Katy N. Newlin, Ph.D.

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EDUCATION

University of Houston, Department of Chemical and Biomolecular Engineering *Houston, TX*
Ph.D. in Chemical Engineering, ***Awarded the Best Dissertation Award for the College*** May 2017

University of Louisville, J.B. Speed School of Engineering *Louisville, KY*
B.S. in Chemical Engineering, *with High Honors* May 2012

RESEARCH EXPERIENCE

Massachusetts Institute of Technology (MIT) *Cambridge, MA*
Postdoctoral Research Fellow 2017 – 2018
Advisors: Bob Langer and Dan Anderson
Affiliations: David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Department of Anesthesiology, Boston Children's Hospital, Harvard Medical School

- Controlled the spatial organization of cells for tissue and organ regeneration by utilizing colloidal co-crystals as three-dimensional bioscaffolds
- Designed a biocompatible, soft-responsive, retrievable device containing glucose-monitoring and insulin-secreting cells for human cell replacement therapies
- Harnessed mechanistic driving forces at cell-surface interfaces to alter cell migration by chemically modifying biocompatible materials, tailoring surface geometries, and imposing environmental stimuli
- Performed survival *in vivo* surgeries, both subcutaneous and intraperitoneal implantations, on animal models for device implantation and retrieval with designed pancreatic scaffolds housing stem cells or isolated islets to treat Type 2 diabetes

University of Houston, Department of Chemical and Biomolecular Engineering *Houston, TX*
Doctoral Researcher 2013 – 2017
Co-advised: Peter Vekilov and Jeffrey Rimer
Dissertation Title: "Deciphering the Molecular Interactions between Antimalarials and Hematin Crystal Surfaces"

- Formulated quantitative parameters for novel antimalarial design to combat malaria parasite drug resistance
- Designed a physiological growth environment that produced hematin crystals > 100x than prior methods
- Identified the growth pathway for hematin crystallization which revealed specific crystal sites for drug binding
- Quantified thermodynamics and kinetics for heme detoxification underling malaria pathophysiology
- Determined antimalarial drug binding specificity to hematin crystal surfaces that categorizes the inhibitory modes of antimalarial action as a platform for drug design
- Identified target sites for therapeutic binding on hematin crystals by *in situ* AFM and revealed the first observation that hematin crystals grow by 2D nucleation and layer spreading
- Collaborated with Dr. Grattoni at Methodist Hospital Research Institute during my NIH Fellowship for drug encapsulation; Dr. Palmer at the University of Houston on computational assessment of drug modes of binding; Dr. Kahr at NYU on optical properties of hematin crystals

Research Scholar *Americas*
The Ronin Institute 2019 – Present

- Conducting a year-long field study across the Americas to collect plant, soil, and environmental data at conventional and alternative agricultural sites
- Developing crop templates towards mitigating climate change and alleviating global health resurgences
- Elucidating fundamental plant-biomatrix interactions through elemental analysis and real-time data collection as input parameters for mathematical models that will predict optimal plant arrangements

NASA Glenn Research Center *Cleveland, OH*
Undergraduate Student Research Project Intern 2010

- Developed a synthesis route for aluminosilicates aerogels to incorporate metals into hydrogels that resulted in testing of material properties: improved stability while enhancing thermal resistance
- Collaborated with engineers and organic chemists to optimize the design parameters for synthesized materials (density, porosity, and surface area) by systematically varying the synthesis parameters and compositions
- Monitored the change in porosity and material morphology which revealed a correlation between metal incorporation and desirable thermal resistivity

University of Louisville, Department of Chemistry *Louisville, KY*
Undergraduate Researcher 2010

- Organic synthesis of medical drugs to target breast cancer
- Designed a synthesis procedure to produce a new, synthetic compound which was previously unsuccessful; determined the compound solubility across a variety of ideal solvents

University of Louisville, Department of Biology *Louisville, KY*
Undergraduate Researcher 2008 – 2012

