

Prof. Dr. Edward L. D'Antonio

Professor of Biochemistry and Structural Biology
University of South Carolina Beaufort, Department of Natural Sciences,
1 University Boulevard, Bluffton, South Carolina 29909
Office: 843-208-8101; E-mail: edantonio@uscb.edu; Website: www.uscb.edu/edant

EDUCATION

University of Pennsylvania, Philadelphia, Pennsylvania

Postdoctoral Research, 2010-2013

Areas of Specialization: Structural Biology, Biochemistry, and Bioinorganic Chemistry

North Carolina State University, Raleigh, North Carolina

Ph.D., Chemistry, 2010

Areas of Specialization: Biochemistry, Electrochemistry, and Analytical Chemistry

Millersville University, Millersville, Pennsylvania

B.S., Chemistry, 2003, Concentration in Biochemistry

TEACHING / RESEARCH POSITIONS AND EMPLOYMENT

University of South Carolina Beaufort, Bluffton, South Carolina

Professor of Biochemistry and Structural Biology (August 2023-Present)

Associate Professor of Biochemistry and Structural Biology (July 2018-August 2023)

Assistant Professor of Biochemistry and Structural Biology (July 2013-2018)

Courses: Principles of Biochemistry (BIOL B441), Lecture & Laboratory
Quantitative Analysis (CHEM B321), Lecture & Laboratory
Forensic Techniques and Data Analysis (BIOL B451), Lecture
General Chemistry I (CHEM B111), Lecture & Laboratory
General Chemistry II (CHEM B112), Lecture & Laboratory
Chemistry of Life (CHEM B109), Lecture
Seminar in Biochemistry Research (BIOL B499), Lecture
Directed Studies in Biology (BIOL B295), Laboratory Research
Independent Study (BIOL B399), Laboratory Research
Independent Study (CHEM B399), Laboratory Research

Jinan University, Guangzhou, Guangdong, China

Adjunct Professor of Biology (Remote) (May 2022-Present)

Course: Introductory Biology, Lecture and Laboratory

Feng Chia University, Taichung City, Taiwan

Adjunct Professor of Biology (Remote) (May 2018-Present)

Course: Introductory Biology, Lecture and Laboratory

Centro Nacional de Pesquisa em Energia e Materiais, Laboratório Nacional de Biociências, Campinas, São Paulo (Brazil)

Visiting Scientist (May 2016-August 2016)

Project: High-Throughput Screen of Synthetic Small Molecule Inhibitors Targeting *Trypanosoma cruzi* Glucokinase

Gloucester County College, Sewell, New Jersey

Adjunct Professor of Chemistry (January 2013-May 2013)

Course: General Chemistry I (CHM 111), Lecture and Laboratory

Edward L. D'Antonio, Ph.D.

University of Pennsylvania, Philadelphia, Pennsylvania

Postdoctoral Fellow (June 2010-July 2013)

Projects: Structural and Functional Investigations of Metalloenzymes Implicated in Disease

Advisor: Dr. David W. Christianson

Guest Lecturer (Two Lectures Covering Selected Metalloenzymes, March 2013)

Course: Mechanisms of Biological Catalysis (CHEM 557, *Graduate-Level*)

North Carolina State University, Raleigh, North Carolina

Graduate Research Assistant (January 2007-May 2010)

Projects: Functional and Structural Studies of Wildtype and Engineered Heme Enzymes

Advisor: Dr. Edmond F. Bowden

Graduate Teaching Assistant (August 2004-December 2006)

Laboratories: General Chemistry Lab (CH 102) and Quantitative Chemistry Lab (CH 202)

Courses Tutored: Chemistry: A Molecular Science (CH 101), Chemistry: A Quantitative Science (CH 201), and Preparatory Chemistry (CH 111)

Recitation: Preparatory Chemistry (CH 111)

TEVA Pharmaceuticals USA, Sellersville, Pennsylvania

Analytical Chemist (February 2004-August 2004)

Project: Testing the Stability of Abbreviated New Drug Applications

AWARDS AND HONORS

- Outstanding Undergraduate Research Mentor Award (One of three awards selected throughout all campuses of the state for the University of South Carolina), 2018
- 4th Annual NCSU Graduate Student Research Symposium (One of six posters selected by the department of chemistry for a university wide symposium), 2009
- The American Institute of Chemists Foundation Award, 2008
- University of Puerto Rico at Cayey "Círculo de Química" Recognition (Annual invitation to one graduate student to expose their research by seminar to the chemistry department), 2005
- Millersville University Neimeyer-Hodgson Student Research Grant, 2003
- Millersville University Annual Research Recognition, 2002 and 2003

PUBLICATIONS

Notes: Underlined authors represent USCB undergraduate researchers in the D'Antonio Laboratory and starred authors represent the corresponding author.

Carey, S. M., Kearns, S. P., Millington, M. E., Buechner, G. S., Alvarez Jr., B. E., Daneshian, L., Abiskaroon, B., Chruszcz, M., and **D'Antonio, E. L.*** At the outer part of the active site in *Trypanosoma cruzi* glucokinase: The role of phenylalanine 337, *Submitted for Publication*.

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Green, S. B., Lanier, R. J., Jr., Carey, S. M., Morgan, D. R., Gracz, H., Sherman, J., Rodriguez, A., and **D'Antonio, E. L.*** (2021) Synthesis, biochemical, and biological evaluation of C2 linkage derivatives of amino sugars, inhibitors of glucokinase from *Trypanosoma cruzi*, *Bioorg. Med. Chem. Lett.* **47**, 128227.

