LOUISE K. CHARKOUDIAN

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ACADEMIC APPOINTMENTS

Professor of Chemistry *2023—present*
Chemistry Department, Haverford College

Associate Professor of Chemistry *2019—2023*
Chemistry Department, Haverford College

Assistant Professor of Chemistry *2013—2019*
Chemistry Department, Haverford College

EDUCATION

Stanford University, Stanford, CA *2008—2013*
NIH Postdoctoral Fellow, chemistry/chemical engineering (Advisor: Prof. Chaitan Khosla)

Duke University, Durham, NC *2008*
Ph.D. in bioinorganic chemistry (Advisor: Prof. Katherine Franz)

Haverford College, Haverford, PA *2003*
B.S. in chemistry with departmental high honors and *magna cum laude*

Marine Biological Laboratory, Woods Hole, MA *2001*
Semester in environmental science graduate with highest honors

AWARDS & HONORS

Iota Sigma Pi Centennial Award	*2024*
Chace Parker Prize for Excellence in Teaching	*2023*
American Chemical Society Rising Star Award	*2023*
Council for Undergraduate Research Silvia Ronco Innovative Mentor Award	*2022*
Henry Dreyfus Teacher-Scholar Award	*2019*
Scialog Fellow *Chemical Machinery of the Cell*	*2018*
Cottrell Scholar Award	*2018 —2021*
Haverford Chapter of Phi Beta Kappa Prize for Excellence in Teaching and Mentoring	*2017*
NSF CAREER Award	*2017—2022*
Cottrell College Science Award Scholar	*2015—2017*
NIH Postdoctoral National Research Service Award Fellowship (F32)	*2009—2012*
Paul Mangus Gross Research Fellowship	*2007—2008*
John Herbert Pearson Teaching Award	*2007*
Pelham Wilder Fellowship for “Excellence in Undergraduate Teaching”	*2006*
Kathleen Zielik Fellowship for “Excellence in Research”	*2005*
Joe Taylor Adams Award for an “Outstanding Graduate Student in Chemistry”	*2004*
George Pierce Graduation Prize in Organic Chemistry	*2003*
American Chemical Society Undergraduate Award in Analytical Chemistry	*2002*
Marine Biological Laboratory Associates’ Award recipient	*2001*
Millipore Foundation Scholarship Award recipient	*1999—2003*

GRANTS (PI)

National Institute of Health: Functional hybrid natural product synthases by tracking acyl carrier protein binding and conformational dynamics. Award #2R15GM12704-03. $462,351. PI. *2024—2027*

National Science Foundation: RUI: Biochemical comparison of type II polyketide biosynthetic enzymes across phyla for expanded access to chemical diversity. Award #2201984. $447,000. PI. *2023—2026*

National Institute of Health: Functional hybrid natural product synthases by tracking acyl carrier protein binding and conformational dynamics. Award #2R15GM12704-01. $297,992. PI. *2020—2023*
Supplement for purchase of a UV-vis. Award #3R15GM12704-02W1. $33,121. PI. *2022*

Henry Dreyfus Teacher-Scholar Award: Unveiling molecular underpinnings of natural product biosynthesis. Award #TH-19-020. $75,000. PI. *2019 – 2024*

Cottrell Scholars Award: Capturing the transient interactions of biosynthetic proteins to access new chemical diversity. Award #24350. $100,000. PI. *2018 – 2021*

National Science Foundation CAREER Award: Accessing chemical diversity through the characterization and redesign of natural product synthases. Award #CHE1652424. $560,681. PI. *2017 – 2022*

National Institute of Health: Functional hybrid natural product synthases by tracking acyl carrier protein binding and conformational dynamics. Award #1R15GM12704. $389,409. PI. *2016—2019*

Cottrell College Science Award: Molecular interactions between carrier proteins and oxygenases in natural product biosynthesis. Award #23251. $40,000. PI. *2015—2017*

Mellon Tri-College Faculty Forum Brainstorming Grant. Development of BioArt outreach activities to serve the surrounding Tri-College communities. $250. PI. *2014—2015*

GRANTS (Co-PI)

Cottrell Scholar Collaborative Award, Research Corporation for Science Advancement: *2021 – 2023*
Cottrell Scholar Collaborative as a Bridge for National DEI efforts. $25,000.
Co-PI with Dr. Rory Waterman (University of Vermont.; PI) and ten other Cottrell Scholars

Cottrell Scholar Collaborative Award, Research Corporation for Science Advancement: *2020 – 2022*
Moving the Dial: A Network for Systemic Change. $25,000.
Co-PI with Dr. Rory Waterman (University of Vermont.; PI) and twenty other Cottrell Scholars

National Science Foundation Undergraduate Biology Education: RCN UBE: *2019 – 2024*
Failure as a part of Learning, A Mindset Education Network (FLAMEnet). $500,000.
Co-PI with Dr. Jennifer Heemstra (Wash U.; PI) and Dr. Lisa Corwin (U. Colorado, Boulder; Co-PI)

Cottrell Scholar Collaborative Award, Research Corporation for Science Advancement: *2019 – 2021*
Establishing a Network for Effective Interventions in STEM Classrooms. $25,000.
Co-PI with Dr. Kerstin Perez (MIT.; PI) and ten other Cottrell Scholars

National Science Foundation Undergraduate Biology Education: RCN UBE Incubator: *2018 – 2019*
Failure as a part of Learning, A Mindset Education Network (FLAMEnet). $75,000.
Co-PI with Dr. Jennifer Heemstra (Emory U.; PI) and Dr. Lisa Corwin (U. Colorado, Boulder; Co-PI)

Cottrell Scholar Collaborative Award, Research Corporation for Science Advancement: *2018 – 2020*
Partnering with CUREnet and professional societies for dissemination of CURE curricula. $25,000.
Co-PI with Dr. Jennifer Heemstra (Emory U.; PI) and twelve other Cottrell Scholars.

