ANGELA L. MAHAFFEY, Ph.D.
Asst. Professor | Email: amahaf1@luc.edu

EDUCATION

2015 Ph.D., Loyola University Chicago
2004 Bachelors of Arts, Biological Sciences, University of Chicago

RESEARCH PROJECTS

2021 – Present: **Provost Undergraduate Research (LUROP) Fellowship Project:** Expanding Safe Sanitization Methods to E-Learning Practices during the COVID-19 Crisis: Designing a Novel Hand and Personal Electronics "All-in-One" Sanitizer

2018 – 2019: **MSN/FNP Graduate Student Research Project:** Ulcerative Colitis and Fecal Microbial Transplants. ICU Registry Nurse, Loyola University Medical Center – Medical Intensive Care Unit, Chicago, IL.

2017 – Present: **Health Professions Education Research:** Examining health professions student responses to Face-to-Face and Virtual Pedagogy in Chemistry for Health Professions and Human Physiology Lab courses and lectures (didactic): A Review of Teaching and Learning. To evaluate the proposed effectiveness of 3-D Virtual Reality (VR) or augmented reality (AR) science modules, lab practicum and simulations, for use in undergraduate Chemistry for Health professions lab courses.

PUBLICATIONS

16. Mahaffey, Angela L. **(ACCEPTED)** Qualitative Assessment of BSN Student Responses to an Online Lab Exercise: Urinalysis, pH and Molarity. Journal of College Science Teaching.

15. Mahaffey, Angela L. **(2021)** 1-2-3 Benchtop to Laptop: Teamwork of an Educator and Instructional Designer to Convert a Popular Ksp and Titration Lab to an Online Module. Journal of Chemical Education. Journal of Chemical Education, 98(6), 1928-1936. https://doi.org/10.1021/acs.jchemed.0c01281

14. Mahaffey, Angela L. **(2021)** Prominence of Analytical Chemistry in Modern-Day Healthcare: Current Medical Discoveries, Student Perspectives, and Systems Thinking. Analytical Chemistry. Journal of Chemical Education, 93(11), 4775-4781. https://doi.org/10.1021/acs.analchem.1c00041

13. Mahaffey, Angela L. **(2020)** Chemistry in a cup of coffee: Adapting an online lab module for teaching specific heat capacity of beverages to health sciences students during the COVID pandemic. Biochem Mol Biol Educ. 2020; 48: 528– 531. https://doi.org/10.1002/bmb.21439

12. Mahaffey, Angela L. **(2020)** Social distance teaching and learning: An online DNA nucleotide binding lab experience for health sciences and non-major students. Biochem Mol Biol Educ. 2020; 48: 506– 508. https://doi.org/10.1002/bmb.21426

11. Mahaffey, Angela L. **(2020)** Computers, carbohydrates and cola: Designing an online lab experience for undergraduate health sciences and non-majors in a pandemic paradigm. Biochem Mol Biol Educ. 2020; 48: 486– 487. https://doi.org/10.1002/bmb.21409

10. Mahaffey, Angela L. **(2020)**. Mock urinalysis demonstration: Making connections among Acid–Base chemistry, redox reactions, and healthcare in an undergraduate nursing course. Journal of Chemical Education, 97(7), 1976-1983. https://dx.doi.org/10.1021/acs.jchemed.9b01086

9. Mahaffey, Angela L. **(2020)** A Learning Tool for Chemistry and Health Professions Students: Mnemonics for Writing Net Ionic Equations. Journal of College Science Teaching, 49 (3), 27-30.

8. Mahaffey, Angela L. **(2019)** It's All Relative! Engaging Nursing and Exercise Science Students in Chemical Education Using Medical Case Studies. Journal of Chemical Education, 96 (10), 2188-2193. https://doi.org/10.1021/acs.jchemed.9b00329

7. Mahaffey, Angela L. **(2019)** A Complementary Laboratory Exercise: Introducing Molecular Structure–Function Topics to Undergraduate Nursing Health Professions Students. Journal of Chemical Education, 96 (10), 2253-2260. https://doi.org/10.1021/acs.jchemed.9b00388

