FORM D - IV A INSTRUCTION

The faculty member is encouraged to use a range of evidence demonstrating instructional accomplishment, which can be included in portfolios or compendia of relevant materials.

1. <u>Undergraduate and Graduate Credit Instruction</u>:
Record of instructional activities for at least the past six semesters. Include only actual participation in credit courses (on- or off-campus instruction) or virtual university on-line courses. In determining the "past six semesters," the faculty member may elect to exclude any semesters during which s/he was on leave; additional semesters may be included on an additional page. Fill in or, as appropriate, attach relevant print screens from CLIFMS*.

Semester and Year	Course Number	Credits (Number or Var)	Number of Sections Taught Lec Rec Lab	Number of Students	Number of Assistants **	Notes
<u>FS 2016</u>	PHM 801	3	1	16		2 Lectures on Signal Transduction
<u>SS 2016</u>	PHM 802	4	1	10		2 lectures on Data Analysis
<u>SS 2016</u>	PHM 552	2	1	113		1 lecture on NSAIDs
<u>FS 2015</u>	HM 539	4	1	6		4 wk PBL, 3d/wk, 2h/day
<u>FS 2015</u>	PHM 980	1	1	8		2 lectures on Signal Transduction
<u>FS 2015</u>	PHM 816	3	1	21		1 lecture on Detoxification
<u>SS 2015</u>	PHM 802	4	1	9		2 lectures on Data Analysis
<u>SS 2015</u>	PHM 552	2	1	~125		1 lecture on NSAIDs
<u>SS 2014</u>	PHM 802	4	1	9		2 lectures on Data Analysis

*Consult departmental staff who are authorized to enter data on the web-based CLIFMS (Course Load, Instruction, Funding and Modeling System) system and can search for course sections and enrollments by faculty name, per semester.

**May include graduate and undergraduate assistants, graders, and other support personnel.

FORM D - IV A INSTRUCTION

2. Non-Credit Instruction:

List other instructional activities including non-credit courses/certificate programs, licensure programs, conferences, seminars, workshops, etc. Include non-credit instruction that involves international, comparative, or global content delivered either to domestic or international groups, either here or abroad.

1. **Pharmacology Forum: Journal Club**. I co-facilitate the Journal Club with [redacted] Students present high-impact studies in a range of research areas related to Pharmacology/Toxicology. Students gain experience in presentation, critiquing the work of others (playing the role of reviewer) and in critical thinking.

2. **Pharmacology Colloquium Coordinator**. I am responsible for coordinating the annual Pharmacology Colloquium with showcases the research of Pharmacology graduate students from Michigan State University, University of Michigan, Wayne State University and the University of Toledo. The Colloquium rotates between the four schools. In years during which MSU is not hosting the Colloquium, I am responsible for advertising the meeting, coordinating registration forms and abstracts and compiling those to send to the host university, organizing parking passes, selecting oral presentations (having abstracts ranked by faculty), recruiting oral and poster judges and insuring payment is sent. When the Colloquium is held at Michigan State, my role expands to procuring an appropriate venue, selecting and inviting a keynote speaker (with student input), organizing registration, abstracts and judges for all the schools, getting poster boards and a room for posters, having programs and signage printed, set-up, food, including breakfast, lunch, appetizers/cocktails and dinner, tabulating judges scoring sheets and giving out presentation awards, clean-up and many other miscellaneous tasks.

*Consult departmental staff who are authorized to enter data on the web-based CLIFMS (Course Load, Instruction, Funding and Modeling System) system and can search for course sections and enrollments by faculty name, per semester.

**May include graduate and undergraduate assistants, graders, and other support personnel.

3. Academic Advising:

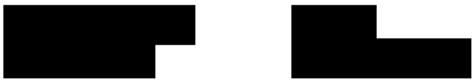
a. Faculty member's activity in the area of academic advising. The statement may include commentary on supplementary materials such as recruitment activities, international student advising, evidence of peer recognition, and evidence of student recognition.

Undergraduate: 12

Graduate: 5

Doctoral

Master's



Graduate/Professional:

Other: 1. In addition to these students, I have also had an additional 7 students rotate through the lab. I also assisted in BMS, PHM/TOX and EITS recruiting by attending and taking notes on recruit seminars, giving presentations during BMS orientation and at the BMS retreat, interviewing prospective students, taking prospective students to dinner, attending Friday receptions and Saturday dinner for recruiting weekends.

b. Candidate's undergraduate advisees (if applicable to individual under review):

	Freshman	Sophomore	Junior	Senior
Number of current undergraduate advisees				1

c. Candidate's graduate/graduate-professional advisees (limit to principal advisor or committee chairpersonship status):

	Masters	Doctoral	Professional
Number of students currently enrolled or active	1	3	
Number of graduate committees during the reporting period		10	
Degrees awarded during the reporting period	1		
Degrees awarded during career	1		

GRADUATE COMMITTEES

4. **List of Instructional Works:**
   List publications, presentations, papers, grants received (refer to Form D-IVE), and other works that are primarily in support of or emanating from instructional activity.

5. **Other Evidence of Instructional Activity:**
   Cite other evidence of instructional productivity such as works/grants in progress or under review (refer to Form D-IVE). Address instructional goals and approaches; innovative methods or curricular development; significant effects of instruction; and curatorial and patient care activities, etc. Include evidence of instructional awards and peer recognition (within and outside the university).

   1. **Teaching philosophy and approach**. My classroom teaching spans multiple programs and includes graduate students, medical students and veterinary students. The style of teaching I employ varies greatly between different academic programs.

      With respect to graduate education, my approach to teaching is multi-faceted. I often end up utilizing a mix of lecture, in-class exercises and discussion. I also favor the "flipped" classroom approach when it is practical to apply. One needs good supplementary materials for the students to review ahead of time in order for this approach to work well. However, this frees up class time for discussion and small group exercises. I employed this technique in Pharmacology 801, 802, 980 and 816. The students seemed to like this approach; I received favorable reviews from these lectures.

      With respect to lecture style, I tend to begin with streamlined overviews to introduce a new topic where possible. I initially try to make concepts as simple and linear as possible. I will then return to material I introduced earlier and start filling in the blanks by providing greater detail. I try to enhance learning by drawing appropriate analogies, particularly if I think it may help the students to remember key concepts. I try to link everything together at the end with a summary that illustrates the big picture.

      It is my preference to incorporate both primary and secondary literature in the course materials and/or lectures. While it is important to learn and understand the didactic material, including primary literature allows the students to see how pivotal experiments were designed and to gain exposure in different research approaches.

   2. **PHM/TOX Curriculum development.** I was a member of the Curriculum committee when the Pharmacology curriculum was reviewed in 2011 – 2012. I was thus integrally involved in revamping the curriculum with the rest of the committee. We methodically reviewed all the required and elective courses and made recommendations. This involved numerous meetings and discussions as we considered many different revisions to the curriculum. These discussions encompassed not only the didactic material needed by our graduate students, but also a change in our approach to delivering the material (favoring "flipped" classrooms and more student participation). Overall, I thought the revisions to the curriculum were necessary and improved our graduate program overall.