Gonzalez, S. N., Mills, J. J., Maugeri, D., Olaya, C., Laguera, B. L., Enders, J. R., Sherman, J., Rodriguez, A., Pierce, J. G., Cazzulo, J. J., and **D'Antonio, E. L.*** (2021) Design, synthesis, and evaluation of substrate – analogue inhibitors of *Trypanosoma cruzi* ribose 5-phosphate isomerase type B, *Bioorg. Med. Chem. Lett.* **32**, 127723.

Mercaldi, G. F., **D'Antonio, E. L.***, Aguessi, A., Rodriguez, A., and Cordeiro, A. T. (2019) Discovery of antichagasic inhibitors by high-throughput screening with *Trypanosoma cruzi* glucokinase, *Bioorg. Med. Chem. Lett.* **29**, 1948-1953.

Buechner, G. S., Millington, M. E., Perry, K., and **D'Antonio, E. L.*** (2019) The crystal structure of glucokinase from *Leishmania braziliensis*, *Mol. Biochem. Parasitol.* **227**, 47-52.

D'Antonio, E. L.*, Deinema, M. S., Kearns, S. P., Frey, T. A., Tanghe, S., Perry, K., Roy, T. A., Gracz, H. S., Rodriguez, A., and D'Antonio, J. (2015) Structure-based approach to the identification of a novel group of selective glucosamine analogue inhibitors of *Trypanosoma cruzi* glucokinase. *Mol. Biochem. Parasitol.* **204**, 64-76.

Taratula, O., Bai, Y., **D'Antonio, E. L.**, and Dmochowski, I. J.* (2014) Enantiopure cryptophane-¹²⁹Xe nuclear magnetic resonance biosensors targeting carbonic anhydrase. *Supramol. Chem.*, 1-8, DOI: 10.1080/10610278.2014.906601.

Chen, M., Al-lami, N., Janvier, M., **D'Antonio, E. L.**, Faraldos, J. A., Cane, D. E., Allemann, R. K., and Christianson, D. W.* (2013) Mechanistic insights from the binding of substrate and carbocation intermediate analogues to aristolochene synthase. *Biochemistry*, **52**, 5441-5453.

D'Antonio, E. L., Ullman, B., Roberts, S. C., Gaur Dixit, U., Wilson, M. E., Hai, Y., and Christianson, D. W.* (2013) Crystal structure of arginase from *Leishmania mexicana* and implications for the inhibition of polyamine biosynthesis in parasitic infections. *Arch. Biochem. Biophys.*, **535**, 163-176.

Genshaft, A., Moser, J-A., **D'Antonio, E. L.**, Bowman, C., and Christianson, D. W.* (2013) Energetically unfavorable amide conformations for N6-acetyllysine side chains in refined protein structures. *Proteins: Struct., Funct., Bioinf.*, **81**, 1051-1057.

D'Antonio, E. L., Chen, T. K., Turner, A. H., Santiago Capeles, L., and Bowden, E. F.* (2013) Voltammetry of Dehaloperoxidase on Self-Assembled Monolayers: Reversible Adsorptive Immobilization of a Globin. *Electrochem. Commun.* **26**, 67-70.

D'Antonio, E. L., Hai, Y., and Christianson, D. W.* (2012) Structure and Function of Non-Native Metal Clusters in Human Arginase I. *Biochemistry* **51**, 8399-8409.

D'Antonio, E. L. and Christianson, D. W.* (2012) Binding of the Unreactive Substrate Analog L-2-amino-3-guanidinopropionic acid (dinor-L-arginine) to Human Arginase I. *Acta Crystallogr. F68*, 889-893.

D'Antonio, E. L., Bowden, E. F.*, and Franzen, S.* (2012) Thin-Layer Spectroelectrochemistry of the Fe(III)/Fe(II) Redox Reaction of Dehaloperoxidase-hemoglobin. *J. Electroanal. Chem.* **668**, 37-43.

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D'Antonio, E. L., D'Antonio, J., de Serrano, V., Gracz, H., Thompson, M. K., Ghiladi, R. A., Bowden, E. F., and Franzen, S.* (2011) Functional Consequences of the Creation of an Asp-His-Fe Triad in a 3/3 Globin. *Biochemistry* 50, 9664-9680.

D'Antonio, E. L. and Christianson, D. W.* (2011) Crystal Structures of Complexes with Cobalt-Reconstituted Human Arginase I. *Biochemistry* 50, 8018-8027.

D'Antonio, J., **D'Antonio, E. L.**, Thompson, M. K., Bowden, E. F., Franzen, S., Smirnova, T., and Ghiladi, R. A.* (2010) Spectroscopic and Mechanistic Investigations of Dehaloperoxidase B from *Amphitrite ornata*. *Biochemistry* 49, 6600-6616.

de Serrano, V., Davis, M. F., Gaff, J. F., Zhang, Q., **D'Antonio, E. L.**, Bowden, E. F., Rose, R., and Franzen, S.* (2010) X-ray Structure of the Metcyano Form of Dehaloperoxidase from *Amphitrite ornata*: Evidence for Photoreductive Dissociation of the Iron-Cyanide Bond. *Acta Crystallogr. D66*, 770-782.

Manuscripts in Preparation

Carey, S. M., Conner, G. B., Sherman, J. Rodriguez, A., and **D'Antonio, E. L.*** 3-Nitro-2-phenyl-2H-chromene analogues as dual inhibitors of trypanosomatid parasitic targets.

PATENTS AND PATENT APPLICATIONS

Note: Published and/or filed with the U.S. Patent and Trademark Office.

