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Education

University of Colorado at Boulder: Ph.D. with Professor Tarek Sammakia (1997-2002),
“Strategies for the Synthesis of the Oxo Polyene Macrolide Antibiotics. Application to the
Total Synthesis of RK-397 and Dermostatin A”

Carleton College: B.A. in Chemistry, *summa cum laude* (1992-1996)

Research with Professor Jerry R. Mohrig (1994-1996): “The Protonation of Enols and
Enolate Anions: The effect of structure and environment” Honors in Independent Study,
Carleton College 1996

Professional and Research Experience

Assistant Professor, The Ohio State University, Columbus, OH (2016-present)

Co-director of the Prevention, Detection, and Therapies Thematic Program, Infectious
Diseases Institute, The Ohio State University, Columbus, OH (2017-present)

Assistant Professor, Ohio Wesleyan University, Delaware, OH (2012-2016)

Visiting Assistant Professor, Denison University, Granville, OH (2011-2012)

Associate Director, Antibacterials Medicinal Chemistry, Pfizer, Groton, CT (2009-2011)

Senior Principal Scientist, Pfizer, Groton, CT (2006-2009)

Principal Scientist, Pfizer, Groton, CT (2004-2006)

Research Scientist/Senior Scientist, Pfizer, Groton, CT (2003-2004)

Research Scientist, Pharmacia, Skokie, IL (2002-2003) [Pfizer purchased Pharmacia in 2003]

Universität Würzburg (Germany): *Deutscher Akademischer Austauschdienst* (German Academic
Exchange Service, DAAD) Fellow with Professor Siegfried Hünig (1996-1997). Thesis:
“Chiral Distannoxanes: Exploring their Uses in Asymmetric Catalysis”

University of Wisconsin, Milwaukee: Research with Professor James M. Cook (Summer 1991):
Project: “Synthesis of 3-ethoxy- β -carboline”

Committee and Other Service

Chair, Committee on Committees, College of Pharmacy, The Ohio State University (2017-2018)

Member, Committee on Committees, College of Pharmacy, The Ohio State University (2018-
2019)

Member, University Laboratory Safety Committee, The Ohio State University (2016-present)

Discussion Leader, Medicinal Chemistry Gordon Research Seminar, New London, NH (August
2017, August 2018)

President, Ohio Wesleyan University Chapter of Phi Beta Kappa (2015-2016)

Co-director, Ohio Wesleyan University Honors Program (2014-2016)

Publications

1. Li, L.; Okumu, A. A.; Nolan, S.; English, A.; Vibhute, S.; Lu, Y.; Hervert-Thomas, K.;
Seffernick, J. T.; Azap, L.; Cole, S. L.; Shinabarger, D.; Koeth, L. M.; Lindert, S.;
Yalowich, J. C.; Wozniak, D. J.; Mitton-Fry, M. J. 1,3-Dioxane-Linked Bacterial

