

CURRICULUM VITAE

ROBERT B. ABRAMOVITCH

Associate Professor

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Education

Cornell University	Ph.D.	2006	Plant Pathology
University of British Columbia	B.Sc. (Honors)	2000	Microbiology

Positions

2018- Associate Professor, Michigan State University
2012-18 Assistant Professor, Michigan State University
2006-11 Postdoctoral Fellow, Cornell University
2000-06 Graduate Fellow, Cornell University

Fellowships and Awards

2015 Zoetis Award for Research Excellence, MSU College of Veterinary Medicine.
2014 Academic Competitiveness Award, MSU College of Human Medicine.
2014 Jean P. Schultz Biomedical Research Award, MSU College of Human Medicine.
2014 Innovation of the Year Award, Michigan State University.
2012,14 Grand Challenges Explorations Awards, Bill & Melinda Gates Foundation.
2009-11 Postdoctoral Fellow, Ruth L. Kirschstein National Research Service Award, NIAID.
2008-09 Postdoctoral Fellow, Heiser Program for Research in Leprosy and Tuberculosis.
2005 Postgraduate Fellow, Cornell University.
2005 Barbara McClintock Graduate Student Award, Cornell University.
2005 1st place, Best Poster, XII Molecular Plant-Microbe Interactions conference.
2001-04 Postgraduate Fellow, National Sciences and Engineering Research Council.
2000 Dolman Prize, Top graduate of UBC Department of Microbiology and Immunology.
1999 Guy Chance Award, UBC Department of Microbiology and Immunology.
1999 Science Scholar, Top 2% of UBC Faculty of Science students.
1995-00 Outstanding Student Initiative entrance scholarship, University of British Columbia.

Journal Publications (total 31, h-index = 21, 3429 citations, Google Scholar Database)

1. Zheng H, Williams JT, Coulson GB, Haiderer ER, Abramovitch RB (2018). HC2091 kills *Mycobacterium tuberculosis* by targeting the MmpL3 mycolic acid transporter. **Antimicrobial Agents and Chemotherapy**. Jun 26;62(7). pii: e02459-17.
2. Abramovitch RB (2018). *Mycobacterium tuberculosis* reporter strains as tools for drug discovery and development. **IUBMB Life**. 70(9):818-825. Times cited: 1
3. Baker JJ, Abramovitch RB (2018). Genetic and metabolic regulation of *Mycobacterium tuberculosis* acid growth arrest. **Scientific Reports**. 8;8(1): 4168. Times cited: 1
4. Bosserman RE, Nguyen TT, Chirakos AE, Sanchez KG, Ferrell MJ, Champion MM, Abramovitch RB, Champion PA (2017). WhiB6 regulation of ESX-1 gene expression is controlled by a negative feedback loop in *Mycobacterium marinum*. **Proc. Natl. Acad. Sci. USA**. Nov 27. pii: 201710167. Times cited: 3
5. Coulson GB*, Johnson BK*, Colvin CJ, Fillinger RJ, Zheng H, Haiderer E, Hammer ND, Abramovitch RB (2017). Targeting *Mycobacterium tuberculosis* sensitivity to thiol stress at acidic pH kills the bacterium and potentiates antibiotics. **Cell Chemical Biology**. 24: 993-1004. *contributed equally. Times cited: 9
6. Zheng H, Colvin CJ, Johnson BK, Kirchhoff PD, Wilson M, Jorgensen-Muga K, Larsen SD, Abramovitch RB (2017). Inhibitors of *Mycobacterium tuberculosis* DosRST signaling and persistence. **Nature Chemical Biology**, 13(2):218-225. Times cited: 22
7. Johnson BK, Abramovitch RB (2017). Small molecules that sabotage bacterial virulence. **Trends in Pharmacological Sciences**, 38(4):339-362. Times cited: 27
-- Journal Cover and Featured Review.
8. Jeon AB, Obregón-Henao A, Ackart DF, Podell BK, Belardinelli JM, Jackson M, Nguyen TV, Blackledge MS, Melander RJ, Melander C, Johnson BK; Abramovitch RB, Basaraba RJ (2017). 2-aminoimidazoles potentiate β -lactam antimicrobial activity against *Mycobacterium tuberculosis* by reducing β -lactamase secretion and increasing cell envelope permeability. **PLOS One**, 2(7):e0180925. Times Cited: 1
9. Augostinho Hunt AM, Gibson JA, Larrivee CL, O'Reilly S, Navitskaya S, Busik JV, Needle DB, Abramovitch RB and Waters CM (2017). A bioluminescent *Pseudomonas aeruginosa* wound model reveals increased mortality of Type 1 diabetic mice to biofilm infection. **Journal of Wound Care**, 26(sup7): S24-33. Times Cited: 1
10. Williams EA, Mba Medie, F, Bosserman RE, Johnson BK, Reyna C, Ferrell MJ, Champion MM, Abramovitch RB, Champion PA (2017). A nonsense mutation in *Mycobacterium marinum* that is suppressible by a novel mechanism. Times cited: 4
Infection and Immunity, 26;85(2). pii: e00653-16.

