

**Georgiana E. Purdy**  
*Curriculum vitae*

**Address**      Molecular Microbiology & Immunology Department  
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**Education**

1998-2003      Ph.D. in Molecular Biology (with Prof. Shelley Payne)  
ICMB, University of Texas at Austin  
Thesis title: Characterization of *Shigella flexneri* DegP.  
1994-1998      B.S. in Microbiology with Honors  
University of Florida, Gainesville, Florida  
1994-1998      B.A. in History with Honors  
University Florida, Gainesville, Florida

**Research Experience**

2021-present    **Professor with tenure**, Department of Molecular Microbiology and Immunology (MMI),  
Oregon Health and Science University (OHSU), Portland, OR

Since joining the OHSU MMI Department in 2008, I have established an independent research program that has maintained continuous funding and contributes to the *Mycobacterium tuberculosis* (Mtb) research field. Work in my lab focuses on defining the host-pathogen interface of Mtb using a combination of bacterial genetics, biochemistry, cell biology and immunology. We are currently characterizing the biological properties and the biosynthetic pathways of the mycobacterial cell envelope. My lab's current projects will characterize the function of mycobacterial MmpL transporters and reveal novel mechanisms of regulation for MmpL proteins and cell wall remodeling. In particular, our current focus is on the MmpL11 transporter because it plays a central role in Mtb non-replicating persistence by transport of dormancy-associated "storage lipids". The establishment of a latent tuberculosis (TB) infection characterized by dormant bacteria is key to Mtb's success as a pathogen, but the mechanisms underlying the establishment or maintenance of dormancy are not well-understood. These projects will substantially contribute to the field's understanding of Mtb physiology and pathogenesis and can inform new strategies for TB therapeutics.

I contribute to the education of medical students and graduate students in the OHSU School of Medicine. I have served as the MMI PhD Program Director since 2016. I was part of the faculty team that redesigned and developed our vision of graduate education, forming our new interdisciplinary PBMS PhD program, currently under my leadership. As PBMS program director, I oversee program curriculum development, implementation and assessment, review recruitment efforts and diversity initiatives, participate in student mentoring activities, and propose an annual budget to the SOM Dean's office that funds faculty leader FTE, support staff FTE, recruitment efforts and student professional development activities.

2014-2021      **Associate Professor**, Department of Molecular Microbiology and Immunology, OHSU  
Portland, OR  
2016 Tenure

2008-2014      **Assistant Professor**, Department of Molecular Microbiology and Immunology, OHSU,  
Portland, OR

2003-2008      **Postdoctoral Research Associate**, Department of Microbiology and Immunology,  
Cornell University, Ithaca, NY (with Prof. David G. Russell)

My projects focused on the interaction between *Mycobacterium tuberculosis* and the host macrophage.

- 1998- 2003     **Graduate Research Assistant**, Institute for Cellular and Molecular Biology, University of Texas at Austin (with Prof. Shelley M. Payne)  
My graduate work focused on the role of *Shigella flexneri* periplasmic chaperones in virulence and the extracytoplasmic stress response.
- 1997-1998     **Undergraduate Research**, Department of Microbiology, University of Florida, Gainesville, FL
- 1994            **Summer Undergraduate Research Fellow**, Institute for Food and Agricultural Sciences, University of Florida, Gainesville, FL

### Professional Development

- 2017-2018     OHSU Paths to Leadership
- 2020-2021     Center for the Improvement of Mentored Experience in Research (CIMER) Mentor Training
- 2021            CIMER Culturally Aware Mentoring
- 2022-2023     NIH Raising a Resilient Scientist

### Awards

- 2020-2022     American Society for Microbiology (ASM) Distinguished Lecturer
- 2019            ASM Judge Travel Award for Annual Biomedical Research Conference for Minority Students (ABRCMS)
- 2008            NIH NIAID K22 Career Transition Award
- 2006-2008     Ruth Kirschstein NRSA Individual Postdoctoral Fellowship
- 2005-2006     Heiser Program for Research in Leprosy and Tuberculosis Postdoctoral Fellowship
- 2002            ASM Student Travel Grant
- 2002            L. Joe Berry Memorial Scholarship Award
- 1998-2000     University of Texas at Austin, Institute for Cellular and Molecular Biology Graduate Fellowship
- 1998            University of Florida Presidential Recognition Award
- 1994-1998     Florida Bright Scholar
- 1994-1998     University of Florida, Institute for Food and Agricultural Sciences Scholarship

### Teaching Experience

#### Education Leadership:

- 2016 – present, Director Molecular Microbiology and Immunology Graduate Program
- 2018 – present, Director, Graduate Program in Biomedical Sciences

#### Course Instruction:

- 2021-present   OHSU BMSC 611 Introduction to Scientific Writing, Course Director
- 2012-2019     OHSU CONJ660 PMCB Student Rotation Talks, Course Director
- 2019, 2021     OHSU MBIM615 Dynamic Interface Between Host and Pathogen, Department of Molecular Microbiology and Immunology, Lecturer
- 2011-2017     OHSU MBIM615 Dynamic Interface Between Host and Pathogen, Department of Molecular Microbiology and Immunology, Course Director
- 2019-present   OHSU School of Medicine, UME Fundamentals, Lecturer: Mycobacteriology
- 2018-present   OHSU School of Medicine, GME ID Fellow Lecture: Mycobacteriology
- 2015-2018     OHSU School of Medicine, UME Cardiovascular, Renal and Pulmonary systems, Lecturer: Bacterial Antimicrobial Resistance Mechanisms;