- Assessed the variability of adiponectin levels across a variety of mice organs/tissues by quantifying the concentration of adipose hormone adiponectin by ELISA assays
- Received two independent grants for undergraduate research on the study of mRNA synthesis for adiponectin in adipose tissue

INDUSTRIAL EXPERIENCE

Alkermes *Waltham, MA*
Scientist 2018 – 2019

- Developed therapeutics to treat opioid and alcohol dependence, Schizophrenia, and Alzheimer's within design spaces that were suitable for multiple required delivery routes bracketed by optimal tolerability levels
- Tuned material properties of pipeline pharmaceuticals to control bioavailability and plasma release profiles, while alleviating local toxicity through novel hydrogel applications to alter diffusion parameters
- Designated project team lead to design a next-generation therapeutic for extending drug release from a single month to a multiple drug delivery – redesigned the process and material properties by employing drug encapsulation methodologies to achieve our target goal of a two month long-acting injectable
- Designed a microencapsulation nasal spray formulation to penetrate the blood brain barrier, with higher bioavailability compared to IV plasma levels, to successfully achieve a formulation to outcompete narcotic compounds in an overdose crisis as an emergency lifesaving treatment
- Altered formulation spaces to produce single and co-crystals from challenging oiling-out therapeutics that were previously deemed inaccessible to create long-acting injectable therapeutics for severe epilepsy cases in youth

Brown-Forman Corporation Headquarters *Louisville, KY*
Student Engineer 2011

- Designed an adiabatic chill filtration system for Jack Daniels® products; successful project implementation for full scale-up of the chill filtration system at the production site that resulted in cost savings by decreasing the amount of off-specification product
- Produced unique batch reactions of alcoholic and non-alcoholic liquid beverages in the research and development pilot plant scale for global production
- Researched resin/carbon treatments for columns to improve production quality between batches
- Presented results to the director of the Department of Research and Development

Kentucky Pollution Prevention Center (KPPC) *Louisville, KY*
Student Engineer 2010

- Provided direct support for the reduction of pollution and energy consumption for projects pertaining to companies throughout the state of Kentucky (industry and commercial facilities)
- Analyzed annual energy consumption from on-site assessments; collected operating parameters for the analysis of process efficiency in order to pinpoint areas of improvement for full facilities
- Optimized energy expenditure for pumps, HVAC systems, and specific company equipment quantitatively

TECHNIQUES

Microscopy | Air and *in situ* AFM (lattice imaging, adhesion and chemical force spectroscopy), SEM, Optical, Confocal, TEM sample preparation and sectioning
Spectroscopy | UV-visible, FTIR, Raman, and NMR/qNMR (H-NMR, C-NMR, 2D-NMR, COSY)
Analytical | LC-MS, HPLC, TGA, IGC, XRD, DLS, SAXS
Crystallization | EasyMax Synthesis Reactor Systems, Crystal 16 Crystallization Systems
Biological | Electrospray encapsulation, Cell culture (HEK 293, HUH 7, beta replacement cell lines RIN 5F, islet/human pancreatic stem cells), GSIS, ELISA, Small animal surgeries (subcutaneous and intraperitoneal implantations)
Programs | Diamond Crystal and Molecular Visualization/Diffrac.Eva, Trios, MestReNova, Nanoscope Analysis, Origin, Image J, Canvas, NuGenesis ELN
Certifications | IACUC/CAC Animal Handling Certification (mice/rats), Laser Safety, Biological Safety BL1/2
Teaching Certifications | TEFL 120-hr Advanced Course

