

## Gregory R. Wiedman Ph.D.

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### **Education:**

#### **Colleges/Universities Attended**

Institution	Major Field	Degree	Date
Rutgers University Public Health Research Institute	Public Health	Post-Doctoral	2015-2018
Johns Hopkins University	Materials Science	Doctorate	2011-2015
University of Pennsylvania	Nanotechnology	Masters	2009-2010
University of Pennsylvania	Bioengineering	Bachelors	2006-2010

### **Professional Appointments:**

Assistant Professor Seton Hall University Department of Chemistry and Biochemistry  
**August 2018-Present**

Postdoctoral Researcher at the Public Health Research Institute at New Jersey Medical School, Rutgers, The State University of New Jersey  
Advisor: Dr. David Perlin  
**June 2015-May 2018**

Graduate Research and Lecturer at the Department of Materials Science Engineering at Johns Hopkins University  
Advisor: Prof. Kalina Hristova  
**August 2011-May 2015**

### **Teaching Experience:**

Assistant Professor for Department of Chemistry and Biochemistry Seton Hall University

- CHEM 1301 Elements of Organic and Biochemistry
- CHEM 3512 Elements of Biochemistry (Lab Course)
- CHEM 3522 Elements of Biochemistry
- CHEM 4501 General Biochemistry I (Undergraduate)
- CHEM 6501 General Biochemistry I (Graduate)
- CHEM 7512 General Biochemistry II

Lecturer for Whiting School of Engineering at Johns Hopkins University

- EN.500.111.03 Finding the Cure Methods in Drug Discovery

## Outreach

### September 2017 – September 2019

Biobase Outreach Program Harlem, Columbia Zuckerman Institute, New York NY.

Director Dr. Robert Frawley

### November 2015 – September 2017

Biobus Outreach Program, Lower East Side Girls Club, New York NY.

Director Dr. Tiffany King PhD and Mr. David Yap

### August 2014

Guest Scientist at the Franklin Institute, Philadelphia PA.

Director: Ms. Jessica McDermott Program Director

## Publications (Total Citations: 713, h-index: 13, i-10 index: 15)

Affiliation as Seton Hall University

\* Denotes Corresponding Author, † Denotes SHU Graduate Student, ‡ Denotes SHU Undergraduate Student

1. Ventura C.R.†, **Wiedman G.R.** Photobufoforin II, a fluorescent photoswitchable peptide. *Under Review in BBA: General Subjects*
2. Frederic, C.†, **Wiedman G.R.\*** Investigating the interaction of azobenzene moiety on the aromatic amino acid tryptophan. *Under Review in Peptide Science*
3. Griffith, A.; Mateen, A.†; Markowitz, K.; Singer, S.; Cugini, C.; Shimizu, E.; **Wiedman G.R.\***; Kumar, V. Alternatives to Antibiotics in Dentistry. *Pharmaceuticals* **2022**, *14*, 1679 <https://doi.org/10.3390/pharmaceuticals14081679>
4. Tancer, R.J.†; Wang, Y; Pawar, S.; Xue, C.; **Wiedman, G.R.\*** Development of antifungal peptides against *Cryptococcus neoformans*; Leveraging knowledge about the *cdc50A* mutant susceptibility for lead compound development. *Microbiology Spectrum* **2022** doi: 10.1128/spectrum.00439-22
5. Guha, S.; Ferrie, R.P., Ghimire, J; Ventura C.R. †; Wu, E.; Sun, L.; Kim, S.Y.; **Wiedman G.R.**; Hristova, K.; Wimley, W.C. Applications and evolution of melittin, the quintessential membrane active peptide. *Biochemical Pharmacology* **2021** doi: 10.1016/j.bcp.2021.114769. Epub 2021 Sep 17
6. Ventura, C.R.†; **Wiedman G.R.\*** Substituting azobenzene for proline in melittin to create photomelittin: A light-controlled membrane active peptide. *BBA-Biomembranes* **2021**. doi: <https://doi.org/10.1016/j.bbamem.2021.183759>
7. Tancer, R.J.†; Baynes, K.‡; **Wiedman, G.R.\*** Synergy among humimycins against methicillin-resistant *Staphylococcus aureus*. *Pept. Sci.* **2020**. doi: 10.1002/pep2.24197
8. Kmeck, A.†; Tancer, R.J.†; Ventura, C.R.†; **Wiedman, G.R.\*** Synergies with and resistance to membrane-active peptides. *Antibiotics* **2020**, *9*, 1–15, doi:10.3390/antibiotics9090620.
9. **Wiedman G\***, Zhao Y, Perlin DS. A Novel, Rapid, and Low-Volume Assay for Therapeutic Drug Monitoring of Posaconazole and Other Long-Chain Azole Class Antifungal Drugs. *mSphere* 2018.
10. Chen C, Starr CG, Troendle EP. **Wiedman G**, Wimley WC, Ulmschneider JP, Ulmschneider MB. Simulation-guided rational *de novo* design of a small pore-forming antimicrobial peptide. *JACS*. (2019)