FORM D – IV A INSTRUCTION, continued

3. **CHM Curriculum Development Group (CDG): Hematopoietic/Neoplasia Domain.** (June 2015 – Present). This committee is tasked with creating and revising the content and examination questions for the Hem/Neo domain. Accordingly, it is an active and busy committee that meets monthly to review the lecture materials, PBL case studies, stimulus questions, etc. The majority of work, however, is devoted to writing and reviewing exam questions for the regular and make-up exams.

4. **Trainee awards.** The trainees in my lab have received a number of awards during the evaluation period:

[redacted] (graduate student, Cell & Molecular Biology (CMB) and Environmental and Integrative Toxicological Sciences (EITS) dual degree program)

- 2012 – 2014 Training grant, Integrative training in the pharmacological sciences
- 2013 Student presentation award, Michigan Society of Toxicology
- 2014 Student presentation award, Michigan Society of Toxicology
- 2014 Student presentation award, Immunotoxicology Specialty Section, Society of Toxicology

[redacted] (graduate, Pharmacology (PHM) and Environmental and Integrative Toxicological Sciences (EITS) dual degree program)

- 2012 – 2015 Training grant, Multidisciplinary training in environmental toxicology
- 2015 Best Paper award, Pharmacology & Toxicology Department
- 2015 Frank C. Lu Student award, Food Safety Specialty Section
- 2015 Student presentation award, Immunotoxicology Specialty Section
- 2015 Student presentation award, Michigan Society of Toxicology
- 2016 Student presentation award, Immunotoxicology Specialty Section
- 2016 Summer Fellowship, ILSI-HESI, Food and Chemical Safety
- 2016 Honorable mention, Michigan Society of Toxicology

[redacted]

- 2014 Undergraduate presentation award, Michigan Society of Toxicology
- 2015 Undergraduate presentation award, Michigan Society of Toxicology
- 2015 Lyman Briggs travel award (competitive award)

[redacted] (undergraduate student, graduated with honors in 2014, Lyman Briggs College, Dual major: Human Medicine and Immunology)

- 2014 Pfizer Undergraduate Travel award to the Society of Toxicology

5. **Trainee publications.** The trainees in my lab have written and submitted a number of publications during the evaluation period (students' names are underlined):

Published:

[redacted] "The Nrf2 activator tBHQ modulates T cell activation in human peripheral blood mononuclear cells." *Cytokine* (2015) **71**(2):289-295

[redacted] "Hepatic stellate cells orchestrate clearance of necrotic cells in a HIF1α-dependent manner by modulating macrophage phenotype in mice," *Journal of Immunology* (2014) **192**(8):3847-57

[redacted] **"**The Nrf2 activator, tBHQ, differentially affects early events following T cell activation in Jurkat cells," *Toxicological Sciences* (2013), **136**(1):63-71, PMID: 23945499

[redacted] "Immunotoxic effects of perfluorononanoic acid in C57BL/6 mice," *Clinical and Experimental Pharmacology*, (2013), S4: 002, NIHMS548417, PMCID: PMC submission in process

Under Review:
[redacted] "Persistent immune effects from perfluorononanoic acid in C57BL/6 mice," Under review for *Food & Chemical Toxicology* (2nd revision, minor revision)

[redacted] "Nrf2-dependent and –independent effects of tBHQ, CDDO-Im and H2O2 in human Jurkat T cells as determined by CRISPR/Cas9 gene editing

Written, to be submitted shortly:
[redacted] "Inhibition of early cytokine production by arsenic occurs independently of Nrf2," To be submitted to *Toxicology and Applied Pharmacology*

Notably, [redacted]*, an undergraduate student in my lab (currently in graduate school at University of Michigan), performed most of the studies in this paper and wrote the first version of this manuscript in its entirety.*

6. **Other aspects to student training outside of MSU.** I strongly encourage my students to present their research at a number of different regional and national meetings. Students from my lab have presented at the following national meetings during the evaluation period:

[redacted] "Nrf2 promotes Th2 differentiation in murine and human CD4 T cells," 2016 Society of Toxicology annual meeting, New Orleans, LA

[redacted] "Upregulation of IgM production by the Nrf2 activator tBHQ in LPS-activated mouse splenocytes," 2016 Society of Toxicology annual meeting, New Orleans, LA

[redacted]**E.**, "The food preservative tBHQ suppresses expression of IL-2 and CD25 independent of Nrf2 in human Jurkat T cells," 2016 Society of Toxicology annual meeting, New Orleans, LA

[redacted] "The food additive, tBHQ, exacerbates anaphylactic response to food allergen," 2015 Society of Toxicology annual meeting, San Diego, CA *The Toxicologist* (2015) **144**(1):1349

[redacted]**"**Activation of Nrf2 by tBHQ upregulates IgM production by LPS-activated splenocytes," 2015 Society of Toxicology annual meeting, San Diego, CA *The Toxicologist* (2015) **144**(1):1347

[redacted] "The Food Additive tBHQ inhibits activation of primary human CD4 T cells," Society of Toxicology annual meeting, San Diego, CA *The Toxicologist* (2015) **144**(1):1348

[redacted] "Determination of the Effects of Nrf2 upon the Early Events of Jurkat T Cell Activation by Use of CRISPR-CAS9 Mediated Mutation," 2015 Experimental Biology annual meeting, Boston, MA *FASEB J* (2015) **29**:621.10

[redacted] "The Nrf2 activator, tBHQ, exacerbates immediate hypersensitivity response to food allergen," American Association of Immunologists annual meeting, Pittsburgh, PA, *J Immunol* (2014) **192**:119.30

[redacted] "Inhibition of IL-2 production by the Nrf2 activator, tBHQ, correlates with inhibition of NFκB activation in activated Jurkat T cells," 2014 Society of Toxicology annual meeting, Phoenix, Arizona, *The Toxicologist* (2014) **138(1):**532.2013

[redacted] "Nrf2 has differential effects on the early events of murine T cell activation," 2014 Society of Toxicology annual meeting, Phoenix, Arizona, *The Toxicologist* (2014) **138(1):**531.2012

[redacted] "Inhibition of early T cell cytokine production by arsenic occurs independently of Nrf2," 2014 Society of Toxicology annual meeting, Phoenix, Arizona, *The Toxicologist* (2014) **138(1):**34.145

[redacted] "Activation of Nrf2 by tBHQ inhibits IL2 production, but not CD69 expression, in human Jurkat T cells," Society of Toxicology annual meeting, San Antonio, Texas, *The Toxicologist* (2013) **132(1):**442.2074

[redacted] "Inhibition of early cytokine production by the Nrf2 activator, tBHQ, in human primary blood mononuclear cells," Society of Toxicology annual meeting, San Antonio, Texas, *The Toxicologist* (2013) **132(1):**442.2075

[redacted] "Nrf2-dependent and –independent effects of tBHQ on early T cell activation," Society of Toxicology annual meeting, San Antonio, Texas, *The Toxicologist* (2013) **132(1)**:442.2073

[redacted] "Activation of Nrf2 by tBHQ inhibits early secretion of IL-2 in murine splenocytes and human Jurkat T cells," Experimental Biology, 2012 Annual meeting, San Diego, CA

In addition, the two doctoral students in my lab [redacted]) traveled to Boston in July 2014 to attend the Advanced Course in Immunology, which is coordinated by the American Association of Immunologists. They also attended the grant-writing workshop, "Write Winning Grants" presented by [redacted] at MSU. [redacted] attended the CRISPR/Cas9 symposium at MSU and met with the speakers.