	OHSU School of Medicine, UME Intersession Infectious Disease Block, Workshop leader - Bacterial Antimicrobial Resistance Mechanisms and Bacterial genetics practicum
2014-2018	OHSU School of Medicine, UME Fundamentals, Lecturer: Introduction to Bacteria, Bacterial genetics, Bacterial gene regulation, Bacterial virulence and Notable opportunistic Gram-positive pathogens, Mycobacteriology; Workshop Leader: Diagnostic bacteriology for Gram positives
2012-2014	OHSU School of Medicine, UME Biological Basis for Disease, Lecturer: Tuberculosis
2014	OHSU School of Medicine, UME Biological Basis for Disease, Lecturer: Regulation of Bacterial gene expression, Genetics of antimicrobial resistance
2009-2013	OHSU School of Medicine, UME Biological Basis for Disease, Discussion Group Leader: Upper Respiratory Infections, Bacterial and Viral Urogenital Infections, Zoonoses and Vector Borne Parasites, Hepatitis, Gastrointestinal Infections
2009-2010	OHSU School of Medicine, UME Biological Basis for Disease, Normal Flora Laboratory
1999	University of Texas at Austin, Department of Microbiology, Immunology Laboratory, Teaching Assistant

### **Mentoring Experience:**

#### ***Oversight of Postdoctoral fellows:***

2016-2017	Joanna Dunn, PhD
2011-2015	Marie Foss, PhD

#### ***Oversight of Graduate Students:***

2013-2019	Geoff Melly, MMI graduate student, PhD Dissertation: "Characterization of lipoprotein LpqN in Mtb cell wall biosynthesis and pathogenesis"
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#### ***Oversight of Undergraduate Researchers:***

2019	Richard Zhang, Oregon State University, "Regulation of the Rv3240-Rv3253 redox locus"
2018	Yasmine Oprea, Hunter College, "Characterization of Mtb Cut2 hydrolase activity", *ABRCMS Presentation Award
2017	Natalie Buchholz, University of Portland, "Mycobacterial TAG and WE synthases"
2016	Victoria Panwala, University of British Columbia, "Quorum sensing in mycobacteria"
2015	Gemechu Geleto, Washington State University, "Rv2034 regulation of MmpL11"
2011-2012	Mischka Moechtar, Reed College, "Analysis of mycobacterial OxyS function"
2010-2011	Scott Eisenhower, Arizona State University, "Amino acids important for OxyS function"
2002-2003	Anna Moorhead, University of Texas "Isolation of <i>S. flexneri</i> chlorate-resistant mutants"
2001-2002	Lindsay A. Parish, University of Texas "Characterization of a <i>S. flexneri</i> <i>dam</i> mutant"

#### ***Oversight of High School Researchers (for senior thesis projects):***

2012-2013	Emma Nienow-Birch, St. Mary's Academy, "Microscopic analysis of bacteria upon treatment with antimicrobials"
2010	Meghana Kalavar Jesuit High School "Bactericidal Ub-peptides"
2009	Scott Eisenhower, N. Clackamas High School "Isolation of bactericidal Ub-peptides"

### **Research Support**

#### ***Active Projects:***

2020-2023	NIH/NIAID R21 AI144658-01	(NCE)
<i>The role and fate of Mtb storage lipids LCTAG and MWE</i>		
We hypothesize that Mtb hydrolyzes, imports and utilizes the exported storage lipids LCTAG and MWE to promote resuscitation from hypoxic and nutrient-restricted environments.		
Role: PI		

2021-2024 NIH/NIAID R21AI167112 (NCE)

*The MmpL3 Interactome*

This project will define lipoproteins that interact with MmpL3<sub>TB</sub> demonstrate the biosynthetic pathway leading to Mtb cell envelope biology

Role: PI

**Completed Research:**

2016-2022 NIH/NIAID R01 AI123148-01A1

*Metabolite modulation of Mtb regulators of cell wall biogenesis*

Mycobacterial membrane protein large (MmpL) transporters and their accessory Mycobacterial membrane protein small (MmpS) proteins export lipids to the *M. tuberculosis* (Mtb) cell wall. This proposal will explore the regulation of essential and virulence-associated MmpL and MmpS protein expression via unique transcriptional regulators that respond to fatty acid and/or lipid intermediates.

Role: PI (MPI grant with subcontract to Dr. Edward Yu, Case Western University)

2015-2018 NIH/NIAID R21 AI113074

*MmpL11 Interactome*

Our working model is that MmpL11 is a conserved transporter of mycolic acid-containing lipids. We hypothesize that the biosynthetic pathway for the MmpL11 substrate can be revealed by defining the MmpL11 interactome. This project will define proteins that interact with MmpL11 and demonstrate the biosynthetic pathway leading to production of the MmpL11 substrate.

Role: PI

2015-2016 NIH/NIAID R56 AI114664

*Mtb regulators of essential and virulence-associated MmpLs*

Mycobacterial membrane protein large (**MmpL**) transporters and their accessory Mycobacterial membrane protein small (**MmpS**) proteins export lipids to the *M. tuberculosis* (**Mtb**) cell wall. This proposal will explore the regulation of essential and virulence-associated MmpL and MmpS protein expression via unique transcriptional regulators that respond to fatty acid and/or lipid intermediates.