11. Johnson BK, Scholtz, MB, Teal TK, Abramovitch RB (2016). SPARTA: Simple Program for Automated reference-based bacterial RNA-seq Transcriptome Analysis. **BMC Bioinformatics**, 17:66. Times cited: 13
12. Liu, Y, Tan S, Huang L, Abramovitch, RB, Rohde, KH, VanderVen BC, Zimmerman MD, Chen C, Dartois V, Russell DG (2016). Immune activation of the host cell induces drug tolerance to *Mycobacterium tuberculosis* both *in vitro* and *in vivo*. **Journal of Experimental Medicine**, 213 (5): 809-825. Times cited: 41
13. Sloup RE, Cieza RJ, Needle DB, Abramovitch RB, Torres AG, Waters CM (2016) Polysorbates prevent biofilm formation and pathogenesis of *Escherichia coli* O104:H4. **Biofouling**, 32 (9):1131-1140. Times cited: 4
14. Johnson BK, Colvin CJ, Needle DB, Mba Medie F, Champion PA, Abramovitch RB (2015). The carbonic anhydrase inhibitor ethoxzolamide inhibits the *Mycobacterium tuberculosis* PhoPR regulon and Esx-1 secretion and attenuates virulence. **Antimicrobial Agents and Chemotherapy**, 59(8):4436-45. Times cited: 25
-- Highlighted in **The Pharmaceutical Journal** (August, 2015)
15. VanderVen BC, Fahey RJ, Lee W, Lui Y, Abramovitch RB, Memmott C, Crowe AM, Eltis LD, Perola E, Deininger DD, Wang T, Locher CP, Russell DG (2015). Novel inhibitors of cholesterol degradation in *Mycobacterium tuberculosis* reveal how the bacterium's metabolism is constrained by the intracellular environment. **PLOS Pathogens**, 11(2): e1004679. Times cited: 103
16. Baker JJ, Johnson BK, Abramovitch RB (2014) Slow growth of *Mycobacterium tuberculosis* at acidic pH is regulated by *phoPR* and host-associated carbon sources. **Molecular Microbiology**, 94 (1): 56-69. Times cited: 48
-- Highlighted as an Editor's Choice in **Science Translational Medicine** (July 9, 2014)
17. Tan S, Sukumar N, Abramovitch RB, Parish T, Russell DG (2013) *Mycobacterium tuberculosis* responds to chloride and pH as synergistic cues to the immune status of its host cell. **PLOS Pathogens**, 9 (4): e1003282. Times cited: 62
18. Abramovitch RB, Rohde KH, Hsu FF, Russell DG (2011) *aprABC*: A *Mycobacterium tuberculosis* complex-specific locus that modulates pH-driven adaptation to the macrophage phagosome. **Molecular Microbiology**, 80 (3): 678-694. Times cited: 122
19. Russell DG, VanderVen BC, Lee W, Abramovitch RB, Kim MJ, Homolka S, Niemann S, Rohde KH (2010) *Mycobacterium tuberculosis* wears what it eats. **Cell: Host and Microbe**. 8(1): 68-76. Times cited: 141
20. Rohde KH, Abramovitch RB, Russell DG (2007) *Mycobacterium tuberculosis* invasion of macrophages: Linking bacterial gene expression to environmental cues. **Cell: Host and Microbe**. 2 (5): 352-64. Times cited: 280
21. Rosebrock TR, Zeng L, Brady JJ, Abramovitch RB, Xiao F, Martin GB (2007) A bacterial E3 ubiquitin ligase mediates degradation of an immunity-associated host protein kinase. **Nature**. 448 (7151): 370-374. Times cited: 293

22. Xiao F, He P, Abramovitch RB, Dawson JE, Nicholson LK, Sheen J, Martin GB (2007) The N-terminal region of *Pseudomonas* type III effector AvrPtoB elicits Pto-dependent immunity and has two distinct virulence determinants. ***Plant Journal***. 52 (4):595-614. Times cited: 75
 23. Abramovitch RB, Anderson JC, Martin GB (2006) Bacterial elicitation and evasion of plant innate immunity. ***Nature Reviews Molecular Cell Biology***. 7 (8): 601-611.
Times cited: 407
 24. Abramovitch RB, Janjusevic R, Stebbins CE, Martin GB (2006) Type III effector AvrPtoB requires intrinsic E3 ubiquitin ligase activity to suppress plant cell death and immunity. ***Proc. Natl. Acad. Sci. USA***. 103 (8): 2851-2856. Times cited: 242
 25. Janjusevic R*, Abramovitch RB*, Martin GB, Stebbins CE (2006) A bacterial inhibitor of host programmed cell death defenses is an E3 ubiquitin ligase. ***Science***, 311 (5758): 222-226. Times cited: 333
*Co-first authors, contributed equally to this paper.
 26. Lin NC, Abramovitch RB, Kim YJ, Martin GB (2006) Diverse AvrPtoB homologs from several *Pseudomonas syringae* pathovars elicit Pto-dependent resistance and have similar virulence activities. ***Applied and Environmental Micro***. 72 (1): 702-712. Times cited: 64
 27. Abramovitch RB, Martin GB (2005) AvrPtoB: A bacterial type III effector that both elicits and suppresses programmed cell death associated with plant immunity. ***FEMS Microbiology Letters***, 245: 1-8. Times cited: 77
 28. Abramovitch RB, Martin GB (2004) Strategies used by bacterial pathogens to suppress plant defenses. ***Current Opinion in Plant Biology***, 7:356-364. Times cited: 273
 29. Abramovitch RB, Kim YJ, Chen S, Dickman MB, Martin GB (2003) *Pseudomonas* type III effector AvrPtoB induces plant disease susceptibility by inhibition of host programmed cell death. ***EMBO Journal***. 22(1): 60-69. Times cited: 422
 30. Abramovitch RB, Yang G, Kronstad JW (2002) The *ukb1* gene encodes a putative protein kinase required for bud site selection and pathogenicity in the fungal pathogen *Ustilago maydis*. ***Fungal Genetics and Biology***, 37: 98-108. Times cited: 24
 31. Fouts, DE, Abramovitch RB, *et al.* (2002) Genomewide identification of *Pseudomonas syringae* pv. *tomato* DC3000 promoters controlled by the HrpL alternative sigma factor. ***Proc. Natl. Acad. Sci. USA***. 99 (4): 2275-2280. Times cited: 302
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Book Chapters