FORM D - IV B RESEARCH AND CREATIVE ACTIVITIES

1. List of Research/Creative Works:

Attach a separate list of publications, presentations, papers, and other works that are primarily in support of or emanating from Research and Creative Activities. Indicate how the primary or lead author of a multi-authored work can be identified. The list should provide dates and, in particular, accurately indicate activity from the reporting period. Items to be identified:

1) Books
2) Book chapters
3) Bulletins or monographs
4) Articles
5) Reviews
6) Papers and presentations for learned professional organizations and societies
7) Artistic and creative endeavors (exhibits, showings, scores, performances, recordings, etc.)
8) Reports or studies

Indicate peer-reviewed or refereed items with a "*".

Indicate items with a significant outreach component with a "**" (determined by the faculty member)

2. Quantity of Research/Creative Works Produced:

For each of the categories listed in question one above, list the number of research and creative works produced.

	1	2	3	4	5	6	7	8
During the reporting period				15		23		
During career		1		25		45		

3. Number of Grants Received (primarily in support of research and creative activities; refer to Form D-IVE):

During the reporting period: 3 During career: 6

4. Other Evidence of Research/Creative Activity:

Cite other evidence of research and creative productivity such as: seminars, colloquia, invited papers; works/grants in progress or under review (refer to Form D-IVE); patents; formation of research-related partnerships with organizations, industries, or communities; curatorial and patient care activities, etc. Include evidence of peer recognition (within and outside the university).

Work in progress:

Papers under review:

[redacted] "Nrf2-dependent and –independent effects of tBHQ, CDDO-Im and H2O2 in human Jurkat T cells as determined by CRISPR/Cas9 gene editing," Under review at *Journal of Pharmacology and Experimental Therapeutics*

Papers submitted and/or in revision after submission:

[redacted] "Persistent immune effects from perfluorononanoic acid in C57BL/6 mice," Under review for *Food & Chemical Toxicology* (2nd revision, minor revision)

Note: I am corresponding author for this paper.

Manuscripts in preparation:

[redacted] "Inhibition of early cytokine production by arsenic occurs independently of Nrf2," Paper is written and currently being edited for *Toxicology and Applied Pharmacology*

[redacted] Differential effects of the Nrf2 activators tBHQ and CDDO-Im on the early events following T cell activation," Paper is written, but waiting on 1 remaining study. In preparation for *Biochemical Pharmacology*

Books in preparation:

I am a co-editor of the second edition of "Immunotoxicity Testing: Methods and Protocols" which is part of the Methods in Molecular Biology series from Springer publishing. We anticipate that this book will be published in November 2017. I am co-editing this book with [redacted] is the series editor.

List of Research/Creative Works:

All of the following publications were published during the reporting period and all were peer-reviewed (as indicated by *).

Published Research articles

1.* [redacted] "Pharmacological inhibition of Myocardin-related transcription factor pathway blocks lung metastases of RhoC overexpressing melanoma," *Mol Cancer Ther*. (2016) *In press*

I served as a consultant for these studies and as such contributed to the design, analysis and interpretation of the studies that assessed and quantified cell cycle phase by flow cytometry.

2.* [redacted] "Fibrin deposition following bile duct injury limits fibrosis through an αMβ2-dependent mechanism," *Blood* (2016) **127**(22):2751-62

I served as a consultant on this project. My role was to contribute to experimental design, analysis and interpretation of the studies that quantified the macrophage population by flow cytometry in this model.

3.* [redacted] "Individual bile acids have differential effects on bile acid signaling in mice," *Toxicology and Applied Pharmacology* (2015) **283**(1)57-64

I performed gene expression analyses that were included in this manuscript and wrote the relevant sections. I assisted with editing and revisions.

4.* [redacted] The Nrf2 activator tBHQ modulates T cell activation in human peripheral blood mononuclear cells." *Cytokine* (2015) **71**(2):289-295

I am the senior corresponding author for this paper and the first author, [redacted]*, is working on her dissertation research in my lab. The studies were done in my lab.*

5.* [redacted] "Fas-Induced Apoptosis Increases Hepatocyte Tissue Factor Procoagulant Activity In Vitro and In Vivo." *Toxicological Sciences* (2014) **141**:453-64, PMCID: 4271044

I contributed to the design, implementation and analysis of the flow cytometry studies that quantified HPC apoptosis in this paper.

6.* [redacted] Enhanced allergic airway disease in old mice is associated with a Th17 response," *Clinical and Experimental Allergy* (2014) **44**(10):1282-92

I served as a consultant for these studies and as such contributed to the design, implementation, analysis and interpretation of the studies that assessed T cell activation and T cell cytokine production.

7.* [redacted] "Hepatic stellate cells orchestrate clearance of necrotic cells in a HIF1α-dependent manner by modulating macrophage phenotype in mice," *Journal of Immunology* (2014) **192**(8):3847-57, PMCID: 4538924

I was a co-mentor to the first author on this study and thus was integrally involved in the initiation and development of this project. In addition, I also served as a consultant on this project. My role was to contribute to experimental design, analysis and interpretation of macrophage polarization in this model.

8.* [redacted] "The Nrf2 activator, tBHQ, differentially affects early events following T cell activation in Jurkat cells," *Toxicological Sciences* (2013), **136**(1):63-71, PMID: 23945499

I am the senior corresponding author for this paper and the first author, [redacted]*, is working on his dissertation research in my lab. The studies were done in my lab.*

9.* [redacted] "Bile acid induction of hepatocellular IL-23 expression amplifies hepatic inflammation during cholestasis," *American Journal of Pathology* (2013), **183**(5):1498-507, PMID: 24012680

I served as a consultant for these studies. Upon seeing preliminary data from this project, which showed neutrophil infiltration in liver, I suggested investigating a possible role for IL-17A and Th17 cells and suggested the studies to investigate this. I also contributed to the design and interpretation of these studies.

10.* [redacted] "Immunotoxic effects of perfluorononanoic acid in C57BL/6 mice," *Clinical and Experimental Pharmacology*, (2013), S4: 002, NIHMS548417, PMCID: PMC submission in process

I wrote this manuscript and thus am the first author. The majority of these studies were implemented at the University of Kansas Medical Center during my post-doc. However, in response to reviewers' critiques, we added some additional data which came from studies done in my lab by [redacted]

11.* [redacted] "Role of mouse hepatocyte tissue factor in coagulation cascade activation," *Blood* (2013), **121**(10):1868-74, PMID: 23305736

I served as a consultant for the studies that quantified phosphatidylserine expression on primary hepatocytes and provided technical expertise. I assisted with editing and revisions.