D'Antonio, E. L. and Mercaldi, G. F. (2023) Tetrazolium-based colorimetric assay. *Filed with the USPTO.*

D'Antonio, E. L. and Pierce, J. G. (2023) One-step synthesis of phosphate-based inhibitors and applications thereof. *U.S. Patent No. 11,555,047 B2.*

D'Antonio, E. L. (2021) Monosaccharide amine and 3-nitro-2-phenyl-2H-chromene based inhibitors of glucose kinases. *U.S. Patent No. 11,059,842.*

D'Antonio, E. L. (2020) Inhibitors of glucose kinases, along with methods of their formation and use. *U.S. Patent No. 10,682,359.*

D'Antonio, E. L. (2018) Cysteine-modifying substrate analogue inhibitors of ribose 5-phosphate isomerase for parasitic diseases, along with methods of their formation and use. *U.S. Patent No. 10,065,978 B2.*

D'Antonio, E. L. and D'Antonio, J. (2018) Therapeutic monosaccharide-based inhibitors of hexokinase and glucokinase for parasitic diseases, along with methods of their formation and use. *U.S. Patent No. 9,956,240 B2.*

LOCAL NEWSPAPER PUBLICATIONS

Hunt, D. (31 December 2020) USCB scientists at front lines of COVID-19 treatment research. *Bluffton Today*. https://www.blufftontoday.com/story/news/2020/12/31/uscb-scientists-front-lines-covid-19-treatment-research/4052660001/?fbclid=IwAR3jMeqE2X3xkDjayRqMyd1ya3_8NUpgL61oBnUdOi-Xr7O3zt_1hOUTJpY

Gray, L. (16 December 2019) USCB Bluffton to introduce single-stream recycling. *The Bluffton Sun*. <https://www.blufftonsun.com/uscb-bluffton-to-introduce-single-stream-recycling-2/>

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GRANT PROPOSALS

Awarded Funding

Experiment.com Crowdfunding Campaign Fundraiser, May 2023. (\$2,200.00). Molecular target-based focused screen for Chagas' disease therapeutic drug discovery. <https://www.doi.org/10.18258/50252> (PI: Edward L. D'Antonio).

Magellan Mini-Grant, February 2023 (\$500.00). Synthesis of a Novel Sulfonamide Isostere of Carboxybenzyl Glucosamine with Testing of Compound Stability and Antichagasic Efficacy. Awarded to USCB student: Anna L. Husted (PI: Edward L. D'Antonio).

2023 Sea Islands Institute Grant, December 2022 (\$5,000.00). Development of Amperometric Biosensors for the Assay of Persistent Organic Pollutants based on *Amphitrite ornata* Dehaloperoxidase Adsorbed onto Gold Electrodes. Awarded to P.I. Edward L. D'Antonio.

Magellan Mini-Grant, October 2022 (\$1,000.00). Towards Drug-Target Validation: Expression, Purification, and Biochemical Evaluation of *Trypanosoma cruzi* Glucokinase Bump Mutations. Awarded to USCB student: Lindsey R. Baker (PI: Edward L. D'Antonio).

Summer Research Experience Award, June 2022. (\$1,000.00). Development of Stable, Selective, and Potent *Trypanosoma cruzi* Glucokinase Inhibitors Exhibiting Strong Antichagasic Efficacy. Awarded to USCB student: Lindsey R. Baker (PI: Edward D'Antonio).

RunSignUp.com Fundraiser, 5 May 2021. (\$1,100.00) Virtual Run for South Carolina Native Trees. (PI: Edward L. D'Antonio, Director of the Environmental Club at USCB).

Higher Education Emergency Relief Fund (HEERF), January 2021. (\$47,000.00). Target-based drug discovery for coronavirus disease 2019. (PI: Edward L. D'Antonio).

RunSignUp.com Fundraiser, 4 January 2021. (\$1,035.00) Virtual Run for Coronavirus Research. (PI: Edward L. D'Antonio).

Magellan Scholar Award (USC Magellan Program), December 2020. (\$2,750.00). Synthesis and Evaluation of *N*-Phenylbenzenesulfonamides as Effective *Trypanosoma cruzi* Inhibitors. Awarded to USCB student: Shane M. Carey (PI: Edward L. D'Antonio).

Experiment.com Crowdfunding Campaign Fundraiser, October 2020. (\$25,010.00). Target-based drug discovery for coronavirus disease 2019. <https://www.doi.org/10.18258/17321> (PI: Edward L. D'Antonio and co-PI: Dr. Gustavo F. Mercaldi).

- a. 2021 Opportunity Grant (Community Foundation of the Lowcountry), October 2020. (Awarded: \$10,000.00 and was used as a pledge contribution for the Experiment.com fundraiser). Early-stage drug discovery for coronavirus disease 2019. (PI: Edward L. D'Antonio).

Palmetto Pride Litter Prevention Grant, December 2019. (\$3,917.00). Improving the collection of recyclable materials at the University of South Carolina Beaufort" (PI: Edward L. D'Antonio, Director of the Environmental Club at USCB).

Experiment.com Crowd Fundraiser, November 2019. (\$4,537.00). Improving the Collection of Recyclable Materials at the University of South Carolina Beaufort. (PI: Edward D'Antonio).

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Magellan Mini-Grant, February 2019. (\$500.00). Biochemical and Structural Analysis of the Binding Strength for Carboxybenzoyl Glucosamine in a Site-Directed Mutation of *Trypanosoma cruzi* Glucokinase. Awarded to USCB student: Ray B. Nettles (PI: Edward D'Antonio).