HONORS AND AWARDS

2019	**Selected to attend the Society of Women Engineers** *Diversity and Inclusion Fuels Innovation in STEM* congressional outreach day at Capitol Hill in Washington D.C., Alkermes, Washington D.C.
2017	**Best Dissertation Award College Wide,** University of Houston, Houston, TX
2016	**Women's Initiative Committee (WIC) Travel Award,** San Francisco, CA
2016	**Gordon Research Seminar (GRS) Travel Award,** Girona, Spain
2016	**Cullen Graduate Fellowship Travel Grant (CGFTG)**, Awarded for travel to the Biomineralization GRC in Girona, Spain by the University of Houston
2016	**American Institute of Chemical Engineers (AIChE) Separations Division Graduate Research Award**, San Francisco, CA
2016	**Gordon Research Seminar (GRS) Poster Selected for Oral Presentation,** Girona, Spain
2015	**Gordon Research Conference (GRC) Travel Award,** Biddeford, ME
2015	**Gordon Research Conference (GRC) Poster Selected for Oral Presentation,** Biddeford, ME
2014	**GRaSP Talks Finalist,** University of Houston, Graduate School, Houston, TX
2014	**GRaSP Talks Training Award,** Graduate Research and Scholarship Projects (GRaSP), University of Houston, Graduate School, Houston, TX
2014	**Future Faculty Program (FFP),** University of Houston, Graduate Training Program (1.5 year teaching and research based training with associated courses), awarded travel funding, Houston, TX
2013	**Poster Award Contest Winner,** 23rd Keck Annual Research Conference, Houston, TX
2013	**NIGTP Keck Center Fellowship Funding**, Gulf Coast Consortia (GCC), Nanobiology Interdisciplinary Graduate Training Program (NIGTP) sponsored by the National Institute of Health (NIH)
2012	**Dean's List**, University of Louisville, Louisville, KY
2008 – 2012	**Trustees' Scholarship Program: President's Scholarship Program, Govenor's Scholars Program** University of Louisville; full tuition awarded based on academic achievement; renewed for eleven semesters in engineering based on academic standing
2008 – 2012	**KEES Award**, awarded for four years of scholarship based on academic standing and ACT score

PUBLICATIONS (Katy N. Newlin was previously Katy N. Olafson)

19. Ma, W., **Newlin, K.N.**, Vekilov, P.G., Rimer, J.D., *Activating Artemisinin Suppresses Hematin Crystal Growth* (In Preparation)
18. Farah, S., Doloff, J.C., Muller, P., Sadraei, A., Han, H.J., **Olafson, K.N.**, Vyas, K., Tam, H.H., Hollister-Lock, J., Kowalski, P.S., Griffin, M., Meng, A., McAvoy, M., Graham, A.C., McGarrigle, J., Oberholzer, J., Weir, G.C., Greiner, D.L., Langer, R.S., Anderson, D.G., *Long-term Implant Fibrosis Prevention in Rodents and Non-human Primates using Crystallized Drug Formulations*, **Nat. Mater.** (2019)
17. **Olafson, K.N.**, Clark, J., Vekilov, P.G., Palmer, J.C., Rimer, J.D., *Structuring of Organic Solvents at Solid Interfaces and Ramifications for Antimalarial Adsorption on β-Hematin Crystals*, **ACS Appl. Mater. Interfaces.** 10 (2018) 29288-29298
16. Fenton, O., **Olafson, K.N.,** Pillai, P., Mitchell, M., Langer, R.S., *Advances in Biomaterials for Drug Delivery*, **Adv. Mater.** 30 (2018) 1705328

