biochemistry, genetics, and molecular biology (miscellaneous, n=207). The h-index for eLife is 22.
CURRICULUM VITAE

NAME:

Mosley, Amber Lee

EDUCATION:

POSTDOCTORAL
Position Institution Degree Date(s)
Senior Research Associate Stowers Institute for Medical Research N/A 2008-2010
Postdoctoral Research Fellow Stowers Institute for Medical Research N/A 2005-2008
Postdoctoral Research Associate Stowers Institute for Medical Research N/A 2004-2005

GRADUATE
Position Institution Degree Date(s)
Graduate Student, Biochemistry University of Kentucky PhD 07/2004
Predoctoral Fellow University of Kentucky N/A 2002-2004

UNDERGRADUATE
Position Institution Degree Date(s)
Undergraduate, Biology/Philosophy East Tennessee State University B.S. 05/1999

APPOINTMENTS:

ACADEMIC
Institution Rank/Title Inclusive Dates
Department of Biochemistry and Molecular Biology Assistant Professor 2010 - present
Indiana University School of Medicine
Center for Computational Biology and Bioinformatics Member 2010 - present
Indiana University School of Medicine
IU Simon Cancer Center
Indiana University School of Medicine Associate Member 2011 - present

PROFESSIONAL ORGANIZATION MEMBERSHIPS:
Organization Inclusive Dates
American Society for Mass Spectrometry 2005 - present

PROFESSIONAL HONORS AND AWARDS:

RESEARCH
Award Name Granted By Date Awarded
Predoctoral Fellowship American Heart Association 07/2002
NRSA Postdoctoral Fellowship National Institutes of Health 09/2005
*Elwert Award in Medicine IU School of Medicine 03/2012
* = in rank

PROFESSIONAL DEVELOPMENT:
Course/Workshop/Evaluation Title Provider Date(s)
Peer Teaching Evaluation Carolyn Hayes, Ed.D. 10/2012
I Orbi 4 User’s Meeting Thermo Scientific 10/2012
Thermo Scientific User’s Meeting Thermo Scientific 09/2011
Scientific Writing from the Reader’s Perspective George D. Gopen 06/2011
Write Winning Grants John Robertson, Ph.D. 09/2010
### TEACHING:
#### GRADUATE

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MTES = Mean Teaching Evaluation Score  
NA = not available

### MENTORING:

#### A) Graduate Students

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<th>Program</th>
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<td>Michael Berna</td>
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<tr>
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<tr>
<td>Nada Alakhras</td>
<td>MS</td>
<td>Biochemistry</td>
<td>2013-2014</td>
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#### B) Thesis Committees for graduate students

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Mohammed Alzahrani  Biochemistry  2015-  Committee member
Eric Talbert  Biochemistry  2015-  Committee member

C) Rotation students

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<td>Gerald O. Hunter</td>
<td>IBMG**</td>
<td>Spring</td>
<td>2012</td>
<td>3</td>
</tr>
<tr>
<td>Amanda Campbell</td>
<td>IBMG**</td>
<td>Spring</td>
<td>2012</td>
<td>3</td>
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<tr>
<td>Chunxiang Wu</td>
<td>IBMG**</td>
<td>Fall</td>
<td>2012</td>
<td>1</td>
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<tr>
<td>Michael Bena</td>
<td>IBMG**</td>
<td>Fall</td>
<td>2012</td>
<td>1</td>
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<tr>
<td>Kayla Collins</td>
<td>IBMG**</td>
<td>Fall</td>
<td>2013</td>
<td>1</td>
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<tr>
<td>Anthony Dioquino</td>
<td>IBMG**</td>
<td>Summer</td>
<td>2014</td>
<td>Early</td>
</tr>
<tr>
<td>Jose Victorino</td>
<td>IBMG**</td>
<td>Fall</td>
<td>2014</td>
<td>1</td>
</tr>
<tr>
<td>Sarah Peck</td>
<td>IBMG**</td>
<td>Spring</td>
<td>2014</td>
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D) Summer students, visiting research associates, and other student employees

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Year(s)</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabriela Cabello</td>
<td>Project SEED Student</td>
<td>2011,2012</td>
<td>Mentor</td>
</tr>
<tr>
<td>Jason True</td>
<td>Student employee</td>
<td>2012</td>
<td>Mentor</td>
</tr>
<tr>
<td>Lynn Bedard, Ph.D.</td>
<td>Visiting Associate Professor</td>
<td>08/12-07/13</td>
<td>Sabbatical Host</td>
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<tr>
<td>Gabriela Cabello</td>
<td>Student employee</td>
<td>2013, 2014</td>
<td>Mentor</td>
</tr>
<tr>
<td>Elizabeth Devliger</td>
<td>MSTP Summer program</td>
<td>2013</td>
<td>Mentor</td>
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<tr>
<td>Joshua Segaran</td>
<td>Volunteer (high school student)</td>
<td>2013-14</td>
<td>Mentor</td>
</tr>
<tr>
<td>Gabriela Mazur</td>
<td>Women-in-science intern</td>
<td>2014</td>
<td>Mentor</td>
</tr>
<tr>
<td>Rachel Chan</td>
<td>Volunteer (high school student)</td>
<td>2014-15</td>
<td>Mentor</td>
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<tr>
<td>Kristen Wek</td>
<td>Volunteer (undergraduate)</td>
<td>2014</td>
<td>Mentor</td>
</tr>
<tr>
<td>Asha Boyd</td>
<td>Volunteer (undergraduate)</td>
<td>2014</td>
<td>Mentor</td>
</tr>
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</table>

** IBMG = Indiana University School of Medicine BioMedical Gateway Program

** RESEARCH/Creative Activity:

** GRANTS/FELLOWSHIPS IN RESEARCH:

ACTIVE GRANTS/FELLOWSHIP
Title: Regulation of RNA Polymerase II transcription by the phosphatase Rtr1
Granting Agency: National Institutes of Health NIGMS
Role: Principal Investigator
Percent Effort: 25%
Amount: $950,000 (5 years, direct costs)
Dates: 08/01/2012-07/31/2017

Title: Glycogen Metabolism and Lafora Disease
Granting Agency: National Institutes of Health NINDS
Role: Co-Investigator (PI: P. Roach)
Percent Effort: 5%
Amount: $218,750 / $6,860 to A.L.M
Dates: 03/15/14-01/31/19

Title: Quantitative analysis of transcription elongation compensation networks
Granting Agency: Ralph W. and Grace M. Showalter Research Trust Fund
Role: PI
Percent Effort: 10%
Amount: $50,000
Dates: 07/01/14-06/30/15
Title: Mechanism of the regulation of DNA replication by PIF1 family helicases  
Granting agency: Indiana University IUCRG  
Role: Co-PI (Bochman-IUB, Takagi-IUSM, Mosley-IUSM); responsible for affinity purification-mass spectrometry.  
Percent effort: 5%  
Amount: $75,000 / $13,036.54 to A.L.M  
Dates: 04/01/2015 – 03/30/2016

PENDING GRANTS/FELLOWSHIPS  
Title: Quantitative analysis of transcription elongation perturbation networks  
Granting agency: NSF  
Role: Principle investigator  
Percent effort: 20%  
Amount: $660,000 (total award recommendation)  
Dates: 07/01/15 – 06/30/20  
Status: Submitted 11/2014. ***This application has been recommended for funding by my program officer. The email containing this recommendation is provided in the appendix.

Title: Metabolic stress responses and eIF2 kinase GCN2; R01GM049164-22 CR  
Granting agency: NIH  
Role: Co Investigator (Pl:Wek)  
Percent effort: 5%  
Amount: $290,069 (total direct/year) / $6,860 to A.L.M.  
Dates: 09/01/15 – 08/31/20  
Status: submitted not yet reviewed.

Title: Ferrochelatase as a mediator of ocular angiogenesis; R01 EY025641-A1 (Pl: Corson / Co-I)  
Granting agency: NIH  
Role: Co Investigator (Pl: Corson)  
Percent effort: 5% in year 3  
Amount: $250,000 (total direct/year) / $6,860 to A.L.M. in year 3  
Dates: 09/01/15 – 08/31/20  
Status: submitted not yet reviewed.

Title: Determining the roles of RecQ4 family helicase in genome maintenance  
Granting agency: ACS  
Role: Collaboratory (Pl:M Bochman)  
Percent effort: 5%  
Amount: $165,000/ ~$4,000 per year to A.L.M. -no salary support  
Status: submitted not yet reviewed.