Experiment.com Crowd Fundraiser, August 2018. (\$2,700.00). Early-Stage Drug Discovery for Chagas' Disease. <https://www.doi.org/10.18258/11365> (PI: Edward L. D'Antonio).

Magellan Mini-Grant, October 2018. (\$1,000.00). Structure-Activity Relationship (SAR) Study: Investigating 7 compounds with potential inhibition of *Trypanosoma cruzi* glucokinase (TcGlck). Awarded to USCB student: Garrett B. Conner (PI: Edward D'Antonio).

Magellan Mini-Grant (USC Magellan Program), October 2018. (\$500.00). Expression of *Trypanosoma cruzi* Hexokinase for Inhibition. Awarded to USCB student: Robert J. Lanier (PI: Edward D'Antonio).

Magellan Mini-Grant, October 2018. (\$500.00). Structure-Activity Relationship (SAR) Investigation of Monosaccharide Derivatives: Discovery of Biologically Active and Competitive *Trypanosoma cruzi* Glucokinase (TcGlck) Inhibitors. Awarded to USCB student: Scott B. Green (PI: Edward D'Antonio).

Magellan Mini-Grant (USC Magellan Program), February 2017. (\$1,000.00). Synthesis and Purification of *Trypanosoma cruzi* Hexokinase Inhibitors. Awarded to USCB student: Robert J. Lanier (PI: Edward D'Antonio).

Magellan Mini-Grant, February 2017. (\$1,000.00). Synthesis and Purification of *Trypanosoma cruzi* Glucosamine Analogue Inhibitors. Awarded to USCB student: Scott B. Green (PI: Edward D'Antonio).

Research Initiative for Summer Engagement (RISE), February 2017. (\$6,000.00). Synthesis and Evaluation of *Trypanosoma cruzi* Glucose Kinase Inhibitors from Structure-Activity Relationships. (PI: Edward D'Antonio).

Magellan Mini-Grant, December 2016. (\$1,000.00). X-ray Crystallography of *Staphylococcus aureus* Glucokinase. Awarded to USCB student: Emilee Conner (PI: Edward D'Antonio).

Magellan Mini-Grant, December 2016. (\$1,000.00). Development of a Biochemical Assay for *Borrelia burgdorferi* Phosphofructokinase-1. Awarded to USCB student: Ashley Freeman (PI: Edward D'Antonio).

Magellan Scholar Award (USC Magellan Program), April 2016. (\$6,000.00). X-ray Crystallography of Glucokinase from *Leishmania braziliensis*. Awarded to USCB students: Gregory Buechner and Matthew Millington (PI: Edward D'Antonio).

Magellan Mini-Grant, March 2016. (\$1,000.00). X-ray Crystallography of Substrate-Analogue Inhibitors of Ribose 5-Phosphate Isomerase type B from *Trypanosoma cruzi*. Awarded to USCB student: Breana Laguera (PI: Edward D'Antonio).

Advanced Support Program for Innovative Research Excellence-1 (ASPIRE-1), April 2016. (\$15,000.00). Development of Biologically-Active Enzyme Inhibitors of the Pentose Phosphate Pathway Against Trypanosomatid Parasites. (PI: Edward D'Antonio).

Magellan Mini-Grant, March 2016. (\$1,000.00). X-ray Crystallography of Glucokinase from *Leishmania braziliensis*. Awarded to USCB student: Matthew Millington (PI: Edward D'Antonio).

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RISE, February 2016. (\$6,000.00). High-Throughput Screen of Synthetic Small Molecule Inhibitors Targeting *Trypanosoma cruzi* Glucokinase. (PI: Edward D'Antonio).

Magellan Mini-Grant, December 2015. (\$1,000.00). X-ray Crystal Structure of the Potential Drug-Target: *Leishmania braziliensis* Glucokinase. Awarded to USCB student: Gregory Buechner (PI: Edward D'Antonio).

RISE, January 2015. (\$6,000.00). Marine Worms *Amphitrite ornata* and *Lepidasthenia commensalis*: Investigation into Halogenated-Phenol Detoxification by Heme Enzymes. (PI: Edward D'Antonio).

Magellan Mini-Grant, June 2015. (\$1,000.00). *Amphitrite ornata* Erythrocyruorin Functions with Substantial Dehaloperoxidase Activity. Awarded to USCB student: Victoria Hearn (PI: Edward D'Antonio).

Magellan Mini-Grant, June 2015. (\$1,000.00). To Screen Eight Synthesized Compounds as Candidate Inhibitors for Potency and Selectivity of *Trypanosoma cruzi* Glucokinase (*TcGlcK*), a Drug-Target Found in the Parasite. Awarded to USCB student: Tyler Frey (PI: Edward D'Antonio).

Magellan Mini-Grant, February 2014. (\$1,000.00). Establishment of the Structural Determinants for Ebselen Binding in Human Glucokinase. Awarded to USCB student: Sean Kearns (PI: Edward D'Antonio).

Magellan Mini-Grant, February 2014. (\$1,000.00). X-ray Crystallography of *Trypanosoma cruzi* Glucokinase. Awarded to USCB student: Mason Deinema (PI: Edward D'Antonio).

Magellan Scholar Award, February 2014. (\$2,000.00). X-ray Crystallography of *Trypanosoma cruzi* Glucokinase. Awarded to USCB student: Mason Deinema (PI: Edward D'Antonio).

Not Selected for Funding

National Institutes of Health – R03 Proposal, June 2018, Re-Submission. (\$137,000.00). Discovery of Potent Inhibitors for the *Trypanosoma cruzi* Glucose Kinases with Antichagasic and Low Toxicity Properties. (PI: Edward D'Antonio).