1. Johnson BK and Abramovitch RB (2015). Macrophage Infection Models for *Mycobacterium tuberculosis*. ***Mycobacteria Protocols, Third Edition***. Edited by Tanya Parish and David Roberts. Springer. Times cited: 8
 2. Yates RM, Rohde KH, Abramovitch RB, Russell DG (2009) Functional Analysis of the Intraphagosomal Environment of the Macrophage: Fluorogenic Reporters and the Transcriptional Responses of *Salmonella* and *Mycobacterium* spp. ***Phagocyte-Pathogen Interactions***. Edited by David G. Russell and Simon Gordon, ASM press, Washington, DC.
 3. Pascuzzi PE, Abramovitch RB, Anderson JC, Lin NC, Cohn JR, Martin GB (2006) Elucidation of the Virulence Activities of *Pseudomonas* Effector Proteins AvrPto and AvrPtoB. ***Biology of Plant Microbe Interactions, vol. 5***. Edited by Federico Sanchez, Carmen Quinto, Isabel M. Lopez-Lara, and Otto Geiger. IS-MPMI, St. Paul, Minnesota, USA.
 4. Abramovitch RB, Anderson JC, Lin NC, Martin GB (2004) The roles of *Pseudomonas* type III effectors AvrPto and AvrPtoB as modulators of plant disease susceptibility and immunity. ***Biology of Plant-Microbe Interactions, vol. 4***. Edited by Igor Tikhonovich, Ben Lugtenberg, and Nikolai Provorov. IS-MPMI. St. Paul, Minnesota, USA.
 5. Kronstad J, Durrenberger F, Laidlaw D, De Maria A, Moniz de Sa M, Lee N, Kohno Y, Abramovitch, RB. (1999) Morphogenesis, Sporulation and Virulence in *Ustilago maydis* Are Controlled by cAMP signaling. ***Biology of Plant-Microbe Interactions, vol. 2***.
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Patent and Patent Applications

1. Martin GB, Abramovitch RB, Kim YK, Lin NC. Bacterial effector proteins which inhibit programmed cell death. US Patent 7,888,467.
 2. Abramovitch RB, Johnson BK, and Colvin CJ. Compositions and methods for inhibiting bacterial growth. U.S. Patent Application PCT/US2016/030689, WO2016179231 (Ethoxzolamide)
 3. Abramovitch RB, Zheng H, Johnson BK, Colvin CJ. Compositions and methods for inhibiting bacterial growth. *Provisional patent application submitted*. (DosRST inhibitors).
 4. Abramovitch RB, Coulson GB, Colvin CJ, Johnson BK. Prodrugs of AC2P36 (5-chloro-n-(3-chloro-4-methoxyphenyl)-2-methylsulfonylpyrimidine-4-carboxamide). *Provisional patent application submitted*.
 5. Abramovitch RB, Ellsworth E. Compositions and methods for inhibiting bacterial growth. *Provisional patent application submitted*. (HC106 analogs).
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Invited Seminars

- 04/19 “TBD” **Rutgers New Jersey Medical School**, Dept. of Pharmacology, Physiology and Neuroscience. *Departmental Seminar*.
- 03/19 “TBD” **Vanderbilt Institute of Chemical Biology**. *Departmental Seminar*.
- 01/19 “Targeting two component systems to inhibit *Mycobacterium tuberculosis* pathogenesis” **Keystone Symposium on Tuberculosis: Mechanisms, Pathogenesis, and Treatment**, Banff, Alberta, Canada. *International meeting*.
- 11/18 “TBD” **Grand Valley State University**, Microbiology Club. *Seminar*.
- 11/18 “TBD” **University of Illinois Urbana-Champaign**, Department of Microbiology. *Departmental seminar*.
- 08/18 “Small molecules targeting *Mycobacterium tuberculosis* pH-driven pathogenesis” **Gordon Research Conference on Microbial Toxins and Pathogenicity**, Waterville Valley, NH. *National meeting*.
- 06/18 “Acid Growth Arrest: A new model for *Mycobacterium tuberculosis* persistence and drug tolerance” **ASM Microbe 2018**, Atlanta, GA. *National meeting*.
- 04/18 “Chemical biology of *Mycobacterium tuberculosis* pathogenesis” **MSU Drug Discovery Seminar**, Dept. of Pharmacology and Toxicology. *Local Meeting*.
- 11/17 “Small molecules that inhibit *Mycobacterium tuberculosis* environmental sensing and virulence” **Johns Hopkins University**, Department of Medicine. *Departmental seminar*.
- 11/17 “Inhibitors of *Mycobacterium tuberculosis* persistence and pathogenesis” **Worcester Polytechnic Institute**, Department of Biology and Biotechnology. *Departmental seminar*.
- 10/17 “Chemical biology of *Mycobacterium tuberculosis* pathogenesis” **University of Tennessee-Knoxville**, Department of Microbiology. *Departmental seminar*.
- 10/17 “Chemical biology of *Mycobacterium tuberculosis* pathogenesis” **The Ohio State University**, Department of Microbial Infection and Immunity. *Departmental seminar*.
- 09/17 “Small molecules that inhibit *Mycobacterium tuberculosis* environmental sensing and virulence” **Washington University**, Department of Molecular Microbiology. *Departmental seminar*.