15. **Olafson, K.N.**, Rimer, J.D., Vekilov, P.G., *Early Onset of Kinetic Roughening Due to Step Identify Loss in Hematin Crystallization*, Phys. Rev. Lett. 119 (2017) 198101
14. Polling-Skutvik, R., **Olafson, K.N.**, Narayanan, S., Stingaciu, L., Faraone, A., Conrad, J.C., Krishnamoorti, R., *Confined dynamics of Grafted Polymer Chains in Solutions of Linear Polymer*, **Macromolecules.** 50 (2017) 7372 – 7379
13. **Olafson, K.N.**, Nguyen, T.Q., Vekilov, P.G., Rimer, J.D., *Deconstructing Quinoline-Class Antimalarials to Identify Fundamental Physicochemical Properties of Hematin Crystal Growth Inhibitors*, **Chem. Eur. J.** 23 (2017) 13638 – 13647
12. **Olafson, K.N.**, Nguyen, T.Q., Rimer, J.D., Vekilov, P.G., *Antimalarials Inhibit Hematin Crystallization by Unique Drug-Surface Site Interactions*, **Proc. Natl. Acad. Sci. U.S.A.** 114 (2017) 7531 – 7536
11. **Olafson, K.N.**, Li, R., Alamani, B.G., Rimer, J.D., *Engineering Crystal Modifiers: Bridging Classical and Nonclassical Crystallization*, **Chem. Mater.** *28* (2016) 8453 – 8465. Artwork selected for cover.
10. Vekilov, P.G., Chung, S., **Olafson, K.N.**, *Shape Change in Crystallization of Biological Macromolecules*, **MRS Bulletin** (2016) 375 – 3809.
9. **Olafson, K.N.**, Ketchum, M.A., Rimer, J.D., Vekilov, P.G., *Molecular Mechanisms of Hematin Crystallization from Organic Solvent*, **Cryst. Growth Des.** 15 (2015) 5535 – 5542
8. Vekilov, P.G., Rimer, J.D., **Olafson, K.N.**, Ketchum, M.A., *Lipid or Aqueous Medium for Hematin Crystallization*, **Cryst. Eng. Comm.** 17 (2015) 7790 – 7800
   Article selected as a highlight article. Artwork selected for cover.
7. **Olafson, K.N.**, Ketchum, M.A., Rimer, J.D., Vekilov, P.G., *Mechanisms of Hematin Crystallization and Inhibition by the Antimalarial Drug Chloroquine*, **Proc. Natl. Acad. Sci. U.S.A.** 112 (2015) 4946 – 4951
6. **Olafson, K.N.**, Rimer, J.D., Vekilov, P.G., *Growth of Large Hematin Crystals in Biomimetic Solutions*, **Cryst. Growth Des.** 14 (2014) 2123 – 2127
5. Hurwits, F.I., Gallagher, M., Olin, T.C., Shave, M.K., Ittes, M.A., **Olafson, K.N.**, Fields, M.G., Guo, H., Rogers, R.B., *Optimization of Alumina and Aluminosilicate Aerogel Structure for High-Temperature Performance*, **Int. J. Appl. Glass Sci.** 5 (2014) 1 – 11
4. Ketchum, M.A., **Olafson, K.N.**, Petrova, E.V., Rimer, J.D., Vekilov, P.G., *Hematin Crystallization from Aqueous and Organic Solvents*, **J. Chem. Phys.** 139 (2013) 1 – 9
3. Hurwits, F.I., Guo, H., Rogers, R.B., Sheets, E.J., Miller, D.R., **Newlin, K.N.**, Shave, M.K., Palczer, A.R., Cox, M.T., *Influence of Ti Addition of Boehmite-derived Aluminum Silicate Aerogels: Structure and Properties*, **J. Sol-Gel Science and Technology.** 64 (2012) 0928-0707 (367 – 374)
2. Hurwitz, F.I., Guo, H., **Newlin, K.N.**, *Influence of Boehmite Precursor on Aluminosilicate Aerogel Pore Structure, Phase Stability and Resistance to Densification at High Temperatures*, **NASA Glenn Research Center** (2011)
1. Hurwitx, F.I., Guo, H., Sheets, E.J., Miller, D.R., **Newlin, K.N.**, *Tailoring of Boehmite-Derived Alunimosilicate Aerogel Structure and Properties: Influence of Ti Addition*, **MRS Proceedings** 1306, Mrsf10-1306-bb10-03 (2010)

AWARDED GRANTS

1. Basal Plasma Levels of Adiponectin in Rats. Newlin, K.N.. Undergraduate Research Grant, Office of the Vice-President for Research, $300, 10/15/09-10/14/10.
2. Expression of Adiponectin in Brown Adipose Tissue. Newlin, K.N.. Undergraduate Research Grant, Office of the Vice-President for Research, $500, 8/2/11-8/1/12.