ASPIRE-1, May 2018. (\$15,000.00). Screening campaign of the *Trypanosoma cruzi* glucose kinases for the identification of potent inhibitors. (PI: Edward D'Antonio).

Research Initiative for Summer Engagement (RISE), February 2018. (\$6,000.00). Exploration of 3-nitro-2-phenyl-2*H*-chromene analogues as anti-*Trypanosoma cruzi* glucose kinase inhibitors. (PI: Edward D'Antonio).

National Institutes of Health – R15 Proposal, August 2017. (\$411,000.00). Discovery and Design of Highly Effective, Low Toxicity Antichagasic Therapeutics. (PI: Edward D'Antonio).

National Institutes of Health – R03 Proposal, June 2017. (\$137,000.00). Discovery of Potent Inhibitors for the *Trypanosoma cruzi* Glucose Kinases with Antichagasic and Low Toxicity Properties. (PI: Edward D'Antonio).

ASPIRE-1, May 2017. (\$14,998.00). High-Throughput Screening Campaign of *Trypanosoma cruzi* Hexokinase and the Identification of Selective Glucose Kinase Inhibitors. (PI: Edward D'Antonio).

ASPIRE-3, May 2016. (\$86,361.00). Upgrading Underperforming GC/MS Instrumentation and Data Handling and Analysis Capabilities to Support Research Efforts at USC Beaufort. (PI: Stephen Borgianini, Co-PI: Eric Montie, Co-PI: Joseph Staton, Co-PI: Edward D'Antonio, and Co-PI: Gordon

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Sproul). SC INBRE 3 (Developmental Research Project Program), September 2015. (\$50,000.00). Development of Selective Trypanosomal Pentose Phosphate Pathway Inhibitors. (PI: Edward D'Antonio).

USCB Sea Islands Institute, November 2014. (\$5,000.00). Marine Worms *Amphitrite ornata* and *Lepidasthenia commensalis*: Investigation of the Relationship between Chemical Ecology and Commensalism. (PI: Edward D'Antonio).

Edward Mallinckrodt Jr. Foundation – Pre-Proposal, July 2014. (\$60,000.00/yr for up to 3 yrs). Development of Selective Trypanosomal Pentose Phosphate Pathway Inhibitors. (PI: Edward D'Antonio).

National Institutes of Health – R03 Proposal, June 2017. (\$137,000.00). Discovery of Potent Inhibitors for the *Trypanosoma cruzi* Glucose Kinases with Antichagasic and Low Toxicity Properties. (PI: Edward D'Antonio).

ORAL PRESENTATIONS

2023

Edward L. D'Antonio (Invited Guest). ChemTalks. Live recording in Germany by the ChemU (<https://chem-u.org/>), 6 April 2023. "Early Stage Drug Discovery for Chagas' Disease and Efforts Toward Drug Target Validation of *Trypanosoma cruzi* Glucokinase." Presentation Link: <https://www.youtube.com/live/WDMFCENm1Zc?feature=share>

Edward L. D'Antonio (Invited Guest). ISNTD Connect. Live recording in London, England by the International Society for Neglected Tropical Diseases, 17 March 2023. "Chagas' Disease and Human African Trypanosomiasis Drug Discovery: *Trypanosoma cruzi* Glucokinase as a Potential Drug Target." Presentation Link: <https://www.isntd.org/isntd-connect>

2022

Edward L. D'Antonio "USCB International Week: 3rd FrenchBIC Summer School on Methods for Studying Metals in Biology" Seminar Program for USCB International Week; 14 November 2022 (University of South Carolina Beaufort; Bluffton, SC).

Edward L. D'Antonio "Towards Drug Target Validation of *Trypanosoma cruzi* Glucokinase: Application of the Bump Mutagenesis Approach" Biology Weekly Seminar Program; 9 September 2022 (Department of Natural Sciences, University of South Carolina Beaufort; Bluffton, SC).

2021

Edward L. D'Antonio "Confronting Plastic Pollution in Beaufort County" First Presbyterian Church of Hilton Head Island (Hilton Head Island, SC), Invited Speaker by University of South Carolina Beaufort Chancellor Emerita Dr. Jane Upshaw, Earth Cares Program Series, November 10th, 2021. Link of pre-recorded presentation: <https://youtu.be/dA2r79LKqHY>.

Edward L. D'Antonio "Development of Stable, Selective, and Potent *Trypanosoma cruzi* Glucokinase Inhibitors Exhibiting Strong Antichagasic Efficacy" University of South Carolina Beaufort (Bluffton, SC), Dept. of Natural Sciences, Natural Sciences Fall Semester Seminar Series, September 3rd, 2021.

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Edward L. D'Antonio "Development of Stable, Selective, and Potent *Trypanosoma cruzi* Glucokinase Inhibitors Exhibiting Strong Antichagasic Efficacy" University of South Carolina (Columbia, SC), Dept. of Chemistry and Biochemistry, Biochemistry Divisional Seminar, September 1st, 2021.

Edward L. D'Antonio "Development of Stable, Selective, and Potent *Trypanosoma cruzi* Glucokinase Inhibitors Exhibiting Strong Antichagasic Efficacy" North Carolina State University (Raleigh, NC), Dept. of Chemistry, Retirement Symposium for Professor Dr. Edmond Bowden, July 23rd, 2021.

2018

Edward L. D'Antonio "Chagas' disease drug discovery: development of inhibitors for a drug-target in *Trypanosoma cruzi* parasites." First Presbyterian Church of Hilton Head Island; Wednesday Night Programs (Spring 2018); Hilton Head Island, South Carolina.

