

WESLEYAN

U N I V E R S I T Y

Dept. of Environmental Services
170 Long Lane
Middletown, CT 06459



06-00483-10
03020108

26 June 2015

To: Betsy Ullrich, Senior Health Physicist
Commercial, Industrial, R&D and Academic Branch
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region 1
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406-2713

Re: Materials License Renewal Responses

Ms. Ullrich,

Please find attached our responses to your questions in an email dated 5/28/15 in regard to our request for license renewal. I have highlighted the additions in Blue for ease of reading.

Attached to this document are the resume and experience for Prof. Erika Taylor.

If you have questions please feel free to call me at (860)685-2771, I look forward to your response.

Regards,

William S. Nelligan RSO
Director
Environmental Services

Encs: Material License Application
Application Package
Erika Taylor, PhD Resume

586854
MICRONI MATERIALS-002

NRC FORM 313

(03-2014)
10 CFR 30, 32, 33, 34
35, 36, 37, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 05/31/2015

APPLICATION FOR MATERIALS
LICENSE

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollections.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW. *AMENDMENTS/RENEWALS THAT INCREASE THE SCOPE OF THE EXISTING LICENSE TO A NEW OR HIGHER FEE CATEGORY WILL REQUIRE A FEE.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

OFFICE OF FEDERAL & STATE MATERIALS AND
ENVIRONMENTAL MANAGEMENT PROGRAMS
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA,
KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY,
NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH
CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,
SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS,
LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH
DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS,
UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

☐

A. NEW LICENSE

☐

B. AMENDMENT TO LICENSE NUMBER

☒

C. RENEWAL OF LICENSE NUMBER

06-00483-12

2. NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code)

William S. Nelligan RSO
Wesleyan University
170 Long Lane
Middletown, CT 06459

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

William S. Nelligan

BUSINESS TELEPHONE NUMBER

(860) 685-2771

BUSINESS CELLULAR TELEPHONE NUMBER

(860) 982-1096

BUSINESS EMAIL ADDRESS

wnelligan@wesleyan.edu

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL

- a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*)
(See 10 CFR 170 and Section 170.31)

FEE CATEGORY

AMOUNT

ENCLOSED \$

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 37, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE

John Meerts Vice President for Finance and Administration

SIGNATURE

DATE

6/25/15

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	



Line #5: 8.5.1 Radioactive Material to be Possessed

Element & Mass Number	Chemical and/or Physical Form	Maximum Amount	Proposed Use
Hydrogen 3	Bound/Non-Volatile	500 millicuries	ADP/ATP/ASE study. Thymidine injection into finches to follow brain development.
Carbon 14	Any	12 millicuries	Methylated marker
Phosphorous 32	Any	30 millicuries	DNA/protein labeling
Phosphorous 33	Any	30 millicuries	DNA/protein labeling
Sulfur 35	Any	30 millicuries	Nucleotide labeling. DNA/Protein labeling
Calcium 45	Any	1 millicurie	Research and development as defined in 10CFR30.4
Iron 59	Any	5 millicuries	Research and development as defined in 10CFR30.4
Iodine 125	Bound/Non-Volatile	5 millicuries	Protein labeling, biochemical study

Understanding:

Radioactive material possessed under the terms of one or more license exemption or under the terms of one or more general license will not impact the quantity limits specified above, are not included when calculating the sum of the ratios to meet the requirements of 10CFR30.35(d), 10CFR40.36(b), or 10CFR70.25(d), and will not be included in the required semi-annual inventory of licensed material. Examples of such exemptions and general licenses are listed below.

10CFR30.14 Exempt Concentrations
10CFR30.18 Exempt Quantities
10CFR31 General Domestic Licenses for Byproduct Material
10CFR40.13 Unimportant Quantities of Source Material
10CFR40.22 Small Quantities of Source Material
10CFR70.19 General License for Calibration or Reference Sources

Possession of naturally occurring radioactive material (NORM) and accelerator-produced radioactive material: Wesleyan University does not currently possess nor do we have immediate plans to possess accelerator produced radioactive material. We also do not possess any of the listed discreet sources of NORM.

Line #6: 8.6 Purpose For Which Licensed Material Will Be Used:

Licensed material will be used for research and development as defined in 10CFR30.4 and as described in the above table. This research and development may include small animal studies. Wesleyan's radiation safety program incorporates Appendix H, "Considerations for Laboratory Animal and Veterinary Uses" of NUREG-1556 Volume 6. We currently do not use radioactive materials in animal research but reserve the right to do so in the future.

Line #7: 8.7.1 Individual Responsible for Radiation Safety Program and Their Training Experience

The radiation safety officer is William S. Nelligan, Director of Environmental Services. His resume was submitted to the NRC in the original application for renewal dated Nov 2004. The University also consults with Radiation Safety Associates Inc. The Vice President for Finance and Administration and the AVP of Facilities oversee the radiation safety program and its components.

Line #8: 8.7.2 Authorized Users

Licensed material will be used by or under the supervision of, the following Principle Investigators: (résumé's were previously submitted to the NRC)

1. Philip Bolton
2. Laura Grabel
3. Manju M. Hingorani
4. John Kim
5. Donald A. Oliver
6. Rex Pratt
7. Irina Russu
8. Michael A. McAlear
9. Michael Weir
10. Scott Holmes
11. Erika Taylor (Resume and experience attached)

***Please remove the following names from the license:**

1. Anthony Infante (retired)
2. Anne Baranger (no longer at Wesleyan University)
3. Jason Wolfe (retired)

Line #8 (Cont.): 8.8 Training for Individuals Working in or Frequenting Restricted Areas

Technical/Research Staff Training:

During initial training, each trainee will be provided with sufficient information about radiation, radioactivity, use of protective equipment and radiological work practices so that the staff member can work in a safe manner, keep both their exposure and their co-workers' doses ALARA. Training will be accomplished before any individual is permitted unescorted access to the restricted area.

The initial training program for all technical staff will have a minimum duration of four hours, and will cover worker rights and responsibilities as well as all of the topics listed below:

1. Principles and practices of radiation protection

2. Radioactivity measurements
3. Monitoring techniques for radiation and contamination
4. The use of radiation and contamination monitoring instruments
5. Mathematics
6. Calculations basic to the use and measurement of radioactivity
7. Biological effects of ionizing radiation
8. Principles of the installation and removal of source holders or detector cells
9. Worker Rights and Responsibilities (10CFR19)
10. All the information provided in 10CFR19.12
11. Wesleyan's byproduct material license and procedures
12. Applicable and appropriate portions of 10CFR20, 30, 40 and 71
13. Open Forum-Questions and Answers

During the initial training the trainee will be required to demonstrate to the RSO or designee the ability to properly perform a self-frisk.