- 06/17 "Small molecules that inhibit *Mycobacterium tuberculosis* environmental sensing and virulence" **Gordon Research Conference on Tuberculosis Drug Discovery and Development**, Lucca, Italy. *International Meeting*.
- 05/17 "Chemical Biology of *Mycobacterium tuberculosis* pathogenesis" **Pediatric Research Rounds**, College of Human Medicine, MSU, East Lansing, MI. *Local seminar*.
- 04/17 "Inhibitors of *Mycobacterium tuberculosis* DosRST signaling and persistence" **ASM Conference on Tuberculosis: Past, Present, and Future**, New York, NY. *National meeting*
- 12/16 "Inhibitors of *Mycobacterium tuberculosis* persistence and pathogenesis" **Oregon Health Sciences University**, Department of Molecular Microbiology and Immunology. *Departmental Seminar*.
- 11/16 "Inhibitors of *Mycobacterium tuberculosis* persistence and pathogenesis" **Tufts University**, School of Graduate Biomedical Sciences. *Departmental seminar*.
- 10/16 "Inhibitors of *Mycobacterium tuberculosis* persistence and pathogenesis" **Notre Dame University**, Department of Biological Sciences. *Departmental seminar*.
- 06/16 "Small molecules that inhibit *M. tuberculosis* two-component regulatory systems." **Banff Conference on Infectious Diseases**, Banff, Canada. *International Meeting*.
- 06/16 "Tuberculosis therapeutics that inhibit bacterial sensing and resistance to host immunity." **TB Summit 2016**, London, UK. *International Meeting*.
- 06/16 "Glow Green! Using fluorescent biosensors to find new treatments for tuberculosis." **Summer research opportunity research seminar**, The Graduate School, MSU, East Lansing, MI. *Local seminar*.
- 12/15 "Small molecules that inhibit *M. tuberculosis* two-component regulatory systems." **University of Toledo**, Department of Medical Microbiology and Immunology. *Departmental seminar*.
- 09/15 "Tuberculosis therapeutics that inhibit bacterial sensing and resistance to host immunity." **Drug Discovery and Development in Michigan** - Cutting Edge, East Lansing, MI. *Statewide meeting*.
- 08/15 "Targeting *M. tuberculosis* pH-driven pathogenesis." **22nd Annual Midwest Microbial Pathogenesis Conference**, Indianapolis, IN. *Regional meeting*.
- 08/15 "Small molecules that inhibit *M. tuberculosis* two-component regulatory systems." **77th Harden Conference: Two Component Signaling in Bacteria: Integrating Approaches and Science**, Warwickshire, UK. *International meeting*.

- 06/15 "Jumpstarting the development of new treatments for drug resistant tuberculosis." **Robert J. Schultz Family Research Day**, Arcadia, MI. *Local meeting*.
- 02/15 "Glow Green! Using fluorescent biosensors to find new treatments for tuberculosis." **Classes Without Quizzes**, MSU College of Natural Sciences Alumni Weekend, East Lansing, MI. *Local meeting*.
- 02/15 "Glow Green! Using fluorescent biosensors to find new treatments for tuberculosis." **MSU Drug Discovery Seminar**, East Lansing, MI. *Local seminar*.
- 01/15 "Glow Green! Using fluorescent biosensors to find new treatments for tuberculosis." **MSU Respiratory Research Initiative**, East Lansing, MI. *Local seminar*.
- 04/14 "High throughput screens for inhibitors of *Mycobacterium tuberculosis* two-component regulatory systems." **Keystone Symposium on Novel Therapeutic Approaches to Tuberculosis**. Keystone, CO. *International meeting*.
- 08/13 "Targeting compounds and genes that modulate *Mycobacterium tuberculosis* pH-driven adaptation." **GLRCE Annual Meeting**, Chicago, IL. *Regional meeting*.
- 07/13 "Glow Green! Using fluorescent biosensors to find new treatments for tuberculosis." **Meriel-NIH Veterinary Scholars Symposium**, East Lansing, MI. *National meeting*.
- 08/12 "Targeting compounds and genes that modulate *Mycobacterium tuberculosis* pH-driven adaptation." **GLRCE Annual Meeting**, Chicago, IL. *Regional meeting*.
- 08/11 "Targeting compounds and genes that modulate *Mycobacterium tuberculosis* pH-driven adaptation." **GLRCE Annual Meeting**, Chicago, IL. *Regional meeting*.
- 01/06 "Suppression of plant immunity by a bacterial type III effector." The Microbe-Host Interactions Workshop at the **International Plant and Animal Genome XIV Conference**, San Diego, CA. *International meeting*.
- 06/04 "Suppression of plant defenses by the tomato pathogen *Pseudomonas syringae* pv. *tomato*." **75th annual meeting of the Canadian Phytopathological Society**, Ottawa, Canada. *International meeting*
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Selected Meeting Abstracts