Mellon Tri-College Faculty Forum Brainstorming Grant. Expanding the impact of biochemistry course-based undergraduate research experiences (CUREs) by integrating efforts across the tri-college communities. $250. Co-PI with Dr. Daniela Fera and Dr. Yan Kung. *2018—2020*

COURSES TAUGHT

CHEM 111: Chemical Structure and Bonding (Fall 2016)
CHEM 222: Organic Biological Chemistry (Fall 2013, 2014, 2018, 2019, 2021, 2022, 2023)
CHEM 267/367: Research in Biological Chemistry (Fall & Spring 2013-2024)
CHEM 302: Laboratory in Chemical Structure and Reactivity (Spring 2014)
CHEM 357: Natural Product Biosynthesis (Spring/Fall 2015, Spring 2018, 2019, 2020)
CHEM/BIO 303: Laboratory in Biochemical Research (Spring 2015, 2016, 2018, 2019, 2020, 2022-2024)
CHEM480: Independent Research in Chemistry (2015, 2020, 2021-2024)

PUBLICATIONS (*Corresponding author; undergraduate student author)

Peer-reviewed Publications from Independent Career at Haverford College:

(1) Bifendeh, A.L.N., Hsu, K. K., McBride, C.M., Ferguson, C., Baumann, E. R., Capcha-Rodriguez, D., Chen, X., Chery, B., Chihade, M. M., Delgado Umpierre, P., Evans, T., Everett, C. H.,. Faheem, S.F., Garrett, O.D., Gottesfeld, A. R., Gupta, I. G., Haas, J. D., Haupt, T. A., Katz, J., Kim, S., Langer, M., Le, V., Li, K. K., Zhao, B., Lin, S., Mabry, K. N., Malkov, A., Marquis, A. T., McDonnell, K. R., Min, K., Mostaghim, B. N. Nichols, K. M., Osbaldeston, R. A., Phan, T. T., Ponte, A. T., Qaraqe, T., Rosas, B. S., Smith, C.S., Smith, L. E., Smith, M. W., Soll, A. C. R., Sotero, G. R., Thornberry, I. E., Tran, K. Vo, Q. K., Yoc-Bautista, M. G., Young M., Zukowski K. A., Fairman, R., Wodzanowski, K. A., Herrera, M, A.,* Cho, Y. I.,* **Charkoudian L, K**.* Exploring the compatibility of phosphopantetheinyl transferases with acyl carrier proteins spanning type II polyketide synthase sequence space. **2025,** *Submitted*.

(2) Hsu, K. K., Ferguson, C. M., McBride, C. M., Mostaghim, N. B., Fairman, R. Mabry, K. N., Cho, Y. I.*, **Charkoudian, L. K**.* A phoshopantetheinyl transferase from *Dictyobacter vulcani* sp. W12 expands the combinatorial biosynthetic toolkit. **2025.** *ACS Omega*, accepted.

(3) Li, K. K., Cho, Y. I., Tran, M. A., Widemann, C., Koweek, R. S., Hoang, N. K., Hamrick, G. S., Bowen, M. A., Kokona, B., Beld, J., Hellmich, U. A.*, **Charkoudian, L, K.*** Strategic engineering unlocks in vitro type II polyketide biosynthesis. **2025,** *20*, 197.

(4) **Charkoudian, L. K.,** Frohlich, C., Hidreth, M., Perez, K., Rizk, S., Ross, J., Solomon, T, Takematsu, K. *Inclusivity in Introductory STEM Courses: A Guide to Improving Student (and Instructor!) Mindsets. Research Corporation for Science Advancement*, **2023**.

(5) McBride, C. M., Miller, E. L.*, **Charkoudian, L. K.*** An updated catalog of diverse type II polyketide synthase biosynthetic gene clusters captured from large-scale nucleotide databases." *Microb. Genom.,* **2023**, *9,* 965.

(6) Romei, M., von Krusenstiern, E., Ridings, S., King, R., Fortier, J., McKeon, C., Nichols, K., **Charkoudian, L. K**., Londergan, C. H.* "Frequency Changes in Terminal Alkynes Provide Strong, Sensitive, and Solvatochromic Raman Probes of Biochemical Environments." *J. Phys. Chem. B.,* **2023**, *127,* 85.

(7) Corwin, L. A., **Charkoudian, L. K**., Heemstra, J. H. *Confronting Failure: Approaches to Building Confidence and Resilience in Undergraduate Researchers.* Council of Undergraduate Research, **2022.**

(8) Hamrick, G. S., Londergan, C. H., **Charkoudian, L.K.*** "Heterologous Expression, Purification, and Characterization of Type II Polyketide Synthase Acyl Carrier Proteins." *Met. Mol. Biol.,* **2022**, *Vol 2489*.