Affiliation as Rutgers Public Health Research Institute

11. **Wiedman G\***, Zhao Y, Mustaev M, Ping J, Vishnubhotla R, Johnson AT, Perlin DS. An aptamer-based biosensor for azole class antifungal drugs. *mSphere*. 2(4): 1-10 (2017)
12. Lee M-H, **Wiedman G**, Park S, Mustaev A, Zhao Y, Perlin DS. A novel, fluorescence-mediated tomographic imaging for rapid diagnosis of fungal keratitis. *Medical Mycology*. October 2017

Affiliation as Johns Hopkins University

13. He J, Melnik L, Komin A, **Wiedman G**, Fuselier T, Morris C, Starr C, Searson P, Gallaher W, Hristova K, Garry R, Wimley W. Ebola Virus Delta Peptide is a Viroporin. *Journal of Virology*. JVI. 00438-17 (2017)
14. **Wiedman G**, Kim SY, Zapata-Mercado E, Wimley WC, Hristova K. PH-Triggered Macromolecule-Sized Poration of Lipid Bilayers by Synthetically Evolved Peptides. *JACS*. 139(2): 937-945. (2017)
15. **Wiedman G**, Searson P, Wimley WC, Hristova K. Testing the limits of rational design by engineering pH-sensitivity into Membrane Active Peptides. *Biochemica et Biophysica Acta*. 1848(4):951-957 (2015)
16. Huang W, Besar K, Zhang Y, Yang S, **Wiedman G**, Liu Y, Guo W, Hemker K, Hristova K, Kymissis IJ, Katz HE. A High-Capacitance Nonionic Dielectric for Self-Healable, Printable, and Flexible Organic Field Effect Transistors and Chemical Sensors. *Advanced Functional Materials*. 25(24): 3745-3755. (2015)
17. **Wiedman G**, Fuselier T, He J, Searson PC, Wimley WC, Hristova K. Highly efficient macromolecular-sized poration of lipid bilayers by a synthetically evolved peptide. *JACS*. 136(12): 4724-4731 (2014)
18. Chen C, **Wiedman G**, Khan A., Ulmschneider MB. Absorption and folding of melittin onto lipid bilayer membranes via atomic detail microsecond molecular dynamic simulations. *Biochemica et Biophysica Acta*. 1838(9):2234-2249 (2014).
19. **Wiedman G**, Herman K, Searson P, Wimley WC, Hristova K. The electrical response of bilayers to the bee venom toxin melittin: evidence for transient bilayer permeabilization. *Biochim Biophys Acta*. 1828(5): 1357-1364 (2013).
20. Cruz J, Mihailescu M, **Wiedman G**, Herman K, Searson P, Wimley WC, Hristova K. A membrane-translocating peptide penetrates into bilayers without significant bilayer perturbations. *Biophys J*. 104(11)2419-2428 (2013).

Affiliation as The University of Pennsylvania

21. Goparaju G, Fry BA, Chobot SE, **Wiedman G**, Moser CC, Dutton PL, Discher B. First principles design of a core bioenergetic transmembrane electron transfer protein. *Biochemica et Biophysica Acta: Bioenergetics*. 1857(5), 503-512. (2016)

### Presentations (Posters)

1. Charnette Frederic†, Cristina Ventura†, **Gregory Wiedman**, “Novel Interactions Among Azobenzene and Aromatic Amino Acids.” American Chemical Society Fall National Meeting, San Francisco, CA, August 2023.
2. **Gregory Wiedman**, “A Three-Prong Approach to Drug Synergy in Antimicrobials”. NJ Academic Drug Discovery Consortium Meeting. Union, New Jersey, December 2022.
3. Akilah Mateen†, **Gregory Wiedman**, “Facile Synthesis of Bio-inspired Pnuemocandin B0 Derivatives.” North Jersey ACS Meeting, Somerset, New Jersey, November 2022.
4. Charnette Frederic†, **Gregory Wiedman**, “Investigating the interaction of azobenzene moiety on nearby amino acids.” North Jersey ACS Meeting, Somerset, New Jersey, November 2022.

