

Anthony S. Grillo

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[NCBI Bibliography](#) • [Google Scholar](#) • [Group Website](#)

APPOINTMENTS

2022 to present **Assistant Professor** Cincinnati, OH
Department of Chemistry (Biochemistry Division), University of Cincinnati

EDUCATION

University of Illinois at Urbana-Champaign Urbana, IL

Doctor of Philosophy (Ph.D.) in Chemistry with a focus on Organic Chemistry, Dec. 2017

- Research Advisor: Martin D. Burke
- Thesis: Restored Iron Transport by a Small Molecule Promotes Absorption and Hemoglobinization: Discovery, Development, and Mechanistic Studies

University of Michigan Ann Arbor, MI

Bachelor of Science (B.S.) in Chemistry with Highest Honors, May 2011

Bachelor of Science (B.S.) in Biochemistry, May 2011

- Research Advisor: Masato Koreeda
- Thesis: Development of Novel Chiral *N*-Heterocyclic Carbenes

RESEARCH EXPERIENCE

Jan. 2018 to July 2022 **NIH F32 Postdoctoral Fellow, ADRC Trainee**
With Professor Matt Kaeberlein
Department of Laboratory Medicine & Pathology, University of Washington, Seattle, WA

June 2011 to Dec. 2017 **NSF Graduate Research Fellow (NSF GRFP)**
With Professor Martin D. Burke
Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL

May 2008 to May 2011 **Undergraduate Research Volunteer in Natural Product Synthesis**
With Professor Masato Koreeda
Department of Chemistry, University of Michigan, Ann Arbor, MI

PUBLICATIONS

9. Bitto, A.; **Grillo, A.S.**; Stanaway, I.; Nguyen, B.; Ying, K.; Tung, H.; Smith, K.; Tran, N.; Velikanje, G.; Urfer, S.; Snyder, J.; Ernst-Bernhard, K.; Wang, L.; Smith, D.; Thompson, J.W.; DuBois, L.; DePaolo, W.; Kaeberlein, M. Acarbose Suppresses Symptoms of Mitochondrial Disease. **2021**, Under Review.
8. **Grillo, A.S.***; Kelly, C.; Ha, V.T.; Bodart, C.M.; Huff, S.; Couch, R.K.; Herrel, N.T.; Kim, H.D.; Zimmermann, A.O.; Pan, Y.-C.; Shattuck, J.; Kaeberlein, M.* Iron Status Influences Mitochondrial Disease Progression in Complex I-Deficient Mice. **2021**, Under Review. *BioRxiv* <https://doi.org/10.1101/2021.09.29.462431>
 - *Co-corresponding authors
7. **Grillo, A.S.**; Bitto, A.; Kaeberlein, M. The NDUFS4 Knockout Mouse: A Dual Threat Model of Childhood Mitochondrial Disease and Normative Aging. *Methods Mol. Biol.* **2021**, 2277, 143-155. [Medline](#)
6. Martin-Perez, M.#; **Grillo, A.S.#**; Ito, T.#; Valente, A.S.; Han, J.; Entwisle, S.; Huang, H.Z.; Kim, D.; Yajima, M.; Kaeberlein, M.; Villén, J. PKC Downregulation upon Rapamycin Treatment Attenuates Mitochondrial Disease. *Nat. Metab.* **2020**, 2, 1472-1481. [Medline](#)
 - # These authors contributed equally to this work.