(9) Feeney, M. A., Newitt, J. T., Addington, E., Algora-Gallardo, L., Allan, C., Balis, B., Birke, A. S., Castaño-Espriu, L., **Charkoudian, L. K.,** Devine, R., Gayrard, D., Hamilton, J., Hennrich, O., Hoskisson, P. A., Keith-Baker, M., Klein, J. G., Kruasuwan, W., Mark, D. R., Mast, Y., McHugh, R. E., McLean, T. C., Mohit, E., Munnoch, J. T., Murray, J., Noble, K., Otani, H., Parra, J., Pereira, C. F., Perry, L., Pintor-Escobar, L., Pritchard, L., Prudence, S. M. M., Russell, A. H., Schniete, J. K., Seipke, R. F., Sélem-Mojica, N., Undabarrena, A., Vind, K. van Wezel, G. P., Wilkinson, B., Worsley, S. F., Duncan, K. R., Fernández-Martínez, L. T., Hutchings, M. I. "ActinoBase: tools and protocols for researchers working on Streptomyces and other filamentous actinobacteria." *Microb. Genom.* **2022**, 8, 824.

(10) Greule, A., Izore, T., Machell, D., Hansen, M. H., Motygullina, A., Schoppet M., De Voss, J. J. **Charkoudian, L. K.**, Schittenhelm, R. B., Harmer, J. R., Cryle, M. J. "The Cytochrome P450 OxyA from the Kistamicin Biosynthesis Cyclisation Cascade is Highly Sensitive to Oxidative Damage." *Front. Chem.,* **2022**, *10,* 868240.

(11) Cho, Y. I., Armstrong, C. L., Sulpizio, A., Acheampong, K. K., Banks, K. N., Bardhan, O., Churchill, S., Connolly-Sporing, A. E., Crawford, C. E. W., Cruz Parrilla, P. L., Curtis, S., De La Ossa, L. M., Epstein, S. C., Farrehi, C. J., Hamrick, G. S., Hillegas, W. J., Kang, A., Laxton, O. C., Ling, J., Matsumura, S. M., Merino, V. M., Mukhtar, S. H., Shah, N. J., Londergan, C. H., Daly, C. A., Kokona, B., **Charkoudian, L. K.*** "Engineered Chimeras Unveil Swappable Modular Features of Fatty Acid and Polyketide Synthase Acyl Carrier Proteins." *Biochemistry*, **2022**, *61,* 217.

(12) Henry, M. A., Shorter, S., **Charkoudian, L. K.,** Heemstra, J. H., Le, B., Corwin, L. A.* "Coping Behavior versus Coping Style: Describing a Measure of Coping in Undergraduate STEM Contexts." *Int. J. STEM. Ed.,* **2022**, *9,* 17.

(13) Henry, M. A., Shorter, S., **Charkoudian, L. K.,** Heemstra, J. H., Le, B., Corwin, L. A.* "Quantifying Fear of Failure in STEM: Modifying and Evaluating the Performance Failure Appraisal Inventory (PFAI) for use with STEM Undergraduates." *Int. J. STEM. Ed.,* **2021**,8, 43.

(14) Sulpizio, A., Crawford, C.E.W., Koweek, R. S., **Charkoudian, L.K.*** "Probing the Structure and Function of Acyl Carrier Proteins to Unlock the Strategic Redesign of Type II Polyketide Biosynthetic Pathways." *J. Biol. Chem.*, **2021**, *296*, 100328.

(15) Klein, J. G., Wu, Y., Kokona, B., **Charkoudian, L. K.*** "Widening the Bottleneck: Heterologous Expression, Purification, and Characterization of Ktedonobacter racemifer Minimal Type II Polyketide Synthase in Escherichia coli." *Bioorganic Med. Chem.,* **2020**, *28*, 115686-115695.

(16) Kautsar, S., Blin, K., Shaw, S., Navarro, J., Terlouw, B., van der Hooft, J., van Santen, J.; Tracanna, V., Suarez, H., Pascal, V., Selem, N., Alanjary, M., Robinson, S., Lund, G., Epstein, S.C., Sisto, A.C., **Charkoudian, L.K**.; Collemare, J., Linington, R., Weber, Ti., Medema, M. H.* "MIBiG 2.0: A Repository for Biosynthetic Gene Clusters of Known Function." *Nucleic Acids Research*, **2020**, *48,* D454-D458.

(17) Acheampong, K. K., Kokona, B., Braun, G.A., Jacobsen, D.R., Johnson, K.A.*, **Charkoudian, L. K.*** "Colorimetric Assay Reports on Acyl Carrier Protein Interactions." **2019**, *Sci. Reports*, 9, 15589.

(18) Epstein, S. C., Winesett, E. S., Huff, A., Londergan, C.H.*, **Charkoudian, L. K.*** "Tracking Carrier Protein Motions with Raman Spectroscopy." *Nature Comm*., **2019,** *10*, 2227.

(19) Henry, M., Shorter, S., **Charkoudian, L. K**., Heemstra, J. M., Corwin, L. A. "FAIL is Not a Four-Letter Word: A Theoretical Framework for Exploring Student Approaches to Academic Challenge and Response to Failure." *CBE Life Sci. Chem. Ed.*, **2019***, 18,* ar1-rm1.

(20) Greule, A., **Charkoudian, L.K.** Cryle, M. J. "Studying Trans-Acting Enzymes that Target Carrier Protein-Bound Amino Acids during Nonribosomal Peptide Synthesis." *Met. Enzymol.*, **2019**, *617*, 114.