5. Robert Tancer†, **Gregory Wiedman**, “Exploring the design space of humimycins and their applications against methicillin-resistant *Staphylococcus aureus*.” Theobald Smith Society Fall Meeting, New Brunswick, NJ, May 2022.
6. Makayla Manfredi‡, **Gregory Wiedman**, Daniel Nichols, Wyatt Murphy, “Inhibiting infectivity of murine hepatitis virus A59 (MHV-A59) by targeting peptide organometallic compound to spike protein.” Theobald Smith Society Fall Meeting, New Brunswick, NJ, May 2022.
- 7.
8. Robert Tancer†, **Gregory Wiedman**, “Exploring the design space of humimycins and their applications against methicillin-resistant *Staphylococcus aureus*.” American Chemical Society Spring National Meeting, San Diego, CA, March 2022
9. Akilah Mateen†, **Gregory Wiedman**, “Photosensitizer-membrane active peptide conjugates for *C. auris* inhibition.” American Chemical Society Spring National Meeting, San Diego, CA, March 2022
10. Makayla Manfredi‡, **Gregory Wiedman**, Daniel Nichols, Wyatt Murphy, “Inhibiting infectivity of murine hepatitis virus A59 (MHV-A59) by targeting peptide organometallic compound to spike protein.” American Chemical Society Spring National Meeting, San Diego, CA, March 2022
11. Cristina Ventura†, **Gregory Wiedman**, “Photomelittin: A photoswitchable membrane active peptide”. American Chemical Society Meeting, San Diego, CA, March 2022
12. **Gregory R. Wiedman**, “Novel Synergistic Methods in the development of next-generation antimicrobial peptides”. American Chemical Society Spring National Meeting, San Diego, CA, March 2022
13. **Gregory R. Wiedman**, “Aptamer-based Methods of Small Molecule Drug Detection.” Biophysical Society Meeting, Baltimore, MD, March 2019
14. **Gregory R. Wiedman**, Yanan Zhao, David Perlin, “Small Molecule Aptamers for Biosensing”. Biophysical Society Meeting, New Orleans, Louisiana, 2017.
15. **Gregory R. Wiedman**, Yanan Zhao, David Perlin. “Beacon-like Scaffolding Aptamers Towards Small Molecules for Biosensing.” American Chemical Society Fall National Meeting, Philadelphia, Pennsylvania, 2016.
16. **Gregory R. Wiedman**, William C Wimley, Kalina Hristova: “Engineering pH-sensitivity into Membrane Active Peptides”. Biophysical Society Meeting, Baltimore, Maryland, 2015.
17. **Gregory R. Wiedman**, William C Wimley, Kalina Hristova: “Engineering pH-sensitivity into Membrane Active Peptides” Delaware Membrane Protein Symposium, Newark, Delaware, 2015.
18. **Gregory R. Wiedman**, Taylor Fuselier, Jing He, Peter Searson, William C Wimley, Kalina Hristova: “A Novel Class of Pore-Forming Peptide”. Biophysical Society Meeting, San Francisco, California, 2014.
19. **Gregory R. Wiedman**, Katherine Herman, Peter Searson, William C Wimley, Kalina Hristova: “An Electrochemical Impedance Spectroscopy Study of membrane Active Peptides”. Biophysical Society Meeting, Philadelphia, Pennsylvania, 2013.
20. **Gregory R. Wiedman**, Katherine Herman, Peter Searson, William C Wimley, Kalia Hristova: “Effect of melittin and a gain-of-function Melittin analogue on bilayer properties: and electrical impedance study.” Biophysical Society Meeting, San Diego, California, 2012.
21. Sarah E. Chobot, **Gregory R. Wiedman**, Christopher C Moser, Bohdana M. Discher P. Leslie Dutton: “Design and Characterization of an Enzymatically Active Amphiphilic Maquette Protein” *Biochemistry* 98(3), 639 (2010).
22. Sarah E. Chobot, Ross L. Anderson, Lee A. Solomon, **Gregory R. Wiedman**, J. Wand, Mike L. Klein, Chris C. Moser. Bohdana M. Discher, P. Leslie Dutton : “De novo synthetic models for light capture and catalysis”, Presentation for NSF MRSEC review, 2010.
23. Kolin C Hribar and **Gregory R. Wiedman**, Andrew Prantner, Chaitanya Divgi, Nathalie Scholler: “Gold Nanorods Conjugated to Tumor-specific Antibody for the Targeting of Ovarian Cancer”, Bioengineering Department Senior Design Presentation, 2010
24. **Gregory R. Wiedman**, Paul O’Brien, Sarah E. Chobot, Sanjini U Nanayakkara, Kendra M Kathan, Dawn A Bonnell, P. Leslie Dutton and Bohdana M. Discher: “Structural Design, Assembly, and

Engineering of Oxidoreductases in Energy Conversion”, University of Pennsylvania Biochemistry and Biophysics Departmental Retreat, 2009.