Edward L. D'Antonio "Chagas' disease drug discovery: development of potent and selective inhibitors for two drug-targets in *Trypanosoma cruzi*" USCB Biology & Marine Science Seminar Series (Spring 2018); University of South Carolina Beaufort, Bluffton, South Carolina.

2017

Edward L. D'Antonio "USCB Biology Program 4-25-17." News Interview. 843TV on Station: WHHI-TV (www.whhitv.com); Bluffton, South Carolina.

Edward L. D'Antonio "Inhibition of Drug-Target *Trypanosoma cruzi* Glucokinase by SBDD and HTS." International Union of Pure and Applied Chemistry – IUPAC 2017; 46th World Chemistry Congress; 40^o Reunião Anual da Sociedade Brasileira de Química; São Paulo, Brazil.

Edward L. D'Antonio "Discovery of Novel *Trypanosoma cruzi* Glucokinase Inhibitors with Biological Activity by High-Throughput Screening." The Center for Tropical & Emerging Global Diseases; 27th Annual Molecular Parasitology & Vector Biology Symposium; University of Georgia; Athens, Georgia.

Edward L. D'Antonio "Biologically-Active Inhibitors of *Trypanosoma cruzi* that Target Glucokinase from Structure-Based Drug Design and High-Throughput Screening Studies." The International Society for Neglected Tropical Diseases; Chagas Disease Roundtable 2017; Washington, D.C.

2016

Edward L. D'Antonio "High-Throughput Screen of Synthetic Small Molecule Inhibitors Targeting *Trypanosoma cruzi* Glucokinase." Invited Speaker; Directed Studies in Biology Seminar Series; University of South Carolina Beaufort; Bluffton, South Carolina.

2015

Edward L. D'Antonio "Glucosamine Analogue Inhibitors of *Trypanosoma cruzi* Glucokinase" American Chemical Society; 2015 Joint Southeastern/Southwest Regional Meeting; Memphis, Tennessee.

Edward L. D'Antonio "Glucosamine Analogue Inhibitors of *Trypanosoma cruzi* Glucokinase." 3rd Annual Cell Biology of Eukaryotic Pathogens Symposium; Clemson University; Clemson, South Carolina.

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2014

Edward L. D'Antonio "Design and Testing of Selective Trypanosomal Enzyme Inhibitors." Invited Speaker; Directed Studies in Biology Seminar Series; University of South Carolina Beaufort; Bluffton, South Carolina.

Edward L. D'Antonio "Design and Testing of Selective Trypanosomal Enzyme Inhibitors." Invited Speaker; Gateway for Interdisciplinary Graduate Studies (GIGS) Conference; University of South Carolina Beaufort; Bluffton, South Carolina.

2013

Edward L. D'Antonio "Target Faculty Progress Report" University of South Carolina, SC INBRE EAC Meeting (Invited Speaker), Columbia, South Carolina.

Edward L. D'Antonio "X-ray Crystallography to Explore Structure-Assisted Drug Discovery" University of South Carolina Beaufort, Directed Studies in Biology Seminar Series (Invited Speaker), Bluffton, South Carolina.

2012

Edward L. D'Antonio, Yang Hai, and David W. Christianson "Crystal Structure Determination of *Leishmania mexicana* Arginase" University of Pennsylvania, Crystal Talk Seminar, Philadelphia, Pennsylvania.

2011

Edward L. D'Antonio and David W. Christianson "Protocol Development Towards the Crystallization of a Parasitic Arginase" University of Pennsylvania, Crystal Talk Seminar, Philadelphia, Pennsylvania.

Edward L. D'Antonio and David W. Christianson "A Structural and Mechanistic Inquiry of Cobalt Containing Human Arginase I" University of Pennsylvania, Crystal Talk Seminar, Philadelphia, Pennsylvania.

2009

Edward L. D'Antonio, Jennifer D'Antonio, Hanna Gracz, Vesna de Serrano, Reza A. Ghiladi, Stefan Franzen and Edmond F. Bowden "Mutagenic Testing for Improved Peroxidase Activity in the Hemoglobin Dehaloperoxidase from *Amphitrite ornata*" Millersville University, Undergraduate Chemistry Department Seminar (Invited Speaker), Millersville, Pennsylvania.

2008

Edward L. D'Antonio and Edmond F. Bowden "Electrochemical Characterization of Dehaloperoxidase" The Electrochemical Society, 214th National Meeting, Honolulu, Hawaii.

Abigail H. Turner, Edward L. D'Antonio and Edmond F. Bowden "Interfacial Electron Transfer Kinetics of Adsorptively Immobilized Dehaloperoxidase on Self-Assembled Monolayers" The 7th Annual NCSU Summer Research Symposium, Raleigh, North Carolina.

Edward L. D'Antonio, Ph.D.

2006

Edward L. D'Antonio, Edmond F. Bowden, Jennifer Belyea, Michael F. Davis, Stefan Franzen, Tim L. Sit and Steven A. Lommel "Interfacial Electrochemistry of Dehaloperoxidase" The Electrochemical Society, 209th National Meeting, Denver, Colorado.

Edward L. D'Antonio and Edmond F. Bowden "Unusual Quasireversibility (UQR) in Protein Monolayers: An Explanation Based on Interfacial Relaxation Dynamics" The Electrochemical Society, 209th National Meeting, Denver, Colorado.

Lan T. Quan, Edward L. D'Antonio and Edmond F. Bowden "Monolayer Electrochemistry of Cytochrome c on Phosphonic Acid Terminated Alkanethiolate SAMs" The Electrochemical Society, 209th National Meeting, Denver, Colorado.