Role: PI (MPI grant with subcontract to Dr. Edward Yu, Iowa State University)

2011-2017 NIH/NIAID R01 AI087840

*TB Membrane Transporters and Intrinsic Resistance*

This project will elucidate the mode of action of ubiquitin-derived peptides and elucidate the role of ABC and MFS membrane transport systems in intrinsic resistance to these host antimicrobial peptides. The overall goal is to define the role of host antimicrobial peptides in *M. tuberculosis* infection.

Role: PI

2013-2014 UL1TR000128 (Orwoll PI, Purdy sub)

*OCTRI Strategic Investment Funding*

*Pilot HTS for inhibitors of mycobacterial biofilms*

This Strategic Investment Funding will allow us to take advantage of resources available at OTRADI to generate essential data for a future NIH application focused on identification of small molecule inhibitors of MmpL11. We developed a robust whole-cell assay that capitalizes on the biofilm-deficient phenotype of mycobacterial *mmpL11* mutants. We will validate this assay by screening the MicroSource Discovery Spectrum Collection that contains ~2400 compounds with diverse structures that includes known compounds as well as bioactive extracts.

Role: sub

2009-2011 K22 Career Development Award NIH/NIAID K22 AI079399

*Mycobacterial genes mediating resistance to bactericidal ubiquitin peptides* – This project will elucidate the mode of action of ubiquitin-derived peptides through identification and characterization of

mycobacterial hyper-susceptible and hyper-resistant mutants and will define the role of host antimicrobial peptides in *M. tuberculosis* infection.

Role: PI

2009-2011 Pacific Northwest Regional Center for Excellence Career Development Award  
U54 AI081680 (Nelson PI, Purdy sub)

*Aging and innate immune functions of macrophages*

This project will define the role of aging on innate immune functions of alveolar macrophages from non-human primates. Of particular interest is the impact of aging on autophagic clearance of *M. tuberculosis*.

Role: sub

2009-2010 MRF New Investigator

*Autophagy and Aging in the Control of M. tuberculosis infections*

This project will allow us to define the role of autophagy and aging in immune control of *M. tuberculosis* using non-human primate alveolar macrophages.

Role: PI

2009-2010 Collins Medical Trust

*Identification and Characterization of Biologically –Relevant Mycobactericidal Ubiquitin-Derived Peptides*

This project will identify biologically relevant ubiquitin-derived peptides and determine their activity on mycobacteria and other bacterial species.

Role: PI

## **Activities and Service**

### **Professional Memberships**

2020-present Member, American Chemical Society

2016-present Member, American Society for Biochemistry and Molecular Biology

2005-2008 Member, New York Academy of Sciences

1999-present Member, American Society for Microbiology

### **Service**

#### *External to OHSU*

2019-present Judge, Annual Biomedical Research Conference for Minority Students (ABRCMS)

2019 Organizer/Host, PacTB West Coast TB Meeting

2018 Organizer/Host, ASM NW Branch Meeting

2016 Session Chair, Keystone Symposia: TB Co-morbidities and immunopathogenesis

2014-2015 External advisor, University of Portland, Biology Department Faculty Search Committee

#### *Internal to OHSU*

2021-present Member, OHSU PREP Advisory Committee

2018-present Program Director, Graduate Program in Biomedical Sciences (PBMS)

2017-present SOM Graduate Steering Committee

2018-2019 Member, MMI Department Faculty Search Committee

2016-2017 Member, MMI Chair Search Committee

2016-present SOM Graduate Council

2016-present Program Director, Molecular Microbiology and Immunology Graduate Program

2016-2020 Member, SOM Collaborative Research Leadership Group/Research Roundtable