### **Presentations (Invited Talks):**

1. **Gregory R. Wiedman** “Azobenzene, Amino Acids, and Proteins: Novel Approaches.” 68<sup>th</sup> Annual Meeting New Jersey Academy of Science Kean University Union, NJ, 2023
2. **Gregory R. Wiedman** “When Azobenzene and Aromatic Amino Acids Meet: Funny, Interesting Things Happen.” 27<sup>th</sup> Annual Petersheim Academic Exposition. Seton Hall University, South Orange, NJ, 2023
3. **Gregory R. Wiedman** “Targeting Drug Synergy to Treat Infectious Diseases.” Seton Hall Department of Biology Seminar Series, South Orange, NJ, 2023
4. **Gregory R. Wiedman** “The Role of Flippases in Drug Synergy.” 26<sup>th</sup> Annual Petersheim Academic Exposition. Seton Hall University, South Orange, NJ, 2022
5. **Gregory R. Wiedman** “Drug Synergy and Antimicrobial Peptides.” Drew University Chemistry Honors Society Seminar Series, Madison, NJ, 2022
6. **Gregory R. Wiedman** “Evolution of the Peptide Melittin.” Seton Hall Department of Biology Seminar Series, South Orange, NJ, 2022
7. **Gregory R. Wiedman** “New Methods of Controlling Membrane Active Peptides.” Pacificchem 2021 Conference, Honolulu, HI, 2021
8. **Gregory R. Wiedman** “Considering Synergistic Mechanisms in Antimicrobial Peptide Design.” 2<sup>nd</sup> International Conference on Biomedical Engineering and Bioengineering, Universidad de los Andes, Bogota, Columbia, 2021
9. **Gregory R. Wiedman** “Methods of Testing for COVID19.” Corona Virus Discussion Panel, Seton Hall University, Microsoft Teams, 2020
10. **Gregory R. Wiedman** “Biophysics and Biochemistry of the Cell Membrane and Consequence for Drug Delivery”. Invited Talk New Jersey Institute of Technology, Newark, NJ 2019.
11. **Gregory R. Wiedman** “Postdoc and Graduate Student Career Symposium”. Symposium Panelist Rutgers University, New Brunswick NJ, 2018
12. **Gregory R. Wiedman** “Biophysics at the Cell Membrane and Consequences for Drug Delivery”. Institute for Nanobiotechnology Invited Talk. The Johns Hopkins University, Baltimore, MD 2018.
13. **Gregory R. Wiedman** “The Interplay between Molecular Rational Design and Synthetic Evolution and its Impact on Antimicrobial Resistance”. Membrane Biophysics and Eclipse Symposium. Kansas State University, Manhattan KS, 2017.
14. **Gregory R. Wiedman**, Yanan Zhao, David S. Perlin. “Small Molecule Aptamers for Biosensing”. City University of New York Lehman College Invited Talk. New York, New York 2016.
15. **Gregory R. Wiedman**, Katherine Herman, Peter Searson, William C Wimley, Kalina Hristova: “Melittin and Membrane Active Peptides as Drugs: a study of Electrical Impedance”. American Chemical Society Meeting, New Orleans, Louisiana, 2013.
16. **Gregory R. Wiedman**, Katherine Herman, Peter Searson, William Wimley, Kalina Hristova: “Pore Forming Peptides”. ACS Colloids Meeting, Johns Hopkins University, 2012.

### **Patents**

1. “Pore forming Peptide and Uses thereof” William C Wimley, **Gregory Wiedman**, Kalina Hristova. U.S. Patent 11,149,068, October, 19<sup>th</sup>, 2021
2. “An Aptamer-biosensor for Azole Class Antifungal Drugs” **Gregory Wiedman**, Yanan Zhao, David S. Perlin. Patent 11,279,936, March, 22<sup>nd</sup>, 2022

3. “Antifungal Peptides, Compounds Including The Same, And Methods of Use Thereof” **Gregory Wiedman**, Robert Tancer, Chaoyang Xue. Prov Patent 63/324,909, March 29, 2022