2005

Edward L. D'Antonio and Edmond F. Bowden "Electrochemistry of Cytochrome c: A New Hypothesis for a Thermodynamic Anomaly" University of Puerto Rico at Cayey, Undergraduate Chemistry Department Seminar (Invited Speaker), Cayey, Puerto Rico.

POSTER PRESENTATIONS

2023

Triet M. Pham (Presenter). "Rapid, Novel, and Sensitive Tetrazolium-Based Colorimetric Assay for Helicase nsp13 in SARS-CoV-2" (co-authored by Morgan G. Howard, Shane M. Carey, Gustavo F. Mercaldi, and Edward L. D'Antonio, Ph.D.).

- a) 32nd Annual Molecular Parasitology & Vector Biology Symposium, University of Georgia, Athens, Georgia (2 May 2023).
- b) 2023 Discover USC, Columbia, South Carolina (21 April 2023).
- c) 2023 USCB Student Research and Scholarship Day, Bluffton, South Carolina (17 April 2023); awarded 1st place in the "Innovation" category.

Lindsey R. Baker (Presenter). "Overexpression, Purification, and Biochemical Evaluation of *Trypanosoma cruzi* Glucokinase Bump Mutations for Drug-Target Validation" (co-authored by Anna L. Husted and Edward L. D'Antonio, Ph.D.).

- a) 32nd Annual Molecular Parasitology & Vector Biology Symposium, University of Georgia, Athens, Georgia (2 May 2023).
- b) 2023 Discover USC, Columbia, South Carolina (21 April 2023); awarded 1st place in the Biology and Biomedical Sciences division.
- c) 2023 USCB Student Research and Scholarship Day, Bluffton, South Carolina (17 April 2023); awarded 2nd place in the Hypothesis-Driven category.

Emily M. Welles (Presenter). "Towards the Development of a Dehaloperoxidase-Based Biosensor for Bisphenol A" (co-authored by Edward L. D'Antonio, Ph.D.).

- a) 2023 Discover USC, Columbia, South Carolina (21 April 2023); awarded 1st place in the Biology and Environmental Sciences division.
- b) 2023 USCB Student Research and Scholarship Day, Bluffton, South Carolina (17 April 2023); awarded 2nd place in the hypothesis-driven category.

Edward L. D'Antonio, Ph.D.

2022

Shane M. Carey, Sean P. Kearns, Matthew E. Millington, Gregory S. Buechner, Ray B. Nettles, Beda E. Alvarez, Jr., Leily Daneshian, Maksymilian Chruszcz, and Edward L. D'Antonio*
"The Role of Phe-337 in *Trypanosoma cruzi* Glucokinase: Thermodynamic Evaluation on the Binding Interaction of Glucosamine-Based Inhibitors." The Center for Tropical & Emerging Global Diseases; 31st Annual Molecular Parasitology & Vector Biology Symposium; 4 May 2022; University of Georgia; Athens, Georgia.

Shane M. Carey, Garrett B. Conner, Julian Sherman, Ana Rodriguez, and Edward L. D'Antonio*
"3-Nitro-2-Phenyl-2*H*-Chromene Analogues as Dual Inhibitors of Trypanosomatid Parasitic Targets." 2022 Discover UofSC. 28 April 2022; University of South Carolina; Columbia, South Carolina.

2019

Edward L. D'Antonio "Inhibitor development and structural characterization of glucokinases from trypanosomatid parasites." 48th Annual Meeting of the Brazilian Society for Biochemistry and Molecular Biology (14-17 May 2019); Águas de Lindoia, São Paulo, Brazil.

2018

Scott B. Green, Robert J. Lanier, Hanna S. Gracz, Ana Rodriguez, and Edward L. D'Antonio.
"Structure activity relationship (SAR) investigation of monosaccharide derivatives: discovery of biologically active and competitive *Trypanosoma cruzi* glucokinase inhibitors." The Center for Tropical & Emerging Global Diseases; 28th Annual Molecular Parasitology & Vector Biology Symposium; University of Georgia; Athens, Georgia.

Robert J. Lanier, Scott B. Green, and Edward L. D'Antonio. "Synthesis, purification, and characterization of monosaccharide inhibitors for *Trypanosoma cruzi* hexokinase." 2018 Discover UofSC; University of South Carolina; Columbia, South Carolina.

2015

Edward L. D'Antonio "Crystal Structures of *Trypanosoma cruzi* Glucokinase in Complex with Potent and Parasite-Homologue Selective Glucosamine Analogue Inhibitors." Poster Presentation. São Paulo School of Advanced Sciences on Neglected Diseases Drug Discovery (SPSAS-ND3) – Focus on Kinetoplastids; Campinas (São Paulo), Brazil.

Edward L. D'Antonio "Exploration of Monosaccharide Inhibitors for *Trypanosoma cruzi* Glucokinase and Hexokinase." Poster Presentation. 2015 SC INBRE Fall Symposium; Columbia, South Carolina.

2012

Edward L. D'Antonio, Yang Hai, and David W. Christianson "Crystal Structure of Arginase from *Leishmania mexicana*" University of Pennsylvania, Department of Chemistry, Graduate Student Recruitment Weekend Poster Session, Philadelphia, Pennsylvania.

Edward L. D'Antonio, Ph.D.

2009

Edward L. D'Antonio, Stefan Franzen, and Edmond F. Bowden "Dehaloperoxidase:
1) Modulation of the Ferric/Ferrous Reduction Potential by Halophenol Binding and 2) Genetic
Engineering Optimization of Peroxidase Function."