5. Muraglia, K.A.; Chorghade, R.S.; Kim, B.R.; Tang, X.X.; Shah, V.S.; **Grillo, A.S.**; Daniels, P.N.; Cioffi, A.G.; Karp, P.H.; Zhu, L.; Welsh, M.J.; Burke, M.D. Small Molecule Ion Channel Restores Host Defenses in Cystic Fibrosis Airway Epithelia. *Nature* **2019**, *567*, 405-408. [Medline](#)
4. Yien, Y.Y.; Shi, J.; Chen, C.; Cheung, J.T.M.; **Grillo, A.S.**; Shrestha, R.; Li, L.; Zhang, X.; Kafina, M.D.; Kingsley, P.D.; King, M.J.; Ablain, J.; Li, H.; Zon, L.I.; Palis, J.; Burke, M.D.; Bauer, D.E.; Orkin, S.H.; Koehler, C.M.; Phillips, J.D.; Kaplan, J.; Ward, D.M.; Lodish, H.F.; Paw, B.H. FAM210B is an Erythropoietin Target and Regulates Erythroid Heme Synthesis by Controlling Mitochondrial Iron Import and Ferrochelatase Activity. *J. Biol. Chem.* **2018**, *293*, 19797-19811. [Medline](#)
3. **Grillo, A.S.**; SantaMaria, A.M.; Kafina, M.D.; Cioffi, A.G.; Huston, N.C.; Han, M.; Seo, Y.A.; Yien, Y.Y.; Nardone, C.; Menon, A.V.; Fan, J.; Svoboda, D.C.; Anderson, J.B.; Hong, J.D.; Nicolau, B.G.; Subedi, K.; Gewirth, A.A.; Wessling-Resnick, M.; Kim, J.; Paw, B.H.; Burke, M.D. Restored Iron Transport by a Small Molecule Promotes Absorption and Hemoglobinization in Animals. *Science* **2017**, *356*, 608-616. [Medline](#)
2. Cioffi, A.G.; Hou, J.; **Grillo, A.S.**; Diaz, K.A.; Burke, M.D. Restored Physiology in Protein-Deficient Yeast by a Small Molecule Channel *J. Am. Chem. Soc.* **2015**, *137*, 10096-10099. [Medline](#)
1. Li, J.; **Grillo, A.S.**; Burke, M.D. From Synthesis to Function via Iterative Assembly of *N*-Methyliminodiacetic Acid Boronate Building Blocks *Acc. Chem. Res.* **2015**, *48*, 2297-2307. [Medline](#)

PATENTS

4. Burke, M.D.; **Grillo, A.S.**; Cioffi, A.G.; SantaMaria, A.; Blair, D.; Blake, A. 2019 Hinokitiol analogues, methods of preparing and pharmaceutical compositions thereof.
3. Burke, M.D.; Nardone, C.; Blake, A.; SantaMaria, A.; **Grillo, A.S.**; Cioffi, A.G.; Lyu, Y. 2019 Restoration of transmembrane copper transport.
2. Burke, M.D.; **Grillo, A.S.** 2016 Restoring physiology in iron-deficient organisms using small molecules.
1. Burke, M.D.; Cioffi, A.G.; Diaz, K.A.; Hou, J.; **Grillo, A.S.** 2016 Restoring physiology with small molecule mimics of missing proteins.

RESEARCH FUNDING AND FELLOWSHIPS (ONGOING AND COMPLETED)

Ongoing

Completed

| | |
|-----------|---|
| 2022 | Transition to Independence Award (NIH/NIA K99): Not accepted (IS=10) |
| 2021-2022 | University of Washington Alzheimer's Disease Research Center (ADRC) Trainee |
| 2018-2021 | Ruth L. Kirschstein NRSA Postdoctoral Fellowship, F32 (NIH/NINDS F32 NS110109) |
| 2019 | UW Nathan Shock Center of Excellence in Basic Biology of Aging Mini-Pilot Grant |
| 2011-2016 | National Science Foundation Graduate Research Fellowship (NSF GRFP) |
| 2012-2013 | Lester and Kathleen Coleman Fellowship |
| 2011-2012 | St. Elmo Brady Graduate Fellowship |
| 2010 | Summer Undergraduate Research Program in Chemistry |
| 2010 | ACS Division of Organic Chemistry Summer Undergraduate Research Fellowship |
| 2009 | ASPET Summer Undergraduate Research Fellowship in Pharmacology |

