

Kevin P. Barry

26 Canna Drive • East Haven, CT 06512 • 203.915.9655 • kpbarry26@gmail.com

QUALIFICATIONS SUMMARY

- Background includes enzymology, biophysics, and biochemistry as well as synthesis and purification of organic, inorganic, and organometallic small molecules
- Extensive knowledge in the extraction of bacterial genomic DNA, generation of cloned gene constructs, and the expression and purification of recombinant proteins
- Six years of experience with Biosafety Level-2 pathogens and procedures
- Extensive knowledge of data collection and analysis techniques
- Mentored and trained new graduate students and undergraduate students
- Excellent oral and written communication skills

EDUCATION

Ph.D. Chemistry – Wesleyan University, Middletown, CT Degree conferred May 2015
Thesis Advisor: Erika A. Taylor, Ph.D.

Ph.D. Program (Chemistry) – Indiana University, Bloomington, IN Sept. 2005 – May 2007

B.S. Honors Chemistry – Lafayette College, Easton, PA Degree conferred May 2005
Thesis Advisor: Chip Nataro, Ph.D.

PROFESSIONAL EXPERIENCE

Assistant Professor of Chemistry – Special Appointment Sept. 2014 – August 2016
Southern Connecticut State University – New Haven, CT

- Instructor for general chemistry lecture and laboratory courses
- Second reader for undergraduate academic theses

Graduate Research Assistant

Wesleyan University – Middletown, CT Sept. 2007 – May 2015
Advisor: Erika A. Taylor, Ph.D.
Thesis: “Two stops on the pathway of lignin utilization: A story of synthesis and enzymology”

- Extraction of bacterial genomic DNA, gene cloning via PCR, and sub-cloning into expression vectors
- Expression and anaerobic purification of oxygen sensitive dioxygenase metalloenzymes
- Collection and analysis of enzyme reaction rate data via spectrophotometric and oxygen electrode methods (steady state kinetics, pH-rate optimization)
- Site-specific mutagenesis of sub-cloned genes for the analysis of enzyme substrate specificity
- Reaction scheme planning, and 15 step synthesis of a FRET-probe labeled lignin mimic for the *in vivo* detection of lignin degradation in complex ecological systems

Indiana University – Bloomington, IN Sept. 2005 – May 2007
Advisor: Amar H. Flood, Ph.D.

- Surface plasmon resonance Raman of self-assembled Ruthenium complex monolayers on gold

Undergraduate Research Assistant

Lafayette College – Easton, PA June 2002 – May 2005
Advisor: Chip Nataro, Ph.D.
Honors Thesis: A New Synthesis for 1,1'-bis(β -hydroxyethyl)ferrocene and the Electrochemistry Of Polypyridyl and Cyclometallated Au(III) Complexes

- Synthesis, purification, and analysis of ferrocene derivatives
- Electrochemistry (cyclic voltammetry) of ferrocene derivatives and Au(III) complexes

SKILLS

- Collection and analysis of data from a wide range of instrumentation (Hansatech oxygen electrode, Varian-Cary UV-Vis Spectrophotometer, Varian 300 and 400 MHz NMR spectrometers, GC-mass spectrometry, ESI-mass spectrometry, Molecular Devices plate reader, Grace Reveleris flash chromatography systems, FT-IR spectrophotometry, preparative TLC, isothermal titration calorimetry, PCR)
- Experience with Biosafety Level 2 sample and pathogen handling and procedures.
- Experience in the extraction and handling of bacterial DNA, gene cloning and mutation using PCR, and planning of gene constructs for recombinant protein expression in *E. coli*.
- Experience in protein purification (metal affinity, and ion exchange chromatography), and handling of enzymes sensitive to ambient conditions.
- Extensive planning and execution of *in vitro* assays for enzyme activity and kinetics.
- Analysis of NMR spectra of synthesized organic compounds (¹H, ¹³C, COSY, HSQC, HMBC, NOESY)
- Setup and use of laboratory equipment (Schlenk lines, rotary evaporators, PCR machines, GE Healthcare AKTA FPLC, Vacuum Atmospheres and MBraun glove boxes, bench top centrifuges, Sorvall centrifuges, ultracentrifuges, class II biosafety cabinets, protein and DNA gel electrophoresis, homogenizers and French press for cell lysis, vacuum pumps)
- Knowledge of computer programs for the collection of computational data such as small molecule docking, computer aided drug design, and optimization of small molecule geometry and energies (AutoDock and AutoDock Vina, Gaussian/GausView), as well as data analysis (KaleidaGraph, Chimera, PyMOL)

RESEARCH**Publications:**

- **Barry, K. P.;** Nataro, C., “A New Synthesis and Electrochemistry of 1,1'-bis(β -hydroxyethyl)ferrocene,” *Inorganica Chimica Acta*, **2009**, 362, 2068-2070. DOI: 10.1016/j.ica.2008.09.017
- **Barry, K. P.;** Taylor, E. A., “Characterizing the Promiscuity of LigAB, a Lignin Catabolite Degrading Extradiol Dioxygenase from *Sphingomonas paucimobilis* SYK-6,” *Biochemistry*, **2013**, 52, 6724-6736. DOI: 10.1021/bi400665t
- **Barry, K. P.;** Ngu, A.; Cohn, E. F.; Cote, J. M.; Burroughs, A. M.; Gerbino, J. P.; Taylor, E. A., “Exploring Allosteric Activation of LigAB from *Sphingobium* sp. strain SYK-6 through Kinetics, Mutagenesis, and Docking Studies,” *Arch. Biochem. Biophys.*, **2015**, 567, 34-45. DOI: 10.1016/j.abb.2014.12.019
- **Barry, K. P.;** Ngu, A.; Taylor, E.A., “Improving Alternate Lignin Catabolite Utilization of LigAB from *Sphingobium* sp. strain SYK-6 through Site Directed Mutagenesis,” *Process Biochemistry*, **2015**, 10, 1634-1639. DOI: 10.1016/j.procbio.2015.05.024

Presentations:

- Poster Presentation: **Barry, K.P.;** Taylor, E. A. “Investigating the substrate utilization profile and kinetics of protocatechuate 4,5-dioxygenase from *S. paucimobilis* SYK-6,” Enzyme Mechanism Conference XXIII. Coronado, California. Jan. 3-7, 2013.
- Poster Presentation: **Barry, K. P.;** Nataro, C. “Electrochemistry of gold polypyridyl complexes,” 229th ACS National Meeting. San Diego, California. March 13-17, 2005.
- Poster Presentation: **Barry, K.P.;** Nataro, C. “Synthesis and characterization of 1,1'-bis(2-ethanol) ferrocene,” 226th ACS National Meeting. New York, New York. Sept. 7-11, 2003.

AWARDS/GRANTS

- | | |
|--|-------------------------|
| • Gomez-Ibanez Graduate Fellowship, Dept. of Chemistry, Wesleyan University | January 2014 – May 2014 |
| • Pierce Prize for Excellence in Chemistry – Dept. of Chemistry, Wesleyan University | April 2012 |
| • NIH Doctoral Studies in Molecular Biophysics Training Grant | Sept. 2012 – May 2013 |
| • Graduate research assistant under Department of Energy research grant | May 2010 – August 2012 |
| • EXCEL Research Scholar – Dept. of Chemistry, Lafayette College | June 2002 – May 2005 |