After initial training each trainee will be required to pass a written examination covering the topics contained in the training program. Minimum passing grade is 80%

Retraining will be performed annually. Retraining will be of at least one hour duration and will cover some portions of the material covered during initial training, plus items such as review of incidents, laboratory and calibration procedures and viewing of the Wesleyan Radiation Safety video.

Ancillary Staff Training

Each individual in these job categories who will have unescorted access to the restricted area will be provided with sufficient information about radiation and radioactivity so that they can perform assigned ancillary duties in a safe manner.

Training will be accomplished before any individual is permitted unescorted access to the restricted area.

The training program for all administrative/secretarial/janitorial staff will have a minimum duration of 30 minutes, and cover all of the topics listed below:

1. Radiation and Radioactivity
 - a. Where they come from
 - b. Types of Radiation
2. Recognition of the radiation warning symbol
3. Biological Effects of Radiation
4. Requirements of the license and the federal regulations regarding control of radioactive materials and exposure to ionizing radiation
5. Specific duties inside the restricted area
 - a. How to recognize incoming samples
 - b. Where to put incoming samples
 - c. Clear instructions about what to do and what not to do
6. What to do in case of a perceived emergency with regard to material or equipment inside the restricted area
7. Worker rights and responsibilities, including all the information provided in 10CFR19.12 with emphasis on NRC Form 3 and its application
8. Applicable and appropriate portions of 10CFR20, 30, 40 and 71

Each trainee will be required to pass a written examination covering the topics contained in the training program. Minimum passing grade is 80%.

Retraining will be performed annually; the duration of retraining will be approximately 15 minutes.

Training and retraining will be accomplished by the RSO, a Principle Investigator or a similarly qualified individual appointed by the RSO. Training documents will be maintained by the RSO.

Line #9: 8.9 Facilities and Equipment

Licensed material will be used and stored at Wesleyan University, Hall-Atwater Laboratories and Shanklin Laboratory, Lawn Avenue, Middletown, Connecticut. Floor plans of the specific rooms utilized, including the waste storage area, are contained in Appendix A of this document.

Line #9 (Cont.): Radiation Monitoring Instruments

Survey Meters

We will use instruments that meet the radiation monitoring instrument specifications published in Appendix M to NUREG-1556, Vol 7, "Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope", dated December 1999. Additionally, we will implement the model survey meter calibration program published in Appendix M to NUREG-1556, Vol. 7. "Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope", dated December 1999.

These instruments will be utilized to perform radiation and contamination surveys at Wesleyan University and will be calibrated every 12 months, plus or minus one month. They will also be calibrated after any servicing of the instrument (other than a simple battery change or replacement of a detector cord with a cord of the same length). Calibrations will be performed by RSA Laboratories (license #06-30007-01) or by another company licensed to perform such services.

The types and minimum numbers of survey meters that will be available at any one time are listed in the table below. We reserve the right to upgrade our survey instruments as necessary.

Type	Minimum # Available	Radiation Detected	Sensitivity Range	Use
Portable thin-window G-M pancake-type & end window type survey meters	10	Beta-Gamma	0-600 kcpm	Survey and monitoring, gross testing of samples
Portable G-M side-wall detector with exposure-rate meter	1	Gamma	0.01-200 mR/h	Survey and monitoring, gross testing of samples

Analytical Equipment

The Liquid Scintillation Analyzer listed in the table below will be used to perform quantitative analysis on routine wipe tests. This instrument meets the radiation monitoring instrument specifications published in Appendix M to NUREG – 1556 Vol. 7 “Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope”, dated December 1999.

This Liquid Scintillation Analyzer listed below will be calibrated in place annually by a trained factory representative. We reserve the right to upgrade our survey instruments as necessary.

The Portable Scintillation Counter listed below will be utilized to perform radiation and contamination surveys of I125 at Wesleyan University and will be calibrated every 12 months, plus or minus one month. They will also be calibrated after any servicing of the instrument (other than a simple battery change or replacement of a detector cord with a cord of the same length). Calibrations will be performed by RSA Laboratories (license #06-30007-01) or by another company licensed to perform such services.

Type	# Available	Radiation Detected	Sensitivity	Use
Liquid Scintillation Analyzer	1	Beta	10^{-8} uCi	Analytical measurements
Portable Scintillation counter	1	Gamma	12.6% efficiency I125 on neck for thyroid phantom	Gamma detection

Line #10 Radiation Safety Program: 8.10.3 Material Receipt and Accountability

Wesleyan will maintain records of receipt, transfer and disposal of licensed material. The RSO or a trained PI approves all orders for licensed material. A written procedure for safely opening packages of licensed material is in place; records of receipt, transfer and disposal of licensed material are maintained. A physical inventory of licensed material will be conducted every six months plus or minus 1 month. Licensed material will be stored and controlled in accordance with 10CFR20 Subpart I – Storage and Control of Licensed Material.

Line #10 (Cont.): 8.10.4 Occupational Dose

We have done a prospective evaluation and determined that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of 10% of the allowable limits in 10CFR20, or we will monitor individuals in accordance with the criteria in the section entitled 'Radiation Safety Program-Occupational Dose' in NUREG1556, Vol 7, “Consolidated Guidance about Materials Licenses: Program-Specific Guidance about Academic, Research and Development and Other Licenses of Limited Scope” dated December 1999.

Line #10 (Cont.): 8.10.6 Safe Use of Radionuclides and Emergency Procedures

Procedures for safe use, including security of materials and emergencies have been developed, and are contained in the Wesleyan University "Radiation Safety Plan for the Sciences", which is currently being revised. Wesleyan University understands that these procedures may be revised only if 1) the changes are reviewed and approved by the licensee management and the RSO in writing; 2) the licensee staff is provided training in the revised procedures prior to implementation; 3) the changes are in compliance with the NRC regulations and the license; and 4) the changes do not degrade the effectiveness of the program.

Line #10 (Cont.): 8.10.7 Surveys

We will survey our facility and maintain contamination levels in accordance with the survey frequencies and contamination levels published in Appendix Q to NUREG-1556, Vol 7, "Consolidated Guidance about Materials Licenses: Program-Specific Guidance about Academic, Research and Development and Other Licenses of Limited Scope" dated December 1999.

Line #11: 8.11 Waste Management

We will use the model waste procedures published in Appendix T to NUREG-1556, Vol 7, "Consolidated Guidance about Materials Licenses: Program-Specific Guidance about Academic, Research and Development and Other Licenses of Limited Scope" dated December 1999.

WESLEYAN

U N I V E R S I T Y

Erika A. Taylor, Ph.D.
Assistant Professor
Department of Chemistry
Middletown, CT 06459
(860) 685-2739 FAX (860)685-2211
eataylor@wesleyan.edu



June 22, 2015

William Nelligan
Radiation Safety Officer
Wesleyan University
Middletown, CT 06459

RE: History of radioisotope usage.