(21) Lopes, L. E., Waldis, S. J., Terrell, S. M., Lindgren, K. A.*, **Charkoudian, L. K.*** "Vibrant symbiosis: Achieving Reciprocal Science Outreach through Biological Art." *PLoS Biology*, **2018**, 16(11): e300006.

(22) Rivas, M. A., Courouble, V. C., Baker, M. C., Cookmeyer, D. L., Fiore, K. E., Frost, A. J., Godbe, K. N., Jordan, M. R., Krasnow, E. N., Mollo, A., Nawal, S., Ridings, S. T., Keisuke, S., Shroff, K. D., Studnitzer, B., Thiele, G. A. R., Sisto, A. C., Huff, A. R., Fairman, R., Beld, J., Kokona, B.*, **Charkoudian, L. K.*** "The Effect of Divalent Cations on the Thermostability of Type II Polyketide Synthase Acyl Carrier Proteins." *AIChE Journal*, **2018**, *64*, 4308-4318.

(23) Epstein, S. C., **Charkoudian, L. K.***, Medema, M. H.* "A Standardized Workflow for Submitting Data to the Minimum Information about a Biosynthetic Gene Cluster (MIBiG) Repository: Prospects for Research-Based Educational Experiences." *Stand. Genomic Sci.,* **2018***, 13,* 16.

(24) Haas, K. L.,* Heemstra, J. M., Medema, M. H., **Charkoudian, L. K.*** "Collaborating with Undergraduates to Contribute to Biochemistry Community Resources." *Biochemistry*, **2018**, *57*, 383-389.

(25) Cookmeyer, D. L., Winesett, S. E., Kokona, B., Huff, A. R., Aliev, S., Bloch, N. B., Bulos, J. A., Evans, I. L., Farge, C. R., Godbe, K. N., Khromava, M., Konstantinovsky, D. M., Lafrance, A., Lamacki, A. J., Parry, R. C., Quinn, J. M., Thurston, A. M., Tsai, K. J. S., Mollo, A., Cryle, M. J., Fairman, R.*, **Charkoudian, L. K.*** " Uncovering Protein-Protein Interactions through a Team-based Undergraduate Biochemistry Course." *PLoS Biology*, **2017**, *15:* e2003145.

(26) Mollo, A., von Krusenstiern, A. N., Bulos, J. A., Ulrich, V., Akerfeldt, K., Cryle, M. J., **Charkoudian, L. K.*** "P450 Monooxygenase ComJ Catalyses Side Chain Phenolic Cross-linking During Complestatin Biosynthesis." *RSC Advances*, **2017**, *7,* 35376-35384.

(27) Thiele, G. A. R., Friedman, C. P., Tsai, K. J. S., Beld, J., Londergan, C. H.*, **Charkoudian, L. K.*** "Acyl Carrier Protein Cyanylation Delivers a Ketoacyl Synthase-Carrier Protein Crosslink". *Biochemistry*, **2017**, *56*, 2533 – 2536.

(28) Finzel, K.*, Beld, J., Burkart, M., **Charkoudian, L. K.** "Utilizing Mechanistic Crosslinking Technology to Study Protein-Protein Interactions: An Experiment Designed for an Undergraduate Chemistry Lab." *J. Chem. Ed.,* **2017**, *94,* 375-379.

(29) Kittiä, T., Mollo, A., **Charkoudian, L. K.*,** Cryle, M. J.* "Have Substrate, will Travel: New Structural Data Reveals the Motion of Carrier Proteins in Non-Ribosomal Peptide Synthesis." *Angew. Chem. Int. Ed.,* **2016**, *55*, 9834 – 9840.

(30) **Charkoudian, L. K.,** Sampson, N. S., Kumar, K., Kritzer, J.* "Designing Convergent Chemistry Curricula." *Nat. Chem. Biol*., **2016**, *12*, 382 – 386.

(31) Fuga Li, Y., Tsai, K., Harvey, C., Ary, B., Berlew, E., Boehman, B., Findley, D., Friant, A., Gardner, C., Gould, M., Ha, J.H., Lilley, B., McKinstry, E., Nawal, S., Parry, R., Rothchild, K., Silbert, S., Tentilucci, M., Thurston, A., Wai, R., Yoon, Y., Aiyar, R., Medema, M. H., Hillenmeyer, M. E.,* and **Charkoudian, L. K.*** "Comprehensive Curation and Analysis of Fungal Biosynthetic Gene Clusters of Published Natural Products." *Fungal Genet. & Biol.*, **2016**. *89,* 18-28.

(32) Kokona, B., Winesett, E. S., von Krusenstiern, A. N., Cryle, M. J., Fairman, R.* **Charkoudian, L. K.*** "Probing the Selectivity of Beta-hydroxylation Reactions in Non-ribosomal Peptide Synthesis using Analytical Ultracentrifugation." *Anal. Biochem*., **2016**, *495,* 42-51.

(33) Hillenmeyer, M. H.*, Borisova, G. V., Berlew, E. E., **Charkoudian, L. K.*** "Evolution of Chemical Diversity by Coordinated Gene Swaps in Type II Polyketide Gene Clusters." *Proc. Natl. Acad. Sci.,* **2015**, *112*, 13952 – 13957.

(34) Morlon, H., O'Connor, T., Bryant, J. A., **Charkoudian, L. K**., Docherty, K. M., Jones, E., Kembel, S., Green, J. L., Bohannan, B. J. M. "The Biogeography of Putative Microbial Antibiotic Production." *PLoS One.* **2015***, 23,* e0130659.