Title: Determining the roles of RecQ4 family helicases in genome maintenance  
Granting agency: NIH  
Role: Co-investigator (Pl:M Bochman)  
Percent effort: 5%  
Amount: $1,094,717 (total direct requested/ 5 yrs) / $39,771 (total direct to ALM/ 5 yrs)

COMPLETED GRANTS/FELLOWSHIPS  
Title: Proteomic identification of SAGA substrates relevant to SCA7  
Granting Agency: CTSI PDT P3  
Role: Co-PI  
Percent Effort: 5%  
Amount: $10,000 / $4,800 to A.L.M.  
Dates: 06/01/13 – 05/31/14

Title: Identifying post-translational modifications in protein complex assembly through STAP
Granting Agency: Indiana University IUCRG
Role: Co-Investigator (with Andrew Kusmierczyk)
Percent Effort: 5%
Amount: $37,500 (1 year, direct costs requested for A.L.M.)
Date submitted: 11/30/2012
Dates: 03/15/13 – 03/15/14 ext 07/31/14

Title: The role of the PAF complex in the regulation of genome stability
Granting Agency: IU School of Medicine Biomedical Research Grant
Role: Principal Investigator
Percent Effort: 5%
Amount: $40,000 (1 year, direct costs)
Dates: 3/1/2012-2/28/2013

Title: The regulation of transcription termination by RNA Polymerase II phosphorylation.
Granting Agency: Ralph W. and Grace M. Showalter Research Trust Fund
Role: Principal Investigator
Percent Effort: 5%
Amount: $60,000
Dates: 7/1/2011-6/30/2012

SUBMITTED BUT NOT FUNDED GRANTS/FELLOWSHIPS:
Title: Novel roles of SREBP-1 in metabolism
Granting Agency: DOD
Role: Co-Investigator (Pl: N Morral) – A.L.M. to serve as a consultant on ChIP-SEQ experiments
Percent Effort: 5%
Amount: $400,000
Dates: 04/01/15 – 03/31/18

Title: R01 - Boosting Bone Anabolism and Bone Regeneration
Granting Agency: NIH
Role Co-Investigator (Pl: J Bidwell) – A.L.M. to serve as a consultant on ChIP-SEQ experiments
Percent Effort: 10%
Amount: $370,331
Dates: 07/01/15 – 06/30/20

Title: Identification of the RPAP2 catalytic active site using oxidative labeling and mass spectrometry
Granting agency: Indiana University IUCRG
Role: Co-PI (Mosley - IUSM, Jones - IUPUI)
Percent effort: 5%
Amount: $75,000 / $37,500 to A.L.M
Status:Submitted 01/2015.

Title: Characterization of novel protein degradation machinery in P. aeruginosa
Granting agency: Indiana University IUCRG
Role: Co-PI (Anderson – IUPUI, Kusmierczyk – IUPUI, Mosley- IUSM); responsible for affinity purification-MS.
Percent effort: 5%
Amount: $75,000 / $25,000 to A.L.M
Status: Submitted 01/2015.

Title: R01 - Metabolic stress responses and eIF2 kinase GCN2
Granting Agency: NIH – NIGMS
Role: Co-Investigator (PI: R Wek)
Percent Effort: 10%
Amount: $250,000 / $13,720 to A.L.M.
Submission date: 07/2014
Status: Not funded but scored, will be resubmitted.

Title: CAREER: Quantitative analysis of transcription elongation compensation networks
Granting agency: NSF
Role: Principle Investigator
Percent Effort: 20%
Amount: $1,357,680
Dates: 02/01/15 – 01/31/20 (submitted 07/2014)
Status: Not funded but scored well. Program officer suggested that I resubmit as a regular NSF grant instead of a CAREER. I resubmitted 11/2014 with additional preliminary data and edits suggested by my program officer.

Title: R21 - Novel strategies to characterize multi-protein complex assembly
Granting Agency: NIH – NCI
Role: Principle Investigator (MPI grant with A. Kusmierczyk)
Percent Effort: 10%
Amount: $250,000 over 2 years
Submission date: 06/2014
Status: Not discussed. Currently working on finishing papers related to this project before resubmission.

Title: Orbitrap Fusion Tribrid for LC-MS/MS
Role: Principle Investigator
Granting Agency: NIH
Amount: $1,003,556
Date: 07/01/14 – 06/30/15
Submission date: 03/2014
Status: Not funded.

Title: Mechanism of transcription regulation by the Mediator (1R01GM111695-01)
Granting Agency: NIH NIGMS
Role: Collaborator (PI: Takagi)
Dates: 07/01/14 – 06/30/19
Amount: $250,000 per year/5 years
Percent Effort: 5%
Submission date: 02/2014
Status: Scored but not funded.

Title: Characterization of the phosphatase activity of Rtr1/RPAP2 in regulating cardiac development
Granting Agency: American Heart Association predoctoral fellowship
Role: Mentor (PI: J Hunter)
Amount: $28,000 per year (2 years requested)
Date submitted: 01/2014
Status: Not funded.

Title: R03 Quantitative proteomic approaches to characterize multi-protein assembly
Granting Agency: National Cancer Institute
Role: Co-PI
Percent Effort: 2.5%  
Amount: $50,000 / $25,000 to A.L.M.  
Submission date: 10/2013  
Dates: 07/01/14-06/30/16  
Status: Scored but not funded. Resubmitted as an R21.

Title: CAREER: Quantitative analysis of transcription elongation factor compensation networks  
Granting Agency: National Science Foundation  
Role: Principle Investigator  
Amount: $1,150,500  
Submission date: 07/2013  
Date: 02/01/14 – 01/31/19  
Status: Not funded but resubmitted in 07/2014

Title: R01 - Telomere dysfunction: a predisposing factor of human mammary cells transformation.  
Granting Agency: NIH  
Role: Co-PI (PI: D. Gilly)  
Percent Effort: 5%  
Amount: $412,382/ $6,860 to A.L.M

Title: R01 - Sestrin proteins function as novel regulators of mTORC1 in metabolism.  
Granting Agency: NIH  
Role: Co-Pl (Pl: X.C. Dong)  
Percent Effort: 5%  
Amount: $250,000/ $6,860 to A.L.M.

Title: Proteomic identification of SAGA substrates relevant to SCA7  
Granting Agency: Indiana Clinical and Translational Sciences Institute Alzheimer Research Pilot Grant  
Role: Co-Investigator (Principle Investigator: V. Weake)  
Percent Effort: 5%  
Amount: $12,500 (1 year, direct costs requested for A.L.M.)  
Date submitted: 10/30/2012

Title: Quantitative Analysis of RNAPII phosphorylation dynamics using mass spectrometry  
Granting Agency: American Society for Mass Spectrometry Research Award  
Role: Principle Investigator  
Percent Effort: 5%  
Amount: $35,000  
Date submitted: 11/30/2012

Title: Regulation of the phosphatase Rtr1 by the cyclin-CDK complex CTDK-I  
Granting Agency: Ralph W. and Grace M. Showalter Research Trust Fund  
Role: Principal Investigator  
Percent Effort: 5%  
Amount: $60,000 (1 year, direct + indirect costs)  
Date submitted: 01/09/2013

Title: The role of PAC-C in the regulation of genome-wide histone occupancy.  
Granting Agency: Next-Generation Sequencing Pilot, IU Cancer Center  
Amount requested: $20,000 (1 year)  
Role: PI

Title: Regulation of Rtr1 recruitment during the RNAPII transcription cycle.  
Granting Agency: National Science Foundation  
Role: Principal Investigator  
Amount Requested: $443,541 (3 years)
Submission Date: 09/2011
Title: Regulation of PAF complex function by post-translational modification.
Granting Agency: IU School of Medicine Biomedical Research Grant
Submission Date: 05/2011

Title: Analysis of post-translational modifications of the yeast PAF Complex by mass spectrometry.
Granting Agency: CTSI Pilot Funding for Research use of Core Facilities
Submission Date: 04/2011

Title: Regulation of PAF complex function by post-translational modification
Granting Agency: IUPUI DRIVE Award.
Submission Date: 02/2011

Title: Regulation of PAF complex function by post-translational modification
Granting Agency: American Cancer Society Institutional Research Grant pilot study
Submission Date: 12/2010

INVITED PRESENTATIONS - RESEARCH

2003 Invited seminar titled "The Importance of Being Positive: Stabilizing Forces in DNA-protein interactions." East Tennessee State University. Johnson City, TN.


2003 Invited seminar titled "Glucose Regulation of Insulin Gene Expression in Pancreatic Beta Cells is Regulated by Histone H4 Acetylation." St. Jude National Graduate Student Symposium. Memphis, TN.