2014-2015 Chair, MMI Department Faculty Search Committee

2013-2017 Member, SOM Honors and Awards committee

2009-2018 Member, Institutional Biosafety Committee

2009-2016 Director, MMI Department Seminar Series

2010-2016 Member, School of Medicine Research Committee

2010-2013 Member, Faculty Council

### **Peer Review Groups**

2021-2026	Member, NIH MIDB
2018-2022	Member, NIH BACP
2021	Reviewer, Medical Research Council (UK, MRC)
2020	Reviewer, NIAID ZAI1-AWA-M-M1, NIAID Program Projects
	Reviewer, Agence Nationale de la Recherche (French National Research Agency)
	Reviewer, Medical Research Council (UK, MRC)
2019	Reviewer, Medical Research Council (UK, MRC)
2018	Reviewer, PCMB
	Reviewer, Agence Nationale de la Recherche (French National Research Agency)
	Reviewer, Medical Research Council (UK, MRC)
	Chair, NIAID ZAI1-FDS-M-J3, NIAID Program Projects
2017	Reviewer, NIAID ZRG1 IDM-B (80): Topics in Mechanisms of Bacterial Pathogenesis
	Chair, NIAID Resource-Related Research Projects (R24)
	Reviewer, NIH BACP
	Chair, NIAID ZAI1 LR-M-J1: NIAID Program Projects
	Reviewer, NIH PCMB
2016	Reviewer, NIH BACP
	Reviewer, NIAID ZRG1 IDM-V (07): Member conflict
	Reviewer, NIAID ZAI1-JRR-M-J1: NIAID Program Projects
	Reviewer, NIAID ZRG1 IDM-V-02: Topics in Mechanisms of Bacterial Pathogenesis
	Reviewer, NIAID ZRG1 IDM-V (02): Topics in Mechanisms of Bacterial Pathogenesis
	Reviewer, Burroughs Wellcome Sir Henry Dale Fellowship
2015	Reviewer, NIAID ZRG1 IDM-B (80): topics in bacterial pathogenesis (R21)
	Reviewer, NIAID ZAI1 RCU-A J3 1: Mechanisms of Immune Protection from TB among HIV-Infected Individuals
2014	Reviewer, NIAID ZAI1 SM-M-M (2): NIAID Program Projects
	Reviewer, NIAID ZRG12 IDM-C (52): US-South African Program for Collaborative Biomedical Research
	Reviewer, NIAID ZRG1 IDM-B (80): topics in bacterial pathogenesis (R21)
2013	Reviewer, NIAID ZRG1 IDM-B (81): topics in microbial pathogens (R15/AREA)
	Reviewer, NIAID ZRG1 IMM-N (12): Non-HIV Microbial Vaccine Development
2012	Ad Hoc reviewer, Ireland Health Research Board
	Reviewer, NIAID ZRG1 IDM-S (03): topics in microbial pathogens (member conflict)
	Reviewer, NIAID ZRG1 IDM-S (92): topics in microbial pathogens (R15/AREA)
2011	Reviewer, NIAID ZAI1-LG-M-J: Chemical Approaches to Target Validation for Drug Resistant Pathogens
2009	Ad Hoc reviewer, Pacific Northwest Regional Center for Excellence
2007	Ad Hoc reviewer, Swiss National Science Foundation

### **Journal Reviewer**

2017-Present Editorial Review Board, Journal of Biological Chemistry

#### **Journal Ad Hoc Review**

2005-Present: PNAS, Plos Pathogens, ACS Infectious Diseases, Molecular Microbiology, Cell Host and Microbe, PlosOne, Cellular Microbiology, Infection and Immunity Microbes and Infection, Transboundary and Emerging Diseases, Tuberculosis, Journal of Antioxidants and Redox Signaling, Frontiers in Cellular and Infection Microbiology, FEMS Microbiology Letters, Scientific Reports

## Publications

### Peer-reviewed Publications:

1. Stokas, H., Rhodes, H.L., Simmons, M.B., Zhang, R, Wright, C.C. and **G.E. Purdy**, *M. tuberculosis* AlkX encoded by *rv3249c* regulates a conserved alkane hydroxylase system that is important for replication in macrophages and biofilm formation. *Accepted, ASM Spectrum*.
2. **G.E. Purdy** and F.F. Hsu. Complete characterization of polyacyltrehaloses from *Mycobacterium tuberculosis* H37Rv biofilm cultures by Multiple-stage LIT mass spectrometry reveals a new tetraacyltrehalose family. 2021 *Biochemistry*. DOI: 10.1021/acs.biochem.0c00956
3. Melly, G. C.,\* Stokas, H., Davidson, P. M., Roma, J. S., Rhodes, H. L., and **Purdy, G. E.** (2021) Identification of residues important for *M. tuberculosis* MmpL11 function reveals that function is modulated by phosphorylation in the C-terminal domain. *Molecular microbiology*. **99**, 193
  - \*, Purdy Lab graduate student
4. Melly, G.C.\*, Stokas, H, Dunaj, J.L., Hsu, F.F., Rajavel, M., Su, C-C., Yu, E.W. and **G.E. Purdy**. 2019 Structural and functional evidence that lipoprotein LpqN supports cell envelope biogenesis in *M. tuberculosis*. 2019 *J. Biol. Chem.* 294(43):15711–23. PMID: PMC6816100
  - Top 50 most viewed articles during the month of publication
  - \*, Purdy Lab graduate student
5. Su, C.-C., Klenotic, P.A., Bolla, J.R., **Purdy, G.E.**, Robinson, C.V., and Yu, E.W. 2019 MmpL3 is a lipid transporter that binds trehalose monomycolate and phosphatidylethanolamine. *Proceedings of the National Academy of Sciences of the United States of America* **100**: 531160.
6. Wright, C.C., Hsu, F.-F., Arnett, E., Dunaj, J.L., Davidson, P.M., Pacheco, S.A., Harrieff, M.J., Lewinsohn, D.M., Schlesinger, L.S., and **G.E. Purdy**. 2017. The *Mycobacterium tuberculosis* MmpL11 Cell Wall Lipid Transporter Is Important for Biofilm Formation, Intracellular Growth, and Nonreplicating Persistence. *Infect Immun* **85**: e00131–17. PMID: 28507063 PMC5520431.
7. Foss, M.H.,\*\* Pou, S., Davidson, P.M., Dunaj, J., Winter, R.W., Pou, S., Licon, M.H., Doh, J., Li, Y., Kelly, J., Dodean, R., Koop, D., Riscoe, M.K. and **G.E. Purdy**. 2016 Diphenylether-modified 1,2-diamines with improved drug properties for development against *Mycobacterium tuberculosis*. *ACS Infect Dis.* Jul 8;2(7):500-8. PMID: 27626102.
  - \*\*, Purdy Lab postdoctoral fellow
8. Delmar, J.A. Chou, T-H, Wright, C.C., Licon M.H.,\*\*\* Doh, J.K.,\*\*\* Radhakrishnan, A., Kumar, N., Lei, H-T., Bolla, J.R., Rajashankar, K.R., Su, C-C., **Purdy, G.E.** and E. W. Yu. 2015 Structural basis for the regulation of the MmpL transporters of *Mycobacterium tuberculosis*. *J. Biol. Chem.* **290**: 28559–28574. PMID 26396194 PMC4653710.
  - \*\*\*, Purdy Lab graduate student rotation project
9. Chou, T-H, Delmar, J.A. Wright, C.C., Radhakrishnan, A., Kumar, N., Lei, H-T., Bolla, J.R., Rajashankar, K.R., Su, C-C., **Purdy, G.E.** and E. W. Yu. 2015 Crystal structure of the *Mycobacterium tuberculosis* transcriptional regulator Rv0302. *Protein Science*. **24**: 1942–1955. PMID 26362239
10. Luthuli, B.B., **G.E. Purdy** and F.K. Balagadde. 2015 Confinement-Induced Drug-Tolerance in *Mycobacteria* Mediated by an Efflux Mechanism. *PLOS ONE* 10(8):e0136231. PMID 26295942 PMC4546595
11. Waddell, C.D, T.J. Walter, S.A. Pacheco, **G.E. Purdy**, and L.J. Runyen-Janecky. 2014 NtrBC and