- a) Bioinorganic Chemistry Graduate Research Seminar (GRS) of the Gordon Research Conference, Ventura, California.
- b) The 4th Annual NCSU Graduate Research Symposium, Raleigh, North Carolina.
- c) The 10th Annual NCSU Chemistry Department Poster Session, Raleigh, North Carolina.

Jennifer D'Antonio, Edward L. D'Antonio, Edmond F. Bowden, and Reza A. Ghiladi "The First Spectroscopic Characterization of Dehaloperoxidase B from *Amphitrite ornata*" The 10th Annual NCSU Chemistry Department Poster Session, Raleigh, North Carolina.

2008

Edward L. D'Antonio and Edmond F. Bowden "Electrochemical Characterization of Dehaloperoxidase" The 9th Annual NCSU Chemistry Department Poster Session, Raleigh, North Carolina.

Abigail H. Turner, Edward L. D'Antonio, and Edmond F. Bowden "Interfacial Electron Transfer Kinetics of Adsorptively Immobilized Dehaloperoxidase on Self-Assembled Monolayers" The 7th Annual NCSU Summer Research Symposium, Raleigh, North Carolina.

2007

Edward L. D'Antonio and Edmond F. Bowden "Electrochemistry of Dehaloperoxidase: The Ferric /Compound III Redox Couple" The 8th Annual NCSU Chemistry Department Poster Session, Raleigh, North Carolina.

2006

Edward L. D'Antonio and Edmond F. Bowden "Electrochemistry of Cytochrome c: A New Hypothesis for a Thermodynamic Anomaly."

- a) The 120th North Carolina - American Chemical Society Sectional Conference, North Carolina Central University, Durham, North Carolina.
- b) The 7th Annual NCSU Chemistry Department Poster Session, Raleigh, North Carolina.

Lisandra Santiago Capeles, Edward L. D'Antonio, and Edmond F. Bowden "Diffusionless Electrochemistry of Dehaloperoxidase Electrostatically Adsorbed to Alkanethiol Self-Assembled Monolayers" The 5th Annual NCSU Summer Research Symposium, Raleigh, North Carolina.

2004

Edward L. D'Antonio and Lyman H. Rickard "Surfactant Charge Effect on the Electrochemistry of Hemoglobin" The American Chemical Society, 227th National Meeting, Anaheim, California.

UNDERGRADUATE / GRADUATE RESEARCH TRAINING

1. Makenna Milbauer, freshman (September 2023 – Present)
2. Kierstin A. Clark, summer intern (May 2023 – August 2023)
3. Destiny M. O'Neill, junior (May 2023 – Present)
4. Carson S. Frey, senior (May 2023 – Present)
5. Triet M. Pham, B.S. Biology (January 2023 – Present)
6. Emily M. Welles, B.S. Biology (October 2022 – May 2023)
7. Anna L. Husted, senior (January 2023 – Present)
8. Lindsey R. Baker, junior (February 2022 – Present)
9. Morgan "Skip" Howard, senior (September 2020 – December 2021)
10. Shane M. Carey, B.S. Biology (February 2020 – May 2022)
11. Ray B. Nettles, senior (January 2019 – December 2019)
12. Garrett B. Connor, B.S. Biology (November 2018 – May 2019)
13. Robert J. Lanier, Jr., B.S. Biology (November 2016 – May 2019)
14. Scott B. Green, B.S. Biology (November 2016 – May 2019)
15. Ashley Y. Freeman, B.S. Biology (September 2016 – May 2017)
16. Dr. Marcos O. Cisca, B.S. Biology (September 2016 – December 2016)
17. Samantha Saterlee, B.S. Biology (January 2016 – May 2016)
18. David Zerifat, B.S. Biology (January 2016 – May 2016)
19. Zach Taylor, senior (January 2016 – May 2016)
20. Breana Laguera, B.S. Biology (January 2016 – May 2016)
21. Dr. Matthew E. Millington, B.S. Biology, PA-C (January 2016 – August 2016)
22. Emilee L. Conner, senior (January 2016 – May 2017)
23. Gregory S. Buechner, junior (September 2015 – August 2016)
24. Hao V. Nguyen, B.S. Biology (September 2014 – May 2016)
25. Victoria R. (Hearn) Sutton, B.S. Biology (September 2014 – May 2016)
26. Tyler A. Frey, B.S. Biology (September 2014 – May 2017)
27. Sean P. Kearns, sophomore (September 2013 – May 2015)
28. Dr. Mason S. Deinema, B.S. Biology, M.D. from MUSC (September 2013 – May 2015)
29. Carolina Tillotson, senior (September 2013 – December 2013)
30. Dr. Butch Alvarez, senior instructor (September 2013 – Present)
31. Christine M. Bowman, sophomore (June 2012 – July 2012)
32. Dr. Mengbin Chen, Ph.D. Chemistry (January 2012 – August 2012)
33. Dr. Yang Hai, Ph.D. Chemistry (September 2011 – July 2012)
34. Sam Shuster, B.S. Computer Science (February 2011 – May 2011)
35. Dr. Thomas K. Chen, Ph.D. Chemistry (September 2008 – December 2008)
36. Abigail H. Turner, B.S. Chemistry, NSF-REU funded (June 2008 – August 2008)
37. Lisandra Santiago Capeles, B.S. Chemistry, NSF-AGEP (June 2006 – August 2006)
38. Jonathan Lee, B.S. Chemistry (January 2006 – May 2006)
39. Quang X. Dong, B.S. Chemistry (September 2005 – May 2006)
40. Ryan L. Coleman, B.S. Chemistry (May 2005 – August 2005)