6. Mahaffey, Angela L. **(2019)** A Flavor Perception Game Designed to Introduce Basic Chemical Sensation of Taste Modalities to Undergraduate Nursing and Exercise Sciences Students. HAPS Educator, Journal of the Human Anatomy and Physiology Society, 23 (2), 446-456. https://doi.org/10.21692/haps.2019.019

5. Mahaffey, Angela L. **(2018)** Interfacing virtual and face-to-face teaching methods in an undergraduate human physiology course for health professions students. Advances in Physiology Education, 42(3), 477-481. https://doi.org/10.1152/advan.00097.2018

4. Mahaffey, Angela L. **(2015)** Study of Escherichia Coli ADP-Glucose Pyrophosphorylase Catalysis: Investigating Critical Roles of Conserved Arg32 and Lys42 Residues. Dissertations, 1954, Retrieved from http://ecommons.luc.edu/luc_diss/1954

3. Mahaffey, Angela L., Aiyash S, Ballicora MA. **(2016)** Biochemistry and Molecular Biology - Enzyme Mechanism (Abstract): The Role of Lys42 on the Catalytic Efficiency of the ADP-glucose Pyrophosphorylase from Escherichia *coli*. *The FASEB Journal, 30:* 1 Supplement. 1083.22. https://www.fasebj.org/doi/abs/10.1096/fasebj.30.1_supplement.1083.22

2. Mahaffey, Angela L., Aiyash S., Ballicora MA. **(2013)** Investigating the Electrostatic Role of a Critical Arginine for the Catalysis of E. coli ADP- Glucose Pyrophosphorylase. Biophysical Journal, 104.2: 557a. Print. (Science Direct: https://www.sciencedirect.com/science/article/pii/S0006349512043330)

1. Bharani KL, Tasch J, Figueroa CM, Mahaffey AL , Iglesias AA, Olsen KW, and Ballicora MA. **(2011)** Allosteric Activation and Dynamics of the ADP-glucose Pyrophosphorylase from *Escherichia coli*. The FASEB Journal, 25:1, Supplemental lb63. Print. https://www.fasebj.org/doi/abs/10.1096/fasebj.25.1_supplement.lb63

PRESENTATIONS

Conferences

18. Mahaffey, Angela **(2021)** Evaluating BSN and BSES student qualitative responses to 2D online chemistry for health professions lab course at Loyola University Chicago School of Nursing (Fall 2017 - 2020)"). ACS Fall 2021 Hybrid Conference. https://www.acs.org/content/acs/en/meetings/acs-meetings.html

17. Mahaffey, Angela. **(2021)** 2021 Celebration of Faculty Scholarship [virtual conference]. Loyola University Chicago. http://libapps.luc.edu/digitalexhibits/s/cfs2021/item/3939

16. Mahaffey, Angela. **(2020)** 2020 Celebration of Faculty Scholarship [virtual conference]. Loyola University Chicago. http://libapps.luc.edu/digitalexhibits/s/cfs2020/page/faculty-participants

15. Mahaffey, Angela L. **(2018)** Examining the syntheses of o-lipopolysaccharies (LPS) of gram-negative bacteria to enable detection of hospital-acquired infections (HAIs) in Healthcare. Under Construction Forum, Marcella Niehoff School of Nursing, Chicago, IL.

14. Mahaffey, Angela L., Participant and Attendee. **(2018)** "CoACH Professional Development", NoBCChE Annual Conference, Orlando, Florida.

13. Mahaffey, Angela L. Participant and Attendee. **(2018)** Roundtable: A Review of the Probable Effect of Employing EdTech Applications in Laboratory Courses on Student Responses and Critical Thinking Skills: Virtual and 'Wet' Labs. Wiley EdTech Summit: Embracing the Opportunities for Digital Learning in the Modern Science Classroom, Dana Point, CA.

12. Mahaffey, Angela L., Aiyash S, Ballicora MA. **(2016)** The Role of Lys42 on the Catalytic Efficiency of the ADP-Glucose Pyrophosphorylase from Escherichia coli. American Society for Biochemistry and Molecular Biology (ASBMB) Annual Meeting, San Diego.