2008 Oral abstract presentation titled "Rtr1 Regulates the Transition from Serine 5 to Serine 2 Phosphorylation on the RNAP II CTD During Transcription Elongation.” Benzon Symposium No. 55. Copenhagen, Denmark.

2009 Invited seminar titled "Quantitative proteomic analysis identifies a novel regulator of RNA Polymerase II phosphorylation." University of Nebraska at Omaha. Omaha, NE.

2011 Invited seminar titled "Quantitative proteomic analysis of RNA Polymerase II dynamics during transcription elongation." University of Indiana – Bloomington. Bloomington, IN.

2011 Invited seminar titled "Interrogation of RNA Polymerase II regulation using quantitative proteomics." Midwestern University. Glendale, AZ.

2011 Invited seminar titled "The CTD phosphatase Rtr1 regulates RNA Polymerase II transcription." University of Kentucky School of Medicine. Lexington, KY.

2012 Invited seminar titled "The CTD phosphatase Rtr1 regulates RNA Polymerase II transcription termination." DePauw University. Greencastle, IN.


2013 Invited seminar title, "The CTD phosphatase Rtr1 regulates RNA Polymerase II transcription. University of Purdue University Indianapolis, Department of Biology, Indianapolis IN.

2013 Invited seminar title, "The CTD phosphatase Rtr1 regulates RNA Polymerase II transcription.” Purdue University, Department of Biochemistry, West Lafayette, IN.

2013 Invited seminar title, "Application of quantitative proteomics to RNA Polymerase II interactome.” Indiana University School of Medicine, Department of Pharmacology and Toxicology, Indianapolis, IN.

2014 Invited seminar titled, "Regulation of cryptic transcription by the phosphatase Rtr1.” Indiana University School of Medicine, Stark Neurosciences Research Institute, Indianapolis, IN.

2014 Invited seminar titled, "Regulation of RNAP II transcription by the phosphatase Rtr1.” Indiana University, Department of Medical Sciences, Bloomington, IN.
2014 Invited seminar title: "The Role of Cryptic Transcripts in the Regulation of RNAPII Function." Indiana University School of Medicine, Department of Medical and Molecular Genetics, Indianapolis, IN.

2015 Invited seminar titled, "Regulation of RNAPII transcription termination by the phosphatase Rtr1." Stowers Institute for Medical Research, Kansas City, MO.

2015 Invited seminar titled, "The exosome subunit Rrp6 regulates RNA Polymerase II termination." The University of Arizona, Department of Pharmacology, Tucson, AZ.

PRINT AND ELECTRONIC PUBLICATIONS:

Refereed Research Publications:


Abstracts/Poster Presentations (in rank as mentor):


Refereed Non-experimental articles:


*Publications in rank


SERVICE ACTIVITIES:

UNIVERSITY SERVICE:

DEPARTMENT

Activity

Hosted BCH seminar series speaker Aseem Ansari
Hosted BCH seminar series speaker Elizabeth Tran
Biochemistry research day
Faculty Effort Guidelines Committee
Graduate program curriculum committee
Hosted BCH seminar series speaker Erin Carlson
Hosted BCH seminar series speaker Daniel Reines
Hosted BCH seminar series speaker Jerry Workman
Hosted BCH seminar series speaker Michael Washburn
Equipment Committee
Hosted BCH seminar speaker Scott Briggs
Hosted BCH seminar speaker Alexey Nesvizhskii

Role Host Organizer Member Member Host Host Host Host Member Member Host Host

SCHOOL

Activity

Solid Tumor faculty search committee
IUSM MSTP MD/PhD program admissions committee
IUSM MSTP program application screening committee
MSTP summer program for undergraduates - application screening committee
IUSM Awards Committee
Participation in MD/PhD candidate interviews for the MSTP Program

Role Member Member Member Member Interviewer
Inclusive Dates 2014-2015 07/14-present 07/14-present 01/14-present 06/13-present 2010-present
<table>
<thead>
<tr>
<th>Participation in IBMG candidate interviews</th>
<th>Interviewer</th>
<th>2011-present</th>
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<tr>
<td>Activity</td>
<td>Role</td>
<td>Inclusive Dates</td>
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<tr>
<td>IUPUI Faculty Council</td>
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<td>2014-2016</td>
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<td>IUPUI Research Affairs Committee</td>
<td>Member</td>
<td>2014-present</td>
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<tr>
<td>RSFG Review Panel</td>
<td>Reviewer</td>
<td>2014</td>
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<td>Bioanalytical Chemist faculty search committee</td>
<td>External member</td>
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<td>Analytical Chemist faculty search committee</td>
<td>External member</td>
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<td>Activity</td>
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<td>Inclusive Dates</td>
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<td>IUCRG Review Panel</td>
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<td>Spring 2014</td>
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<td>Organization</td>
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<td>Nucleic Acids Research (2)</td>
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<td>Molecular and Cellular Proteomics (1)</td>
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<td>Medical Research Council (MRC), UK (1)</td>
<td>Ad Hoc reviewer</td>
<td>2013-present</td>
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<tr>
<td>BBA – Gene Regulatory Mechanisms (Elsevier) (1)</td>
<td>Ad Hoc reviewer</td>
<td>2012-present</td>
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Updated 06/04/2015
### Section 07

#### Teaching

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<tbody>
<tr>
<td>Teaching Statement</td>
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<tr>
<td>Teaching load</td>
<td>This section</td>
</tr>
<tr>
<td>Peer evaluation of teaching</td>
<td>See letters in this section</td>
</tr>
<tr>
<td>Student/house evaluation of teaching</td>
<td>This section and Section 06 (Candidate's Statement)</td>
</tr>
<tr>
<td>Evidence of student learning</td>
<td>Not applicable</td>
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<tr>
<td>Evidence of scholarly dissemination of work and leadership on teaching</td>
<td>Not applicable</td>
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<tr>
<td>Evidence of undergraduate or graduate student research or mentoring</td>
<td>This section, Section 06, and Section 10 (Curriculum Vitae)</td>
</tr>
<tr>
<td>Evidence of quality course development or innovation efforts</td>
<td>This section and Section 06</td>
</tr>
<tr>
<td>Evidence of teaching development efforts</td>
<td>Not applicable</td>
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</table>
Teaching

Teaching Statement: N/A

Teaching load

I have devoted approximately 20% of my time to teaching graduate and medical students at IU School of Medicine. This includes serving as a facilitator in X-604: Clinical Problem Solving, as a lecturer in G716: Biomedical 2: Molecular Biology and Genetics, as a lecturer and co-course director (Fall 2013) in G825: Advanced topics in Molecular Biology, and finally as a lecturer and course director (Spring 2015) in G848: Bioinformatics, genomics, proteomics, and systems biology.

Peer evaluation of teaching

To document my teaching performance I have included the following peer evaluations in this section:

A peer teaching evaluation performed by Dr. Carolyn Hayes Director of Student Assessment at IU School of Medicine

A letter from Dr. Ronald Wek, course director of G716

A letter from Dr. Joseph Bidwell, course director of G717, who attended the majority of my lectures in Spring 2015 in G848

Student/house staff evaluations of teaching

X604 – Clinical problem Solving
Instructor: Mosley, Amber  Course: ITDS X604D Clinical Problem Solving Discussion (IN)
Academic Year: 2011-12  Semester: Spring

Rating Scale: 5=Strongly agree to 1=Strongly disagree

<table>
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<tr>
<th>Learning Climate</th>
<th>Instructor</th>
<th>Discipline*</th>
<th>School**</th>
</tr>
</thead>
<tbody>
<tr>
<td>During this course, the instructor generally:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listened to learners.</td>
<td>4.80</td>
<td>4.66</td>
<td>4.40</td>
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<tr>
<td>Expressed respect for learners.</td>
<td>4.80</td>
<td>4.70</td>
<td>4.43</td>
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<tr>
<td>Encouraged learners to bring up problems.</td>
<td>4.80</td>
<td>4.69</td>
<td>4.41</td>
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Control of Session