CONFERENCE PRESENTATIONS, MEETINGS, AND SEMINARS

17. **American Aging Association Annual Meeting (AGE), San Antonio, TX, May 2022 (poster and oral)**
A Complex I Deficiency Induces Tau Aggregation in Mitochondrial Disease
16. **Alzheimer's Disease Research Center Hybrid Meeting, Los Angeles, CA, May 2022 (invited speaker)**
A Mitochondrial Complex I Deficiency Induces O₂-Dependent Tau Aggregation
 - Clinical Core Session: "Mitochondria and Bioenergetics in Alzheimer's Disease: Why Should We Care"

15. **American Aging Association Annual Meeting (AGE), Madison, WI, July 2021 (poster and oral)**
O₂-Dependent Tau Aggregation in Mitochondrial Disease Mice
 - Won Best Postdoctoral Data Blitz Presentation (out of ~25 trainee presentations)
14. **Gerontological Society of America 2020 Annual Scientific Meeting, Philadelphia, PA (virtual meeting), Nov. 2020 (oral presentation)**
Protein Kinase C Downregulation upon Rapamycin Treatment Attenuates Mitochondrial Disease
13. **University of Washington Department of Pathology Interest Group, Seattle, WA, Jan. 2020 (oral presentation)**
PKC is a Key Target for Attenuation of Inflammation by Rapamycin During Severe Mitochondrial Disease
12. **Mitochondria & Metabolism Interest Group, Seattle, WA, June 2019 (oral presentation)**
PKC is a Key Target for Attenuation of Inflammation by Rapamycin During Severe Mitochondrial Disease
11. **Mitochondria: From Basic Biology to Mechanisms of Disease Conference, Nassau, Bahamas, Feb. 2019 (oral presentation)**
PKC is a Key Target for Attenuation of Inflammation by Rapamycin During Severe Mitochondrial Disease
 - Chair of "Mitochondria: Diseases and Interventions II" Speaker Session
10. **Metals in Medicine Gordon Research Conference, Andover, NH, June 2018 (invited speaker)**
Restored Iron Transport by a Small Molecule Promotes Absorption and Hemoglobinization in Animals
 - Emerging Young Investigators Session
9. **University of Michigan Research Seminar, Ann Arbor, MI, Nov. 2017 (invited speaker)**
Restored Iron Transport with a Small Molecule Promotes Absorption and Hemoglobinization in Animals
8. **7th Congressional Biolron Conference, Los Angeles, CA, May 2017 (oral presentation)**
Restored Iron Transport with a Small Molecule Promotes Absorption and Hemoglobinization in Animals
 - Won Bothwell-Finch Award for Best Podium Presentation (out of 55 oral presentations)
7. **Millipore-Sigma Alfred R. Bader Award for Student Innovation Symposium, Milwaukee, WI, Aug. 2016 (invited speaker)**
Restored Iron Transport with a Small Molecule Promotes Absorption and Hemoglobinization
 - 5 awarded nationally per year
6. **10th BioMetals Conference, Dresden, Germany, July 2016 (oral presentation)**
Restored Iron Transport with a Small Molecule Promotes Absorption and Hemoglobinization
5. **Natural Products Gordon Research Conference, Andover, NH, July 2015 (poster)**
Restoring Physiology in Iron-Deficient Organisms
4. **28th Beak-Pines Organic Area Allerton Conference, Monticello, IL, Nov. 2014 (oral presentation)**
Restoring Physiology in Protein-Deficient Cells with Small Molecules
 - Won Best Oral Presentation (1 awarded per year)
3. **Howard Hughes Medical Institute National Conference, Ashburn, VA, Nov. 2014 (poster)**
Replacing Missing Proteins with Molecular Prosthetics
2. **University of Illinois R.C. Fuson Student Talks, Urbana, IL, Aug. 2014 (invited speaker)**
Restoring Physiology in Protein-Deficient Cells with Small Molecules
 - Won R.C. Fuson Travel Award for outstanding research achievements (3 awarded per year)
1. **248th American Chemical Society National Meeting, San Francisco, CA, Aug. 2014 (oral presentation)**
Restoring Physiology in Protein Deficient Cells with Small Molecules