12.* [redacted] "A critical role for the inducible proteasomal subunits, LMP7 and MECL1, in cytokine production by activated murine splenocytes," *Pharmacology* (2012), **89**(3-4):117-126, PMID: 22398747, PMCID: PMC3702019

I wrote this paper and am first author. [redacted] *is corresponding author. These studies were implemented during my first post-doc at the University of Missouri Kansas City. However, the manuscript required extensive revision in response to reviewers' concerns, which was done at Michigan State University.*

13.* [redacted] "Th2-skewing by activation of Nrf2 in CD4+ T cells," *Journal of Immunology* (2012), **188**(4):1630-7, PMID: 22250088, PMCID: PMC3273574

I wrote this paper and am first author. [redacted] *is the corresponding author. I implemented all of these studies during my second post-doc at University of Kansas Medical Center. I revised the manuscript in response to reviewers' concerns at Michigan State University.*

14.* [redacted] "Effect of bile duct ligation on bile acid composition in mouse serum and liver," *Liver International* (2012), **32**(1):58-69, PMID: 22098667, PMCID: PMC3263524

I performed analyses that were included in this manuscript and wrote the relevant sections. I assisted with editing and revisions. I also assisted in the response to reviewers.

15.* [redacted] "Protease Activated Receptor-1 and Hematopoietic Cell Tissue Factor are required for hepatic steatosis in mice fed a high fat diet," *American Journal of Pathology* (2011), **179**(5):2278-89, PMID: 21907177, PMCID: PMC3204032

I performed analyses that were included in this manuscript and wrote the relevant sections. I assisted with editing and revisions as well as the response to reviewers.

Presentations at professional scientific societies: All of these abstracts were peer-reviewed and published (as indicated by *)

1. [redacted] "DNA Methylation And Differences In Blood Pressure Levels In Monozygotic Twins," 2016 Council on Hypertension annual meeting, Orlando FL

2. * [redacted] "Differential response of hepatic monocyte-derived macrophages and Kupffer cells to bacterial lipopolysaccharide," 2016 American Association for the Study of Liver Diseases (AASLD), Boston, MA

3. [redacted] "Nrf2 promotes Th2 differentiation in murine and human CD4 T cells," 2016 Society of Toxicology annual meeting, New Orleans, LA

4. * [redacted] "Upregulation of IgM production by the Nrf2 activator tBHQ in LPS-activated mouse splenocytes," 2016 Society of Toxicology annual meeting, New Orleans, LA

5. * [redacted] "The food preservative tBHQ suppresses expression of IL-2 and CD25

independent of Nrf2 in human Jurkat T cells," 2016 Society of Toxicology annual meeting, New Orleans, LA

6. [redacted] "The food additive, tBHQ, exacerbates anaphylactic response to food allergen," 2015 Society of Toxicology annual meeting, San Diego, CA *The Toxicologist* (2015) **144**(1):1349

7. * [redacted] "Activation of Nrf2 by tBHQ upregulates IgM production by LPS-activated splenocytes," 2015 Society of Toxicology annual meeting, San Diego, CA *The Toxicologist* (2015) **144**(1):1347

8. * [redacted] "The Food Additive tBHQ inhibits activation of primary human CD4 T cells," Society of Toxicology annual meeting, San Diego, CA *The Toxicologist* (2015) **144**(1):1348

9. * [redacted] "Determination of the Effects of Nrf2 upon the Early Events of Jurkat T Cell Activation by Use of CRISPR-CAS9 Mediated Mutation," 2015 Experimental Biology annual meeting, Boston, MA *FASEB J* (2015) **29**:621.10

10. * [redacted] "The Nrf2 activator, tBHQ, exacerbates immediate hypersensitivity response to food allergen," American Association of Immunologists annual meeting, Pittsburgh, PA, *J Immunol* (2014) **192**:119.30

11. * [redacted] "Inhibition of IL-2 production by the Nrf2 activator, tBHQ, correlates with inhibition of NFκB activation in activated Jurkat T cells," 2014 Society of Toxicology annual meeting, Phoenix, Arizona, *The Toxicologist* (2014) **138(1):**532.2013

12. * [redacted] "Nrf2 has differential effects on the early events of murine T cell activation," 2014 Society of Toxicology annual meeting, Phoeniz, Arizona, *The Toxicologist* (2014) **138(1):**531.2012

13. * [redacted] "Inhibition of early T cell cytokine production by arsenic occurs independently of Nrf2," 2014

Society of Toxicology annual meeting, Phoenix, Arizona, *The Toxicologist* (2014) **138(1):**34.145

14. * [redacted] "Hepatocyte tissue factor decryption contributes to coagulation triggered by fas-induced apoptosis." 2014 Society of Toxicology annual meeting, Phoeniz, Arizona, *The Toxicologist* (2014) **138(1)**:491.1867

15. * [redacted] "Enhanced allergic airway disease in old mice is associated with a Th17 response," American Thoracic Society International Conference Annual meeting, San Diego, CA, *Am J Respir Crit Care Med* (2014) **189**;2014:A3698

16. * [redacted] "Activation of Nrf2 by tBHQ inhibits IL2 production, but not CD69 expression, in human Jurkat T cells," Society of Toxicology annual meeting, San Antonio, Texas, *The Toxicologist* (2013) **132(1):**442.2074

17. * [redacted] "Inhibition of early cytokine production by the Nrf2 activator, tBHQ, in human primary blood mononuclear cells," Society of Toxicology annual meeting, San Antonio, Texas, *The Toxicologist* (2013) **132(1):**442.2075

18. * [redacted] "Hepatocyte tissue factor triggers the procoagulant response associated with acetaminophen-induced liver injury and hepatocyte transplantation," Society of Toxicology annual meeting, San Antonio, Texas, *The Toxicologist* (2013) **132(1)**:137.638

19. * [redacted] "Nrf2-dependent and –independent effects of tBHQ on early T cell activation," Society of Toxicology annual meeting, San Antonio, Texas, *The Toxicologist* (2013) **132(1)**:442.2073

20. * [redacted] "Hepatocyte tissue factor is required for thrombin generation in early acetaminophen-induced liver injury," 2012 FASEB Summer conference, "Live Biology: Fundamental Mechanisms and Translational Applications", Snowmass, CO

21. * [redacted] "Activation of Nrf2 by tBHQ inhibits early secretion of IL-2 in murine splenocytes and human Jurkat T cells," Experimental Biology, 2012 Annual meeting, San Diego, CA

22. * [redacted] "Activation of Nrf2 by tBHQ inhibits early cytokine production in activated T cells, but has little effect on induction of CD25 and CD69," Society of Toxicology, 2012 Annual meeting, San Francisco, CA, *The Toxicologist* (2012) **126(1)**:2755 (24)

23. * [redacted] "Th2 skewing by activation of Nrf2 in CD4 T cells," Midwinter Conference of Immunologists, 2012 Annual Meeting, Pacific Grove, CA

FORM D - IV C SERVICE WITHIN THE ACADEMIC AND BROADER COMMUNITY

1. Service within the Academic Community

a. Service to Scholarly and Professional Organizations:

List significant committee/administrative responsibilities in support of scholarly and professional organizations (at the local, state, national, and international levels) including: elected and appointed offices held; committee memberships and memberships on review or accreditation teams; reports written and submitted; grants received in support of the organization (refer to Form D-IVE); editorial positions, review boards and ad hoc review requests; and programs and conferences planned and coordinated, coordinated or served on a panel or chaired a session. Include evidence of contributions (e.g., evaluations by affected groups or peers).