As a biological scientist, over the past ten years I have worked with the following radioisotopes: ^{14}C , and ^3H . These were in the form of ^{14}C and ^3H -labeled sugars, nucleotides and other small molecules. These isotopic molecules were used for performing *in vitro* kinetic isotope effect experiments, where we assess the rate of a given reaction with multiple isotopes to determine how isotopic incorporation at a given chemical position effects the reactivity. I hope to do this type of experiments here at Wesleyan. Such experiments involved the use of about 200 – 400 μCi of radioactivity per month during active experiments.

At the Albert Einstein College of Medicine (as a postdoctoral fellow), I took radiation safety courses that taught (and tested) proper procedures for the use, storage, and disposal of radioisotopes, and emphasized the safety measures necessary for handling radioactive materials. I was also responsible for maintaining the radioactive inventory records and disposal of radioactive materials from my laboratory.

As a primary investigator at Wesleyan University Chemistry Department, I plan to use similar radioactive reagents for *in vitro* experiments with proteins and nucleosides. I anticipate a requirement of at most 500 μCi of radioactivity per month during the periodic usage of radioactive materials in my laboratory (mostly ^3H and ^{14}C , and occasionally ^{32}P). All personnel in my laboratory will be trained for proper handling of radioactive materials. Please contact me if you require additional information. Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Erika A. Taylor'.

Erika A. Taylor, Ph.D.

Erika A. Taylor, Ph.D.
June 15, 2015

Wesleyan University
Assistant Professor
Department of Chemistry
College of the Environment
Environmental Studies Program
Molecular Biophysics Program

Middletown, Connecticut 06459
Telephone: 860-685-2739
Fax: 860-685-2211
eataylor@wesleyan.edu
<https://eataylor.faculty.wesleyan.edu>

Education

Ph. D. Chemistry - University of Illinois at Urbana-Champaign
B.S. Honors Chemistry - University of Michigan at Ann Arbor

Degree conferred [REDACTED]
Degree conferred [REDACTED]

Employment

Assistant Professor - Wesleyan University July 2007 – Present
Post-Doctoral Research Associate - Albert Einstein College of Medicine Feb. 2004 – May 2007
Advisor: Vern L. Schramm
Project: Studied Nucleotide Metabolism in the context of Drug Development for Malaria
Graduate Research Assistant - University of Illinois at Urbana-Champaign Sept. 1998 – Jan. 2004
Advisor: John A. Gerlt
Ph.D. Thesis – Characterization of *ortho*-Succinylbenzoate Synthase (OSBS): A study of Mechanism, Proficiency and Evolutionary Diversity
Graduate Teaching Assistant - University of Illinois at Urbana-Champaign Sept. 1998 – Dec. 1999
• Lecture and laboratory instructor of Introductory Organic Chemistry for majors
• Teaching assistant for graduate level Advanced Organic Chemistry: Structure and Spectroscopy
Undergraduate Research
University of Michigan at Ann Arbor May 1995 – May 1998
Advisor: Peter L. Toogood
Honors Thesis – Synthesis towards analog molecules of Motuporin for Determination of Structure-Function Relationships with Protein Phosphatase I
Northwestern University May 1997 – Aug. 1997
Advisor: Frank E. McDonald
Project: Research towards a General Solid-phase Synthesis of Polysaccharides
Undergraduate Teaching Assistant - University of Michigan at Ann Arbor Sept. 1996 – May 1998
• Laboratory instructor of Introductory Organic Chemistry for majors
• Instructor for the Honors Organic Chemistry discussion section

Honors, Awards and Recognition

- National Institute of Health – Synthetic and Biological Chemistry A Study Section (4) June 2015
- Department of Energy, Basic Energy Sciences – Photo- and Bio-Chemistry Panel (8) Feb. 2011
- Gordon Research Conference Travel Award for Beginning Faculty July 2008
- R. C. Fuson Travel Award - Dept. of Chem., Univ. of Illinois April 2003
- GAAAN Graduate Fellowship - Dept. of Chem., Univ. of Illinois Sept. 1998 – Dec. 1999
- General Electric Summer Research Fellowship - Dept. of Chem., Univ. of Michigan Summer 1996 & 1997
- Abbott Summer Research Fellowship - Dept. of Chem., Univ. of Michigan Summer 1995

Professional Memberships

Association for Women in Science - Member	Dec. 2010 – Present
American Society for Microbiology - Member	Nov. 2006 – Present
American Association for the Advancement of Science - Member	April 2004 – Present
American Chemical Society - Member	Sept. 1999 – Present

Continuing Education/Training

- Teagle Seminar on the Teaching of Writing – Fall 2014
- Science/AAAS, Effective Lab Skills: Managing People, Projects, and Money – December 2, 2009
- [REDACTED] IGMS, NIH mentoring workshop, March 28 – April 1, 2009
- GAIN/COACH workshop, Grant Writing and Professional Training – January 21 - 22, 2008

Extramural Funding

Grants (*upcoming*):

- Petit Family Foundation "Green Street Girls in Science Summer Camp," \$12,500. Funding period: 07/01/2015 - 06/30/16 with Sara MacSorley, Ruth Johnson, and Christina Othon, Wesleyan University. Role: Co-PI

Grants (*current*):

- National Institute of Health, Academic Research Enhancement Award (AREA) Grants - (R15), "Design and Synthesis of Inhibitors of HeptosyltransferaseI from *E. coli*," \$492,900. Funding Period: 06/15/2015 – 06/14/2018. Role: PI
- National Institute of Health, NIGMS Training Grant (T31), "Doctoral Studies in Molecular Biophysics," \$715,845.60. Grant Period: 07/01/2011 – 06/30/2016. Role: Contributing Member (David Beveridge, Wesleyan University – PI)
- Department of Energy, Biological and Environmental Research (BER) of the Office of Science (SC), "Imaging Lignin Degradation: Bio-prospecting for New Enzymes for Use in Biofuel Production," \$1,152,521.00. Funding period: 09/01/2010 – 11/30/2015 with Ming Tien, Penn State University and George Kabalka, University of Tennessee. Role: Co-PI

Grants (*completed*):

- Petit Family Foundation "Green Street Girls in Science Summer Camp (pilot)," \$10,000. Funding period: 07/01/2014 - 06/30/2015 with Sara MacSorley, Ruth Johnson, and Christina Othon, Wesleyan University. Role: Co-PI
- Connecticut Space Grant Consortium, "Regulating Protein Stability in Microgravity Environments," \$29,662.00. Funding period: 01/01/2014 – 12/31/2014 with Christina Othon, Wesleyan University. Role: Co-PI
- National Research Council (NRC) at the National Academies of Science and National Resource for Biomedical Supercomputing at the Pittsburgh Supercomputing Center, "The Substrate-Binding Induced Conformational Transitions in HepI: Structure, Mechanism, and Conformational Dynamics of a GT-B Enzyme," 50,000 Anton node hours. Grant period: 11/1/2012 – 10/31/2013 with Jiali Gao, University of Minnesota. Role: Co-PI
- Connecticut Space Grant Consortium, "Osmoregulation for Microgravity Environments," \$ 50,000.00. Funding period: 06/01/2011 – 12/31/2012 with Christina Othon, Wesleyan University. Role: Co-PI