MENTORING EXPERIENCE

June 2018 **Research Mentor**
to June 2022 Lab PI: Professor Matt Kaeberlein
University of Washington, Seattle, WA

| Name | Current Institution/Position | Mentored |
|-------------------|--|-----------|
| Azaad Zimmermann | George Washington University Law School – J.D. Candidate – Intellectual Property Law | 2018-2019 |
| Yu-Chen Pan | Clemson University Center for Human Genetics – Mackay-Anholt Lab – Research Technician | 2018-2019 |
| Hyunsung Kim | Seattle Children's Research Institute – Jackson Lab – Research Scientist I | 2019-2020 |
| Vivian Ha | Allen Institute – Optical Physiology Team – Research Associate I | 2019-2021 |
| Sanchita Narayan | George Washington University – MPH Candidate | 2019-2020 |
| Sydney Huff | Allen Institute – Molecular Genetics Team – Research Associate I | 2019-2020 |
| Camille Bodart | Applying to Medical Schools | 2019-2021 |
| Aaron Long | Graduate Student in Molecular & Cellular Biology, University of Washington | 2021 |
| CJ Kelly | Research Assistant, University of Washington | 2020-2022 |
| Judy Wu | Research Assistant, University of Washington | 2020-2022 |
| Reid Couch | Student Volunteer, University of Washington | 2021-2022 |
| Nicole Herrel | Nursing School | 2021-2022 |
| Tom Milstein | EMT | 2021-2022 |
| Will Rieger | Student Volunteer, University of Washington | 2021-2022 |
| Carmen Young | High School Volunteer, Newport High School | 2021-2022 |

Graduate students shown in bold

Aug. 2013 **Research Mentor**
to May 2017 Lab PI: Professor Martin Burke
University of Illinois at Urbana-Champaign, Urbana, IL

- >10 summer rotation graduate students mentored

| Name | Current Institution/Position | Mentored |
|-------------------------------|--|------------------|
| Brooke Schuster, Ph.D. | U. Chicago, Ph.D. in Chemical Biology ; Biotech Equity Research Associate at William Blair | 2013-2015 |
| Dillon Svoboda | U. Wisconsin, M.D. ; Hospital Resident at Yale | 2014-2017 |
| Chris Nardone | Harvard, Ph.D. Candidate in Microbiology | 2014-2017 |
| James Fan | U. Chicago, M.D. ; Hospital Resident at U. Chicago | 2015-2017 |
| Jacob Anderson | Mayo Clinic, M.D./Ph.D. Candidate in Biology | 2014-2015 |
| Anna SantaMaria, Ph.D. | Postdoctorate Fellow, NIH NICHD – Rouault Lab | 2014-2017 |

Graduate students shown in bold

TEACHING EXPERIENCE

Jan. 2012 **Head Teaching Assistant (Discussion/Lecture)**
to May 2012 CHEM 436: Fundamental Organic Chemistry II
Course Instructor: Professor Douglas Mitchell
University of Illinois at Urbana-Champaign, Urbana, IL

Sep. 2012 **Head Teaching Assistant (Discussion/Lecture)**
to Dec. 2012 CHEM 236: Fundamental Organic Chemistry I

Course Instructor: Professor Ryan Rafferty
University of Illinois at Urbana-Champaign, Urbana, IL

Jan. 2011 to May 2012 **Teaching Assistant (Discussion/Lecture)**
 CHEM 436: Fundamental Organic Chemistry II
 Course Instructor: Professor Martin Burke
University of Illinois at Urbana-Champaign, Urbana, IL

