BIOGRAPHICAL SKETCH

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NAME: Merritt, James Robert

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POSITION TITLE: Director of Medicinal Chemistry Core

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of North Carolina at Wilmington	BS	05/1989	Chemistry
Duke University, Durham, NC	Ph.D.	05/1994	Organic Chemistry – Carbohydrates
Duke University, Durham, NC	Postdoctoral	12/1995	Solid Phase carbohydrate synthesis

A. Personal Statement

I have worked in the pharmaceutical industry for over 20 years. For most of that time I have led research groups of 3 to 15 chemists, Ph.D. and Masters level, in drug discovery efforts associated with large and small pharmaceutical companies. I have achieved several successes inventing and progressing compounds into pre-clinical and clinical trials for autoimmune diseases and oncology.

In 2010, I joined Kean University as associate professor of organic and medicinal chemistry in their STEM program where I earned academic tenure in 2015. I trained more than twenty-five undergraduate and masters students in my research laboratory and taught organic and medicinal chemistry to hundreds of students. My masters graduates have obtained employment at Merck, CDD Vault, Immucor, Product Safety Labs, Medical Diagnostics Labs, Venenum Biodesign, and Sanguine Biosciences; and five former research students are pursuing or have obtained Ph.D.'s in chemistry at Cornell University, Northeastern University, the University of Kentucky, Rutgers University and the University of South Florida.

After many years of academic collaboration with Venenum Biodesign, I joined the parent company, Genesis Biotechnology Group, in 2022 and served as director of chemistry until 2024. In this role, I led medicinal chemistry, organic synthesis, formulation, and analytical chemistry efforts. I also coordinated compound advancement through *in vitro* ADME and *in vivo* PK/PD studies. My teams achieved *in vivo* proof of concept with two novel inhibitors for metabolic disease and oncology.

In 2024, I joined CDI-HMH as director of the medicinal chemistry core. I oversee drug discovery efforts for immunology and oncology programs. I am a nationally recognized leader in medicinal chemistry and have served yearly since 2013 as a co-author for the "To Market, To Market" chapter of Medicinal Chemistry Reviews, an American Chemical Society Publication that is distributed to all members of the Medicinal Chemistry Division.

1. J. Robert Merritt, Jinqi Liu, Elizabeth Quadros, Michelle L. Morris, Ruiyan Liu, Rui Zhang, Biji Jacob, Jennifer Postelnek, Catherine M. Hicks, Weiqing Chen, Earl F. Kimble, W. Lynn Rogers, Linda O'Brien, Nicole White, Hema Desai, Shalini Bansal, George King, Michael J. Ohlmeyer, Kenneth C. Appell, Maria L. Webb. Novel Pyrrolidine Ureas as C-C Chemokine Receptor 1 (CCR1) Antagonists. Journal of Medicinal Chemistry, (2009), 52, 1295-1301. 19183043.

2. A. Gilchrist, T. D. Gauntner, A. Fazzini, K. M. Alley, D. S. Pyen, J. Ahn, S. J. Ha, A. Willett, S. E. Sansom, M. R. Mazzoni, J. L. Yarfi, K. A. Bachovchin and J. R. Merritt. Comparative in vitro analysis of CCR1 antagonists using radiolabeled binding, receptor internalization, β-arrestin translocation, and chemotaxis assays. British Journal of Pharmacology, (2014), 171, 5127-5138. 24990525.
3. Yu-Wen Li, Matthew A. Seager, Trevor Wojcik, Karen Heman, Thaddeus F. Molski, Alda Fernandes, Shaun Langdon, Annapurna Pendri, Samual Gerritz, Yuan Tian, Yang Hong, Lizbeth Gallagher, James R. Merritt, Chongwu Zhang, Ryan Westphal, Robert Zaczek, John E. Macor, Joanne J. Bronson, Nicholas J. Lodge. Biochemical and Behavioral Effects of PDE10A Inhibitors: Relationship to Target Site Occupancy, Neuropharm. (2016), 102, 121-135.
4. Erika Araujo, Bjorn Bartels, Ian M. Bell, Georgette Castanedo, Mingshuo Zeng, T. G. Murali Dhar, Natalie Holmberg-Douglas, Eric R. Welin, Dennis C. Koester, Brian Leon, James R. Manning, J. Robert Merritt, Kevin M. Peese, Anh Tran, and Joanne J. Bronson. To Market, To Market – 2023: Small Molecules, 2024 Medicinal Chemistry Reviews. (2024), *59*, Ch. 19.