### **Awards and Accomplishments:**

- Seton Hall University Research of the Year Award 2023
- American Society for Microbiology Peggy Cotter Award 2023
- Seton Hall University Teaching Fellow 2021
- Seton Hall University Undergraduate Research Committee Fellowship 2019
- Biobus/Biobase Volunteer Service Award 2016
- Preparing Future Faculty for Teaching (PFFT) Fellowship CIRTL 2014-2015
- IGERT Fellowship Johns Hopkins University 2011-2015

### **Professional Memberships:**

- American Peptide Society 2019-Present
- American Society for Microbiology 2017-Present
- American Chemical Society 2011-Present
- Biophysical Society 2011-Present
- New York Academy of Sciences 2015-Present
- American Society for Testing Materials 2006-2010

### **Service**

- American Society for Microbiology North NJ Theobald Smith Society President (2023-2024)
- ACS National Committee on Public Relations and Communications Member (2021-Present)
- NIH Grant Review Panel Study Section: NIAID ZAI1 CB-W(S2)
- Reviewer for University of Strasbourg Institute for Advanced Study Fellowship Program
- NJ ACS Baekeland Award Speaker Introducer
- Reviewer for Graduate Women in Science (GWIS) Fellowship Program
- Editor-in-Chief Rutgers Alliance for Career Advancement Blog
- Editorial Board – Review Editor for *Frontiers in Bacteriology* Frontiers
- Board of Reviewing Editors for *Microbiology Spectrum* ASM
- Special Topics Board Editor and peer-reviewer for *Antibiotics* MDPI
- Special Topics Board Editor for *Frontiers in Chemical Engineering* Frontiers
- Reviewer Board for *Microorganisms* (Molecular Diversity Preservation International) MDPI
- Record of over 100 peer-reviews (<https://orcid.org/0000-0002-6720-699X>)

### **Research Funding**

- NSF I-Corp (National) Grant  
Title: “Team: Antifungal Inhibitors”  
Role: PI  
2023-2024
- NIH R01 AI155647-01  
Title: “Lipid flippase mediated antifungal drug resistance in *Cryptococcus neoformans*”  
Role: Co-I  
2022-2027
- NSF I-Corp (Regional) Grant  
Title: “Mycosyn Team”  
Role: PI  
2022-2022

- NeverGerms Industry Sponsored Research Agreement  
Title: “Studies of Antimicrobial Surfaces and Surface Coatings”  
Role: PI  
2020-2021
- NIH Direct Donation Program  
Role: PI  
2018-Present
- Seton Hall Startup Funding  
Role: PI  
2018-2022
- Seton Hall University Research Council Grant  
Title: “Exploration of Lipid-Flippases as New Antimicrobial Targets”  
Role: PI  
2018-2019

## Students

### Doctorate of Philosophy in Chemistry

Akilah Mateen (2020-)  
Charnette Frederic (2018-2023)  
Cristina Ventura (2018-2023)  
Robert Tancer (2018-2022)  
Tiana Howard (2018-2019) (Transfer from Dr. Monika Raj)  
Yonnette Simms (2019-2020) (Transfer from Dr. Monika Raj)  
Gina Antuono (2021-2022) (Transfer from Dr. David Sabatino)  
Nelson Casanova (2021-2022) (Transfer from Dr. David Sabatino)  
Daniela Noguera-Urbina (2022) (Rotational Student)

### Masters of Chemistry

Miryam Kikhwa (2023-)  
Adam Kmeck (2018-2021)  
Vincent La Iacona (2019-2020)

### External Doctorate Students

Joseph Dodd-O, NJIT (2023-)  
Julian Torres, Universidad de Los Andes (2022-2023)  
Fabian Ricardo, Universidad de Los Andes (2022-2023)

### Undergraduate

Dylan Schwartz (2023-)  
Ishan Sharma (2022-2023)  
Reesha Patel (2022-)  
Roja Das (2022-)  
Julia Pucar-Ojeda (2022-2023)  
Siya Patel (2022-2023)  
Zena Karam (2022-)  
Tariq Khairullah (2021-2022)  
Juan Herrero Bourdie (2021-2022)  
Osei Lindsay (2018-2021) NJSGC NASA Fellowship 2020  
Kazim Baynes (2018-2022) Georgetown ARCHES finalist 2020

Abigail Richter (2019-2021) CLB Fellowship 2020, SHU Best Poster Travel Award

Makayla Manfredi (2020-) CBL Fellowship 2021, 2022

Ayanna Hodges (2021-2022)

Axel Martinez Gaona (2020-2021)

Elizabeth Boyer (2020)

Kynzie Campbell (2018-2019)

Esther Shinne (2018-2019)

Erika Tamakloe (2019-2020)

Marinelle Geda (2018-2020)