<table>
<thead>
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<th>Instructor</th>
<th>Discipline*</th>
<th>School**</th>
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<tbody>
<tr>
<td>Covered all scheduled topics.</td>
<td>4.60</td>
<td>4.59</td>
<td>4.37</td>
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<tr>
<td>Set an agenda.</td>
<td>4.40</td>
<td>4.58</td>
<td>4.41</td>
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<tr>
<td>Avoided digressions.</td>
<td>4.60</td>
<td>4.48</td>
<td>4.28</td>
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<tr>
<td>Category</td>
<td>Rating</td>
<td>Rating</td>
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<tr>
<td>--------------------------------------------------</td>
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<tr>
<td>Communication of Goals/Objectives</td>
<td>4.60</td>
<td>4.55</td>
<td>4.32</td>
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<tr>
<td>Prioritized goals/objectives.</td>
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<td>4.57</td>
<td>4.34</td>
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<tr>
<td>Repeated goals/objectives periodically.</td>
<td>4.60</td>
<td>4.51</td>
<td>4.28</td>
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<tr>
<td>Stated relevance of goals/objectives to learners.</td>
<td>4.60</td>
<td>4.59</td>
<td>4.35</td>
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<td><strong>Promoting Understanding and Retention</strong></td>
<td>4.53</td>
<td>4.55</td>
<td>4.28</td>
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<tr>
<td>Explained relationships in materials.</td>
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<td>4.59</td>
<td>4.33</td>
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<tr>
<td>Presented well-organized material.</td>
<td>4.40</td>
<td>4.49</td>
<td>4.23</td>
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<tr>
<td>Emphasized the relevant information.</td>
<td>4.60</td>
<td>4.58</td>
<td>4.27</td>
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<tr>
<td><strong>Evaluation</strong></td>
<td>4.73</td>
<td>4.54</td>
<td>4.22</td>
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<tr>
<td>Evaluated learners' ability to analyze or synthesize knowledge.</td>
<td>4.60</td>
<td>4.52</td>
<td>4.23</td>
</tr>
<tr>
<td>Evaluated learners' ability to apply knowledge to specific patients, cases, or examples.</td>
<td>4.80</td>
<td>4.57</td>
<td>4.23</td>
</tr>
<tr>
<td>Evaluated learners' skills to apply knowledge to specific patients, cases, or examples.</td>
<td>4.80</td>
<td>4.54</td>
<td>4.21</td>
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<tr>
<td><strong>Evaluation</strong></td>
<td>4.80</td>
<td>4.53</td>
<td>4.16</td>
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<tr>
<td>Gave feedback frequently.</td>
<td>4.80</td>
<td>4.48</td>
<td>4.13</td>
</tr>
<tr>
<td>Gave feedback in timely manner.</td>
<td>4.80</td>
<td>4.50</td>
<td>4.18</td>
</tr>
<tr>
<td>Gave positive feedback to learners.</td>
<td>4.80</td>
<td>4.59</td>
<td>4.18</td>
</tr>
<tr>
<td><strong>Promoting Self-Directed Learning</strong></td>
<td>4.67</td>
<td>4.49</td>
<td>4.16</td>
</tr>
<tr>
<td>Encouraged learners to do outside reading.</td>
<td>4.80</td>
<td>4.44</td>
<td>4.14</td>
</tr>
<tr>
<td>Motivated learners to learn on their own.</td>
<td>4.60</td>
<td>4.52</td>
<td>4.20</td>
</tr>
<tr>
<td>Explicitly encouraged further learning.</td>
<td>4.60</td>
<td>4.51</td>
<td>4.13</td>
</tr>
<tr>
<td><strong>Mean of seven constructs</strong></td>
<td>4.68</td>
<td>4.56</td>
<td>4.28</td>
</tr>
<tr>
<td>Overall Assessment: The effectiveness of this instructor was (5= Excellent, ..., 1= Very Poor)</td>
<td>4.60</td>
<td>4.56</td>
<td>4.22</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>5</td>
<td>128</td>
<td>3606</td>
</tr>
</tbody>
</table>

*-Discipline column represents the average of all instructors within a particular department statewide  
**-School column represents the average of all instructors who taught first and second year courses.

Comments

She was really effective as a leader of the group.

Dr. Mosley was a great CPS facilitator. She knew what she needed to do, and she was very effective at moving the discussion points through.
### Clinical Problem Solving

**Instructor:** Mosley, Amber  
**Course:** ITDS X604D Clinical Problem Solving Discussion (IN)  
**Academic Year:** 2012-13  
**Semester:** Fall  
**Number of observations:** 6

<table>
<thead>
<tr>
<th>Rating Scale items 1 to 5: 1= Very Poor to 5=Very Good</th>
<th>This Instructor</th>
<th>Discipline¹</th>
<th>Center²</th>
<th>School³</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quality of content</td>
<td></td>
<td>4.67</td>
<td>4.58</td>
<td>4.28</td>
</tr>
<tr>
<td>Please consider such factors as clarity, organization, detail, and usefulness of instructional material (e.g., Power Points/visual aids/handouts).</td>
<td><strong>Comments:</strong> Was always completely prepared in having the materials organized and ready to hand out. Clearly understood the material and always pointed out different ideas, perspectives, or details that allowed us to best comprehend the cases.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Relevance of instructional materials</td>
<td></td>
<td>4.50</td>
<td>4.51</td>
<td>4.33</td>
</tr>
<tr>
<td>Please consider whether the faculty adequately established the importance of the presented material.</td>
<td><strong>Comments:</strong> Always ensured that we not only understand the material, but also the significance of the material in how it will relate to our future careers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Constructive interactions</td>
<td></td>
<td>5.00</td>
<td>4.63</td>
<td>4.29</td>
</tr>
<tr>
<td>Please consider whether the faculty encouraged questions, responded to questions in a timely manner, provided assistance to help you learn and improve, and offered opportunities for you to know how you were doing in the course or provided constructive feedback if appropriate.</td>
<td><strong>Comments:</strong> Dr. Mosley made our CPS group environment very comfortable and open. She did a good job at encouraging us to put forth possible diagnoses and figuring out the cases by ourselves. Allowed us proper time to consider the information ourselves, but knew when she should step in if we started to struggle or simply fail to see something. I've heard that other instructors help too little and others throw the answers of the cases to the students, but Dr. Mosley perfects the balance of these two.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Professionalism</td>
<td></td>
<td>5.00</td>
<td>4.77</td>
<td>4.48</td>
</tr>
<tr>
<td>Please consider whether the faculty demonstrated a high standard of professional behavior in the teaching setting, including showing respect for learners, staff, other faculty and patients.</td>
<td><strong>Comments:</strong> Very professional.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Overall effectiveness of instructor</td>
<td></td>
<td>4.83</td>
<td>4.65</td>
<td>4.24</td>
</tr>
<tr>
<td>Please consider such factors as ability to motivate and encourage learning, effectively communicate information, accessibility and demonstration of confidence and content expertise.</td>
<td>I thought that Dr. Mosley did a good job, or as good a job as possible given the course structure, keeping us on task, focused and eliminating guesswork and wasted time spinning our wheels. I really enjoyed having Dr. Mosley as our CPS facilitator. She was very helpful during the one-on-one meetings for how to improve. Fostered an environment where we felt encouraged to perform well, while also allowing us to feel comfortable enough as novices in the medical field to make suppositions. Helped us begin to develop our thought processes and teamwork skills. Was very accessible out of class for all of our needs. A superb facilitator for this course.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹-Discipline column represents the average of all instructors within a particular department statewide during this semester.
²-Center column represents the average of all instructors of all first and second year courses offered by the center during this semester.
3-School column represents the average of all first and second year instructors during this semester.

X604 – Clinical problem Solving
Instructor: Mosley, Amber  
Course: ITDS X604D Clinical Problem Solving Discussion (IN)  
Academic Year: 2013-14  
Semester: Fall  
Number of observations: 6

<table>
<thead>
<tr>
<th>Rating Scale items 1 to 5: 1= Very Poor to 5=Very Good</th>
<th>This Instructor</th>
<th>Discipline(^1)</th>
<th>Center(^2)</th>
<th>School(^3)</th>
</tr>
</thead>
</table>
| 1. Quality of content  
Please consider such factors as clarity, organization, detail,  
and usefulness of instructional material (e.g., Power  
Points/visual aids/handouts). | 5.00 | 4.52 | 4.25 | 4.31 |

**Comments:** I don’t know how much say Dr. Mosley got in this area, but I felt as though the cases were very interesting and sufficiently challenging.