B. Positions and Honors

Positions and Employment

1988-1989	Chemist, Applied Analytical Industries (now AAIPharma), Wilmington, NC
1996-1997	Research Scientist, Pharmacopeia, Inc., Princeton, NJ
1997-1999	Senior Research Scientist, Pharmacopeia, Inc., Princeton, NJ
1999-2004	Research Fellow, Pharmacopeia, Inc., Princeton, NJ
2004-2008	Senior Principal Scientist, Pharmacopeia, Inc., Princeton, NJ
2008-2010	Senior Research Investigator, Ligand Pharmaceuticals, Inc., Cranbury, NJ
2010-2022	Associate Professor, NJCSTM, Kean University, Union, NJ
2022-2024	Director of Chemistry, Genesis Biotechnology Group, Hamilton, NJ
2024-present	Director, Medicinal Chemistry Core, CDI-HMH, Nutley, NJ

Other Experience, Honors and Professional Memberships

1991-present	American Chemical Society Member
2009-2010	Guest editor for Current Topics in Medicinal Chemistry Journal
2009-2010	Adjunct professor of chemistry at The College of New Jersey
2012-2013	Scientific Advisory Committee for Kean University
2012-2014	Institutional Review Board for Kean University
2013	Vice-chair, Gordon Research Seminar for Medicinal Chemistry
2014	Chair, Gordon Research Seminar for Medicinal Chemistry
2014	Kean University Research Mentor of the Year Award
2013-2015	Member – American Chemical Society Long Range Planning Committee for Medicinal Chemistry Division
2013-present	Contributing Author for “Medicinal Chemistry Reviews: To Market, To Market”
2018-2020	ACS Project SEED mentor
2020	Certificate in Biochemistry from HarvardX (MCB63X)

C. Contributions to Science

1. My first significant contributions to science occurred during my time at Duke University as a graduate student and post-doc when I carried out the first total synthesis of a high-mannose oligosaccharide present on gp120, the envelop glycoprotein of HIV. To date, it was the most challenging synthesis that I ever faced as several of the reactions themselves were novel and are still used today by synthetic carbohydrate chemists. This experience prepared me well for the challenges that I would face later as a medicinal chemist synthesizing smaller, but often still formidable, organic molecules.

a. Bert Fraser-Reid, Uko E. Udodong, Zufan Wu, Hakan Ottosson, J. Robert Merritt, C. Srinivas Rao, Carmichael Roberts, Robert Madsen (1992). n-Pentenyl Glycosides in Organic Chemistry: A Contemporary Example of Serendipity, *Synlett*, 927-942.

b. J. Robert Merritt, B. Fraser-Reid (1992). n-Pentenyl Glycoside Methodology For Rapid Assembly of Homoglycans Exemplified with the Nonasaccharide Component of a High-Mannose Glycoprotein, *J. Am. Chem. Soc.*,*114*, 8334.

c. Bert Fraser-Reid, J. Robert Merritt, Anthony L. Handlon, C. Webster Andrews (1993) The Chemistry of n-pentenyl glycosides: Synthetic, theoretical, and mechanistic ramifications, *Pure & Appl. Chem.*, *65*, 779-786.
d. J. Robert Merritt, Elizabeth Naisang, Bert Fraser-Reid (1994). n-Pentenyl Mannoside Precursors for Synthesis of the Nonamannan Component of High Mannose Glycoproteins, *J. Org. Chem.*, *59*, 4443-4449.

2. In 1996, I began working in the pharmaceutical industry at Pharmacopeia. For my first few years there I prepared proprietary combinatorial libraries of thousands of novel small molecules for drug discovery. This effort ultimately led, in an indirect way, to my research on antagonists for chemokine receptors. I prepared a small library of squaramides which were potent antagonists of the chemokine receptors CXCR1 and CXCR2. Collaborating with teams of chemists at Pharmacopeia and Schering-Plough, we optimized this series and developed a potent and orally efficacious antagonist which showed promise for treatment of COPD. This compound, known as SCH527123 and later as Navarixin, advanced into Phase II trials in patients and is now owned by Merck.