- Topoisomerase Inhibitors with Enhanced Antibacterial Activity and Reduced hERG Inhibition. *ACS Infect Dis*, **2019**, *5*, 1115-1128.
2. Li, L.; Okumu, A.; Dellos-Nolan, S.; Li, Z.; Karmahapatra, S.; English, A.; Yalowich, J. C.; Wozniak, D. J.; Mitton-Fry, M. J. Synthesis and Anti-staphylococcal activity of Novel Bacterial Topoisomerase Inhibitors with a 5-amino-1,3-dioxane Linker Moiety. *Bioorg. Med. Chem. Lett.* **2018**, *28*, 2477-2480.
 3. Lall, M. S.; Tao, Y.; Arcari, J. T.; Boyles, D.; Brown, M. F.; Damon, D. B.; Lilley, S. C.; Mitton-Fry, M. J.; Starr, J. T.; Stewart, A. M.; Sun, J. Process Development for the Synthesis of Monocyclic β -Lactam Core 17. *Org. Process Res. Dev.* **2018**, *22*, 212-218.
 4. Vazquez, M. L.; Kaila, N.; Strohbach, J. W.; Trzupek, J. D.; Brown, M. F.; Flanagan, M. E.; Mitton-Fry, M. J.; Johnson, T. A.; TenBrink, R. E.; Arnold, E. P.; Basak, A.; Heasley, S. E.; Kwon, S.; Langille, J.; Parikh, M. D.; Griffin, S. H.; Casavant, J. M.; Duclos, B. A.; Fenwick, A. E.; Harris, T. M.; Han, S.; Caspers, N.; Dowty, M. E.; Yang, X.; Banker, M. E.; Hegen, M.; Symanowicz, P. T.; Li, L.; Wang, L.; Lin, T. H.; Jussif, J.; Clark, J. D.; Telliez, J.-B.; Robinson, R. P.; Unwalla, R.; Identification of N-{*cis*-3-[Methyl(7H-pyrrolo[2,3-d]pyrimidin-4-yl)amino]cyclobutyl}propane-1-sulfonamide (PF-04965842): A Selective JAK1 Clinical Candidate for the Treatment of Autoimmune Diseases. *J. Med. Chem.* **2018**, *61*, 1130-1152
 5. Mitton-Fry, M. J.; Brickner, S. J.; Hamel, J. C.; Barham, R.; Brennan, L.; Casavant, J. M.; Ding, X.; Finegan, S.; Hardink, J.; Hoang, T.; Huband, M. D.; Maloney, M.; Marfat, A.; McCurdy, S. P.; McLeod, D.; Subramanyam, C.; Plotkin, M.; Reilly, U.; Schafer, J.; Stone, G. G.; Uccello, D. P.; Wisialowski, T.; Yoon, K.; Zaniewski, R.; Zook, C. Novel 3-fluoro-6-methoxyquinoline derivatives as inhibitors of bacterial DNA gyrase and topoisomerase IV. *Bioorg. Med. Chem. Lett.* **2017**, *27*, 3353-3358.
 6. Mitton-Fry, M. J. Novel Bacterial Type II Topoisomerase Inhibitors. *Med. Chem. Rev.* **2017**, *52*, 281-302.
 7. Gonzales, A. J.; Bowman, J. W.; Fici, G. J.; Zhang, M.; Mann, D. W.; Mitton-Fry, M. Oclacitinib (Apoquel®) is a novel Janus kinase inhibitor with activity against cytokines involved in allergy. *J. Vet. Pharmacol. Therap.* **2014**, *37*, 317-324.
 8. Brown, M. F.; Mitton-Fry, M. J.; Arcari, J. T.; Barham, R.; Casavant, J.; Gerstenberger, B. S.; Han, S.; Hardink, J. R.; Harris, T. M.; Hoang, T.; Huband, M. D.; Lall, M. S.; Lemmon, M. M.; Li, C.; Lin, J.; McCurdy, S. P.; McElroy, E.; McPherson, C.; Marr, E. S.; Mueller, J. P.; Mullins, L.; Nikitenko, A. A.; Noe, M. C.; Penzien, J.; Plummer, M. S.; Schuff, B. P.; Shanmugasundaram, V.; Starr, J. T.; Sun, J.; Tomaras, A.; Young, J. A.; Zaniewski, R. P. Pyridone-Conjugated Monobactam Antibiotics with Gram-Negative Activity. *J. Med. Chem.* **2013**, *56*, 5541-5552.
 9. Mitton-Fry, M. J.; Brickner, S. J.; Hamel, J. C.; Brennan, L.; Casavant, J. M.; Chen, M.; Chen, T.; Ding, X.; Driscoll, J.; Hardink, J.; Hoang, T.; Hua, E.; Huband, M. D.; Maloney, M.; Marfat, A.; McCurdy, S. P.; McLeod, D.; Plotkin, M.; Reilly, U.; Robinson, S.; Schafer, J.; Shepard, R. M.; Smith, J. F.; Stone, G. G.; Subramanyam, C.; Yoon, K.; Yuan, W.; Zaniewski, R. P.; Zook, C. Novel quinoline derivatives as inhibitors of bacterial DNA gyrase and topoisomerase IV. *Bioorg. Med. Chem. Lett.* **2013**, *23*, 2955-2961.
 10. McAllister, L. A.; Montgomery, J. I.; Abramite, J. A.; Reilly, U.; Brown, M. F.; Chen, J. C.; Barham, R. A.; Che, Y.; Chung, S. W.; Menard, C. A.; Mitton-Fry, M.; Mullins, L. M.; Noe, M. C.; O'Donnell, J. P.; Oliver, R. M.; Penzien, J. B.; Plummer, M.; Price, L. M.; Shanmugasundaram, V.; Tomaras, A. P.; Uccello, D. P. Heterocyclic methylsulfone hydroxamic acid LpxC inhibitors as Gram-negative antibacterial agents. *Bioorg. Med. Chem. Lett.* **2012**, *22*, 6832-6838.