The instructor was wonderful. The information was organized, presented clearly and useful in solving the cases. The instructor also brought in a lot of outside/personal knowledge to share with us in order to make more real-world connections and increase our understanding of the subject.

| 2. Relevance of instructional materials  
Please consider whether the faculty adequately established the importance of the presented material. | 5.00 | 4.49 | 4.32 | 4.38 |

**Comments:**

| 3. Constructive interactions  
Please consider whether the faculty encouraged questions, responded to questions in a timely manner, provided assistance to help you learn and improve, and offered opportunities for you to know how you were doing in the course or provided constructive feedback if appropriate. | 5.00 | 4.57 | 4.31 | 4.38 |

**Comments:** Dr. Mosley did a wonderful job of keeping us on track. She also gave useful information which helped us to go deeper into the case when we became stuck. She gently guided us without "giving it away".

| 4. Professionalism  
Please consider whether the faculty demonstrated a high standard of professional behavior in the teaching setting, including showing respect for learners, staff, other faculty and patients. | 5.00 | 4.65 | 4.47 | 4.53 |

**Comments:**

| 5. Overall effectiveness of instructor  
Please consider such factors as ability to motivate and encourage learning, effectively communicate information, accessibility and demonstration of confidence and content expertise. | 5.00 | 4.56 | 4.22 | 4.29 |

She was a wonderful CPS preceptor. Every knowledgeable in her area, and even though she is not a clinician we still learned a lot from her about the process and had the opportunity to develop skills which will be very useful to us in the future.

Dr. Mosley was a wonderful instructor and discussion facilitator.

I really enjoyed having Dr. Mosley as a preceptor for CPS. She was very laid back which made it easy to enjoy the course.

---

1-Discipline column represents the average of all instructors within a particular department statewide during this semester.
3-Center column represents the average of all instructors of all first and second year courses offered by the center during this semester.
3-School column represents the average of all first and second year instructors during this semester.

G848 – Bioinformatics, genomics, proteomics, and systems biology
Lecturer: Mosley, Amber  Academic Year: 2011-12  Semester: Spring
Mean teaching score: 4.63 (scale A-E, converted to 1-5)

Student comments (copy of originals provided in the appendix)

"Easy to understand. Excellent analogies. Interesting lecture considering it was on MS."

"very enthusiastic, great lecture."

"She did a good job with what she had, but more lectures should be devoted to Proteomics. It is a very large/complicated/important field and needs more time to be explained properly – especially since it is included in the title of the course."

"Good lecture, but more prone to informatics than to biological science."

"Really informative, but I can tell she is super nervous. Also, many materials are too deep for an introductory course, some statistical models need to be further explained."

"good lectures. clearly and logically."

"know more about proteomics, very powerful, Hopefully I will use the MS techniques to solve some interesting problems."

"slides were a little wordy lengthy vs. what was covered but overall a great job"

G848 – Bioinformatics, genomics, proteomics, and systems biology
Course director: Mosley, Amber  Academic Year: 2014-15  Semester: Spring
Mean teaching score: 4.67 (scale of to 1-5, 5 being the best)

Student comments regarding Dr. Mosley (copy of originals provided in the appendix)

"Dr. Mosley's lectures were clear & very useful. They showed me a lot of resources I think will be helpful in the future. She is easy to understand and follow."

"Overall very good, pathway analysis lecture could use more on background and application of tools"

G716 – Biomed 2: Molecular biology and genetics
Lecturer: Mosley, Amber  Academic Year: 2011-12  Semester: Fall
Note: Scores are rated 5 (highest) to 1 (lowest). N/A reflects no response was given

<table>
<thead>
<tr>
<th>Student</th>
<th>Lectures well organized</th>
<th>Presented clearly</th>
<th>Stimulated my interest</th>
<th>Answered questions well</th>
<th>Improved my understanding</th>
<th>Handouts helpful</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>No comments</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>N/A</td>
<td>No comments</td>
<td></td>
</tr>
</tbody>
</table>
G716 – Biomed 2: Molecular biology and genetics  
Lecturer: Mosley, Amber  
Academic Year: 2013-14  
Semester: Fall  
Note: Scores are rated 5 (highest) to 1 (lowest). N/A reflects no response was given

<table>
<thead>
<tr>
<th>Student</th>
<th>Lectures well organized</th>
<th>Presented clearly</th>
<th>Stimulated my interest</th>
<th>Answered questions well</th>
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<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>No comments</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>No comments</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>No comments</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>Talked a lot of extra stuff than what was needed, little confusing</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>Lectures felt a little unfocused, in part at least, because the oral lecture strayed from the material on the ppt. slides</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>Good instructor</td>
</tr>
</tbody>
</table>

**Overall Average: 4.50**
G716 – Biomed 2: Molecular biology and genetics  
Lecturer: Mosley, Amber  Academic Year: 2014-15  Semester: Fall  
Note:  Scores are rated 5 (highest) to 1 (lowest). N/A reflects no response was given.
Evidence of undergraduate or graduate student research or mentoring

<table>
<thead>
<tr>
<th>Trainee</th>
<th>Status</th>
<th>Publication/Presentation (as indicated)</th>
</tr>
</thead>
</table>


Presentation: Gerald O. Hunter and Amber L. Mosley. Rtr1 is an atypical CTD phosphatase. Mechanisms of Eukaryotic Transcription, August 2013, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

<table>
<thead>
<tr>
<th>Intern</th>
<th>Status</th>
<th>Publication</th>
</tr>
</thead>
</table>

Awards, fellowships, and grants by trainees

<table>
<thead>
<tr>
<th>Trainee</th>
<th>Status</th>
<th>Awards, fellowships, and grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melanie J. Fox</td>
<td>PhD student, 2011-Present</td>
<td>William M. Plater Civic Engagement Medallion, IUPUI Office of Community Engagement, 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Honorable Mention, Poster Presentation, IU School of Medicine Department of Biochemistry &amp; Molecular Biology Research Day, 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IUPUI Graduate &amp; Professional Student Government Educational Enhancement Grant, Awarded for travel to EMBO Transcription</td>
</tr>
<tr>
<td>Name</td>
<td>Role</td>
<td>Achievements</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Gerald O. Hunter</td>
<td>PhD student, 2012-Present</td>
<td>Best Poster, Poster Presentation, IU School of Medicine Department of Biochemistry &amp; Molecular Biology Research Day, 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Educational Enhancement Grant (EEG)</strong>, IUPUI Graduate &amp; Professional Student Government. Attended Fall Workshop “Mass Spectrometry-based Protein Phosphorylation.”, 2012</td>
</tr>
<tr>
<td>Rachel Chan</td>
<td>Intern, (high school student) 2014-present</td>
<td><strong>Poster presentation of note</strong>, selected at Central Indiana Regional Science and Engineering Fair (CIRSEF) for presentation at the state science fair.</td>
</tr>
</tbody>
</table>

**Evidence of quality course development or innovation efforts**

I have served as a member of the departmental curriculum committee and have taken over G848 as the sole course director in Spring of 2015. In order to facilitate graduate student learning about -omics focused approaches, I also took over two lectures on bioinformatics in G716 in Fall of 2015 with the goal of making the transition from G716 to G848 (the bioinformatics course) smooth. As course director of G848, I formed a committee to assess the goals and lectures that should be the focus on G848 and completely revised the course content. This will be an ongoing process for G848 as we adjust content based on student feedback, faculty feedback, and changes in the bioinformatics, genomics, proteomics, and system biology fields.
Dear Dr. Zhang:

This letter is in strong support of Dr. Amber Mosley who is being evaluated for tenure and promotion to Associate Professor. I have known Dr. Mosley for about five years and have interacted with her as a research colleague, and as the director of the G716 Molecular Biology and Genetics course, in which Dr. Mosley has taught since 2011. The G716 course is part of the first year curriculum for all incoming doctoral students at IUSM, and many MS students are also enrolled. My overall impression of Dr. Mosley is that she has demonstrated excellence as a teacher and as a researcher, and she deserving of tenure and promotion.

The G716 course covers all facets of molecular biology and genetics, featuring not only the fundamental concepts and experimental strategies, but also applications, especially in cancer biology. Dr. Mosley has taught genetics in lower eukaryotic organisms and bioinformatics, with a focus on program applications and systems biology. I attended and evaluated many of Dr. Mosley's G716 lectures. Dr. Mosley has excellent lecturing skills. She is enthusiastic and knowledgeable. Dr. Mosley has the ability to integrate complex genetic and bioinformatic concepts, distilling them down into a comprehensive presentation that can be understood and appreciated by first year graduate students. I want to note that bioinformatics, which involves integration of large datasets to decipher key concepts in gene expression and genome organization, is a rapidly evolving field and has many moving parts. Therefore, it can be challenging to present this topic to students. In fact, most of the bioinformatic lecturers that I encountered have a grasp of the computation side, but not much appreciation for the biological perspectives, or vice versa. Dr. Mosley is an expert in both, and she can balance complex systems analysis with an appreciation for the underlying biological concepts and questions. A key part of Dr. Mosley's material in G716 involves student problem solving, where students integrate on-line bioinformatic programs with provided datasets to derive solutions to a given biological question. The student problem solving includes in-class preparation for students, along with independent study and small group settings are also available. Therefore, I think that Dr. Mosley provides for an active learning environment, where students are encouraged to participate and extend beyond the basic material presented in the course.