INVITED TALKS AND POSTERS

2019 **Sustainability Seminar** **Cambridge, MA**
Cambridge Public Library Selected Presentation
Co-host Sponsorship: Massachusetts Sierra Club (Nonprofit), 350 Inc. (Nonprofit)
Newlin, K.N., *Everyday Actions to Build a Sustainable World*, (Oral Presentation) June 10th, 2019

2018 **McKinsey&Co, Spark Spark Event Series** **Cambridge, MA**

2018 **McKinsey&Co, Spark Symposium** **Cambridge, MA**

2016 **Southwest Regional Meeting (SWRM) of the American Chemical Society** **Galveston, TX**
Aggregation of Biological Molecules
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Molecular Interactions that Govern Antimalarial Drugs Selectively Binding to Hematin Crystal Surface Sites*, (Oral Presentation) November 10th, 2016

2016 **Gordon Research Seminar (GRS) – Biomineralization** **Girona, Spain**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Is the Sum Greater than the Parts? Elucidating the Molecular Interactions between Antimalarial Drugs and Hematin Crystal Surfaces*, (Oral Presentation) August 13th, 2016

2016 **Research First Look Showcase – University of Houston** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Decoding the Molecular Recognition between Antimalarials and Hematin Crystal Surfaces* (Poster Presentation) May 4th, 2016

2015 **Society of Plastics Engineers (*SPE*) , University of Houston Local Chapter** **Houston, TX**
Olafson, K.N., *Elucidating the Molecular Interactions at a Solid-Liquid Interface to Combat Malaria,* (Oral Presentation) November 17th, 2015

2015 **Rice University, 25th Keck Annual Research Conference** **Houston, TX**
25th Anniversary Celebration
Olafson, K.N., Grattoni, A., Rimer, J.D., Vekilov, P.G.. *Elucidating the Fundamentals of Hematin Crystallization to Combat Malaria,* (Poster Presentation) October 15th and 16th, 2015

2015 **Gordon Research Conference (GRC) – Crystal Growth and Assembly** **Biddeford, ME**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Are All Antimalarials Created Equal? Modes of Antimalarial Drug Inhibition in Hematin Crystallization,* (Oral Presentation) June 30th, 2015

2014 **Keck Seminar – Rice University** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Growth Mechanisms of β-hematin in a Biomimetic Environment,* (Oral Presentation) March 28th, 2014

PRESENTATIONS AND POSTERS

2017 **Gordon Research Conference (GRC) – Crystal Growth and Assembly** **Biddeford, ME**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Deconstructing Molecular Interactions between Antimalarials and Hematin Crystal Surfaces* (Poster Presentation) June 25th – 30th, 2017

2017 **Gordon Research Conference (GRS) – Crystal Growth and Assembly** **Biddeford, ME**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Deciphering the Molecular Interactions between Antimalarials and Hematin Crystal Surfaces* (Poster Presentation) June 23rd – 25th, 2017

2016 **American Institute of Chemical Engineers (AIChE) Annual Conference** **San Francisco, CA**
Solid-Liquid Interfaces Session
Olafson, K.N., *Interactions between Antimalarials and Hematin Crystal Surface Sites Determine the Mode of Inhibition,* (Oral Presentation 610f) November 14th, 2016
Nucleation and Growth Session
Olafson, K.N., *Application of Hematin Crystallization by Classical Mechanisms towards Understanding Antimalarial Drug Modes of Action,* (Oral Presentation 659g) November 14th, 2016

2016 **University of Houston, 31st Organization of Chemical Engineering Graduate Students (OChEGS) Annual Research Symposium** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Deconstructing Antimalarial Drugs to Understand their Molecular Recognition for Hematin Crystal Surfaces*, (Oral Presentation) September 23rd, 2016