Internal Funding

Grants (*upcoming*):

- Wesleyan Project Grant “Inhibition of the HeptosyltransferaseI,” \$2,500.00. Funding period: 07/01/2015 – 06/30/2016. Role: PI

Grants (*current*):

- Wesleyan Project Grant “Investigation of a Newly Discovered Allosteric Binding Site of LigAB,” \$2,500.00. Funding period: 07/01/2014 – 06/30/2015. Role: PI

Grants (*completed*):

- Wesleyan Project Grant, “Characterization of the HeptosyltransferaseI Binding Site,” \$5,000.00. Funding period: 01/01/2014 – 06/30/2014. Role: PI
- Wesleyan Project Grant, “Kinetic Characterization of the HeptosyltransferaseI Chemical Step,” \$2,500.00. Funding period: 07/01/2012 – 06/30/2013. Role: PI
- Wesleyan Project Grant, “Enzymatic Characterization of a Unique Lignin Degradation Pathway,” \$2,413.00. Funding period: 07/01/2009 – 06/30/2010. Role: PI
- Wesleyan Project Grant, “Proposed Investigation of a New Metallo-Dioxygenase Superfamily,” \$2,500.00. Funding period: 07/01/2008 – 06/30/2009. Role: PI
- Wesleyan University Start-Up Funds. Funding period: 07/01/2007 – 06/30/2012. Role: PI

Research

Annotated Publication List

(Annotations provided for work performed at Wesleyan University).

May 2015 *h*-index of 14 (with 558 or 661 citations according to ISI Web of Science or Google Scholar, respectively);
i10-index of 15 (Google Scholar)

Peer-Reviewed Publications while at Wesleyan (mentored undergraduate co-authors indicated with *; mentored graduate student co-authors indicated with #)

23. Barry, K. P.[#]; Cohn, E. F.*; Ngu, A.*; **Taylor, E. A.**, “Improving Alternate Lignin Catabolite Utilization of LigAB from *Sphingobium* sp. strain SYK-6 through Site Directed Mutagenesis,” *Process Biochemistry*, **2015**, *in press*. (doi: 10.1016/j.procbio.2015.05.024)

Described the successful broadening of the substrate scope of LigAB by mutagenesis, which yielded an enzyme able to efficiently utilize multiple known lignin derived aromatic compounds; most notably, multiple mutants of LigAB were generated that allowed the dioxygenation of 3-O-methyl gallate with rates greater than those of the native catalyst.

22. Mudapaka, J.[#]; **Taylor, E. A.**, “Cloning and Characterization of the *Escherichia coli* Heptosyltransferase III: Exploring Substrate Specificity in Lipopolysaccharide Core Biosynthesis,” *FEBS Letters*, **2015**, 589, 1423-1429. (doi: 10.1016/j.febslet.2015.04.051)

We demonstrated the first ever expression and characterization of the HeptosyltransferaseIII enzyme from E. coli; this work allows for the first comparisons of the three core Heptosyltransferase enzymes providing insights into the protein regions that control substrate specificity.

21. Chen, L.; Shukla, N.; Cho, I.; Cohn, E. F.*; **Taylor, E. A.**; Othon, C. M., "Sucralose Destabilization of Protein Structure," *Journal of Physical Chemistry Letters*, **2015**, 6, 1441-1446. (doi: 10.1021/acs.jpcllett.5b00442)

This paper explores the use of the disaccharide sucralose as an osmolyte to stabilize proteins. Interestingly, these investigations revealed sucralose destabilizes both BSA and Staphylococcal nuclease in marked contrast to sucrose. This is suggestive of a general phenomenon of action. The research was conceived and designed by ET and CO, performed by LC, NS, IC and EC, analyzed by LC, NS, IC and CO, and written by CO and ET.

20. Barry, K. P.#; Ngu, A.*; Cohn, E. F.*; Cote, J. M.#; Gerbino, J. P.#; **Taylor, E. A.**, "Exploring Allosteric Activation of LigAB from *Sphingobium* sp. strain SYK-6 through Kinetics, Mutagenesis and Computational studies," *Archives of Biochemistry and Biophysics*, **2015**, 567, 35-45. (doi: 10.1016/j.abb.2014.12.019)

This paper was the first demonstration of allosteric activation of ring-cleaving dioxygenases. The most potent activator being vanillin, a molecule metabolically upstream of LigAB, suggesting that LigAB is subject to feed-forward activation, an often discussed but rarely observed phenomenon.

19. Barry, K. P.#; **Taylor, E. A.**, "Characterizing the Promiscuity of LigAB, a Lignin Catabolite Degrading Extradiol Dioxygenase from *Sphingomonas paucimobilis* SYK-6," *Biochemistry*, **2013**, 52, 6724-6736. (doi: 10.1021/bi400665t; PMID: PMC3926093)

Established that LigAB has the largest substrate scope of all ring-cleaving dioxygenase enzymes described in the literature. A number of inhibitors were also identified which revealed that movement of the diol location could interconvert compounds from being substrates to inhibitors.

18. Czyzyk, D. J.#; Sawant, S.; Ramirez-Mondragon, C. A. #; Hingorani, M. M.; **Taylor, E. A.**, "*Escherichia coli* Heptosyltransferase I: Investigation of Protein Dynamics of a GT-B Structural Enzyme," *Biochemistry*, **2013**, 52, 5158-5160. (doi: 10.1021/bi400807r; PMID: PMC3867311)

We demonstrated the first real-time protein dynamics for a GT-B protein, which had been previously predicted to interconvert between open and closed conformations to promote catalysis. This provided major insights into the mechanisms of GT-B proteins – importantly demonstrating that catalysis is preceded by multiple protein conformational changes. The research reported was conceived by ET, designed by ET and MH, performed collaboratively by all authors, with analysis and writing by DC, MH and ET.

17. Czyzyk, D. J.#; Liu, C.*; **Taylor, E. A.**, "Lipopolysaccharide Biosynthesis Without the Lipids: Substrate Recognition for *Escherichia coli* Heptosyltransferase I," *Biochemistry*, **2011**, 50, 10570-10572. (doi: 10.1021/bi201581b; PMID: PMC3263931)

We established that Heptosyltransferase I is the first Lipopolysaccharide biosynthetic pathway that does not require acylation of its substrate, making it an important possible target for development of inhibitors of LPS biosynthesis.