11. Le, T. Q.; Oliver, R. M.; Arcari, J. T.; Mitton-Fry, M. J. Total synthesis of (±)-monomorine. *Tetrahedron Lett.* **2012**, *53*, 5660-5662.
12. Mitton-Fry, M. J.; Arcari, J. T.; Brown, M. F.; Casavant, J. M.; Finegan, S. M.; Flanagan, M. E.; Gao, H.; George, D. M.; Gerstenberger, B. S.; Han, S.; Hardink, J. R.; Harris, T. M.; Hoang, T.; Huband, M. D.; Irvine, R.; Lall, M. S.; Lemmon, M. M.; Li, C.; Lin, J.; McCurdy, S. P.; Mueller, J. P.; Mullins, L.; Niosi, M.; Noe, M. C.; Pattavina, D.; Penzien, J.; Plummer, M. S.; Risley, H.; Schuff, B. P.; Shanmugasundaram, V.; Starr, J. T.; Sun, J.; Winton, J.; Young, J. A. Novel monobactams utilizing a siderophore uptake mechanism for the treatment of gram-negative infections. *Bioorg. Med. Chem. Lett.* **2012**, *22*, 5989-5994.
A corrigendum of typographical errors in a Table Graphic was subsequently published: *Bioorg. Med. Chem. Lett.* **2015**, *25*, 4029.
13. Wallis, R. S.; Jakubiec, W.; Mitton-Fry, M.; Ladutko, L.; Campbell, S.; Paige, D.; Silvia, A.; Miller, P. F. Rapid Evaluation in Whole Blood Culture of Regimens for XDR-TB Containing PNU-100480 (Sutezolid), TMC207, PA-824, SQ109, and Pyrazinamide. *PLOS One* **2012**, *7*, e30479.
14. Montgomery, J. I.; Brown, M. F.; Reilly, U.; Price, L. M.; Abramite, J. A.; Arcari, J.; Barham, R. A.; Che, Y.; Chen, J. M.; Chung, S. W.; Collantes, E. M.; Desbonnet, C.; Doroski, M.; Doty, J.; Entrakul, J. J.; Harris, T. M.; Huband, M.; Knafels, J. D.; Leach, K. L.; Liu, S.; Marfat, A.; McAllister, L.; McElroy, E.; Menard, C. A.; Mitton-Fry, M.; Mullins, L.; Noe, M. C.; O'Donnell, J.; Oliver, R.; Penzien, J.; Plummer, M.; Shanmugasundaram, V.; Thoma, C.; Tomaras, A. P.; Uccello, D. P.; Vaz, A.; Wishka, D. G. Pyridone Methylsulfone Hydroxamate LpxC Inhibitors for the Treatment of Serious Gram-Negative Infections. *J. Med. Chem.* **2012**, *55*, 1662-1670.
15. Mitton-Fry, M. J.; Hanna, D. Current Approaches to Tuberculosis Drug Discovery and Development. In *Neglected Diseases and Drug Discovery*; Palmer, M. J., Wells, T. N. C., Eds. RSC Drug Discovery Series No. 14; Royal Society of Chemistry: Cambridge, UK, 2012; pp 228-261.
16. Zhang, Y.; Arpin, C. C.; Cullen, A. J.; Mitton-Fry, M. J.; Sammakia, T. Total Synthesis of Dermostatin A. *J. Org. Chem.* **2011**, *76*, 7641-7653. (Featured Article)
17. Brown, M. F.; Gupta, R. R.; Kuhn, M.; Flanagan, M. E.; Mitton-Fry, M. New analyses of MIC90 data to aid antibacterial drug discovery. *MedChemComm* **2011**, *2*, 735-742.
18. Flanagan, M. E.; Brickner, S. J.; Lall, M.; Casavant, J.; Deschenes, L.; Finegan, S. M.; George, D. M.; Granskog, K.; Hardink, J. R.; Huband, M. D.; Hoang, T.; Lamb, L.; Marra, A.; Mitton-Fry, M.; Mueller, J. P.; Mullins, L. M.; Noe, M. C.; O'Donnell, J. P.; Pattavina, D.; Penzien, J. B.; Schuff, B. P.; Sun, J.; Whipple, D. A.; Young, J.; Gootz, T. D. Preparation, Gram-Negative Antibacterial Activity, and Hydrolytic Stability of Novel Siderophore-Conjugated Monocarbam Diols. *ACS Med. Chem. Lett.* **2011**, *2*, 385-390.
19. Wallis, R. S.; Jakubiec, W.; Kumar, V.; Bedarida, G.; Silvia, A.; Paige, D.; Zhu, T.; Mitton-Fry, M.; Ladutko, L.; Campbell, S.; Miller, P. F. Biomarker-Assisted Dose Selection for Safety and Efficacy in Early Development of PNU-100480 for Tuberculosis. *Antimicrob. Agents Chemother.* **2011**, *55*, 567-574.
20. Wallis, R. S.; Jakubiec, W. M.; Kumar, V.; Silvia, A. M.; Paige, D.; Dimitrova, D.; Li, X.; Ladutko, L.; Campbell, S.; Friedland, G.; Mitton-Fry, M.; Miller, P. F. Pharmacokinetics and Whole-Blood Bactericidal Activity against *Mycobacterium tuberculosis* of Single Doses of PNU-100480 in Healthy Volunteers. *J. Infect. Dis.* **2010**, *202*, 745-751.
21. Antipas, A. S.; Blumberg, L. C.; Brissette, W. H.; Brown, M. B.; Casavant, J. C.; Doty, J. L.; Driscoll, J.; Harris, T. M.; Jones, C. S.; McCurdy, S. P.; McElroy, E.; Mitton-Fry, M. J.; Reim, D. A.; Reiter, L. A.; Ripp, S. L.; Shavnya, A.; Smeets, M. I.; Trevena, K. A. Structure-activity relationships and hepatic safety risks of thiazole agonists of the