- Nac contribute to efficient *Shigella flexneri* intracellular replication. *J. Bacteriol.* 196(14):2578-86. PMID 24794563.
12. Radhakrishnan, A., N. Kumar, C. Wright, T-H Chou, J.R. Bolla, C-C. Su, K.R. Rajashankar, L. Messerle, **G.E. Purdy**, and E.W. Yu. 2014 Crystal Structure of the transcriptional regulator Rv0678 of *Mycobacterium tuberculosis*. *J. Biol. Chem.* 289(23):16526-16540. PMID: 24737322
  13. Kumar, N., A. Radhakrishnan, C.C. Wright, T-H Chou, H-T Lei, J.R. Bolla, M.L. Tringides, K.R. Rajashankar, C-C. Su, **G.E. Purdy**, and E.W. Yu. 2014. Crystal Structure of the transcriptional regulator Rv1219c of *Mycobacterium tuberculosis*. *Protein Science.* 23(4):423-32. PMID:
  14. Pacheco, S.A., F.F. Hsu, K.M. Powers, and **G.E. Purdy**. 2013 The MmpL11 transporter contributes to mycobacterial cell wall biosynthesis and biofilm formation in *M. smegmatis*. *J. Biol. Chem.* 288:24213-24222. PMID 238369904.
  15. **Purdy, G.E.**, Pacheco, S.A., Turk, J., and F.F. Hsu. 2013. Characterization of mycobacterial triacylglycerols and the unusual monomeromycetyl diacylglycerols from *Mycobacterium smegmatis* biofilms by linear ion-trap multiple-stage and high-resolution mass spectrometry with electrospray ionization. *Anal. Bioanal. Chem.* 405(23), 7415–26. PMID: 23852148
  16. Pacheco, S.A., Powers, K.M., Engelmann, Messaoudi, I. and **G.E. Purdy**. 2013. Autophagic killing effects against *Mycobacterium tuberculosis* by alveolar macrophages from young and aged Rhesus macaque. *PLoS ONE* 8(6): e66985. doi:10.1371/journal.pone.0066985. PMID 23825603
  17. Foss, M.H.,\*\* Powers, K.M., and **G.E. Purdy**. 2012. Structural and functional characterization of mycobactericidal ubiquitin-derived peptides in model and bacterial membranes. *Biochemistry*, 51(49):9922-9. PMID:23173767 PMC3567233
    - \*\*, Purdy Lab postdoctoral fellow
  18. Hsu, F.F., Pacheco, S., Turk, J. and **G. Purdy**. 2012. Structural Elucidation of Glycopeptidolipid of *Mycobacterium smegmatis* by High Resolution Multiple-stage Linear Ion-trap Mass Spectrometry with Electrospray Ionization, *J. Mass Spectrom.* 47(10):1269-81. PMID: 23019158
  19. Daugherty, K.M. Powers, M.S. Standley, C.S. Kim, and **G.E. Purdy**. 2011 *M. smegmatis* RoxY is a repressor of *oxyS* and contributes to resistance to oxidative stress and bactericidal ubiquitin peptides. *J. Bacteriol.* 193(24):6824-33. PMID: 21984791.
  20. **Purdy, G.E.**, M. Niederweis, and D.G. Russell. 2009. Decreased outer membrane permeability protects mycobacteria from killing by ubiquitin-derived peptides. *Mol. Microbiol.* 73(5):844-57. PMID: 19682257.
  21. Alonso, S., K. Pethe, D.G. Russell and **G.E. Purdy**. 2007. Lysosomal killing of *Mycobacteria* by soluble ubiquitin-derived peptides is enhanced by autophagy. *PNAS* 104:6031-6036.\* PMID:17389386
    - Reviewed by Faculty of 1000
  22. **Purdy, G.E.**, C.A. Fisher and S.M. Payne. 2007. IcsA surface presentation in *S. flexneri* requires the periplasmic chaperones DegP, Skp and SurA. *J. Bacteriol.* 189:5566-5573. PMID: 17526712
  23. Owens, R.M., F.F. Hsu, B.C. VanderVen, **G.E. Purdy**, E. Hesteande, P. Giannakas, J.C. Sacchettini, J.D. McKinney, P.J., Hill, J.T. Belisle, B.A. Butcher, K. Pethe, and D.G. Russell. 2006. *M. tuberculosis* Rv2252 encodes a diacylglycerol kinase involved in the biosynthesis of phosphatidylinositol mannosides (PIMs). *Mol. Microbiol.*, 60:1152-1163. PMID: 16689792