a. Merritt, J. Robert; Rokosz, Laura L.; Nelson, Kingsley H.; Kaiser, Bernd; Wang, Wei; Stauffer, Tara M.; Ozgur, Lynne E.; Schilling, Adriane; Li, Ge; Baldwin, John J.; Taveras, Arthur G.; Dwyer, Michael P.; Chao, Jianping. Synthesis and structure-activity relationships of 3,4-diaminocyclobut-3-ene-1,2-dione CXCR2 antagonists. Bioorganic & Medicinal Chemistry Letters (2006), 16(15), 4107-4110. 16697193.
b. Dwyer, Michael P.; Yu, Younong; Chao, Jianping; Aki, Cynthia; Chao, Jianhua; Biju, Purakkattle; Girijavallabhan, Viyyoor; Rindgen, Diane; Bond, Richard; Mayer-Ezel, Rosemary; Jakway, James; Hipkin, R. William; Fossetta, James; Gonsiorek, Waldemar; Bian, Hong; Fan, Xuedong; Terminelli, Carol; Fine, Jay; Lundell, Daniel; Merritt, J. Robert; Rokosz, Laura L.; Kaiser, Bernd; Li, Ge; Wang, Wei; Stauffer, Tara; Ozgur, Lynne; Baldwin, John; Taveras, Arthur G. Discovery of 2-Hydroxy-N,N-dimethyl-3-{2-[[(R)-1-(5- methylfuran-2-yl)propyl]amino]-3,4-dioxocyclobut-1-enylamino}benzamide (SCH 527123): A Potent, Orally Bioavailable CXCR2/CXCR1 Receptor Antagonist. Journal of Medicinal Chemistry, (2006), 49, 7603-7606. 17181143.
c. Purakkattle Biju, Arthur Taveras, Younong Yu, Junying Zheng, Jianhua Chao, Diane Rindgen, James Jakway, R. William Hipkin, James Fossetta, Xuedong Fan, Jay Fine, Hongchen Qiu, J. Robert Merritt and John J. Baldwin. 3,4-Diamino-2,5-thiadiazole-1-oxides as potent CXCR2/CXCR1 antagonists. Bioorganic & Medicinal Chemistry Letters 18 (2008) 228-231. 18006311.
d. Gaifa Lai, J. Robert Merritt, Zhenmin He, Daming Feng, Jianhua Chao, Michael F. Czarniecki, Laura L. Rokosz, Tara M. Stauffer, Diane Rindgen, Arthur G. Taveras Synthesis and structure–activity relationships of new disubstituted phenyl-containing 3,4-diamino-3-cyclobutene-1,2-diones as CXCR2 receptor antagonists. Bioorganic & Medicinal Chemistry Letters 18 (2008) 1864-1868. 18304809.

3. In 2005, upon screening Pharmacopeia's compound collection, we discovered a moderate inhibitor of the chemokine receptor CCR1. My team spent the next two years optimizing this chemotype and ultimately synthesized a potent, orally bioavailable inhibitor of CCR1. This compound, still undisclosed and now owned by Ligand Pharmaceuticals, was poised to enter human clinical trials for rheumatoid arthritis (RA). However, after several other companies experienced clinical failures with CCR1 antagonists for RA, this compound was put on hold. My research efforts at Kean University focused on the utility of CCR1 antagonists for multiple myeloma and glioblastoma.

a. Joe-Louis Yarfi, Kelly Bachovchin, Regina Nardi, Molly Gill, Daniel Pyen, Timothy Gauntner, Annette Gilchrist, J Robert Merritt. Synthesis and evaluation of pyrrolidine derivatives as CCR1 antagonists for in vitro inhibition of multiple myeloma. Abstracts of Papers, 244th ACS National Meeting, Philadelphia, PA, United States, August 19-24, 2012, MEDI-070.
b. F. Faisal, K. Mack, E. Shepherd, S. Chakravorti, M. Gill, M. Notarmaso, I. Pabon, N. Patel, H. Rao, J. Yarfi, J. Xie, J. R. Merritt. Synthesis of Novel CCR1 antagonists for treatment of glioblastoma. Abstracts of Papers, 255th ACS National Meeting, New Orleans, LA, United States, March 18-22, 2018, MEDI-057.
c. Salvatore J. Coniglio, Poornema Ramasundaram, Neshama Fournier, Danielle S. Hamilton, Gregory Marshall, Keia Smith, Diana Habib, James R. Merritt. The Chemokine Receptor CCR1 is involved in microglia stimulated glioblastoma invasion, Cancer Res. (2019), 79, 4548.
d. Nazende Zeren, Zobia Afzal, Sara Morgan, Gregory Marshall, Maithrayee Uppiliappan, James Merritt, Salvatore J. Coniglio. The Chemokine Receptor CCR1 Mediates Microglia Stimulated Glioma Invasion. Int. J. Mol. Sci. (2023), *24*, 5136-5147.