- thrombopoietin receptor. *Bioorg. Med. Chem. Lett.* **2010**, *20*, 4069-4072.
22. Munchhof, M. J.; Antipas, A. S.; Blumberg, L. C.; Brissette, W. H.; Brown, M. F.; Casavant, J. M.; Doty, J. L.; Driscoll, J.; Harris, T. M.; Wolf-Gouveia, L. A.; Jones, C. S.; Li, Q.; Linde, R. G.; Lira, P. D.; Marfat, A.; McElroy, E.; Mitton-Fry, M.; McCurdy, S. P.; Reiter, L. A.; Ripp, S. L.; Shavnya, A.; Thomasco, L. M.; Trevena, K. A. The identification of orally bioavailable thrombopoietin agonists. *Bioorg. Med. Chem. Lett.* **2009**, *19*, 1428-1430.
 23. Mitton-Fry, M. J.; Cullen, A. J.; Sammakia, T. The Total Synthesis of the Oxopolyene Macrolide RK-397. *Angew. Chem. Int. Ed.* **2007**, *46*, 1066-1070. (VIP Paper)
 24. Mohrig, J. R.; Lee, P. K.; Stein, K. A.; Mitton, M. J.; Rosenberg, R. E. Diastereoselectivity in the Protonation of Ester Enolates – The Importance of Aggregation with LDA. *J. Org. Chem.* **1995**, *60*, 3529-3532.

Patents

1. Mitton-Fry, M. J. Berlinski, P. J.; Birchmeier, M. J.; Bowman, J. W.; Gonzales, A. J.; Kamerling, S. G.; Mann, D. W.; Pyrrolo[2,3-D]pyrimidine Compounds. U.S. Patent 8,133,899 B2, Mar. 13, 2012.
2. Mitton-Fry, M. J. Berlinski, P. J.; Birchmeier, M. J.; Bowman, J. W.; Gonzales, A. J.; Kamerling, S. G.; Mann, D. W.; Pyrrolo[2,3-D]pyrimidine Compounds. U.S. Patent 8,987,283 B2, Mar. 24, 2015.
3. Brown, M. F.; Fenwick, A. E.; Flanagan, M. E.; Gonzales, A.; Johnson, T. A.; Kaila, N.; Mitton-Fry, M. J.; Strohbach, J. W.; TenBrink, R. E.; Trzupek, D.; Unwalla, R. J.; Vazquez, M. L.; Parikh, M. D. Pyrrolo[2,3-D]pyrimidine Derivatives. US. Patent 9,035,074 B2, May 19, 2015.
4. Mitton-Fry, M. J. Berlinski, P. J.; Birchmeier, M. J.; Bowman, J. W.; Gonzales, A. J.; Kamerling, S. G.; Mann, D. W.; Pyrrolo[2,3-d]pyrimidine Compounds. U.S. Patent 9,161,939 B2, Oct. 20, 2015.
5. Mitton-Fry, M. J. Berlinski, P. J.; Birchmeier, M. J.; Bowman, J. W.; Gonzales, A. J.; Kamerling, S. G.; Mann, D. W.; Pyrrolo[2,3-D]pyrimidine Compounds. U.S. Patent 9,271,981 B2, Mar. 1, 2016.
6. Brown, M. F.; Fenwick, A. E.; Flanagan, M. E.; Gonzales, A.; Johnson, T. A.; Kaila, N.; Mitton-Fry, M. J.; Strohbach, J. W.; TenBrink, R. E.; Trzupek, D.; Unwalla, R. J.; Vazquez, M. L.; Parikh, M. D. Pyrrolo[2,3-D]pyrimidine Derivatives. US. Patent 9,545,405 B2, Jan. 17, 2017.
7. Brown, M. F.; Fenwick, A. E.; Flanagan, M. E.; Gonzales, A.; Johnson, T. A.; Kaila, N.; Mitton-Fry, M. J.; Strohbach, J. W.; TenBrink, R. E.; Trzupek, D.; Unwalla, R. J.; Vazquez, M. L.; Parikh, M. D. Pyrrolo[2,3-D]pyrimidine Derivatives. US. Patent 9,549,929 B2, Jan. 24, 2017.

Professional Memberships

American Chemical Society, European Society of Clinical Microbiology and Infectious Diseases, American Society for Microbiology, Sigma Xi, and Phi Beta Kappa