16. Li, L.; Luo, M.; Ghanem, M.; **Taylor, E.A.**; Schramm, V.L., "Second-Sphere Amino Acids Contribute to Transition-State Structure in Bovine Purine Nucleoside Phosphorylase," *Biochemistry*, **2008**, *47*, 2577-83. (Original Manuscript Submitted October 23, 2007; Revised Manuscript submitted December 4, 2007; doi: 10.1021/bi7021365)

We demonstrated the ability of non-adjacent residues to impact chemistry through changes in the global environment of the active site. The research reported was conceived, designed and performed in part by ET as a post-doctoral fellow; the writing and submission of the publication was done after ET became an assistant professor.

15. **Taylor, E. A.**; Rinaldo-Matthis, A.; Li, L.; Ganhem, M.; Hazleton, K. Z.; Cassera, M. B; Almo, S. C.; Schramm, V. L., "Anopheles gambiae Purine Nucleoside Phosphorylase: Catalysis, Structure and Inhibition," *Biochemistry*, **2007**, *46*, 12405-12415. (Original Manuscript Submitted May 25, 2007; Revised Manuscript submitted August 15, 2007; doi: 10.1021/bi7010256)

We reported the cloning, expression, kinetic characterization, structure and inhibition profile for PNP from A. gambiae to complement data from humans and Plasmodium falciparum, to enhance targeting of PNP for treatment of malaria. The research described includes work that was conceived, designed, performed and analyzed mainly by ET as a post-doctoral fellow; the manuscript was revised and accepted for publication during my time at Wesleyan.

Publications prior to Wesleyan

14. Luo, M.; Singh, V.; **Taylor, E. A.**; Schramm, V. L., "Transition State Structures of Human, Bovine and Plasmodium falciparum Adenosine Deaminases," *Journal of the American Chemical Society*, **2007**, *129*, 8008-8017. (PMCID: PMC2522313)
13. **Taylor, E. A.**; Clinch, K.; Kelly, P. M.; Li, L.; Evans, G. B.; Tyler, P. C.; Schramm, V. L., "Acyclic Ribooxacarbenium Ion Mimics as Transition State Analogues of Human and Malarial Purine Nucleoside Phosphorylases," *Journal of the American Chemical Society*, **2007**, *129*, 6984-6985.
12. Tyler, P. C.; **Taylor, E. A.**; Fröhlich, R. F. G.; Schramm, V. L., "Synthesis of 5'-Methylthio Coformycins: Specific Inhibitors for Malarial Adenosine Deaminase," *Journal of the American Chemical Society*, **2007**, *129*, 6872-6879. (PMCID: PMC2522312)
11. Murkin, A. S.; Birck, M. R.; Rinaldo-Matthis, A.; Shi, W.; **Taylor, E. A.**; Almo, S. C.; Schramm, V. L., "Neighboring Group Participation in the Transition State of Human Purine Nucleoside Phosphorylase," *Biochemistry*, **2007**, *46*, 5038-5049. (PMCID: PMC2526054)
10. **Taylor Ringia, E. A.**; Tyler, P. C.; Evans, G. B.; Furneaux, R. H.; Murkin, A. S.; Schramm, V. L., "Transition State Analogue Discrimination by Related Purine Nucleoside Phosphorylases," *Journal of the American Chemical Society*, **2006**, *128*, 7126-7127.
9. Clinch, K.; Evans, G. B.; Fleet, G. W.; Furneaux, R. H.; Johnson, S. W.; Lenz, D. H.; Mee, S. P.; Rands, P. R.; Schramm, V. L.; **Taylor Ringia, E. A.**; Tyler, P. C., "Syntheses and Bio-Activities of the L-Enantiomers of Two Potent Transition State Analogue Inhibitors of Purine Nucleoside Phosphorylases," *Organic & Biomolecular Chemistry*, **2006**, *4*, 1131-1139.
8. **Taylor Ringia, E. A.**; Schramm, V. L., "Transition States and Inhibitors of the Purine Nucleoside Phosphorylase Family," *Current Topics in Medicinal Chemistry*, **2005**, *5*, 1237-1258.

7. Lewandowicz, A; **Taylor Ringia, E. A.**; Ting, L.-M.; Kim, K.; Tyler, P. C.; Evans, G. B.; Zubkova, O. V.; Mee, S.; Painter, G. F.; Lenz, D. H.; Furneaux, R. H.; Schramm, V. L., "Energetic Mapping of Transition State Analogue Interactions with Human and *Plasmodium falciparum* Purine Nucleoside Phosphorylases," *Journal of Biological Chemistry*, **2005**, *280*, 30320-30328.
6. Ting, L.-M.; Shi, W.; Lewandowicz, A.; Singh, V.; Mwakingwe, A.; Birck, M. R.; **Taylor Ringia, E. A.**; Bench, G.; Madrid, D. C.; Tyler, P. C.; Evans, G. B.; Furneaux, R. H.; Schramm, V. L.; Kim, K., "Targeting a Novel Plasmodium falciparum Purine Recycling Pathway with Specific Immucillins," *Journal of Biological Chemistry*, **2005**, *280*, 9547 - 9554.
5. Thoden, J. B.; **Taylor Ringia, E. A.**; Garrett, J. B.; Gerlt, J. A.; Holden, H. M.; Rayment, I., "Evolution of Enzymatic Activity in the Enolase Superfamily: Structural Studies of the Promiscuous o-Succinylbenzoate Synthase from *Amycolatopsis*," *Biochemistry*, **2004**, *43*, 5716-5727.
4. **Taylor Ringia, E. A.**; Garrett, J. B.; Thoden, J. B.; Holden, H. M.; Rayment, I.; Gerlt, J. A., "Evolution of Enzymatic Activity in the Enolase Superfamily: Functional Studies of the Promiscuous o-Succinylbenzoate Synthase from *Amycolatopsis*," *Biochemistry*, **2004**, *43*, 224-229.
3. Klenchin, V. A.; **Taylor Ringia, E. A.**; Gerlt, J. A.; Rayment, I., "Evolution of Enzymatic Activity in the Enolase Superfamily: Structural and Mutagenic Studies of the Mechanism of the Reaction Catalyzed by o-Succinylbenzoate Synthase from *Escherichia coli*," *Biochemistry*, **2003**, *42*, 14427-14433.
2. **Taylor, E. A.**; Palmer, D. R. J.; Gerlt, J. A., "The Lesser "Burden Borne" by o-Succinylbenzoate Synthase: An "Easy" Reaction Involving a Carboxylate Carbon Acid," *Journal of the American Chemical Society*, **2001**, *123*, 5824-5825.
1. Thompson, T. B.; Garrett, J. B.; **Taylor, E. A.**; Meganathan, R.; Gerlt, J. A.; Rayment, I., "Evolution of Enzymatic Activity in the Enolase Superfamily: Structure of o-Succinylbenzoate Synthase from *Escherichia coli* in Complex with Mg²⁺ and o-Succinylbenzoate," *Biochemistry*, **2000**, *39*, 10662-10676.