(35) Johnson, M. N. R., Londergan, C. H.*, **Charkoudian, L. K.*** "Probing the Phosphopantetheine Arm Conformations of Acyl Carrier Proteins using Vibrational Spectroscopy." *J. Am. Chem. Soc.,* **2014**, *136*, 11240-11243. (Article highlighted in *C&EN News*).
(36) Walker, M. C., Thuronyi, B. W., **Charkoudian, L. K.**, Lowry, B., Khosla, C., Chang, C. Y. C. "Expanding the Fluorine Chemistry of Living Systems using Engineered Polyketide Synthase Pathways." *Science,* **2013***, 341,* 1089-1094. (Article highlighted in *C&EN News* and *Nature*)

Peer-reviewed Publications from Postdoctoral and Graduate Work:

(37) Fitzgerald, J. T., **Charkoudian, L. K.,** Watts, K. R., Khosla, C. "Analysis and Refactoring of A-74528 Biosynthetic Pathway." *J. Am. Chem. Soc*., **2013**, *135*, 3753-3755.
(38) Charkoudian, L. K., Farrell, B. F., Khosla, C. "Natural Product Inhibitors of Glucose-6-Phosphate Translocase." *Med. Chem. Comm*., 2012, 3, 926 - 931.
(39) Charkoudian, L. K., Liu, C. W., Capone, S., Kapur, S., Cane, D. E., Togni, A., Seebach, D., Khosla, C. "Probing the Interactions of an Acyl Carrier Protein Domain from the 6-Deoxyerythronolide B Synthase." *Protein Science,* 2011, 20, 1244-1255.
(40) Charkoudian, L. K., Fitzgerald, J. F., Khosla, C., Champlin, A. "In Living Color: Bacterial Pigments as an Untapped Resource in the Classroom and Beyond". *PLoS Biology*, 2010, 8, 10, e1000510.
(41) Zaleta, K. R., **Charkoudian, L. K.**, Ridley, C. P., Khosla, C. "Cloning, Sequencing, Heterologous Expression, and Mechanistic Analysis of A-74528 Biosynthesis." *J. Am. Chem. Soc.,* **2010**, 132, 9122-9128.
(42) **Charkoudian, L. K**., Dentchev, T., Lukinova, N., Wolkow, N., Dunaief, J. L., Franz, K. J. "Iron Prochelator BSIH Protects Retinal Pigment Epithelial Cells against Cell Death Induced by Hydrogen Peroxide." *J. Inorg. Biochem*., **2008**, *102*, 2130-2135.
(43) **Charkoudian, L. K.*,** Heymann, J. J., Adler, M. J., Haas, K. L., Mies, K. A., Bonk, J. F. "Forensics as a Gateway: Promoting Undergraduate Interest in Science and Graduate Student Pedagogical Development Through a First-Year Seminar Course." *J. Chem. Ed.,* **2008***, 85,* 807 – 812.
(44) **Charkoudian, L. K.,** Pham, D. M., Kwan, A., Vangeloff, A. , Franz, K. J. "Modifications of Boronic Ester Pro-chelators Triggered by Hydrogen Peroxide Tune Reactivity to Inhibit Metal-Promoted Oxidative Stress. *Dalton Trans.,* **2007**, *43*, 5031-5042.
(45) **Charkoudian, L. K**., Pham, D. M., Franz, K. J. "A Pro-chelator Triggered by Hydrogen Peroxide Inhibits Iron-Promoted Hydroxyl Radical Formation." *J. Am. Chem. Soc.* **2006***, 128*, 12424 – 12425.
(46) Franz, K. J., **Charkoudian, L. K**. ROS-Sensitive Iron Chelators and Methods of Using the Same. US Patent 20100004204, **2006**.
(47) **Charkoudian, L.K**., Franz, K.J. "Fe(III) Coordination Properties of Neuromelanin Components: 5, 6-Dihydroxyindole and 5, 6- Dihydroxyindole-2-carboxylic Acid." *Inorg. Chem*., **2006**, *45*, 3657-3664.

Other Publications and Podcasts:

(1) **Charkoudian, L. K.** "One CURE for Managing the Research and Teaching Expectations at a Research-Intensive College." *Council on Undergraduate Research in Chemistry*, January 29 2019.
(2) **Charkoudian, L. K**., Bitners, A. C., Bloch, N. B., Nawal, S. "Dynamic Discussions and Informed Improvements: Student-led Revision of First-Semester Organic Chemistry." *Teaching and Learning Together in Higher Education*, Issue 15, Spring 2015.
(3) **Charkoudian, L. K.** "Rebranding Organic Chemistry." *Science Behind the Science Podcast*, April 2022.