The majority of service I have done thus far has been for the Immunotoxicology Specialty Section (ITSS) of the Society of Toxicology and the Michigan regional chapter of the Society of Toxicology. I also serve on 2 editorial boards and review manuscripts for publication for various journals.

Immunotoxicology Specialty Section (ITSS):

Junior councilor (2014 - 2015) and Senior Councilor (2015 – 2016): As junior/senior councilor of the specialty section, I was on the Executive Committee, which is responsible for overseeing and implementing all activities of the ITSS. The most important activities of the specialty section include organizing programs to submit for the national meeting, organizing the ITSS reception at the national meeting and collecting nominations for awards and choosing award winners. However, the specialty section is busy year-round in collecting information for the quarterly newsletter, maintaining and promoting membership, outreach and international exchange activities, promoting immunotoxicology education and training and tracking the budget, among other activities. We accomplish these tasks through multiple committees, through the monthly teleconference meetings of the Executive committee as well as through email communication of the Executive committee in between monthly meetings. As senior councilor, I chaired both the Education and Awards committees (committee descriptions below).

Education committee (2014 – Present): The mission of this committee is to promote and support education as it relates to immunotoxicology. Our aim is not only to promote didactic teaching of immunotoxicology at the undergraduate and graduate levels, but also to support the career development and training of undergraduate, graduate and postdoctoral trainees who have an interest in the area of immunotoxicology. With respect to didactic teaching, we have developed a pool of lecturers who are available to provide unique immunotoxicology education to programs who request it. We are also available to support K-12 initiatives. When I joined the committee, we initiated a new event: the ITSS Mentoring event. I played a major role in organizing this event in 2015 and 2016. I secured funding and space, recruited mentors, acted as moderator, organized refreshments, ordered AV equipment, organized room layout, organized registration, among other tasks. This event was a huge success in both 2015 and 2016. This has become a standing annual event now for ITSS.

Communications committee (2012 – 2013): The purpose of this committee is to collect and disseminate information relevant to the needs of immunotoxicologists. This is accomplished via the publication of newsletters, outreach to members via email or written communication and timely updates to the ImTox SS website. Thus, the Communications committee is responsible for soliciting articles for and compilation of the newsletter, coordinating website updates with SOT staff liaisons, and contacting membership as directed by the Executive Committee. As a member of this committee, I was responsible for compiling information and making spreadsheets.

Awards committee (2012 – 2013): The mission of the Immunotoxicology Specialty Section Awards Committee is to honor the scientific accomplishments of its members by conferring awards at each annual Society of Toxicology meeting. The Senior Councilor chairs the Awards Committee and works with Awards Committee members to review and score the: A) Best Paper of the Year Award, B) Best Presentation by a Postdoctoral Trainee Award, and C) Best Presentation by a Student Award. The Senior Councilor coordinates with other members of the ImTox SS Executive Committee members

who are tasked with reviewing and scoring the: A) Vos Lifetime Career Achievement Award in Immunotoxicology, B) Outstanding Young Immunotoxicologist Award, C) HESI Immunotoxicology Young Investigator Travel Award, and D) Outstanding Senior Immunotoxicologist Award. Thus, the most important function of this committee is to receive and score the nominations for each of these awards.

Michigan regional chapter of the Society of Toxicology (MiSOT):

Councilor (2013 – 2015): As councilor, I am on the executive committee of the MiSOT, which is collectively responsible for overseeing and implementing all activities of MiSOT. The most important activities of MiSOT include organizing and implementing the annual meeting, coordinating the MiSOT reception at the national meeting, maintaining and promoting membership and overseeing the budget. I have been heavily involved (with the rest of the executive committee) in organizing the annual meeting the last two years. We have collectively made decisions regarding date and venue, keynote speakers and program, registration deadlines and fees, presentation awards for students and postdoctoral fellows as well as breakfast and lunch. Although we discuss and make decisions collectively through conference calls, we also delegate specific tasks to one another. I have been responsible for coordinating lunch for the last two annual meetings, developed the scoring sheet for judging presentations, acted as a judge and performed numerous other tasks.

Editorial boards

I currently serve on 2 editorial boards: Molecular Pharmacology & Pharmacological Research.

Ad hoc manuscript review

I review manuscripts that relate to my research interests for a number of journals, including Molecular Pharmacology, Pharmacological Research, Toxicological Sciences, Toxicology, Toxicology and Applied Pharmacology, Plos One, European Journal of Pharmacology, Food and Chemical Toxicology, and a new journal: Toxicology Reports that was started by members of Michigan Society of Toxicology.

b. Service within the University:

List significant committee/administrative responsibilities and contributions within the University. Include service that advances the University's equal opportunity/affirmative action commitment. Committee service includes: appointed and elected university, college, and department ad hoc or standing committees, grievance panels, councils, task forces, boards, or graduate committees. Administrative responsibilities include: the direction/coordination of programs or offices; admissions; participation in special studies or projects; collection development, care and use; grants received in support of the institution (refer to Form D-IVE), etc. Describe roles in any major reports issued, policy changes recommended and implemented, and administrative units restructured. Include evidence of contributions (e.g., evaluations by peers and affected groups).

Department committees:

Graduate committee (2013 – Present): The Graduate Committee makes recommendations with respect to the graduate curriculum (in conjunction with the Course and Curriculum Committee), coordinates the administration of the comprehensive examination, develops and administers enrichment activities, reviews applications for departmental fellowships, recommends nominees for non-departmental fellowships, various honors and scholarships, selects the winner of the Best Paper award, reports student awards to the Department and other duties. During my tenure on this committee, we revamped the comprehensive examination in addition to our regular duties.

Course and Curriculum committee (2011 – 2013): The Course and Curriculum Committee reviews proposals for new courses and programs and recommends (in conjunction with the Graduate and Online Degree Committees) revisions in the curriculum. During my tenure on this committee, we revamped the curriculum for the doctoral program in Pharmacology & Toxicology in addition to our regular duties.

Committee on Inclusion and Intercultural Initiatives (formerly Diversity committee, 2011 – 2012): This Committee promotes inclusion in all departmental activities.