Research Dissemination (mentored undergraduate co-authors indicated with *; graduate student co-authors indicated with #)

Oral Presentations (co-author presenters underlined):

29. *Upcoming invited Presentation* - **Taylor, E. A.**, "Thoughts about Adenosine: Efforts in Drug Discovery of Nucleoside Utilizing Enzymes," Gordon Research Conference: Nucleosides, Nucleotides and Oligonucleotides, Salve Regina University, Newport, Rhode Island, June 28 - July 3, 2015.
28. **Taylor, E. A.**, "Gaining Insights into GT-B Glycosyltransferases through studies of Heptosyltransferase I from *E. coli*," University of Maryland, College Park, Mar. 26, 2015.
27. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," University of Delaware, Mar. 25, 2015.
26. **Taylor, E. A.**, "Gaining Insights into GT-B Glycosyltransferases through studies of Heptosyltransferase I from *E. coli*," University of Maryland, Baltimore County, Mar. 24, 2015.
25. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," Georgia State University, Feb. 13, 2015.
24. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," Emory University, Feb. 11, 2015.
23. Johnson, R.; MacSorley, S.; Othon, C.; **Taylor, E. A.**, "Girls in Science Summer Camp" Wesleyan University's NSM Lunch Meeting, Feb. 6, 2015.

22. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," Amherst College, Sept. 12, 2014.
21. *Keynote Speaker: Taylor, E. A.*, "Alternative Energy Sources: Enzymology that is essential for making lignin into a biofuel," The Hudson-Bergen Chemical Society, Sigma Xi Chapter and the School of Natural Sciences of Fairleigh Dickinson University - The 16th Annual Undergraduate Research Symposium, April 25, 2014.
20. **Taylor, E. A.**, "Lignin Breakdown for Fun and Profit (I hope)," Wesleyan University's NSM Lunch Meeting, April 4, 2014.
19. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," Texas A&M, Dec. 6, 2013.
18. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," University of Texas at Austin, Dec. 5, 2013.
17. **Taylor, E. A.**, "Heptosyltransferase I: Exploring Function and Dynamics to create better Inhibitors for GT-B Enzymes," University of Kansas, April 1, 2013.
16. **Taylor, E. A.**, "Heptosyltransferase I: Exploring Function and Dynamics to create better Inhibitors for GT-B Enzymes," University of Connecticut, Feb. 13, 2013.
15. **Taylor, E. A.**, "Heptosyltransferase I: Exploring Function and Dynamics to create better Inhibitors for GT-B Enzymes," Connecticut College, Sept. 18, 2012.
14. **Taylor, E. A.**, "Heptosyltransferase I: Exploring Function and Dynamics to create better Inhibitors for GT-B Enzymes," Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville, New Hampshire, July 15 – 20, 2012.
13. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," Queens College, Oct. 24, 2011.
12. **Taylor, E. A.**, "Two Stops on the Path for Converting Lignin into Biofuels," Wesleyan University's 12th Annual Molecular Biophysics Program Retreat, Sept. 22, 2011.
11. Wang, S. *; **Taylor, E. A.**, "Structure of the *Escherichia coli* Heptosyltransferase WaaC," 2011 Ronald E. McNair Scholars Program at Penn State Summer Research Conference, July 8-10, 2011.
10. **Taylor, E. A.**, "Lipopolysaccharide Biosynthesis without the Lipids: Substrate Recognition for *E. coli* Heptosyltransferase I", American Chemical Society, Western Connecticut Section, 602nd Meeting, Fairfield, CT, April 12, 2011.
9. **Taylor, E. A.**, "Alcohol and You," Wesleyan University – Alcohol and other Drugs Committee, Middletown, CT March 3, 2011.
8. **Taylor, E. A.**, "Forging a Path for the Conversion of Lignin into Biofuels," Mount Saint Vincent, Bronx, NY, Oct. 5, 2010.
7. **Taylor, E. A.**, "Forging a Path for the Conversion of Lignin into Biofuels," Trinity College, Hartford, CT, April 16, 2010.
6. **Taylor, E. A.**, "Chemical Biology of Antibiotics," Model Mini-lecture, Johns Hopkins University's Center for Talented Youth Pathways to College Program, Wesleyan University, Middletown, CT Nov. 17, 2007.
5. *Panelist:* Wesleyan University's Malaria Awareness Week Discussion Panel, organized by Antoinette Zosherafatain '10 and Katie Boyce-Jacino '10, co-presidents of Wesleyan's Americans for Informed Democracy; Oct. 16, 2007.

4. **Taylor, E. A.**, "Exploration of Lipopolysaccharide Biosynthesis," Wesleyan University's NSM Lunch Meeting, Oct. 12, 2007.
3. **Taylor, E. A.**, "Exploration of Lipopolysaccharide Biosynthesis," Wesleyan University's 8th Annual Molecular Biophysics Program Retreat, Sept. 20, 2007.
2. **Taylor Ringia, E. A.**, "Transition-State Analogue Inhibitors for Purine Nucleoside Phosphorylase as Anti-Malarials," Biology of Host-Parasite interactions Gordon Research Conference, Newport, RI, June 27-July 2, 2004.
1. **Taylor Ringia, E. A.**; Thoden, J. B.; Holden, H.; Rayment, I.; Gerlt, J. A., "Naturally Occurring Functional Promiscuity of an *ortho*-Succinylbenzoate Synthase from *Amycolatopsis*," 226th ACS National Meeting, New York, NY, Sept. 7-11, 2003.

Poster Presentations (Since 2007; co-author presenters underlined):