2016 **Gordon Research Conference (GRC) – Biomineralization** **Girona, Spain**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Modes of Antimalarial Drug Binding During Hematin Crystallization* (Poster Presentation) August 14th – 19th, 2016

2015 **American Institute of Chemical Engineers (AIChE) Annual Conference** **Salt Lake City, UT**
Solid-Liquid Interfaces Session
Olafson, K.N., *Molecular Interactions at a Solid-Liquid Interface Determine the Inhibition Mechanism of Hematin Crystallization by Antimalarial Drugs,* (Oral Presentation 610f) November 11th, 2015
Particle Formation and Crystallization Processes from Liquids, Slurries, and Emulsions Session
Olafson, K.N., *Mechanisms of Hematin Crystallization and Inhibition in Biomimetic Solutions,* (Oral Presentation 659g) November 12th, 2015

2015 **University of Houston, 30th Organization of Chemical Engineering Graduate Students Annual Research Symposium** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Modes of Antimalarial Drug Inhibition,* (Poster Presentation) September 26th, 2015

2015 **Rice University, Texas Soft Matter Meeting** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Classification of Antimalarial Drug Inhibition*, (Oral Presentation) August 21nd, 2015

2015 **Gordon Research Conference (GRC) – Crystal Growth and Assembly** **Biddeford, ME**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Modes of Antimalarial Drug Inhibition in Hematin Crystallization* (Poster Presentation) July 1st – 2nd, 2015

2014 **American Institute of Chemical Engineers (AIChE) Annual Conference** **Atlanta, GA**
Engineering Sciences and Fundamentals Session
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Mechanisms of β-hematin Crystallization and Inhibition by Antimalarials*, (Oral Presentation 720f) November 20th, 2014

2014 **Rice University, 24th Keck Annual Research Conference** **Houston, TX**
Quantitative Synthetic Biology
Olafson, K.N., Grattoni, A., Rimer, J.D., Vekilov, P.G.. *Mechanisms of Hematin Crystallization and Inhibition by Antimalarial Growth Modifiers in a Physiological Environment*, (Poster Presentation) November 7th, 2014

2014 **University of Houston, 29th Organization of Chemical Engineering Graduate Students Annual Research Symposium** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Mechanism of Hematin Crystallization and Modes of Antimalarial Drug Inhibition*, (Oral Presentation) September 26th, 2014

2014 **University of Texas, Texas Soft Matter Meeting** **Austin, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Mechanism of Hematin Crystallization*, (Oral Presentation) August 22nd, 2014

2014 **Rice University, International Year of Crystallography: Structure Matters** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Growth Mechanisms of β-hematin Crystals*, Structure Matters (Poster Presentation) February 14th, 2014

2013 **Rice University, 23rd Keck Annual Research Conference** **Houston, TX**
Therapeutic Monoclonal Antibodies – A Multidisciplinary Challenge
Olafson, K.N., Grattoni, A., Rimer, J.D., Vekilov, P.G.. *Classical and Non-classical Growth Mechanisms of β-hematin Crystals*, Received a Pre-doctoral Poster Award (Poster Presentation) November 8th, 2013

2013 **University of Houston, 28th Organization of Chemical Engineering Graduate Students Annual Research Symposium** **Houston, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Molecular Mechanism of Hematin Crystallization*, (Poster Presentation) September 27th, 2013

2013 **Texas A&M, Texas Soft Matter Meeting** **College Station, TX**
Olafson, K.N., Rimer, J.D., Vekilov, P.G.. *Mechanisms of β-hematin Crystal Growth by in-situ AFM*, (Oral Presentation) August 12th, 2013

2012 **Kentucky State Capital, 11th Posters-at-the-Capitol** **Frankfort, KY**
Wagoner, T. and Newlin, K.N.. *Gender Differences in a Hormone Related to Obesity*, (Poster Presentation; One of fifteen UofL undergraduate students selected to present) January 26th, 2012