- 01/17 "The acidic pH-dependent compound AC2P36 depletes *M. tuberculosis* thiol pools and potentiates the bactericidal activity of isoniazid, clofazimine and oxidizing agents" 2017 Keystone Symposium on New Developments in our Basic Understanding of Tuberculosis, Vancouver, BC, Canada.
- 04/16 "Reporter-based phenotypic screens to discovery inhibitors of *Mycobacterium tuberculosis* two-component regulatory systems" Poster presented at the 2016 Keystone Symposium on Phenotypic Drug Discovery, Big Sky, MT.
- 07/15 "The carbonic anhydrase inhibitor ethoxzolamide inhibits the *Mycobacterium tuberculosis* PhoPR regulon, Esx-1 secretion and attenuates virulence." Poster presented at the 2015 Gordon Research Conference on Tuberculosis Drug Development in Barcelona, Spain.
- 09/14 "A whole cell phenotypic screen in *M. tuberculosis* identifies ethoxzolamide as an inhibitor of the *phoPR* regulon." Poster presented at the 2014 ASM Interscience Conference on Antimicrobial Agents and Chemotherapy. Washington, DC.
- 09/13 "Chemical biology investigations of *Mycobacterium tuberculosis* pH- and hypoxia-driven adaptation." Poster presented at the 2013 Microbial Pathogenesis and Host Response meeting, Cold Spring Harbor, NY.
- 08/13 "High throughput screens for inhibitors of pH- and hypoxia-regulated fluorescence biosensors in *Mycobacterium tuberculosis*." Poster presented at the 2013 Midwest Microbial Pathogenesis Conference, Columbus, OH.
- 07/13 "High throughput screens for inhibitors of pH- and hypoxia-regulated fluorescence biosensors in *Mycobacterium tuberculosis*." Poster presented at the 2013 Gordon Research Conference on Tuberculosis Drug Development in Lucca, Italy.
- 09/12 "*reduced aprA expression* mutants identify pathways involved in *Mycobacterium tuberculosis* pH-driven adaptation" Poster presented at the Tuberculosis 2012 meeting in Paris, France.
- 01/11 "*aprABC*: A *Mycobacterium tuberculosis* complex-specific locus that modulates pH-driven adaptation to the macrophage phagosome" Poster presented at the Mycobacteria: Physiology, Metabolism and Pathogenesis Keystone Symposium, Vancouver, BC, Canada.
- 01/09 "Acid regulated *M. tuberculosis* reporter strains as tools for studies of pathogen adaptation to the macrophage phagosome" Poster presented at the Tuberculosis: Biology, Pathology and Therapy Keystone Symposium, Keystone, Colorado.
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Current Research Support

National Institutes of Health, NIAID	R01 AI116605	12/01/15—11/30/20
<i>Principal Investigator, \$1,356,684 Direct Costs</i>		
Mechanisms of <i>Mycobacterium tuberculosis</i> pH-driven adaptation		
National Institutes of Health, NIAID	R21 AI1170181	8/20/16—7/31/19
<i>Principal Investigator, \$275,000; Direct Costs to PI \$137,500.</i>		
Non-competitive proteasome inhibitors to treat chronic, drug-resistant TB		
MSU Foundation, Strategic Partnership Grant	14-SPG-Full-2966	07/01/15—06/30/19
<i>Principal Investigator, \$399,079; Direct Costs to PI \$199,539</i>		
Non-competitive proteasome inhibitors to treat chronic, drug-resistant TB		

Completed Research Support

Bill & Melinda Gates Foundation	OPP1119065	10/31/14—10/31/17
<i>Principal Investigator, \$745,035 Direct Costs</i>		
Development of TB therapeutics that inhibit persistence and reduce antibiotic tolerance		
Michigan Animal Agriculture Alliance	AA16006	01/01/16—12/31/17
<i>Principal Investigator, \$41,076 Direct Costs</i>		
Fate of <i>Mycobacterium bovis</i> in ensiled forages		
National Institutes of Health, NIAID	R21 AI105867	08/08/13—07/31/16
<i>Principal Investigator, \$256,427 Direct Costs</i>		
Screening for inhibitors of <i>Mycobacterium tuberculosis</i> persistence-associated lipid metabolism		
Jean P. Schultz Endowed Biomedical Research Award		09/01/14—08/31/16
<i>Principal Investigator, \$30,000 Direct Costs</i>		
Jumpstarting the development of new treatments for drug resistant tuberculosis		
Michigan Initiative for Innovation and Entrepreneurship		01/01/14—10/31/14
<i>Principal Investigator, \$44,022 Direct Costs</i>		
<i>in vivo</i> efficacy studies of first-in-class compounds to treat chronic, drug-resistant tuberculosis		
National Institutes of Health, NIAID	U54 AI057153	03/01/12—02/28/14
<i>Career Development Grant, \$230,000 Direct Costs to Robert Abramovitch (O. Schneewind, PI)</i>		
Targeting compounds and genes that modulate <i>Mycobacterium tuberculosis</i> pH-driven adaptation.		
Bill & Melinda Gates Foundation	OPP1059227	05/01/12—10/31/13
<i>Principal Investigator, \$100,000 Direct Costs</i>		
Using a synthetic biosensor to find drugs targeting <i>Mycobacterium tuberculosis</i> persistence		