PROFESSIONAL SERVICE

External Reviewer: Wellesley College Chemistry	2025
Panelist: Biocatalyst Network: Working at a PUI	2024
Member: Biocatalyst Network, Center for ChemoEnzymatic Synthesis	2024 – *present*
Advising Council Member: Armenian Society of Fellows Computational Chemistry	*2023 – present*
Standing Member: National Institutes of Health Study Section CSB	2023 – *2027*
Panelist: University of Chicago My Choice	*2023*
Selection Committee: Council for Undergraduate Research Mentor Award	*2023– present*
Member: National Academy of Sciences US National Committee	*2023 – present*
Member: Armenian Society of Fellows	*2022 – present*
Panelist: NSF Center for Genetically Encoded Materials Career Chat	*2022*
Panelist: Council on Undergraduate Research Connect Plenary	*2022*
Panelist: National Institute of Diabetes and Digestive and Kidney Diseases Symposium	*2022*
Reviewer: National Institutes of Health Study Section (SBCB)	*2022*
Panelist: Cancer Chemical Biology and Metabolism Directors' Career Symposium	*2021*
Panelist: ACS Polymer Chemistry Division panel on Research with Undergraduates	*2021*

Organizing Committee: Chem Bio Connections Summer Series	*2021*
Organizing Committee: ACS Sessions honoring Kathy Franz	*2021*
Panelist: NSF CHE Office Hour on Broader Impacts	*2021*
Reviewer: National Science Foundation	*2020*
Reviewer: Research Corporation for Scientific Advancement	*2020 – present*
Board Member: American Peptide Society (Nominating Committee)	*2019 – 2021*
Reviewer: National Institutes of Health Study Section (SBCB)	*2019*
Steering Committee: FLAMEnet	*2018 – present*
Reviewer: Department of Energy BioEnergy Engineering for Products Synthesis Panel	*2018*
Thesis Committee Advisor: University of Delaware Department of Chemistry	*2018 – 2022*
Member, COACh, a grassroots organization working to support women in STEM	*2018 – 2020*
Thesis Committee Advisor: Drexel University Microbiology & Immunology	*2017 – 2021*
Mentor: Graduate Assistance in Areas of National Need	*2017 – present*
Panelist: NSF Postdoc to PUI Workshop	2014
Panelist: American Society of Cell Biology Career Workshop	*2015*
Panelist: Frontiers at the Interface of Chemistry & Biology Symposium	2017
Panelist: ACS Women in Chemistry	2020
Reviewer: Department of Energy Microbial Biofuels Review Panel	*2014*
Ad hoc tenure and promotion reviewer (22 total)	*2019 – present*
Ad hoc Grant Proposal Reviewer: Carleton College, University of Northern Illinois, National Science Foundation, Marsden Fund Council (New Zealand), Biotechnology and Biological Sciences Research Council (United Kingdom), EPSCoR FIRST	*2014 – present*
Ad hoc Manuscript Reviewer: *ACS Infectious Disease*, *ACS Medicinal Chemistry, ACS Central Science, AIChE*, *Journal of the American Chemical Society*, *Angew. Chem.*, *Applied Biochemistry and Biotechnology*, *Biochemical Journal*, *Biochemistry*, *Bioorganic and Medicinal Chemistry, Biopolymers, BMC Genomics, Chemical Sciences, Chemistry and Biology*, *Journal of Chemical Education, FEBS Letters, Nature, Chem. Biol., PNAS, Scientific Reports, RSC Advances, SynLett, Synthetic and Systems Biology, Tetrahedron Letters*	*2010 – present*

SERVICE AT HAVERFORD COLLEGE

Faculty Representative to the Pre-Health Committee	*2024 – 2025*
Presenter for Dr. Alvin Grissom II	*2023*
Chair, Chemistry Department Search for Organic Chemistry Laboratory Instructor	*2022*
Faculty Representative to the Pre-Health Committee	*2022, 2024*
Co-Chair/Rep, Faculty Representative to the Faculty Affairs and Planning Committee	*2021 – 2023*
Departmental Representative to the Chemistry Department Search Committee	*2021*
Alternate Faculty Representative At-Large to Academic Council	*2021 – 2022*
Faculty Representative to the HHMI Inclusive Excellence Leadership Group	*2020 – 2025*
Diversity, Equity, Inclusion and Thriving Leadership Program, Participant	*2020 – 2021*
Navigating and Transforming Bi-Co Seminar, Participant	*2019 – 2020*
Faculty Representative to the Cases of Sexual and Racial Harassment	*2019 – 2020*
Faculty Representative to the Haverford Chemistry Search Committee	*2019 – 2020*
Haverford Faculty Athletic Representative	*2019 – 2020*
Haverford Wellness Committee	*2019 – 2020*
Haverford College Faculty Rep to the Bryn Mawr Chemistry Search Committee	*2018 – 2019*
Faculty Representative to the Pre-Health Committee	*2018 – 2019*
New Faculty Mentor to Dr. Rebecca Everett (Mathematics)	*2018 – 2019*
College Honors Committee	*2017 – 2018*
Advising Working Group	*2017 – 2018*
Faculty Representative to the Mentors as Student Teachers (MAST) Program	*2015 – 2016*
Faculty Representative to the Haverford Biology Search Committee	*2015 – 2016*
Member of the Ethics symposium planning committee	*2015 – 2016*
Beckman Selection Committee	*2015 – 2016*
Biochemistry Concentration Committee	*2014 – present*
Faculty Liaison to the Women's Lacrosse Team	*2014 – present*
Major Research Instrumentation Grant Writing Committee	*2014 – 2016*
Member: KINSC Steering Committee	*2014 – 2015*
Mentor for Laboratory Development for Mentors as Student Teachers (MAST) Program	*2014 – 2015*
Advisor to Pre-majors (Including Chesick Scholars, QuestBridge and Horizons students)	*2014 – present*

RECENT TALKS AND PRESENTATIONS

Invited oral presentations (since 2013)