Sep. 2011 to Dec. 2011 **Teaching Assistant (Discussion/Lecture)**
 CHEM 236: Fundamental Organic Chemistry I
 Course Instructors: Professors Peter Beak and Steven Zimmermann
University of Illinois at Urbana-Champaign, Urbana, IL
 • Teacher Ranked as Outstanding (top 5% of all instructors at UIUC)

Aug. 2009 to May 2011 **Structured Study Group Leader**
 CHEM 210 (Honors): Organic Structure and Reactivity I
 CHEM 215 (Honors): Organic Structure and Reactivity II
 With Professor Brian Coppola
University of Michigan, Ann Arbor, MI

Aug. 2010 to Dec. 2010 **Undergraduate Student Instructor (Discussion/Lecture)**
 CHEM 210: Organic Structure and Reactivity I
 Course Instructors: Professors John Wolfe, Anne McNeil, John Montgomery, and Alan Kiste
University of Michigan, Ann Arbor, MI

Jan. 2010 to May 2010 **Undergraduate Student Instructor (Laboratory)**
 CHEM 216 (Honors): Synthesis and Characterization of Organic Compounds Laboratory
 Course Instructor: Professor Masato Koreeda
University of Michigan, Ann Arbor, MI

June 2009 to May 2011 **Undergraduate Student Instructor (Laboratory)**
 CHEM 216: Synthesis and Characterization of Organic Compounds Laboratory
 Course Instructors: Professors Masato Koreeda, Ginger Shultz, and Kyoung Moo Koh
University of Michigan, Ann Arbor, MI

Aug. 2008 to May 2009 **Organic Chemistry Tutor**
 Science Learning Center
University of Michigan, Ann Arbor, MI

PROFESSIONAL DEVELOPMENT

2021 UW School of Medicine Workshop – Surviving and Thriving During the Research Years
 2021 National Institute on Aging Summer Training Course in Experimental Aging Research
 2019 Future Faculty Fellows Workshop
 2018 Biomedical Research Integrity Program
 2016 Chemistry 590F: Preparing Future Faculty (audited)

LEADERSHIP, SERVICE, AND OUTREACH

2021 American Aging Association – Grants, Meetings, and Opportunities Committee
 2021 American Aging Association – Educational Resources Committee
 2014 STEAM Volunteer's Program, University of Illinois
 2014 13th Senter Symposium on Frontier's in Organic Chemistry Lectureship Series
 2012 Lab Partner's Program, University of Michigan
 2011 Alpha Chi Sigma Professional Chemistry Fraternity
 2010 IDEA Institute Summer Enrichment Science Camp, University of Michigan

HONORS AND AWARDS

2021-2022 University of Washington Alzheimer's Disease Research Center Trainee
2021 Best Postdoctoral Data Blitz Presentation Award – AGE Conference, Madison, WI
2018-2021 NIH Ruth L. Kirschstein National Research Service Award, F32
2017 Pines Travel Award to present research seminar at University of Michigan
2017 Bothwell-Finch Award for Best Presentation – Biolron Conference, Los Angeles, CA
2016 Sigma Aldrich Alfred R. Bader Award for Student Innovation
2015 Eastman Travel Grant, University of Illinois at Urbana-Champaign
2014 Pines Award for Best Presentation at Beak-Pines Conference
2014 R.C. Fuson Travel Award for outstanding research achievements
2012 Teacher Ranked as Excellent for top 10% of instructors
2011 Teacher Ranked as Outstanding for top 5% of instructors
2011-2016 National Science Foundation Graduate Research Fellowship Program (NSF GRFP)
2011 American Institute of Chemists Chemistry Award

ACTIVITIES AND ORGANIZATIONS

2020- American Aging Association
2020- Gerontological Society of America
2020- Federation of American Societies for Experimental Biology
2016- International Biolron Society
2011-2016 American Chemical Society
2009-2011 Alpha Chi Sigma Professional Chemistry Fraternity