FORM D - IV C SERVICE WITHIN THE ACADEMIC AND BROADER COMMUNITY

Center of Integrative Toxicology/Environmental and Integrative Toxicological Sciences committees:

Postdoctoral committee (2013 – Present): This committee interviews all postdoctoral fellows on the Environmental & Integrative Toxicological Sciences (EITS) training grant upon arrival at MSU and every 6 – 12 months thereafter. The purpose of these meetings is to insure that each postdoc is completing an Individualized Development Plan (IDP), that he/she is progressing and fulfilling his/her career goals, to strongly encourage the submission of F32 applications and to provide support and advice to the postdoctoral fellows as needed. The committee makes written recommendations to enhance the training and to promote the career development of each postdoctoral fellow in the program.

College of Human Medicine committees:

College Advisory Council (2015 – Present): This committee serves as conduit for communication between the college faculty and the college dean. The council also plays an advisory role in policy-making for the college. The council meets monthly. I represent the faculty of department on issues that are discussed during these meetings and report back to our faculty during monthly faculty meetings.
Curriculum Development Group for Hematopoiesis and Neoplasia: (June 2015 – Present): This committee is tasked with creating and revising the content and examination questions for the Hem/Neo domain. Accordingly, it is an active and busy committee that meets monthly to review the lecture materials, PBL case studies, stimulus questions, etc. The majority of work, however, is devoted to writing and reviewing exam questions for the regular and make-up exams. I am also specifically responsible for the Pharmacology exam questions, including reviewing the quality of the questions, writing new questions as needed and responding to challenges from the students on these questions.

Other service activities:

Pharmacology Colloquium Coordinator (2012 – Present): I coordinate MSU participation in and hosting of the annual Pharmacology Colloquium. The Colloquium is hosted alternately by four universities: Michigan State University, University of Michigan, Wayne State University and University of Toledo. Please see item #2 under Non-Credit Instruction (p.8).

Trainer on graduate training grants (2012 – Present): I am a trainer on two different training grants: Multidisciplinary Training in Environmental Toxicology (through the EITS program, [redacted] and Integrative Training in the Pharmacological Sciences (PI: [redacted] For the ITPS training grant, I attend and participate in the annual retreat and provide information as needed for progress reports. For the EITS training grant, I attend the annual research evening, attend meetings to pick nominees to be supported by the training grant, am a member of the Postdoctoral committee (see above), and supply information as needed for progress reports and grant renewal. I also assisted in reviewing portions of the training grant prior to submission. I have had 1 student supported by the Multidisciplinary Training in Environmental Toxicology and 2 students supported by the Integrative Training in the Pharmacological Sciences training grant.

Trainer on undergraduate training grants: I am also a trainer for a number of R25 undergraduate and post-baccalaureate training grants, including Research Education Program to Increase Diversity in Health-Related Research (REPID, PI: [redacted] and a new R25 application that was submitted by [redacted] to provide training to underrepresented groups in biomedical research. I am also a trainer on the new Summer Undergraduate Research Fellow (SURF) application (PI: [redacted]) that was submitted in October to American Society of Pharmacology and Experimental Therapeutics to provide support for undergraduate students for summer projects in various areas of pharmacology research. Thus far, I have had one REPID scholar in my lab. This student remained in my lab after the program ended and continued his research in my lab until he graduated.

Student Presentation Judge: I have frequently served as a judge for student and/or post-doc presentations for various forums, including Pharmacology Colloquium, Phi Zeta Day, Michigan Society of Toxicology and the Immunotoxicology Specialty Section of the Society of Toxicology.

FORM D - IV C SERVICE WITHIN THE ACADEMIC AND BROADER COMMUNITY, continued

2. Service within the Broader Community:

As a representative of the University, list significant contributions to local, national, or international communities that have not been listed elsewhere. This can include (but is not restricted to) outreach, MSU Extension, Professional and Clinical Programs, International Studies and Programs, and Urban Affairs Programs. Appropriate contributions or activities may include technical assistance, consulting arrangements, and information sharing; targeted publications and presentations; assistance with building of external capacity or assessment; cultural and civic programs; and efforts to build international competence (e.g., acquisition of language skills). Describe affected groups and evidence of contributions (e.g., evaluations by affected groups; development of innovative approaches, strategies, technologies, systems of delivery; patient care; awards). List evidence, such as grants (refer to Form D-IVE), of activity that is primarily in support of or emanating from service within the broader community.

Outreach seminars/classes:

"Fact or Fiction: controversies in vaccination": a one-hour seminar/lecture for lay people on the current controversies surrounding vaccination, where those controversies originated from and other issues related to vaccination, including influenza epidemics. Wednesday Night Live class series at the People's Church, Nov. 5, 2014.

"What's wrong with Tylenol? Toxicity of common household medications": a one-hour seminar/lecture for lay people focused on side effects and toxicity of common OTC medications, including acetaminophen, aspirin and other NSAIDs, cold remedies, antihistamines, diet medications, etc. Wednesday Night Live class series at the People's Church, Nov. 12, 2014.

"BPA and Babies": a one-hour seminar/lecture for lay people on BPA: its uses, exposure and what is known (and not known) about its effects in humans. Wednesday Night Live class series at the People's Church, Nov. 19, 2014.

FORM D - IV D ADDITIONAL REPORTING

1. Evi dence of Other Scholarship:

Cite evidence of "other" scholarship as specified on p. 2 in the "summary rating" table (i.e., functions outside of instruction, research and creative activity, and service within the academic and broader community). Address the scholarship, significance, impact, and attention to context of these accomplishments.

2. Integration across Multiple Mission Functions:

Discuss ways that your work demonstrates the integration of scholarship across the mission functions of the university—instruction, research and creative activities, and service within the academic and broader community.

Nearly all the work I do is related to gaining and disseminating knowledge in the areas of immunology, pharmacology and toxicology and that this is the common thread in all of the many activities related to my career. I do not necessarily seek ways to integrate teaching, research and service, but nonetheless, it is nearly impossible to separate the three. In my case, as the principal investigator of a research lab, the research direction of the lab is intimately related to the teaching and training of undergraduate and graduate students; the two cannot be separated. Likewise, as a result of my research, I am called upon to review papers that fall within my area of expertise. In addition, by regularly presenting our research at regional and national meetings and by participating in the societies that host such meetings, I have found myself doing service to support these societies. At the university level, I am naturally interested in participating in and strengthening biomedical education (particularly in the areas of immunology, pharmacology and toxicology) and am involved in activities related to this.