24. **Purdy, G.E.**, R.M. Owens, L.Bennett, D.G. Russell, and B.A. Butcher. 2005. Kinetics of phosphatidylinositol-3-phosphate acquisition differ between IgG bead-containing phagosomes and *Mycobacterium tuberculosis*-containing phagosomes. *Cell. Microbiol.* 7:1627-1634. PMID:16207249
25. **Purdy, G.E.**, M. Hong, and S.M. Payne. 2002. *Shigella flexneri* DegP facilitates IcsA surface expression and is required for efficient intercellular spread. *Infect. Immun.* 70:6355-6364. \*  
PMID:12379715
  - Reviewed by Faculty of 1000
26. **Purdy, G.E.**, and S.M. Payne. 2001. The SHI-3 iron transport island of *Shigella boydii* 0-1392 carries the genes for aerobactin synthesis and transport. *J. Bacteriol.* 183:4176-4182. PMID:11418557

#### **Invited and Peer Reviewed Reviews:**

1. Stokas, H., Rhodes, H.L., and **G.E. Purdy**. (2020) Modulation of the *M. tuberculosis* cell envelope between replicating and non-replicating persistent bacteria. *Tuberculosis*, doi.org/10.1016/j.tube.2020.102007.
2. Melly, G\* and **G.E. Purdy**. (2019) MmpL Proteins in Physiology and Pathogenesis of *M. tuberculosis*. *Microorganisms*. 7(3). pii: E70. doi: 10.3390/microorganisms7030070.
  - \* Purdy Lab graduate student
3. Keiser, T.L., and **Purdy, G.E.** (2017) Killing *Mycobacterium tuberculosis* In Vitro: What Model Systems Can Teach Us. *Microbiology Spectrum* 5(3).
4. Harrieff, M., **Purdy, G.** and D.M. Lewinsohn. 2012. Escape from the phagosome: the explanation for MHC-I processing of mycobacterial antigen? *Front. Immun.* 3:40. doi: 10.3389/fimmu.2012.00040. PMID: 22566923
5. **Purdy, G. E.** 2011. Taking out TB – Lysosomal trafficking and mycobactericidal ubiquitin-derived peptides. *Front. Microbio.* 2:7. Epub 2011 Jan 31, 2011. PMID: 22566923
6. **Purdy, G.E.** and D.G. Russell. 2007. Lysosomal ubiquitin and the demise of *Mycobacterium tuberculosis*. *Cell. Microbiol.* 9:2768-2774. PMID: 17714517
7. **Purdy, G.E.** and D.G. Russell. 2007. Ubiquitin trafficking to the lysosome: keeping the house tidy and getting rid of unwanted guests. *Autophagy*, 3: 399-401. PMID: 17457035
8. Rohde, K., Yates, R.M., **Purdy, G.E.**, and Russell, D.G. 2007 *Mycobacterium tuberculosis* and the environment within the phagosome. *Immunol Rev* 219: 37-54. PMID: 17850480
9. Russell, D.G., **G.E. Purdy**, R.M. Owens, K.H. Rohde, and R.M. Yates. 2005. *Mycobacterium tuberculosis* and the Four-minute Phagosome. *ASM News* 71:459-463.

#### **Invited Non Peer Reviewed Book chapter:**

1. T. Keiser and **G.E. Purdy**. Killing TB: What in vitro model systems can tell us about pathogenesis. In *Tuberculosis and the Tubercle Bacillus*, Steward T. Cole, Valerie Mizrahi, William R. Jacobs, Jr editors, ASM Press, Washington, DC.