Professional Activities

Grant and fellowship proposal review activities

- 2013-present Reviewer, **ASM Undergraduate Research Fellowships**.
 2014 Proposal Reviewer, **Wellcome Trust**.
 2015 Proposal Reviewer, **Irish Health Research Board**.
 2016 R01 Special Emphasis Panel “U.S. China Program for Biomedical Collaborative Research”, **NIH Study Section**.
 2016 R01 Special Emphasis Panel “Topics on Infectious Diseases and Drug Discovery”, **NIH Study Section**.
 2016 Peer Review Medical Research Panel member: Discovery Awards – Tuberculosis, **US Department of Defense Study Section**.
 2017 R15 “AREA applications Infectious Diseases and Microbiology”, **NIH study section**
 2017 R01 Special Emphasis Panel “Topics on Infectious Diseases and Drug Discovery”, **NIH Study Section**.
 2017 R21/R03 “Topics in Bacterial Pathogenesis”, **NIH Study Section**.
 2017 R01 “International Research in Infectious Diseases including AIDS”, **NIH Study Section**.
 2017 R61/R33 “Dysregulation of Immune Cell Regulatory Pathways by Mtb in the Context of HIV Infection”, **NIH Study Section**.
 2017 Peer Review Medical Research Panel member: Discovery Awards – Antimicrobial Resistance, **US Department of Defense Study Section**.
 2018 Proposal Reviewer, **Swiss National Science Foundation**.
 2018 Proposal Reviewer, **European Research Council**

Editorial activities

- 2015-2017 Editorial Board (Review Editor), **Frontiers in Cellular and Infection Biology**.
 2016-present Editorial Advisory Board, **The Journal of Infectious Diseases**.
 2017-present Academic Editor, **PeerJ**
 2017-2022 Editor, **Microbiology** (Microbiology Society)

Ad hoc article reviewer (33 journals, 65 manuscripts reviewed):

ACS Infectious Disease; Antimicrobial Agents and Chemotherapy; BMC Biotechnology; BMC Microbiology; Cell Chemical Biology; Cell Host & Microbe; Cell Reports; Current Opinion in Pharmacology; Gene; International Journal of Tuberculosis and Lung Disease; IUBMB Life; Journal of Bacteriology; Journal of Infectious Diseases; Journal of Medical Microbiology; Frontiers in Cellular and Infection Biology; mBio; MedChemComm; Microbiology; Molecular Microbiology; mSphere; Nature Communications; Nucleic Acids Research; Pathogens and Disease; PLOS Computational Biology; PLOS Pathogens; PLOS One; PNAS; Science Advances; Scientific Reports; Trends in Pharmacological Sciences; Tuberculosis; Veterinary Record Case Reports; Virulence.

Meeting organization

- 2018 Planner and Moderator, “Recent advances in understanding the implications of persistence in microbial pathogenesis”. Plenary Session. **ASM Microbe 2018**, Atlanta, GA.

Graduate student, Undergraduate Student, and Postdoctoral Mentoring

Graduate students

2012-17 Jacob Baker (MD/PhD student)
 2012-16 Benjamin Johnson PhD (currently Bioinformatics Scientist at Van Andel Institute)
 2013-17 Huiqing Zheng PhD (currently Senior Biologist, The Dow Chemical Company)
 2014-16 Javiera Ortiz, DVM
 2014-16 David Needle, DVM (currently Clinical Assistant Professor, Univ. of New Hampshire)
 2017- John Williams (PhD student)
 2017- Shelby Dechow (PhD student)
 2018- Elizabeth Haiderer (DVM/PhD student)

Undergraduate research students (and, if known, current position post-graduation)

2012-13 Jessica Hallesy (lab manager, Rybak Lab, Wayne State University)
 2012-14 Navi Sahi
 2012-14 Devin Carter
 2013-15 Hinako Terauchi (DO/PhD student, Michigan State University)
 2013-15 Boitshoko Molefhi
 2014-15 Robert Fillinger (PhD student, The Ohio State University)
 2015-16 Hannah Bodnar (Dental Student, University of North Carolina, Chapel Hill)
 2015-18 Marilyn Werner
 2016-18 Emily Juzwiak
 2016-17 Hayley West
 2016-18 Nana Abena Anti
 2017- Ingrid Flaspohler
 2017- Joe Grech
 2018- Dylan Slaugh

Postdoctoral Researchers

2014-15 Garry Coulson (currently Biosafety Officer, University of North Carolina, Chapel Hill)
 2016- Rajni Goyal
 2017- Uma Shankar Gautam

Summer research students

2013 Cory Schall (MD summer student)
 2014 Sabrina Rupani (DVM summer student)
 2015 Katriana Jorgensen-Muga (NHLBI R25 summer undergraduate student)
 2015 Tiffany Bryant (DVM summer student)
 2016 A'Jah Chandler (NHLBI R25 summer undergraduate student)
 2016,17 Elizabeth Haiderer (DVM summer student)
 2016 Paulo Carneiro (LCS811 summer research project)
 2017 Ryan Borchert (SROP summer undergraduate student)
 2017 Sharon-Rose Nartey (NHLBI R25 summer undergraduate student)
 2018 Chioma Ngene (NHLBI R25 summer undergraduate student)