(1) National Organic Chemistry Symposium, Troy, NY. June 2025.
(2) University of California Berkeley, Berkeley, CA. March 2025.
(3) SIMB 5th Natural Product Discovery and Development, San Diego, CA. January 2025.
(4) Haverford Lawyers Network Sharpless Inn of Court, Wilmington, DE. January 2025.
(5) MAALACT Conference at Jefferson University, Philadelphia, PA. November 2024
(6) Directing Biosynthesis VII, July 2024. Birmingham, United Kingdom.
(7) National Science Foundation BRC-BIO Meeting, June 2024. Virtual.
(8) Bucknell University, Lewisburg, PA. March 2024.
(9) Rutgers University, Camden, NJ. November 2023.
(10) Sphingolipid Conference, Camdeon, NJ. October 2023. Virtual.
(11) Division of Organic Chemistry Graduate Research Symposium, Bozeman, MT. July 2023
(12) Stanford University, Palo Alto, CA. May 2023.
(13) American Chemical Society, Indianapolis, IN. March 2023.
(14) American Society of Pharmacognosy, October 2022, webinar.
(15) Council on Undergraduate Research, September 2022, webinar.
(16) Bioorganic Chemistry Gordon Conference, Proctor, NH. June 2022.
(17) University of Illinois Urbana-Champaign. April 2022. Virtual.
(18) University of New Mexico, NM. April 2022. Virtual.
(19) University of Northern Texas, TX. January 2022. Virtual.
(20) American Chemical Society, San Francisco, CA. Three talks. April, 2021. Virtual.
(21) Amherst College, MA. March 2021. Virtual
(22) Union College, CT. March 2021. Virtual.
(23) James Madison University, MD. November 2020. Virtual.
(24) Ursinus College, PA. November 2020. Virtual
(25) Loyola Marymount University, CA. November 2020. Virtual
(26) Virginia Tech, Blacksburg, VA. November 2020. Virtual.
(27) Hofstra University, Long Island, NY. September 2020. Virtual.
(28) American Chemical Society, San Francisco, CA. August 2020. Virtual.
(29) Virginia Tech, Blacksburg, VA. April 2020. Cancelled due to COVID19 pandemic.
(30) University of Pennsylvania, Philadelphia, PA. February 2020.
(31) Saint Joseph's University, Philadelphia, PA. February 2020.
(32) Trinity University, San Antonio, TX. January 2020.
(33) Gettysburg College, Gettysburg, PA. October 2019.
(34) University of Oslo, Norway, August 2019.
(35) FLAMEnet, Atlanta, GA. May 2019.
(36) Frontiers at the Chemistry and Biology Interface, Bethesda MD. May 2019.
(37) University of the Sciences, Philadelphia, PA. March 2019.
(38) Institutional Advancement, Haverford College, Haverford, PA. January 2019.
(39) University of Chicago, Chicago, IL. December 2018.
(40) University of Illinois Chicago, Chicago, IL. December 2018.
(41) Duke University, Durham, NC. October 2018.
(42) National Cancer Institute, Frederick, MD. September 2018.
(43) Cottrell Scholars Conference, Tucson, AZ. July 2018.
(44) Bioorganic Chemistry Gordon Conference, Proctor, NH. June 2018.
(45) Emory University, GA. April 2018.
(46) University of Richmond, VA. April 2018.
(47) Bowdoin College, Brunswick, ME. Nov 2017.
(48) University of Delaware, Newark, DE. Oct 2017.
(49) Swarthmore College, Swarthmore, PA. Oct 2017.
(50) George Washington University, Washington DC. Sept 2017.
(51) University of Edinburgh, Edinburgh, Scotland. Aug 2017.
(52) University of Bristol, Bristol, United Kingdom. July 2017.
(53) Temple University, Philadelphia, PA. Feb 2017.
(54) Villanova University, Villanova, PA. Dec 2016.
(55) American Chemical Society National Meeting, Philadelphia, PA. Aug 2016.
(56) Duke University, Durham, NC. Mar 2016.
(57) Haverford College Faculty Seminar, Haverford, PA. Feb 2016.
(58) Bryn Mawr College, Bryn Mawr, PA. Nov 2013

Organized and Co-Organized Symposia and Workshops

(1) Engineering in Opportunities to Fail, Be Kind and Do Great Science. Science Leadership and Management series. March 2025. Berkeley, CA.
(2) Inclusive Science Communication: Making Science Make Sense to Everybody. Cottrell Scholars Conference. July 2024. Tucson, AZ.
(3) Factors that affect Learning, Attitudes, and Mindsets in Education Network (FLAMEnet). 6th Annual Workshop. November 2023. Howard Hughes Medical Institute.
(4) Bioorganic Gordon Conference Power Hour. June 2022. Proctor Academy, NH.
(5) Factors that affect Learning, Attitudes, and Mindsets in Education Network (FLAMEnet). 5th Annual Workshop. May 2022. Emory University.
(6) Inclusivity in STEM Introductory Courses Mini-Workshop Series. March – May 2022. Virtual.
(7) Factors that affect Learning, Attitudes, and Mindsets in Education Network (FLAMEnet). 4th Annual Workshop. May 2021. Virtual.
(8) Chem Bio Connections Summer Series. Summer 2021. Virtual.
(9) American Chemical Society: Inorganic Chemistry & Women in Chemistry Committee Sessions (virtual). April 2021.
(10) Mentoring in Chemistry, Virginia Tech, Blacksburg, VA. April 2020 (Cancelled due to COVID19 pandemic).
(11) American Chemical Society: Inorganic Chemistry & Women in Chemistry Committee Sessions, Philadelphia, PA. March 2020. (Canceled due to COVID19 pandemic).
(12) Failure as a part of Learning: A Mindset Educational Network (FLAMEnet), 3rd Annual Workshop. Howard Hughes Medical Institute, Bethesda, MD. May 2020. (Postponed due to COVID19 pandemic).
(13) Creating Inclusive Learning Spaces by Embracing Failure in STEM. Trinity University, San Antonio, TX. January 2020.
(14) Failure as a part of Learning: A Mindset Educational Network (FLAMEnet) 2nd Annual Workshop. Emory University, Atlanta, GA. May 2019.
(15) Failure as a part of Learning: A Mindset Educational Network (FLAMEnet) 1st Annual Workshop. Emory University, Atlanta, GA. May 2018.