My research is generally focused on elucidating the mechanisms that regulate immune cell function and how this ultimately impacts immunity and inflammation. I am secondarily interested in how xenobiotics modulate such mechanisms (i.e. Immunopharmacology/Immunotoxicology). The majority of the teaching I do is in training graduate students with a particular focus in Pharmacology & Toxicology. I also serve as a preceptor in Problem-Based Learning for medical students in CHM (Hem/Neo domain). The majority of service I have done outside the university has been for the Immunotoxicology Study Section of the Society of Toxicology as well as the Michigan regional chapter of the Society of Toxicology. The service I have done within the university has been in a number of different areas, but is largely concentrated on graduate student and postdoc training. Although my work in this area has been both inside and outside the department of Pharmacology & Toxicology, an important part of my service has been to increase undergraduate/graduate student/postdoc exposure to and the visibility of Pharmacology & Toxicology. I have done this in various ways, including coordinating the Pharmacology Colloquium, participating in various undergraduate/graduate/postdoc training programs (Environmental and Integrative Toxicological Sciences training program, Pharmacology training grant, Research Education Program to Increase Diversity in Research in Health-Related Research and other R25 programs, etc.) and through the Michigan Society of Toxicology and Immunotoxicology Specialty Section of the Society of Toxicology. Wherever possible, I present opportunities to students and postdocs in Immunology/Pharmacology/Toxicology of which they may not otherwise be aware. The outreach I have organized has revolved around public awareness and education in various topical issues related to Immunology, Toxicology and Pharmacology.

3. Other Awards/Evidence:

Cite other distinctive awards, accomplishments of sabbatical or other leaves, professional development activities, and any other evidence not covered in the preceding pages. (If the reporting period differs from the usual review period, then justify and support that period here.)

Awards

Outstanding Young Immunotoxicologist of the Year. I received this award in 2014 from the Immunotoxicology Specialty Section of the Society of Toxicology. This award is for an investigator whose work has made significant contributions to the field of Immunotoxicology. The nominees are judged based on the depth, breadth and significance of their scientific contributions to advancing Immunotoxicology. Service to the Immunotoxicology community is also considered. Nominees must be within 10 years of receiving their highest degree.

FORM D - IV D ADDITIONAL REPORTING

Student awards: The students in my lab have also won awards. [redacted] (graduate student) has been awarded 4 presentation awards, an honorable mention, a paper award and a competitive summer fellowship (internship). [redacted] (graduate student) has been awarded three student presentation awards from the Michigan Society of Toxicology and the Immunotoxicology Specialty Section of the Society of Toxicology. [redacted] undergraduate student) was awarded the Pfizer Undergraduate Travel Award in 2014 to attend the annual SOT meeting. [redacted] (undergraduate student) was awarded two presentation awards.

Professional Development Activities

Grant information and writing seminars: I have attended two different grant-writing seminars during the reporting period: "Writing Winning Grants" in Jan. 2012 and Jan. 2014 (I attended this seminar twice to get new information on the new grant review criteria) and "The Iceman's Guide to Writing Grants" in August 2014. I also attended Sally Rockey's two information sessions on NIH grants in Nov. 2013. I also attend the Coffee Breaks sponsored by Vice President for Graduate Studies in Research, which cover a range of different issues related to grant funding.

Technical symposia: I attended the CRISPR/CAS9 symposia in Apr. 2014.

Faculty Discussion Group: I regularly attend and also present in the Pharmacology Faculty Discussion Group, which is held monthly.

Invited Talks

I have been invited to give a number of talks in the last several years (and upcoming year):

- "The role of the stress-activated transcription factor Nrf2 in allergy and immunity", University of Alabama Birmingham, invited - May 2017
- "Revenge of the Nrf2: Immunomodulatory effects of the stress-activated transcription factor Nrf2 in activated T cells and effects on downstream immunity", invited - Midwestern University, May 2017
- "The role of Nrf2 in regulating immune function", invited - East Carolina University, April 2017
- "The role of Nrf2 in T cell differentiation and allergic disease", Outstanding New Environmental Scientist Symposium, May 2016, NIEHS, Research Triangle Park, NC
- "Food Allergy and the Role of the Food Preservative tBHQ", Michigan Dietetics Association, April 21, 2016
- "Plotting an Upward Trajectory of Funding for the Early Career Scientist", March 14, 2016 NIH Funding Luncheon, Society of Toxicology Annual Meeting, New Orleans, LA
- "Toxicology and Food Allergy: Case Study of tBHQ", April 14, 2015, FDA-SOT Colloquium: Immunotoxicology in Food and Ingredient Safety Assessment: Approaches and Case Studies. The 3rd Colloquium of the series: Emerging Toxicological Science Challenges in Food and Ingredient Safety, College Park, MD
- "Food Allergy and the Role of the Food Preservative tBHQ", Lansing Dietetics Association, January 20, 2015

Reporting Period:

I was granted a one-year automatic extension due to the birth of my son on 11/29/12. I requested the extension after discussion with my mentoring committee.

FORM D - IV E GRANT PROPOSALS

List grant proposals submitted during reporting period relating to teaching, research and creative activities, or service within the academic and broader community. Include grants in support of outreach, international, urban, and extension activities.*

	Name of Granting Agency (Grantor:) Focus of Grant (Focus:)	Date Submitted	$ Amount Requested	Status: Pending	Status: $ Amt Funded	Status: Not Funded	$ Amount Assigned to Faculty Candidate (if Applicable)	Principal/Co-Investigators (if not faculty candidate)
I.	**Instruction**							
	Grantor:			☐		☐		
	Focus:							
	Grantor:			☐		☐		
	Focus:							
II.	**Research/Creative Activity**							
NOTE: All grant submittals are attached—Three grants awarded thus far (R00, R01 and AHA SFRN – 2 years)								
	Grantor: NIH/National Institute of Environmental Health Sciences Outstanding New Environmental Scientist (ONES) R01	02/25/2015	$2,152,141	☐	$2,098,057	☐	n/a	n/a
	Focus: The role of Nrf2 in immune cell polarization and allergy							
	Grantor: NIH/National Institute of Environmental Health Sciences R00	11/01/2011	$747,000	☐	$739,653	☐	n/a	n/a
	Focus: Role of Nrf2 in immunotoxicity by food additives and environmental contaminants							
	Grantor: American Heart Association through Medical College of Wisconsin	10/31/2014	$99,724	☐	$99,724	☐	$2,652	[redacted]
	Focus: Epigenomics of Hypertension in Monozygotic Twins and Effect of Salt Intake							
	Grantor: American Heart Association through Medical College of Wisconsin	03/23/2016	$106,224	☐	$106,224	☐	$2,649	[redacted]
	Focus: Epigenomics of Hypertension in Monozygotic Twins and Effect of Salt Intake (Year 2)							

*Anyone with an MSU Net username and password can log onto the web-based Information Reference database, maintained by the Office of Contract and Grant Administration, to search for records of proposals and grant awards by principal investigator. Printouts may be attached to this page.