Overall, I think that Dr. Mosley is a very effective educator. She is creative in her teaching and prepares students for graduate level research that includes bioinformatics. I note also that Dr. Mosley has responded constructively to the suggestions I have offered to her concerning lecture content and presentation, and I look forward to her continued participation in the G716 course. Dr. Mosley has received positive reviews from students, ranging from 4.3 to 4.5 (out...
of 5). A few students do struggle with the complexities of bioinformatics, so it is certainly challenging for students. However, most are excited about the topic and see the great potential for its application in their research. For students seeking more in depth training in bioinformatics, Dr. Mosley has recently become the director of the more advanced course G848 Bioinformatic Applications to Proteomics and Genomics. She updated key portions of G848, added more problem solving, and better integrated the content into research applications. I participated in the G848 course by giving a lecture and discussed the overall course with students. I was very encouraged with the comments and interest of students in the G848 course, and two of my doctoral students have initiated minors in bioinformatics, so Dr. Mosley has already had a significant impact on our graduate students and program.

I would also like to comment on Dr. Mosley's research program. As a researcher interested in gene expression and cellular stress, and a member of one of Dr. Mosley's student committees, I have had ample opportunity to learn about Dr. Mosley's research program and attend her research presentations. Dr. Mosley is interested in the mechanisms regulating RNA polymerase II synthesis of mRNA, with an emphasis on elongation and termination. Dr. Mosley is an expert in Mass spectrometry analysis of proteins complexes, and has addressed the proteins interacting with the RNA polymerase. This underlying process is central to our understanding of the control of gene expression networks underlying the health of cells, and this topic has fundamental applications to disease processes. Dr. Mosley has also pursued a genome-wide perspective studying changes in gene expression, involving both the levels of gene expression and the consequential variations in gene products. Dr. Mosley has a solid collection of manuscripts from her laboratory, with the quality of the work being excellent. She is also a highly sought after collaborator, given her bioinformatic skills. Furthermore, Dr. Mosley is well funded with a current R01 grant from NIH and most recently a grant from NSF. Given the present difficult funding climate, this level of grant support is a major accomplishment for a young investigator.

As you probably gather from my description of Dr. Mosley, I have the highest regards for Dr. Mosley as an educator and researcher. I fully expect her to make major contributions to the IUSM and IUPUI for many years to come. In short, Dr. Mosley is a major asset to Indiana University, and she is very deserving of tenure and promotion. If I can provide any additional information about Dr. Mosley please do not hesitate to contact me.

Sincerely,

Ronald Wek, Ph.D.
Showalter Professor
Email: rwek@iu.edu
TO: PROMOTION AND TENURE COMMITTEE

FROM: JOSEPH BIDWELL

DATE: 05/31/15

SUBJECT: EVALUATION OF AMBER MOSLEY’S TEACHING SKILLS

I am writing in response to a request for evaluating the teaching skills of Dr. Amber Mosley. I audited her course, G848 Bioinformatics, genomics, proteomics, and system biology this spring semester and had the opportunity to observe both her lecture and organizational skills. My assessment is based on my own experience as the director for the required IBMG core course G717 Biomedical Sciences III in which I deliver 8 lectures and observe the other lecturers. I also deliver 4 lectures for the medical school course X/G804 Cellular and Molecular Biology and present 1 lecture in Histology D851.

I was very impressed with Dr. Mosley’s teaching skills. Her lectures are well organized and she delivers the material at a relaxed pace. Her style is conversational, which emboldens student participation. She uses her own laboratory experiences, both positive and negative to enrich the lecture topics. She encourages questions and often turns the inquiries back onto the students in a non-threatening manner, challenging the class to think out loud. The students clearly enjoy her course and judging from their class presentations learned the material.

Dr. Mosley is an enthusiastic and animated teacher. We need more like her in the classroom. As more faculty take less effort to teach under the current funding contraction, natural talents like Mosley will become even more valuable to our school’s mission. I strongly and without reservation can attest to her outstanding teaching skills.

Sincerely,

Joseph Bidwell
Professor
Person Observed: Amber Moseley
Observer: Carolyn Hayes
Date and Time: October 16, 2012 – 10:00 am
Class/Setting: CPS
Number of Learners: 5
Type of Learners: MS1
Learning Objectives: Day 1 of new case

LEARNING CLIMATE
☒ Shows enthusiasm for topic and learners through body language and voice
☒ Makes eye contact with learners
☒ Encourages learners to participate
☒ Invites learners to express opinions
☒ Respects and welcomes divergent ideas
☒ Avoids ridiculing, intimidating and interrupting learners

Comments:
• Used students' names
• Introduced visitor to the group (me)
• Announced that a student would be absent
• Session is laid back and open; laughter is part of the climate

CONTROL OF SESSION
☒ Collaborates with learning in making decisions (i.e. does not have to prompt students to do assigned jobs)
☒ Watches the session drive itself (i.e. helped learners work through the discovery process without giving the answers)
☒ Avoids digressions; keeps on topic
☒ Manages time and pace of instruction (i.e. allows time for discussion, questions and thinking before moving to the next piece of information)
☒ Starts and ends the session on time
☒ Efficiently handles day-to-day administrative details (i.e., on time, distributing paperwork, assigning roles)

Comments:

COMMUNICATION OF GOALS
☒ Asks learners for their goals
☒ Works with learners to agree on goals (i.e. setting up learning issues)
☒ Prioritizes learning goals
☒ Repeats goals periodically and at end of session

Comments:
• Take time to repeat goals for the session and at the beginning of the session.

PROMOTION OF UNDERSTANDING AND RETENTION
☒ Uses examples (i.e. provides suggestions on what to search for an answer)
☒ Defines new terms (i.e. helps by explaining meaning of results)
☒ Answers learners' questions clearly
☒ Varies voice quality and speed
☒ Cues important points (i.e. confirms discoveries and decisions made by learners)
Punctuates session with questions or activities (i.e. provides introductory question to start the case, asks “open ended” questions throughout the session, asks questions about interpretation of results)

Asks thought-provoking questions

Comments:
  - Corrects learners if using an incorrect term

**EVALUATION**

- Allows appropriate wait time after asking learners a question and before moving on
- Asks learners to self-assess
- Uses formative assessment regularly to check students understanding

Comments:
  - Checks in with learners to make sure all understand and if not asks learners more questions in order to provide more clarity

**FEEDBACK**

- Tells learners why performance is correct or incorrect (i.e. provides support for learner’s choices throughout the process)
- Uses nonverbal cues like nodding
- Gives reasons for agreement or disagreement with learners
- Has learners self-assess and provides feedback on the self-assessment

Comments:
  - Be careful not to interject your opinion when learners are deciding on a hypothesis. Provide additional questions to help learners make better decisions.

**SELF-DIRECTED LEARNING**

- Uses controversy/doubt/curiosity to promote self-directed learning
- Brainstorms with learners
- Provides opportunities for learners to pursue their area of interest/chosen topics (i.e. learning issues)
- Informs learners about resources for life-long learning (e.g. additional references)

Comments:
Section 08
Research or Creative Activity

Research and creative activity statement
Peer evaluation of research or creative activity
Evidence of scholarly products and presentations
Research load information
Documentation of individual contributions to collaborative work

This section
External letters and collaborator letters in this section
Curriculum Vitae (Section 10)
See research statement this section
Candidate's statement and this section.
RESEARCH AND CREATIVE ACTIVITY STATEMENT

During my appointment as an Assistant Professor at Indiana University, the majority of my effort (≥70%) has been focused on research as my area of excellence. My laboratory uses a number of system-wide methods to study the regulation of RNA Polymerase II transcription – a fundamental cellular process. My training in peptide mass spectrometry and its associated bioinformatics has also given me the unique opportunity to collaborate with researchers from within and outside the university on technically challenging projects including chemoproteomics (studies on the interactions between drugs/small molecules and proteins), protein-protein interaction analysis, and studies on various posttranslational modifications including ubiquitination, methylation, and phosphorylation.

A. Independent research

My research in the past five years has been focused on four main projects which are detailed in my candidate’s statement. These projects are centered on the role of elongation factors and post-translational modifications on the regulation of RNA Polymerase II (RNAPII) transcription elongation and termination.