Undergraduate Students Mentored

Student Presentations

- **142** Student presentations mentored. **63** external at regional, national, or international conferences.
- Students present regularly at the following meetings: ACS National, Biophysical Society, ASBMB, Protein Society, Experimental Biology, Gulf Coast Undergraduate Research Symposium (GCURS), Frontiers in Chemistry and Biology Interface Symposium (FCBIS), MARM, and more.
- Select student presentation awards include the GCURS outstanding presentation, FCBIS best poster, Intercollegiate Student Chemists Convention best presentation in biochemistry.

Letters of Recommendation. Written letters for 533 unique students to support them in taking "shots on goal" for summer programs, fellowships, and graduate/professional post-graduation opportunities.

Senior Thesis Lab Alumni Training and Current Position

Student (Year)	**Post-Haverford training; current job (# publications, presentations)**
Kevin Li ('24)	MD/PhD Baylor University (1, 3)
Shahla Mukhtar ('24)	TBD (1, 3)
Trisha Phan ('24)	RA University of Pennsylvania (0, 6)
Meg Bowen ('23)	Medical Career Design fellowship at the Children's Hospital of Philadelphia (1, 2)
Christina McBride ('23)	PhD Program, University of Michigan (1, 13)
Bayan Mostaghim ('23)	Fulbright Switzerland, MD/PhD University of Chicago (0, 4)
Callie Crawford ('22)	PhD Program, University of Pennsylvania, Biochem. & Mol. Biophysics (2, 2)
Rebecca Koweek ('22)	PhD Program, Boston University (2, 2)
Zach Brown ('21)	PhD Program, SIO/UCSD (0, 2)
Grayson Hamrick ('21)	PhD Program, Duke University Biomedical Engineering (3, 5)
June Hoang ('21)	MD Program, Drexel University (1, 4)
Ariana Sulpzio ('21)	PhD Program, Scripps Institute Chemistry (2, 3)
Claire Armstrong ('20)	DVM Program, Tufts University (1, 3)
Kameron Banks ('20)	MD Program, University of Pennsylvania (1, 3)
Clara Farrehi ('20)	MD Program, Jefferson University (1, 3)
Josh Klein ('20)	MD Program, Johns Hopkins University (1, 3)

Ashley Sisto (’20)	JD Program, Albany Law School (2, 4)
Kofi Acheampong (’19)	MD Program, University of Chicago (2, 4)
Renata DiDonato (’20)	MD Program, University of Pittsburgh (0, 4)
Sam Epstein (’19)	Starcom Data Analyst, MS Chemistry, New York University Chemistry (4, 3)
Yang Wu (’19)	PhD Program, University of California Berkeley Chemistry (1, 3)
Vasiliki Chioti (’18)	PhD Program, Princeton University Chemistry (0, 4)
Marco Rivas (’18)	MD Program, University of Chicago (2, 4)
Stephanie Terrell (’18)	MD Program, University of Michigan (1, 3)
Valentine Courouble (’17)	PhD Program, Scripps University Chemistry (1, 4)
Aurelio Mollo (’17)	PhD Program, Harvard University Chemistry (4, 3)
Grace Thiele (’17)	MSc Program University of British Columbia, MD Program Jefferson (2, 3)
Josh Bulos (’16)	PhD Program University of Pennsylvania Chemistry (2, 4)
Saadia Nawal (’16)	MD George Washington University; Internal Medicine Physician (3, 2)
Katie Tsai (’16)	MSEd University of Pennsylvania; high school science teacher (3, 2)
Emily Winesett (’16)	MD/PhD Program University of Florida (3, 2)
Noah Bloch (’16)	PhD Program Harvard University Biomedical Sciences; Prime Medicine (2, 2)
David Cookmeyer (’16)	MD Program Harvard University (2, 1)
Erin Berlew (’15)	PhD Program University of Pennsylvania Bioengineering (2, 2)
Connie Friedman (’15)	MD Program University of Southern California (1, 2)
Niki von Krusenstiern (’15)	MD/PhD Program Columbia University (2, 3)
Alec De Vivo (’14)	MS Colorado School of Mines; Data Engineer (0, 2)
Matt Johnson (’14)	MD Columbia University; resident at University of Washington (1, 2)

Additional Notes

- Lab alumni have earned major fellowships including the NIH F30 (2), NIH T32 (4), NIH F31 (1), Goldwater Scholarships (3), Fulbright (3), Beckman Scholarships (4), and NSF GRFP (5).
- A recent survey of alum revealed that 100% of respondents gained a deep appreciation for science and that they found that their laboratory work at Haverford set them up for success in their post-graduation pursuits.