2011 **University of Louisville, Undergraduate Research Symposium** **Louisville, KY**
Wagoner, T., Guardiola-Bright, J., Newlin, K.N., and Steffen, J.M.. *Gender Differences in Serum and Adipose Tissue Adiponectin in Rats*, (Poster Presentation)

2011 **American Chemical Society National Meeting & Exposition** **Anaheim, CA**
Hurwitz, F.I., Guo, H., Newlin, K.N.. *Influence of Boehmite Precursor on Aluminosilicate Aerogel Pore Structure, Phase Stability and Resistance to Densification at High Temperature*, (Poster Presentation)

2010 **University of Louisville, Undergraduate Research Symposium** **Louisville, KY**
Guardiola-Bright, J., Newlin, K.N., Steffen, J.M.. *Gender Differences in Total and Multimeric Forms of Serum Adiponectin in Rats*, (Poster Presentation)

ACADEMIC EXPERIENCE

iTutorGroup *Remote*
Teaching English as a Foreign Language 2020 – Present
Global consultant who teaches English as a second language to advance both individual and group clients. Leading classes that range from a 1-1 to a 1-6 student body using positive reinforcement and TPR.

Graduate Recruitment Coordinator *Houston, TX*
Department of Chemical and Biomolecular Engineering, University of Houston 2014 – 2017
Organized and hosted department-wide recruitment events for the incoming graduate class

Course Instructor for Experimental Methods Class *Houston, TX*
Department of Chemical and Biomolecular Engineering, University of Houston 2016
Atomic Force Microscopy lecture and experimental demonstration, designed homework problems, exam questions, and assessed the knowledge of the student's ability to critically apply what was learned in the classroom setting to practical and experimental applications.

Thermodynamics Tutor *Houston, TX*
Department of Chemical and Biomolecular Engineering, University of Houston 2015

Teaching Assistant for Classical Thermodynamics *Houston, TX*
Department of Chemical and Biomolecular Engineering, University of Houston 2013 – 2014

OUTREACH AND VOLUNTEERING

2020 Invited as a return panelist at the University of Louisville Chemical Engineering course to speak on non-traditional career paths as a chemical engineering major.

2019 Alkermes Intern Presentation Series | Developed a team where interns are provided with a supportive environment to gain exposure to receiving and providing feedback in order to practice public speaking.

2019 Selected to attend the SWE *Diversity and Inclusion Fuels Innovation in STEM* congressional outreach day at Capitol Hill in Washington D.C. to meet with congress members

2019 Society of Women Engineers (SWE) Member | 2017 – Present

2019 American Institute of Chemical Engineers (AIChE) Member | 2009 – Present | Local chapter president at the University of Louisville; annual attendance to national conferences to present talks and posters; received awards at multiple AIChE conferences.

2019 Invited as to be a panelist at the University of Louisville by Dr. Willing for a Chemical Engineering course to speak on non-traditional career paths as a chemical engineering major.

2019 Boston Global Women's Breakfast: Empowering Women in Chemistry Seminar with the 100th anniversary of IUPAC as a global initiative

2018 ThermoFisher Aspire Program | Organized a team of members to present state of the art equipment and a teaching program for the Langer Lab at MIT

2018 Reviewed a submitted manuscript for *Applied Surface Science*

2018 STEM | Invited as a panel member for *Think Big!* to inspire and discuss academic and industry avenues to pursue with primary school students

2017-18 Langer Lab Symposium | Selected to invite speakers from top tier universities, venture capitols, and national laboratories for regular seminar lectures for Bob Langer's research group at the Koch Institute for Integrative Cancer Research Center at MIT to broaden the research perspectives of lab members.

2017 Shelby County Public Schools Astronomy Day | STEM outreach for elementary students to discuss the classification of comets, meteorites, etc. and developed methods to prevent a catastrophic event from impacting the Earth.