#### **Manuscripts under review:**

**Peer reviewed abstracts presented:**

1. Wright, C.C. Hsu, F.F., Foss, M.H., Melly, G. and **G.E. Purdy**. 2018 MmpL11 contributes to Mtb non-replicating persistence. Gordon Research Conference on Microbial Toxins and Pathogenesis. Waterville Valley, NH
2. **Purdy, G.E.**, Wright, C.C., Davidson, P.M. and E. Yu, Metabolite modulation of Mtb regulators of cell wall biogenesis. 2016 Colorado Mycobacteria Conference, Ft. Collins, CO; Gordon Research Conference on Microbial Toxins and Pathogenesis, Waterville Valley, NH
3. Melly, G.\*, Wright, C.C., Pacheco, S. Davidson, P.M., Hsu, F.F., and **G.E. Purdy** 2016 Characterization of Lipoprotein LpqN in Mycobacterial Cell Wall Biogenesis. Keystone Symposia on Tuberculosis, Keystone, CO.  
\*Purdy Lab graduate student, presenter
4. Wright, C.C. Hsu, F.F. Harrieff, M.J., Foss, M.H., Melly, G. Lewinsohn, D.M. and **G.E. Purdy** 2015 Characterization of MmpL11 and its contribution to mycobacterial physiology, phenotypic antibiotic resistance and virulence. Keystone Symposia on Tuberculosis, Santa Fe, NM.,
5. Pacheco, S.A., Wright, C.C. Hsu, F.F., Foss, M.H., Alday, P.H. Melly, G. and **G.E. Purdy**. 2014 MmpL11 contributes to mycobacterial physiology and virulence. Gordon Research Conference on Microbial Toxins and Pathogenesis. Waterville Valley, NH; Keystone Symposia on Tuberculosis, Santa Fe, NM.
6. Foss, MH\*, Pou, S., Winter, RW, Riscoe, MK and **G.E. Purdy**. 2014. Ethambutol-like adamantyl 1,2-diamines function via a new mechanism of action against the pathogen *Mycobacterium tuberculosis*. OHSU MMI/VGTI/ID Annual Retreat, Portland, OR; Keystone Symposia on Tuberculosis, Santa Fe, NM.  
\*\*, Purdy Lab postdoctoral fellow, presenter
7. Foss, M.H.\*, Powers, K. M., and **G.E. Purdy**. 2013. Structural and functional characterization of mycobactericidal ubiquitin-derived peptides. Keystone Symposia on Tuberculosis, Whistler, BC, Canada; Gordon Research Conference on Antimicrobial peptides, Ventura, CA.  
\*\*, Purdy Lab postdoctoral fellow, presenter
8. Pacheco, S.A.\*, Hsu, F.F., Powers, K.M. and **G.E. Purdy**. 2012. The MmpL11 transporter contributes to mycobacterial cell wall biosynthesis. OHSU MMI/VGTI/ID Annual Retreat, Portland, OR.  
\*, Purdy Lab research staff, presenter
9. Powers, K.M.\*, and **G.E. Purdy**. 2012. Structural and functional characterization of mycobactericidal ubiquitin-derived peptides. OHSU MMI/VGTI/ID Annual Retreat, Portland, OR.  
\*, Purdy Lab research staff, presenter
10. M.S. Standley, A. Daugherty, C.S. Kim, K.M. Powers and **G.E. Purdy\***. 2011. RoxY and OxyS are required for mycobacterial resistance to bactericidal ubiquitin peptides and oxidative stress. Keystone Symposia on Tuberculosis, Vancouver, BC, Canada.
11. **Purdy, G.E.**, M. Niederweis, and D.G. Russell. 2009. Mycobactericidal ubiquitin-peptides target the mycobacterial membrane and impair membrane function. Keystone Symposia on Tuberculosis, Keystone, CO.
12. **Purdy, G.E.** and D.G. Russell. 2008. Mycobactericidal ubiquitin-derived peptides access the mycobacterial membrane via porins and possess pore-forming activity. Gordon Research Conference on Microbial Toxins and Pathogenesis. Andover, NH.

13. **Purdy, G.E.**, S. Alonso and D.G. Russell. 2007. Lysosomal killing of Mycobacteria by Ubiquitin-derived peptides. American Society for Microbiology 107<sup>th</sup> General Meeting. Toronto, Ontario, Canada.
14. **Purdy, G.E.** and D.G. Russell, 2007. Lysosomal killing mediated by ubiquitin-derived peptides is enhanced by autophagy. **Oral Presentation.** Cornell Infection and Pathobiology Seventh Annual Retreat, Owego, NY.
15. **Purdy, G.E.**, S. Alonso, K. Pethe, and D.G. Russell. 2007. Killing of *Mycobacteria* by soluble lysosomal fraction is mediated by ubiquitin-derived peptides and is enhanced by autophagy. Keystone Symposia on Tuberculosis, Vancouver, BC, Canada. and 2006 Gordon Research Conference on Microbial Toxins and Pathogenesis. Andover, NH.
16. **Purdy, G. E.**, R. Owens and D. G. Russell. 2005. Identification and characterization of secreted *M. tuberculosis* lipid kinases. Meeting on Microbial Pathogenesis and Host Response. Cold Spring Harbor, New York. and 2005 Keystone Symposia on Tuberculosis, Whistler, BC, Canada.
17. **Purdy, G. E.**, R. Owens and D. G. Russell. 2004. Analysis of PI3P levels on *M. tuberculosis*-containing phagosomes. FEBS/EMBO Frontiers of Cellular Microbiology and Cell Biology Conference, San Feliu de Guixols, Spain.
18. **Purdy, G. E.** and S. M. Payne. 2003. DegP is required for wild type levels of nitrate reductase activity in *Shigella flexneri*. American Society for Microbiology 103<sup>rd</sup> General Meeting. Washington, DC.
19. **Purdy, G. E.** and S. M. Payne. 2002. DegP is a *S. flexneri* virulence factor. **Oral Presentation.** Texas Branch American Society for Microbiology Meeting. Austin, TX.
20. **Purdy, G. E.**, M. Hong, and S. M. Payne. 2002. *S. flexneri* DegP is required for wild type levels of intercellular spread. American Society for Microbiology 102<sup>nd</sup> General Meeting. Salt Lake City, UT.
21. **Purdy, G. E.** and S. M. Payne. 2000. A *Shigella boydii* Island Encodes Aerobactin Synthesis and Transport. American Society for Microbiology 100<sup>th</sup> General Meeting. Los Angeles, CA.