Identification and discussion of the 3-5 most significant publications that reflect major research accomplishments in rank:

1. Our studies on the role of the RNA exosome subunit Rrp6 on RNA Polymerase II termination were published in PLoS Genetics in 2015. We performed extensive analysis of the transcriptome in wild-type and RRP6 knockout yeast to show that Rrp6 is required for proper RNA Polymerase II termination at a subset of target genes. We confirmed these findings with chromatin immuno-precipitation studies that found changes in RNAPII occupancy indicated termination defects. In the absence of Rrp6, faulty termination leads to many changes in the gene expression profile. These studies are highly significant since previous work on Rrp6, a 3'-5' RNA exonuclease, showed that Rrp6 only acts to degrade certain classes of RNA Polymerase II transcripts, but did not find that loss of Rrp6 also feeds back onto the function of RNA Polymerase II itself. Additionally, mutations in subunits of the exosome have recently been found to cause pontocerebellar hypoplasia (PCH) with spinal motor neuron degeneration, a severe birth defect. It is currently unknown if the regulation of RNA Polymerase II by the exosome contributes to the pathology of PCH.

2. Using a combination of affinity purification mass spectrometry approaches, we published an analysis of the RNAPII phosphatase Rtr1 interactome in Molecular Biosystems in 2014. Using state of the art statistical approaches, we calculated interaction probabilities for Rtr1 interacting proteins and found that the major interacting partner for Rtr1 was RNAPII alone. In addition, we determined that Rtr1 binds to hyper-phosphorylated RNAPII modified at serine residues 2, 5, and 7 in the CTD. Finally, we show that serine 2 phosphorylation by the CTD-kinase complex is required for Rtr1 recruitment to RNAPII using affinity purification mass spectrometry.

3. In collaboration with the Varani lab, we published a comprehensive structure/function paper in the Journal of Molecular Biology in 2014. The studies in this paper clearly show that Rtr1 is a bona fide phosphatase and identified glutamic acid residue 66 in Rtr1 as a key residue involved in the catalytic function of Rtr1. In our laboratory, we performed genetic experiments to show that E66A mutation of Rtr1 causes a growth defect in yeast. We also found that the C-terminus of Rtr1 is inhibitory to phosphatase activity and showed structural evidence from the Varani lab to support these findings.

4. In 2013 we published a comprehensive study of the RNA Polymerase II interactome in Molecular & Cellular Proteomics. Using a combination of approaches, we clearly showed that RNAPII exists as both a 10-subunit and 12-subunit enzyme in vivo due to the dynamic association of the heterodimer Rpb4/7. Interestingly, we found that the loss of Rpb4/7 was highly correlated with hyper-phosphorylation of the RNAPII CTD at serine 2. As such, proteins including Rtr1, Asr1, and Set2 that bind to multi-site phosphorylated RNA Polymerase interact predominantly with the 10-subunit form of the enzyme. This is the first study to demonstrate that the 10-subunit form of RNAPII exists in vivo. I was both first author and co-corresponding author on this paper. While the majority of the purifications used in this study were performed during my postdoctoral training, all the vast majority of the data analysis, figure preparation, and manuscript writing were performed at IUSM.
B. Collaborative research

Details of collaborative projects 1-3 are in my candidate’s statement while projects 4-13 are discussed below.

Collaborative project 4 with Dr. Matt Bochman and Yuro Takagi, Indiana University, Bloomington, IN: Analysis of the RecQ and Pif1 family helicases. In this project, my laboratory has (will) performed proteolytic digestion and mass spectrometry (MS) analysis of the RecQ and Pif family helicases. We will continue this project to identify interacting partners of these helicases as well as post-translational modifications in various conditions (including DNA damage). Work with the Bochman lab has been funded through an IU Collaborative Research Grant (see C.V.).

Collaborative project 5 with Dr. Andrew Kusmierczyk, Department of Biology, IUPUI, Indianapolis, IN. Analysis of proteasome assembly mutants by mass spectrometry. Work with the Kusmierczyk lab was funded through an IU Collaborative Research Grant (see C.V.). My laboratory has performed the MS analysis and proteomics data analysis for this ongoing project.

Collaborative project 6 with Dr. Kristian Baker, Case Western University, Cleveland, OH: Analysis of the protein component of the messenger ribonucleoprotein (mRNP). Ongoing project to determine the components of the mRNPs of nonsense mediated decay targeted messenger RNA using MS.

Collaborative project 7 with Dr. Raghavendra G. Mirmira, Indiana University, School of Medicine, Indianapolis, IN: Post-translational modification analysis of the transcription factor Pdx1. Data obtained through MS experiments during my postdoc were shared with the Mirmira lab and published in Maganti, et al. (2015) Journal of Biological Chemistry. I also contributed to figure preparation.

Collaborative project 8 with Dr. Hua Lu, Tulane University School of Medicine, New Orleans, LA: Analysis of Inauzhin targets using chemoproteomics. I performed MS analysis of biotinylated-Inauzhin and computational analysis to identify significant interacting partners. These studies were published with the Lu lab in Zhang et al. (2014) Elife.

Collaborative project 9 with Dr. Jack Greenblatt and Zuyao Ni, University of Toronto, Ontario, Canada: Analysis of the phosphatase activity of human RPAP2 and its regulation by RPRD proteins. My graduate student, Gerald Hunter, performed numerous kinetic experiments for RPAP2 in the present and absence of RPRD proteins, inhibitors, and divalent metals. These studies were published with the Greenblatt lab in Ni et al (2014) Nature Structural and Molecular Biology.

Collaborative project 10 with Dr. Gabriele Varani, Department of Chemistry, University of Washington, Seattle, WA: Structural/functional analysis of yeast Rtr1. This was a long-term collaboration with the Varani lab started in 2012. Our contributions to Hsu et al (2014) in the Journal of Molecular Biology are discussed above. Dr. Varani’s student Peter Hsu also made some contributions of in vitro interaction data to our 2014 study in Molecular Biosystems.

Collaborative project 11 with Dr. Tom Hurley, Indiana University, Indianapolis, IN: Mass spectrometry analysis of human glycogen synthase-1. We performed mass spectrometry analysis and developed a post-translational modification analysis pipeline for these studies published in Khanna et al 2013 Protein Expr Purif.

Collaborative project 12 with Dr. Michael Carey, Department of Biological Chemistry, David Geffen School of Medicine, University of California, Los Angeles, CA: Analysis of mammalian transcription pre-initiation complexes by proteomics. Dr. Carey recruited me to analyze mass spectrometry data obtained with a colleague at UCLA. I performed all the statistical analysis of their data and made figures to represent these findings for the publication Chen et al (2012) Cell Reports.

Collaborative project 13 with Dr. Aseem Ansari, Department of Biochemistry, University of Wisconsin, Madison, WI: Functional analysis of the phosphatase Ssu72 and its role in the regulation of RNA Polymerase II phosphorylation. For these studies, I performed numerous phosphatase assays for Ssu72 to determine that it could directly dephosphorylate serine 7 in the RNA Polymerase II C-terminal domain. These experiments and analysis of some affinity purification MS data were included in the publication Zhang, et al. (2012) Journal of Biological Chemistry.
Dear Amber,

I am pleased to write this letter to confirm my collaboration with you on our projects to investigate the role of the p53-MDM2-pathway in cancer metabolism and biology, and its application to anti-cancer drug discovery over the past half a decade. One aspect of these projects is to identify new protein molecules that may be involved in the regulation of this pathway. Also, recently my lab identified a new small molecule called Inauhzin (INZ) that can activate p53 by inhibiting SIRT1 activity. We have been interested in revealing additional protein targets of this small molecule. Thus, your unique expertise in proteomics using mass spectrometry is particularly useful to our research. Indeed, your lab has helped us identify IMPDH2 as a novel protein target of INZ. IMPDH2 is a rate-limiting enzyme for GTP synthesis. This work was recently published in eLIFE (Zhang et al. eLIFE. 2014). In addition, you have helped and been continuing to help us identify new protein regulators important for the p53 family pathway. Therefore, your proteomic expertise is especially conducive to our research on the p53 network. Also, our collaboration has been fruitful and will continue to be so in the very near future.

I am looking forward to our continuing collaborations.

Hua Lu, MB (US MD equivalent), PhD
Professor and Chair
Department of Biochemistry and Molecular Biology
Reynolds and Ryan Families Chair in Translational Cancer
Tulane University School of Medicine
Dear members of the promotion and tenure committee,

I am happy to write a letter of support for our collaborator Amber Mosley. Dr. Mosley worked closely with my Postdoctoral Research Associate, Samantha Pattenden, to perform proteomic analysis of the lysine methyltransferase, G9a, and its interacting partners. The purpose of this study was to assess changes in G9a interacting proteins when a human tumor cell line was treated with a G9a inhibitor, UNC0638, and compare them to changes in the same cell line harboring a stable knockdown of a key G9a interacting partner, WIZ. A major focus at our Center is the development of small molecules that influence chromatin regulatory proteins, in this case a substrate competitive inhibitor of the methyl-transferase activity of G9a. Dr. Pattenden is specifically focused on understanding the mechanistic basis for the differences between pharmacologic and genetic manipulations. Therefore, Dr. Mosley’s expertise in proteomic analysis has been a crucial contribution to Dr. Pattenden’s research.