18. Cote, J. M.[#]; **Taylor, E. A.**, "Investigation of *E. coli* Heptosyltransferase I Dynamics," 2015 Biophysical Society 59th Annual Meeting, Baltimore, Maryland, Feb. 7-11, 2015.
17. Cote, J. M.^{#,1}; Ramirez-Mondragon, C. A.^{#,2}; Seigel, Z. S.^{*,1}; Czyzyk, D. J.^{#,1}; Gao, J.²; and **Taylor, E. A.¹**, "Gaining Insights into GT-B Glycosyltransferases through studies of Heptosyltransferase I from *E. coli*," 24th Enzyme Mechanism Conference, Galveston, Texas, Jan. 4-8, 2015. ¹Wesleyan University, ²University of Minnesota.
16. Czyzyk, D. J.^{#,1}; Sawant, S.¹; Ramirez-Mondragon, C. A.^{#,2}; Hingorani, M. M.¹; **Taylor, E. A.¹**, "*E. coli* Heptosyltransferase I: Exploration of Protein Dynamics of a GT-B Structural Enzyme" 10th North Eastern Structure Symposium, Storrs, Connecticut, Oct. 4, 2013. ¹Wesleyan University, ²University of Minnesota.
15. **Taylor, E. A.**; Noreen Nkosana[#]; Daniel Czyzyk[#]; Matt Long^{*}; Kevin Barry[#], "Synthetic Stories to Probe complex Biopolymer Metabolism," Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville, New Hampshire, July 14-19, 2013.
14. Ngu, A.^{*}; **Taylor, E. A.**, "Mutant Chronicles: Mutagenesis, Expression and Purification of LigAB Mutants," American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Central Connecticut State University, New Britain, Connecticut, April 27, 2013.
13. Liu, C.^{*}; **Taylor, E. A.**, "Optimizing the Methods for the Generation of Heptosyltransferase I Substrates," American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Central Connecticut State University, New Britain, Connecticut, April 27, 2013.
12. Czyzyk, D. J.[#]; Liu, C.^{*}; Sawant, S. S.; Hingorani, M. M.; **Taylor, E. A.**, "*E. coli* Heptosyltransferase I: Exploring Function and Dynamics to Create Better Inhibitors for GT-B Enzymes," 2013 Biophysical Society 57th Annual Meeting, Philadelphia, Pennsylvania, Feb. 2-6, 2013.
11. Barry, K.P.[#]; **Taylor, E. A.**, "Investigating the Substrate Utilization Profile and Kinetics of Protocatechuate 4,5-Dioxygenase from *Sphingomonas paucimobilis* SYK-6," 23rd Enzyme Mechanism Conference. Coronado, California. Jan. 3-7, 2013.
10. Czyzyk, D. J.[#]; Liu, C.^{*}; Sawant, S.; Hingorani, M. M.; **Taylor, E. A.**, "*E. coli* Heptosyltransferase I: Exploration of Protein Function and Dynamics" 23rd Enzyme Mechanisms Conference, Coronado Bay, California, Jan. 3-7, 2013.
9. Czyzyk, D. J.[#]; Liu, C.^{*}; **Taylor, E. A.**, "Lipopolysaccharide Biosynthesis without the Lipids: Recognition Promiscuity of *E. coli* Heptosyltransferase I," Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville, New Hampshire, July 10-15, 2011.

8. Nkosana, N.*; **Taylor, E. A.**, "Synthesis of Simplified Lipid A Analogs as Targets for Inhibition of LPS Biosynthesis," American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Trinity College, Hartford, Connecticut, April 30, 2011.
7. Czyzyk, D. J.#; **Taylor, E. A.**, "Heptosyltransferase I Lipid a Structure Activity Relationships (SAR)," 2011 Biophysical Society 55th Annual Meeting, Baltimore, Maryland, March 5-9, 2011.
6. Olvera, A.*; **Taylor, E. A.**, "Investigation of Lignin Degradation Pathway Amidohydrolase Enzymes," 2010 Wayne State University McNair Conference, August 5-7, 2010.
5. Carpenter, C.*; **Taylor, E. A.**, "Characterizing the Lipopolysaccharide of *Vibrio cholerae* to Develop Novel Drug Treatments," American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Amherst College, Massachusetts, April 24, 2010.
4. Carpenter, C.*; **Taylor, E. A.**, "Characterizing the Lipopolysaccharide of *Vibrio cholerae* to Develop Novel Drug Treatments," NOBCCHE Northeast Regional Meeting, MIT, Cambridge, Massachusetts, Oct. 22-24, 2009.
3. Huang, J.*; Barry, K. P.#; **Taylor, E. A.**, "Lignin Degrading Dioxygenases," American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Connecticut College, New London, Connecticut, April 25, 2009.
2. Barry, K. P.#; Polanco, J.*; Xie, L.#; **Taylor, E. A.**, "Forging a Path for the Efficient Conversion of Lignin to Biofuels," Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville, New Hampshire, July 5-10, 2009.
1. Berman, S.*; **Taylor, E. A.**, "Producing a Better Biofuel: Investigation of *Sphingomonas paucimobilis* & *Escherichia coli* Dioxygenase Activity," American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Smith College in Northampton, MA, April 26, 2008.

Other Meetings Attended:

- 24th Enzyme Mechanisms Conference, Galveston, TX, Jan. 4-8, 2015.
- Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville Valley, NH, July 14-19, 2013.
- 23rd Enzyme Mechanisms Conference, Coronado Bay, CA, Jan. 3-7, 2013.
- Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville Valley, NH, July 15-20, 2012.
- Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville Valley, NH, July 10-15, 2011.
- American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Trinity College, Hartford, Connecticut, April 30, 2011.
- 22nd Enzyme Mechanisms Conference, St. Pete Beach, FL, Jan. 2-6, 2011.
- Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, Waterville Valley Resort, Waterville Valley, NH, July 5-10, 2009.
- 21st Enzyme Mechanisms Conference, Loews Ventana Canyon Resort, Tucson, AZ, Jan. 3-6, 2009.
- Gordon Research Conference: Enzymes, Coenzymes & Metabolic Pathways, University of New England, Biddeford, ME, July 13-18, 2008.
- Gordon Research Conference: Bacterial Cell Surfaces, Colby-Sawyer College, New London, NH, June 22-27, 2008.
- American Chemical Society, Connecticut Valley Section, Undergraduate Research Symposium, Smith College in Northampton, MA, April 26, 2008.

Collaborators

- Bioinformatics: A. Max Burroughs, National Institute of Health – NLM/NCBI
- Biophysical Enzyme Characterization: Manju Hingorani, Wesleyan University; Ishita Mukerji, Wesleyan University
- Computational Chemistry: David Beveridge, Wesleyan University; Jiali Gao, University of Minnesota
- Lignin Depolymerization: Ming Tien, Pennsylvania State University
- Inhibitor Design for Adenyl-Cofactor Utilizing Enzymes: Ya-Ming Hou, Thomas Jefferson University; Andrew Andrews, Fox Chase Cancer Center
- Protein-sugar-lipid Interactions: Christina Othon, Wesleyan University
- Protein Structure Determination: Steven Almo, Albert Einstein College of Medicine of Yeshiva University; Ramaswamy Subramanian, National Centre for Biological Sciences in Bangalore; Rich Olson, Wesleyan University

Teaching

Current Group Members (prizes awarded for research listed)

Graduate Students:

- [REDACTED]

Undergraduate Students:

5. [REDACTED]
4. [REDACTED]
3. [REDACTED]
2. [REDACTED]
1. [REDACTED]

Former Group Members (Alumni prizes and affiliations listed if known)

Graduate Students:

Ph.D. Recipients

2. [REDACTED]
1. [REDACTED]

M.A. Recipients

3. [REDACTED]
[REDACTED]
2. [REDACTED]
[REDACTED]
[REDACTED]
1. [REDACTED]
[REDACTED]
[REDACTED]

Other Mentored Graduate Students

5. [REDACTED]
4. [REDACTED]
3. [REDACTED]
[REDACTED]
2. [REDACTED]
1. [REDACTED]

Undergraduate Students (Proceeded to medical school indicated with ¹; graduate school indicated with ²; research associate after graduation indicated with ³; Teach for America/Match Corps indicated with ⁴; law school indicated with ⁵; Nature Publishing Group indicated with ⁶):