Student Awards and Accomplishments:

Graduate students

Ben Johnson: Rudolph Hugh Award (2015); Hsiang Everett Kimball Scholarship (2016).
 Jake Baker: Schultz Award (2014); Duvall Award (2015); Wentworth Scholarship (2016);
 NIAID Scholarship for Keystone Symposium (2017); Whittam Award (2017).
 Huiqing Zheng: MMPC Best Poster Award (2015); Rudolph Hugh Award (2016);
 Hsiang Everett Kimball Scholarship (2017); ASM Microbe 2017 Travel Award;
 CNS Dissertation Completion Fellowship (2017).
 Shelby Dechow: IPSTP NIH Training Grant Fellowship (2017-2019). Marvis Richardson
 Endowed Award (2018).
 John Williams: Elenor L Gilmore Endowed Excellence Award (2018). Invited seminar at the
 2018 Keystone Symposium on Tuberculosis, Whistler, BC.

Undergraduate students

Marilyn Werner: Duvall Award (2016); ASM Undergraduate Research Fellowship (2016);
 MSU nominee for Goldwater Scholarship (2017); Peabody Award (2017).
 Emily Juzwiak: Summer Research Experience, Mayo Clinic (2016). Lyman Briggs Research
 Symposium Grand Prize from MSUFCU (2017); Peabody Award (2017).
 First Prize, poster session, University Undergraduate Research Forum (2018)
 Philipp and Vera Gerhardt Research Award (2018)
 A'Jah Chandler: Annual Biomedical Research Conference for Minority Students Travel Award
 (2016).
 Nana Anti: Summer Research Experience, Novartis Institute of Biomed Research (2016).
 First Prize oral presentation University Undergraduate Research Forum (2018)

Graduate Committees

Committee member (16 total, other than students mentored in Abramovitch lab):

Darin Quach (Britton lab), Suttipun Sungusuwan (Huang lab), Alita Burmeister (Lenski lab),
 Peng Lu (Xi lab), Michelle Korir (Manning lab), Gregory Patten (Tepe lab), John Shook (Waters
 lab), Xiao Liang (Xi lab), Evert Njomen (Tepe Lab), Y Hoang (Kroos lab), Jeff Schachterle
 (Sundin Lab), Paulo Carneiro (Kaneene lab), Michael Maiden (Waters lab), Josh Lensmire
 (Hammer lab), Fernanda Miyagakishoyama (Srevatasan lab), Evan Brenner (Srevatasan lab).

Preliminary exam chair (8 total):

Natalia Porcek (Parent Lab), Laura Kirby (Koslowsky Lab), Ahrom Kim (Yu lab), Nico
 Fernandez (Waters lab), Sanjana Mukherjee (Manning lab), Brian Nohomovich (Manning Lab),
 Nhu Nguyen (Dufour lab), John Lee (Dufour lab)

Classroom Teaching

Courses taught:

2012-2013 MMG532 (1 lecture), MMG563 (2 lectures), MMG861 (4 lectures)
2013-2014 MMG461 (14 lectures), MMG532 (1 lecture), MMG563 (8 lectures),
MMG801 (1 lecture)
2014-2015 MMG532 (1 lecture), MMG563 (4 lectures), MMG801 (1 lecture),
MMG861 (6 lectures), PDI851 (1 lecture)
2015-2016 MMG461 (14 lectures), MMG532 (1 lecture), MMG563 (4 lectures),
MMG801 (1 lecture), VM820 (1 lecture)
2016-2017 MMG532 (1 lecture), MMG563 (5 lectures), MMG861 (7 lectures)
PDI851 (1 lecture)
2017-2018 MMG461 (14 lectures), MMG532 (1 lecture), MMG563 (4 lectures)
2018-2019 MMG532 (1 lecture), MMG563 (4 lectures), MMG861 (6 lectures)
PDI851 (2 lecture)

Course names:

MMG461: Molecular Pathogenesis (Undergraduate students)
MMG532: Medical Microbiology (Medical students)
MMG563: Veterinary Pathogenic Microbiology (Veterinary Medicine students)
MMG801: Integrative Microbial Biology (Graduate Students)
MMG861: Advanced Microbial Pathogenesis (Graduate Students)
PDI851: Advanced General Pathology (Veterinary Residents)
VM820: Topics in Comparative Medicine and Integrative Biology (Graduate Students)