I am director of the Center for Integrative Chemical Biology and Drug Discovery at UNC, which was created with the mission of bringing medicinal chemistry expertise to bear on biological targets of therapeutic relevance. Synthetic chemists, assay development and compound profiling scientists work in the Center and create dedicated, multidisciplinary project teams with other groups on campus in order to progress targets through the drug discovery process. I am also the lead principal investigator for the North Carolina Comprehensive Chemical Biology Center, a UNC-based, NCI designated center that engages in oncology drug discovery. The particular focus of my lab is on chemical biology of chromatin regulation.

Following purification in our laboratory, Dr. Mosley analyzed our samples using LC/MS/MS to identify the interacting partners of G9a to help us to identify changes in those partners following UNC0638 treatment or siRNA knockdown of WIZ. Dr. Mosley and members of her laboratory performed the sample digestion, sample cleanup, mass spectrometry, and bioinformatics analysis of our data. She provided us with a clear summary of the data obtained which was included in an important figure for a manuscript that is currently under revision for The Journal of Biological Chemistry. An aspect of this collaboration to note is that we decided to work with Dr. Mosley despite the presence of a mass spectrometry core facility here at UNC. We chose to work with Dr. Mosley because of her expertise in LC/MS/MS, record of publication in diverse areas of biology as well as mass spectrometry, and extensive experience with quantitative proteomics analysis methods.

Sincerely,

Stephen V. Frye, PhD
Fred Eshelman Distinguished Professor
Division of Chemical Biology and Medicinal Chemistry
Director, Center for Integrative Chemical Biology and Drug Discovery
Eshelman School of Pharmacy, UNC-Chapel Hill
Dear Dr. Zhang,

I would like to take this opportunity, on the occasion of Dr. Amber Mosley being advanced for consideration of promotion to Associate Professor with tenure, to comment about her great value as a scientific collaborator.

Amber's research combines her main biological pursuit, the control of transcription mediated by RNAPII, and in particular the role of post-translation modifications in this control, with state of the art -omic approaches, notably proteomics in which she is an acknowledged expert. I, and many others, have benefitted from this latter expertise, often to the point of my worrying that we distract her from her own primary research interests. However, Amber is big hearted, always willing to help and also ready to seize possibilities for interesting projects. In my case, with much input from Amber, we designed a study, which also involved my former PhD student Punitee Garyali, where we tried to identify possibly substrates for an E3 ubiquitin ligase called malin. Defects in malin cause Lafora disease and this is the reason for our interest. Our basic idea was to compare wild type and malin knockout mice proteomically for the presence of peptides that had been ubiquitinated. Without getting too technical, treatment of a ubiquitinated protein with trypsin generates a peptide with a Gly-Gly tag where it was ubiquitinated. This project had ups and downs, needed much refinement from our initial ideas, necessitated much input from Amber as well as Punitee, and really led to Amber truly becoming a major mentor for Punitee. After overcoming several technical hurdles, which excited Amber, we made significant progress, the work forming a critical part of Punitee's PhD thesis. As a result, we have a couple of manuscripts in the works dealing with the technical issues and some basic biological results on ubiquitination of mouse muscle proteins. In addition, we did indeed identify a few proteins whose ubiquitination was eliminated in the absence of malin, potential targets that we can look to validate.
This can lead to a third paper. I should also add that the overall plan formed an Aim in the successful competitive renewal of my R01 grant on Lafora disease.

I therefore can speak personally about my collaboration with Amber - how many, even with good intentions, are thwarted by a multitude of reasons. Instead, it was a pleasure to interact with Amber, her expertise and enthusiasm were terrific, we accomplished some good work of mutual interest, and she played a major role in the training of my student. In this regard, the Department is fortunate to have Amber listed amongst its faculty.

Yours sincerely,

Peter Roach

Peter J. Roach, Ph.D.
Chancellor's Professor and
Distinguished Professor of Biochemistry and Molecular Biology
Chair, Department Promotion and Tenure Committee
Section 09
Professional and University Service

Service statement

Summary of professional service activities and service load information

Peer evaluation of quality as well as quantity of professional service as intellectual work

Evidence of scholarly publications, presentations, and other means of dissemination

See section 06 (Candidate's statement)

This section and section 10 (Curriculum Vitae)

See letters from this section

Not applicable
Summary of professional service activities and service load information

My service activities are detailed in my candidate's statement. I have devoted 10% of time to University and professional service during my appointment at IU School of Medicine.
June 3, 2015

Dr. Zhong-Yin Zhang
Chair, Department of Biochemistry and Molecular Biology
Indiana University School of Medicine
Indianapolis, IN 46202

Re: Promotion and Tenure, Dr. Amber Mosley

Dear Dr. Zhang and Promotion Committee Members:

It gives me extraordinary pleasure to write this letter of support on behalf of Dr. Amber Mosley, who is being considered for promotion to Associate Professor in the Department of Biochemistry and Molecular Biology. I serve as the Director of the Center for Diabetes and Metabolic Diseases and as Director of the Medical Scientist Training Program (MSTP). I have known Amber for almost 12 years, dating back to her graduate studies under her former mentor, Sabire Özcan, at the University of Kentucky. At that time, Amber was engaging in science that was directly relevant to islet β cell function, and her contributions to the field were both novel and highly significant. After Amber was recruited here to the IU School of Medicine, she and I have been engaged in collaborative research as well as in the MSTP. Notwithstanding the years I have known and interacted with Amber, I can say with absolutely no doubt that Amber should be considered an outstanding candidate for promotion, and this letter should be considered a raved review of Amber.

Amber’s training and early faculty background are clearly evident from her CV, and therefore I will dispense with summarizing these facts. Instead, I would like to focus on two key factors that should be considered in her promotion dossier, as these are highly relevant to her contributions to the academic mission of the university.

First, Amber has participated as an integral member of the MSTP Prescreening and Admissions Committees. The MSTP is the premier T32 training program in the university. The goal of the MSTP is to educate and train the next generation of physician scientists, and position them for careers in academic medicine. The MSTP now receives over 220 applications per year for only 6-8 positions. As you can imagine, the work of going through these 220 applications is extensive, and we give each candidate full attention. Doing so requires a great deal of time and effort on the part of a select few faculty, designated as the Prescreening Committee. As part of the Prescreening Committee, Amber has reviewed over 60 applications, spent time to come up with thoughtful application evaluations, and helped make decisions on whether to interview the applicants or not. Subsequently, Amber also participates in the Admissions Committee, where final
admissions decisions are made on the applicants who were interviewed. Amber has provided some of the most insightful and carefully considered critiques of the applicants. In fact, I felt that this past year, Amber was perhaps my most valuable committee member, whose assessments I trusted more than any other. I feel that this kind of insight could only come from her deep appreciation for the mission and rigor of our training program, and her commitment to ensure that the institution matriculates only best, most compatible students.

Second, Amber is simply an outstanding researcher. There is little need for me to summarize her research accomplishments, beginning from her graduate training, through her postdoctoral training, and into her junior faculty phase. She has published over 20 papers, in exceptional journals, I might add. Most recently, she published a seminal study on mechanisms of RNA pol II termination in PloS Genetics, a journal with an impact factor >8. Amber has also obtained two important extramural grants—an R01 award and an NSF award—which are clear indicators of the significance of her contributions to the scientific community. In addition, she was a crucial contributor to the oversight committee of one of my graduate students. In that role, she directly helped my student in interpreting data, and contributing data of her own. As such, Amber appeared as a co-author on that paper in J. Biol. Chem., which focused on the role of Set7/9 (a methyltransferase) in posttranslationally modifying the critical β cell transcription factor, Pdx1. Amber’s contribution to my work reflects her commitment to student education and her extraordinary collegiality and collaborative nature.

In summary, I cannot think of a candidate at the IU School of Medicine more worthy of promotion and tenure than Amber. From the perspective of teaching, service to our institution, and research contributions, Amber is second to none! I rarely give such a high recommendation for a faculty member, but Amber is clearly in the top 5 among candidates for whom I have written a support letter for promotion/tenure in the past 10 years—from any institution. I feel that her promotion should be considered a “done-deal.” If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Raghu Mirmira, MD, PhD
Professor