2017 Current Postdoctoral Board Member for the Department of Chemical Engineering

2017 STEM | Invited judge for the Massachusetts Junior Academy of Science Symposium at MIT

2017 Reviewed a submitted manuscript for *Experimental Parasitology*

2017 Invited to co-chair at the Gordon Research Seminar for Crystal Growth and Design in the session "In Situ Characterization of Crystal Growth"

2016 Reviewed a submitted manuscript for the *Journal of Crystal Growth*

2016 Invited to co-chair the "Accelerated Discovery and Development of Inorganic Materials" event in the Materials Engineering and Sciences Division program for the Annual 2016 AIChE Conference

2016 Invited to co-chair the "Templated Assembly of Inorganic Nanomaterials" event in the Materials Engineering and Sciences Division program for the Annual 2016 AIChE Conference

2016 MIT-Lemelson Event | Demonstrated uses of optical/atomic force microscopy and dynamic light scattering techniques to visiting high school students for STEM outreach.

2016 Committee Member for the Student Success Task Force | Invited by the Vice Provost and Dean of Graduate School to serve on the Student Success Task Force

2016 Energy Day Festival | October 12th, 2016. Volunteered at the University of Houston Engineering educational booth with interactive demonstrations, including those that conveyed ideas pertaining to renewable energy sources, and other select STEM areas to our Houston youth.

2015 Women's Initiative Committee (WIC) American Institute of Chemical Engineers (AIChE) Annual Meeting Networking Luncheon | Salt Lake City, UT, November 9th, 2015

2015 Energy Day Festival | October 17th, 2015. Participated in hosting the UH educational booth with interactive demonstrations, including those that conveyed ideas pertaining to renewable energy sources, and other select STEM areas to our Houston youth in Sam Houston Park.

2014 Women's Initiative Committee American Institute of Chemical Engineers Annual Meeting Networking Luncheon | Atlanta, GA, November 17th, 2014

2014 Rice University, International Year of Crystallography: Structure Matters |
Educated undergraduate students on crystal growth using analogies (i.e., addition of building Lego blocks to a tower) and conveyed the importance of STEM programs/higher education

2013 – 17 Society of Plastics Engineers (SPE) Member | Annually attended local conferences and presented posters

2013 – 15 Mentorship for Undergraduate Research Project | Tam Q. Nguyen completed independent research projects during his two-year project on hematin complexation in various media; received an outstanding poster award at the 2014 Undergraduate Research Day; successfully defended his honors thesis.

2013 – 14 Mentorship for High School Research Project | Aman Patel initially began his competitive research project with me at the beginning of his project; accepted to attend undergraduate schooling at MIT.

2011 – 12 American Institute of Chemical Engineers (AIChE) Local Chapter President | University of Louisville, Louisville, KY

2011 – 12 Invited Grader for Numerical Methods, J.B. Speed School | University of Louisville, Louisville, KY

2009 – 12 Honors Dormitory Resident Assistant | University of Louisville, Louisville, KY

2007 Governor's Scholar Program (GSP) | Bellarmine University, Louisville, Kentucky

PERSONAL INTERESTS

- Currently traversing Canada by bike to collect real-time data to combat climate change
- Rock climber, backpacking and hiking, traveling
- Certified Yoga Instructor | 200 Hour Yoga Teacher Training (YTT)
- Yoga instructor at Majestic Yoga Studio, Cambridge, MA 2017 – 2019; Inspire Rock, Houston, TX 2016 – 2017
- Piano player for 12 years; oboe player
- BARC Animal Rescue Volunteer, Houston, TX 2017
- Polar Bear Plunge for Louisville's Special Olympics 2013
- Volunteered with the Shelby County Humane Society for 7 years; shadowed veterinarian Dr. Gregory and assisted with vaccinations and preparatory procedures for routine surgeries
- Competitive equitation rider for 12 years