Department, College and University Service

2012	MMG Departmental Seminar Committee
2013	MMG Graduate Committee BMS Graduate Admissions Committee MMG Faculty Search Committee, Hugh Chair in Microbial Pathogenesis
2014	MMG Graduate Committee BMS Graduate Admissions Committee MMG Faculty Search Committee, Microbiome/Infectious Disease MMG Strategic Planning Retreat Committee
2015	MMG Graduate Committee MMG Faculty Search Committee, Hugh Chair in Microbial Pathogenesis CHM Faculty Search Committee, Chief of Division of Infectious Diseases CVM representative to the University Council and Faculty Senate CVM College Advisory Council, <i>ex officio</i> , <u>Secretary</u> . CVM Graduate Grievance Hearings Pool
2016	MMG Faculty Advisory Committee CVM representative to the University Council and Faculty Senate, <i>re-elected</i> CVM College Advisory Council, <i>with vote</i> , <u>Secretary</u> CVM Faculty Search Committee, Dehn Endowed Chair. CHM Faculty Search Committee, Chief of Division of Infectious Diseases
2017	MMG Faculty Advisory Committee CVM representative to the University Council and Faculty Senate, <i>re-elected</i> CVM College Advisory Council, <i>with vote</i> , <u>Chairperson</u>
2018	MMG Awards Committee MMG Faculty Mentoring Committee, Dr. Andrew Olive, <u>Chair</u> . CVM College Advisory Council, <i>with vote</i> , <u>Secretary</u> .

MMG: Department of Microbiology and Molecular Genetics; CVM: College of Veterinary Medicine; CHM: College of Human Medicine. BMS: BioMolecular Science.
Years are academic years (starting in August).

Abramovitch lab in the news and other publications

May 9, 2012: “Biosensor illuminates compounds to aid fight against TB”, Jason Cody, **MSU Today** (<http://msutoday.msu.edu/news/2012/biosensor-illuminates-compounds-to-aid-fight-against-tb/>).

May 23, 2012 “MSU Researcher searches for new tuberculosis drug with Gates Foundation grant”, Natalie Burg, **Capital Gains** (<http://www.capitalgainsmedia.com/innovationnews/TB0620.aspx>).

2012 “We have bad news for TB” **International Magazine**, No. 13. (<http://www.isp.msu.edu/resources/documents/MSUIntl2012.pdf>).

2013 “Illuminating science addresses TB threat”, Natasha Berryman, **AgBioResearch Futures Magazine** (http://agbioresearch.msu.edu/uploads/futures/Fall_WinterFutures2013_Vol31_No3and4.pdf).

April 22, 2014 “MSU innovation center recognizes inventors and inventions” **MSU Today**, (<http://msutoday.msu.edu/news/2014/msu-innovation-center-recognizes-inventors-and-inventions/>).

June 10, 2014 “Priming the Pipeline, Embracing Risk”, Natasha Berryman, **AgBioResearch Futures Magazine**, (<http://agbioresearch.msu.edu/uploads/futures/2014FuturesAntibioticResistance.pdf> and http://agbioresearch.msu.edu/news/priming_the_pipeline_embracing_risk).

April 28, 2015 “Illuminating Solutions”, Sarah Wardell. **Empower Extraordinary Campaign**. (<http://givingto.msu.edu/stories/story.cfm?id=366>)

June 4, 2015 “Schultz Family Helps Shed New Light on Dark Disease”, Lois Furry, **University Advancement**. (<http://givingto.msu.edu/stories/story.cfm?id=380>)

June 9, 2015 “Illuminating Solutions”, Faculty Voices Video, **MSU Today**, (<http://msutoday.msu.edu/360/2015/robert-abramovitch-illuminating-solutions/>)

July 23, 2015 “MSU scientists set sights on glaucoma medication to treat TB”, Sarina Gleason, **MSU Today** press release (<http://msutoday.msu.edu/news/2015/msu-scientists-set-sights-on-glaucoma-medication-to-treat-tb/>). Picked up by numerous news organizations.

December 19, 2016 “Ancient Chinese Malaria Medicine Fights TB”, Sarina Gleason, **MSU Today** press release (<http://msutoday.msu.edu/news/2016/ancient-chinese-malaria-remedy-fights-tb/>)

December 20, 2016 “Ancient Chinese medicine shows promise in the treatment of tuberculosis”, Léa Surugue. Interview with **International Business Times** (<http://www.ibtimes.co.uk/life-saving-malaria-drug-artemisinin-also-shows-promise-treatment-tuberculosis-1597276>)

December 21, 2016 “Ancient Chinese Herb Aids Fight Against TB”, Jessica Berman, Interview with **Voice of America**. (<https://www.voanews.com/a/tb-tuberculosis-artemisinin/3645555.html>)

December 29, 2016 “Dormancy Inhibitors' Promising for Combating TB, Slowing Resistance”, Marilynn Larkin, **Reuters Health**. (<http://www.medscape.com/viewarticle/873822>).

January 26, 2017 “Malaria drug artemisinin shows promise against TB”, Claudia Caruana, Interview with **SciDev.net** (<http://www.scidev.net/asia-pacific/author.claudia-caruana.html>)

June 30, 2017 “Combating Tuberculosis with Ancient Chinese Malaria Meds”, Monika Buczek, Homepage of **ASM.org** (<https://www.asm.org/index.php/general-science-blog/item/6645-combating-tuberculosis-with-ancient-chinese-malaria-meds>)

July 2017 “What I wish I knew when starting as an assistant professor: An interview with Robert Abramovitch, Lark Coffey, Thomas Kehl-Fie and Rita Tamayo”.

Trends in Microbiology. DOI: <http://dx.doi.org/10.1016/j.tim.2017.04.008>

January 2018 “Wake Up: Treating Tuberculosis by Stopping Dormancy”. MSU College of Veterinary Medicine Perspectives Magazine (<https://cvm.msu.edu/news/perspectives-magazine/perspectives-winter-2018/wake-up>)