FORM D - IV E GRANT PROPOSALS

				Status				
	Name of Granting Agency (Grantor:) Focus of Grant (Focus:)	Date Submitted	$ Amount Requested	Pending	$ Amt Funded	Not Funded	$ Amount Assigned to Faculty Candidate (if Applicable)	Principal/Co-Investigators (if not faculty candidate)
III.	**a. Service – Academic Community**							
	Grantor:			☐		☐		
	Focus:							
III.	**b Service – Broader Community**							
	i. MSU Extension							
	Grantor:			☐		☐		
	Focus:							
	ii. Professional/Patient Care Activities							
	Grantor:			☐		☐		
	Focus:							
	iii. International Studies and Programs							
	Grantor:			☐		☐		
	Focus:							
	vi. Urban Affairs Programs							
	Grantor:			☐		☐		
	Focus:							
	v. Other							
	Grantor:			☐		☐		
	Focus:							

*Anyone with an MSU Net username and password can log onto the web-based Information Reference database, maintained by the Office of Contract and Grant Administration, to search for records of proposals and grant awards by principal investigator. Printouts may be attached to this page.

Proposals Submitted by: [redacted] On y awarded data before 7/1/2008

[redacted]

Department

PHARMACOLOGY & TOXICOLOGY HUMAN MEDICINE [redacted]

App Number: [redacted] **Date Submitted: 6/4/2012** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,830,959.00	5.0000000000	$91,547.95	NATL INST OF HEALTH - NIH/PHS	HIF1Alpha, preterm birth, and immunity of the lung

[redacted]

App Number: [redacted] **Date Submitted: 7/3/2012** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,835,708.00	10.0000000000	$183,570.80	NATL INST OF HEALTH - NIH/PHS	The Role of HIF1 in inflammatory response to toxicant challenge

[redacted]

App Number: [redacted] **Date Submitted: 7/8/2013** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,644,027.00	5.0000000000	$82,201.35	NATL INST OF HEALTH - NIH/PHS	HIF1Alpha, preterm birth, and immunity of the lung

[redacted]

App Number: [redacted] **Date Submitted: 11/15/2013** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,659,994.00	10.0000000000	$165,999.40	NATL INST OF HEALTH - NIH/PHS	HIFs, preterm birth, and toxicant-induced inflammation

[redacted]

App Number: [redacted] **Date Submitted: 2/5/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,659,609.00	10.0000000000	$165,960.90	NATL INST OF HEALTH - NIH/PHS	Early life hyperoxia and its impact on toxicant-induced inflammation as an adult

[redacted]

App Number: [redacted] **Date Submitted: 2/28/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$2,130,877.00	100.0000000000	$2,130,877.00	NATL INST OF ENVIRON HEALTH SCI -NIH/PHS	The Role of Nrf2 in immune cell polarization and allergy

[redacted]

App Number: [redacted] **Date Submitted: 8/12/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$107,198.00	0.0000000000	$0.00	NATL INST OF HEALTH - NIH/PHS	Nrf2 dependent modulation of the early events of human CD4 T cell activation

[redacted]

App Number: [redacted] **Date Submitted: 8/12/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$107,198.00	50.0000000000	$53,599.00	NATL INST OF HEALTH - NIH/PHS	Nrf2 dependent modulation of the early events of human CD4 T cell activation

[redacted]

App Number: [redacted] **Date Submitted: 8/12/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$107,198.00	0.0000000000	$0.00	NATL INST OF HEALTH - NIH/PHS	Modulation of human T cell differentiation by the synthetic food additive tBHQ

[redacted]

App Number: [redacted] **Date Submitted: 8/12/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$107,198.00	50.0000000000	$53,599.00	NATL INST OF HEALTH - NIH/PHS	Modulation of human T cell differentiation by the synthetic food additive tBHQ

[redacted]

App Number: [redacted] **Date Submitted: 10/3/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,863,290.00	0.0000000000	$0.00	NATL INST OF HEALTH - NIH/PHS	The role of Nrf2 in immune cell polarization and allergic disease

[redacted]

[redacted] Number: [redacted] **Date Submitted: 10/3/2014** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,863,290.00	90.0000000000	$1,676,961.00	NATL INST OF HEALTH - NIH/PHS	The role of Nrf2 in immune cell polarization and allergic disease

[redacted]

App Number: [redacted] **Date Submitted: 10/31/2014** **Board Award Date: 12/18/2015**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$522,799.00	0.0000000000	$0.00	MEDICAL COLLEGE OF WISCONSIN	Epigenomics of Hypertension in Monozygotic Twins and Effect of Salt Intake

[redacted]

App Number: [redacted] **Date Submitted: 10/31/2014** **Board Award Date: 12/18/2015**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$522,799.00	7.0000000000	$36,595.93	MEDICAL COLLEGE OF WISCONSIN	Epigenomics of Hypertension in Monozygotic Twins and Effect of Salt Intake

[redacted]

App Number: [redacted] **Date Submitted: 2/25/2015** **Board Award Date: 4/15/2016**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$2,136,085.00	0.0000000000	$0.00	NATL INST OF HEALTH - NIH/PHS	The role of Nrf2 in immune cell polarization and allergic disease

[redacted]

App Number: [redacted] **Date Submitted: 2/25/2015** **Board Award Date: 4/15/2016**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$2,136,085.00	86.0000000000	$1,837,033.10	NATL INST OF HEALTH - NIH/PHS	The role of Nrf2 in immune cell polarization and allergic disease

[redacted]

App Number: [redacted] **Date Submitted: 6/25/2015** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,657,084.00	0.0000000000	$0.00	NATL INST OF HEALTH - NIH/PHS	Early life hypoxia signaling and its impact on toxicant-induced inflammation as an adult

[redacted]

App Number: [redacted] **Date Submitted: 6/25/2015** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,657,084.00	10.0000000000	$165,708.40	NATL INST OF HEALTH - NIH/PHS	Early life hypoxia signaling and its impact on toxicant-induced inflammation as an adult

[redacted]

App Number: [redacted] **Date Submitted: 3/23/2016** **Board Award Date: 9/8/2016**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$106,224.00	0.0000000000	$0.00	MEDICAL COLLEGE OF WISCONSIN	Epigenomics of Hypertension in Monozygotic Twins and Effect of Salt Intake

[redacted]

App Number: [redacted] **Date Submitted: 3/23/2016** **Board Award Date: 9/8/2016**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$106,224.00	7.0000000000	$7,435.68	MEDICAL COLLEGE OF WISCONSIN	Epigenomics of Hypertension in Monozygotic Twins and Effect of Salt Intake

[redacted]

App Number: [redacted] **Date Submitted: 6/2/2016** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,865,753.00	0.0000000000	$0.00	NATL INST OF HEALTH - NIH/PHS	Neonatal loss of Hif1 impacts inflammatory response in the adult lung.

[redacted]

App Number: [redacted] **Date Submitted: 6/2/2016** **Board Award Date:**

Full Amt Requested	PI-Dept Credit	PI Portion Of	Sponsor	Title
$1,865,753.00	10.0000000000	$186,575.30	NATL INST OF HEALTH - NIH/PHS	Neonatal loss of Hif1 impacts inflammatory response in the adult lung.

[redacted]

Grand Total for this time period for PI: [redacted]
Total Request: $27,492,436.00
Sum of PI Portion of Submitted Proposals: $6,837,664.81 # Submitted Proposals = 22
[redacted]