#### Invited Speaker

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| 04/2022 | ASM Rio Grande Branch Annual Meeting, El Paso, TX, "The big ball of wax: the role of MmpL11 in Mtb cell wall biosynthesis and non-replicating persistence"              |
| 03/2022 | Oklahoma State University, Stillwater, OK, "The big ball of wax: the role of MmpL11 in Mtb cell wall biosynthesis and non-replicating persistence"                      |
| 03/2022 | ASM Eastern New York Branch Meeting, virtual, "The big ball of wax: the role of MmpL11 in Mtb cell wall biosynthesis and non-replicating persistence"                   |
| 10/2021 | ASM Northeastern Pennsylvania Branch Meeting, Philadelphia, PA, "The big ball of wax: the role of MmpL11 in Mtb cell wall biosynthesis and non-replicating persistence" |
| 11/2020 | Rutgers University, Newark, NJ, virtual, "The role of MmpL proteins in Mtb cell wall biosynthesis and drug development"   |
| 09/2019 | Michigan State University, East Lansing, MI, "The role of MmpL11 in Mtb cell wall biosynthesis and non-replicating persistence"   |

- 09/2019 AAMC Great Group Annual Meeting, Seattle, WA, "Design, Implementation, and Evaluation of a Learner-Centered Foundational Doctoral Curriculum" with Drs. M.E. Lane and A. Fryer.
- 02/2019 University of Texas, Austin, TX, "The role of MmpL proteins in Mycobacterium tuberculosis cell wall biosynthesis"
- 02/2019 University of Tennessee, Knoxville, TN, "The big ball of wax: the role of MmpL11 in Mtb cell wall biosynthesis and non-replicating persistence"
- 10/2017 ASM NW Branch Annual Meeting, Pullman, WA, "MmpL11 plays a key role in Mtb biofilms and persistence"
- 04/2017 ASM Tuberculosis Conference, Brooklyn, NY, "The Function and Regulation of Mtb MmpL Transporters"
- 03/2017 Pacific Tuberculosis Pathogenesis and Host-Response Research Retreat, Berkeley, CA, "MmpL11 plays a key role in Mtb biofilms and persistence"
- 11/2013 University of Central Florida, Burnett School of Biomedical Sciences, Orlando, FL, "The big ball of wax: the role of MmpL proteins in Mtb cell wall biosynthesis"
- 06/2013 Front Range Mycobacteria Conference, Fort Collins, CO "MmpL11: a transporter of mycolic acid containing cell wall lipids"
- 04/2012 Seattle Biomedical Research Institute, Seattle, WA, "The big ball of wax: new insights into the unique mycobacterial cell wall"
- 05/2010 American Society for Microbiology General Meeting, San Diego, CA. "Autophagic control of *Mycobacterium tuberculosis*: a role for lysosomal ubiquitin- peptides" in the **Symposium** session 110/E Eating Information: Innate Immune Functions of the Phagolysosome
- 07/2008 University of Florida, Department of Microbiology and Cell Science Gainesville, FL. "Lysosomal ubiquitin and the demise of Mtb"
- 07/2008 National Jewish Medical and Research Center, Department of Immunology, Denver, CO. "Lysosomal ubiquitin and the demise of Mtb"
- 06/2008 University of Louisville, Department of Microbiology and Immunology, School of Medicine, Louisville, KY. "Lysosomal ubiquitin and the demise of Mtb"
- 06/2008 Louisiana State University, Department of Pathobiology, College of Veterinary Medicine, Baton Rouge, LA. "Lysosomal ubiquitin and the demise of Mtb"
- 01/2008 University of Arkansas for Medical Sciences. Department of Microbiology and Immunology, Little Rock, AR. "Lysosomal ubiquitin and the demise of Mtb"
- 12/2007 University of Kentucky, Department of Microbiology, School of Medicine, Lexington, KY. "Lysosomal ubiquitin and the demise of Mtb"
- 06/2007 Emory Vaccine Center, Emory University, Atlanta, GA. "The dichotomy of the host-pathogen interface"

Regional and Local

- 07/2018 Oregon Health Authority Statewide TB forum, Portland OR “Mycobacterium tuberculosis basic biology: how understanding MmpL cell wall lipid transporters can give insight into latent disease”
- 04/2013 OHSU MMI/VGTI/ID/EBS Retreat, Portland, OR “The big ball of wax: MmpL11 transports mycobacterial cell wall lipids”
- 05/2012 OHSU Research Week, Portland, OR “The big ball of wax: new insights into the unique *M. tuberculosis* cell wall”
- 09/2011 Portland State University, Department of Biology, Portland, OR “Taking Out TB: Lysosomal Trafficking and Mycobactericidal Ubiquitin-Derived Peptides”
- 03/2011 Lewis and Clark College, Department of Biology, Portland, OR, “Mycobacterium tuberculosis – from basic biology of the pathogen to the macrophage and back”
- 09/2010 Reed College, Department of Biology, Portland, OR. “Lysosomal Ubiquitin and the Demise of Mycobacterium tuberculosis”
- 03/2010 OHSU/OGI Department of Science and Engineering, Beaverton, OR “Autophagic control of Mtb – a role for ubiquitin-derived peptides”
- 10/2009 OHSU Department of Cellular and Developmental Biology, Portland, OR “Host-pathogen interactions of Mtb and macrophages”
- 04/2009 OHSU MMI/VGTI/ID/EBS Retreat, Portland, OR “Host-pathogen interactions of Mtb and macrophages”
- 01/2009 OHSU Vaccine and Gene Therapy Institute, Beaverton, OR “Mycobactericidal ubiquitin-peptides: A tool to understand the intrinsic antimicrobial resistance of Mtb”

**Intellectual Property**

Intellectual Property Disclosure 4/1/2015- **Small molecule Mycobacterial biofilm inhibitors**

Intellectual Property Disclosure 5/26/2015 - **Diphenylether anti tubercular compounds**