Senior Thesis Honors Recipients

7. [REDACTED]
[REDACTED]
6. [REDACTED]
[REDACTED]
[REDACTED]
5. [REDACTED]
[REDACTED]
4. [REDACTED]
[REDACTED]
3. [REDACTED]
[REDACTED]
[REDACTED]
2. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
1. [REDACTED]
[REDACTED]
[REDACTED]

Other Mentored Undergraduate Research Students

23. [REDACTED]
22. [REDACTED]
21. [REDACTED]
20. [REDACTED]
19. [REDACTED]
18. [REDACTED]
17. [REDACTED]
16. [REDACTED]
15. [REDACTED]
14. [REDACTED]
13. [REDACTED]
12. [REDACTED]
11. [REDACTED]
10. [REDACTED]
9. [REDACTED]
8. [REDACTED]
7. [REDACTED]
6. [REDACTED]
5. [REDACTED]
4. [REDACTED]
3. [REDACTED]
2. [REDACTED]
1. [REDACTED]

High School Students:

4. [REDACTED]
3. [REDACTED]
2. [REDACTED]
1. [REDACTED]

Academic Advising

Student Non-Majors (35)	July 2007 – Present
Student Majors (33)	July 2007 – Present
Undergraduate Thesis Reader (20)	July 2007 – Present
Graduate Students (Ph.D. - 13; M.A. - 8)	July 2007 – Present

Courses Taught at Wesleyan University

Chem 251 Organic Chemistry I Lecture	Fall 2011, 2012 & 2014
Chem 258 Organic Chemistry Lab	Spring 2008, 2009 & 2010
Chem 314 Environmental Chemistry	Spring 2013
Chem 321 Biomedical Chemistry	Fall 2007 & 2009, Spring 2012, 2014 & 2015
Chem 357 Bioorganic Chemistry	Fall 2008
Chem 557/8 Seminar, Organic-Inorganic Chemistry	Spring/Fall 2008, 2009 & 2010
Chem 587/588 Seminar, Biological Chemistry	Fall 2011 - Present
Rel 287 End Times Scenarios (Science Modules)	Fall 2009

Professional/University/Departmental Service

Professional Service:

Invited Grant Reviewer

Research Corporation for Science Advancement (1)	July 2013 – Present
Biotechnology and Biological Sciences Research Council (2)	March 2012 – Present
National Science Foundation (5)	Sept. 2010 – Present
American Chemical Society, Petroleum Research Fund (1)	March 2008 – Present

Invited Journal Reviewer

Bioorganic Chemistry (1)	April 2015 – Present
Biochemistry and Cell Biology (1)	Dec. 2014 – Present
Journal of Biological Inorganic Chemistry (1)	Nov. 2014 – Present
Marine Drugs (1)	Dec. 2013 – Present
Biochemistry (7)	Sept. 2012 – Present
International Microbiology (1)	Nov. 2011 – Present
Protein Journal (1)	June 2010 – Present
Bioorganic and Medicinal Chemistry (3)	Nov. 2009 – Present

University Service:

• McNair Advisory Group	Jan 2013 – Present
• Director of Wesleyan University Institutional Biosafety Committee	Sept. 2007 – Present
• Search Committee for the Associate Dean of Student Academic Resources	
Faculty Representative	Spring 2013
• Faculty Committee on Rights and Responsibilities	July 2011 – June 2013
• Wesleyan Summer Experience Grant Selection Committee	Spring 2009

Departmental Service:

• Department of Chemistry Curriculum Committee	Fall 2014 – Present
• Chemistry Undergraduate TA Budget Investigation Team (CUTABIT)	Spring 2012 – Present
• Chemistry Department Graduate Student Recruiting and Admissions Committee	
Member	Sept. 2007 – Aug. 2010
Interim Chair	Jan. 2009 – Aug. 2009
Chemistry Department Graduate Council Representative	Jan. 2009 – Aug. 2009

Workshop and Conference Organization:

- Co-creator of "Girls in Science" summer science camp for underserved elementary school girls from Middletown (with [REDACTED]). The camp is designed to reveal to 10 girls, 8- 10 years old, the science that surrounds them in their daily lives, while also giving them exposure to (1) scientific concepts and vocabulary, (2) equipment and experiments, and (3) female scientist role models, including both the faculty mentioned above and also three female, Wesleyan science students. We are teaming with [REDACTED] which has an excellent record of engaging young underserved students through their after school programs. August 2014 – present. Featured in article, "Wesleyan professors, Green Street artists introduce girls to the sciences this summer," Middletown Press, Aug. 6, 2014.
- Coordinator for the 35th Leermaker's Symposium – Green Energy and Biofuel Technology, Wesleyan University, Middletown, Connecticut, May 7, 2010.
- Co-creator/Campus Coordinator for the Student Professional Development Workshop (2008-2009; 2009-2010). Description of Workshop: This workshop series teaches professional development skills to our graduate and advanced undergraduates to enhance the quality of teaching conducted in the science departments at Wesleyan, while furthering 1-the retention of life science students across ethnic backgrounds, and 2-the future performance of our graduates as academy members. This endeavor is an interuniversity collaboration designed to create a new program for Wesleyan students, which could be used as a model for other schools. Funding provided in part by a Seed Grant from Wesleyan's Pedagogical Renewal Committee and the Hughes Summer Research Program.

Additional Activities:

- American Chemical Society – Connecticut Valley Section, Summer Undergraduate Research Fellowship Selection committee; April 2012.
- Interviewed by Hartford Courant about the legacy of Wilbur O. Atwater, a professor of chemistry at Wesleyan from 1873 to 1904, who developed the respiration calorimeter to measure precisely the energy provided by food and alcohol; Featured in the article "Counting Calories? You Can Thank — Or Blame — Wesleyan Professor" on Nov. 23, 2011.
- Chemistry Dept./Free Radicals outreach – Muslim Coalition of Connecticut's Eid Carnival to commemorate the end of Ramadan. Coordinated chemistry demonstrations and students; Oct. 5, 2008.
- Participation in Johns Hopkins University's Center for Talented Youth Pathways to College Program raised students awareness of Wesleyan's chemistry program and was a potential recruiting opportunity; Nov. 17, 2007.
- Panelist in Wesleyan University's Malaria Awareness Week Discussion Panel, organized by [REDACTED]
- Departmental Representative/Member of the Connecticut Chemical Education Collective, a group of local scientists dedicated to improving chemistry education and chemical education research at all age levels in Connecticut; Sept. 2007 – Jan. 2010.
- Participation in the April 2014 PIMMS (Project to Increase Mastery of Mathematics and Science) at the Green Street Art Center, teaching high school teachers about green energy initiatives and biofuel production.
- Wesleyan's Neighborhood Preschool Board of Directors
Board President

Jan. 2013 – Present
March 2014 – June 2014