11. Mahaffey, Angela L, Solamen L, Aiyash S, Ballicora MA* and Olsen KW*. **(2014)** Exploring the Role of Conserved Arginine-32 and Lysine-42 Residues of *E. coli* ADP-Glucose Pyrophosphorylase. Midwest Enzyme Chemistry Conference, UIC

10. Mahaffey, Angela L, Solamen L, Aiyash S, Ballicora MA* and Olsen KW*. **(2014)** Kinetic Analysis of the Electrostatic Properties of the Arg-32 and Lys-42 Double Mutants of *E. coli* ADP-Glucose Pyrophosphorylase. 41st Annual Conference NOBCChE, N.O., Louisiana.

9. Solamen, L. Mahaffey AL., Olsen KW* and Ballicora MA*. **(2014)** Computational Analysis of Mutational Effects on Substrate Mobility in the ADP-Glucose Pyrophosphorylase from Escherichia coli. Great Lakes BioInformatics Conference 2014, Cincinnati, OH.

8. Mahaffey, Angela L, Solamen L, Aiyash S, Ballicora MA* and Olsen KW*. **(2013)** Investigating the Electrostatic Role of a Critical Arginine for the Catalysis of *E. coli* ADP-Glucose Pyrophosphorylase. 57th Annual Mtg. Biophysical Society, Phil., PA

7. Solamen, L. Mahaffey AL., Aiyash, S. Olsen KW* and Ballicora MA*. **(2013)** Computational Analysis of Mutational Effects on Substrate Mobility in the ADP-Glucose Pyrophosphorylase from *Escherichia coli*. 33rd Midwest Enzyme Chemistry Conference, Loyola University Chicago, Chicago, IL.

6. Solamen, L. Mahaffey AL., Olsen KW* and Ballicora MA*. **(2013)** Allosteric Mechanisms and Dynamics of ADP-Glucose Pyrophosphorylase from *Escherichia coli*. 27th Annual National Conference of Undergraduate Research (NCUR 2013), UW-La Crosse, La Crosse, Wisconsin.

5. Mahaffey, Angela L., Aiyash, S. Kielczewski C, Orlof A, Ballicora MA and Olsen KW. **(2012)** Substitution of Arginine-32 in the Catalysis of *Escherichia coli* ADP- Glucose Pyrophosphorylase. Midwest Enzyme Chemistry Conference, University of Illinois at Chicago.

4. Mahaffey, Angela L., Aiyash S, Ballicora MA. **(2012)** The Critical Role of the Guanidinium Group for Arginine-32 in the Catalysis of *E. coli* ADP-Glucose Pyrophosphorylase. 39th Annual Conference NOBCChE, Washington, DC.

3. Mahaffey, Angela L., Aiyash S, Ballicora MA. **(2012)** Site-Directed Mutagenesis and Specific Activity of the Arginine-32 for the Catalysis of *E. coli* ADP-Glucose Pyrophosphorylase. DFI Conference, University of Illinois at Chicago.

2. Mahaffey, Angela L., Aiyash S, Ballicora MA. **(2011)** Site-Directed Mutagenesis of a Critical Arginine for the Catalysis of ADP- Glucose Pyrophosphorylase. Midwest Science Conference, University of Chicago.

1. Bharani KL, Tasch J, Figueroa CM, Mahaffey AL , Iglesias AA, Olsen KW, and Ballicora MA **(2011)** Allosteric Activation and Dynamics of the ADP-glucose Pyrophosphorylase from *Escherichia coli*. ASBMB Annual Meeting.

Invited Speaker

7. Mahaffey, Angela L., Commencement Speaker. **(2021)** 8th Grade Commencement Address. Emmitt Till Fine and Performance Arts Magnet School (Chicago Public School), Chicago, IL.

6. Mahaffey, Angela. **(2019)** Antibiotic Resistant Gram-Negative Bacteria and a Study of Catalytic Role of Escherichia coli ADP-Glucose Pyrophosphorylase in Glycogen Biosynthesis: Biochemical and Computation Analysis of Conserved Residues Arg32 and Lys42. STEM Scholar Colloquium Series, Joliet Junior College.

5. Mahaffey, Angela L., Speaker. **(2018)** Annual Career Day. Air Force Academy (Chicago Public School), Chicago, IL.

4. Mahaffey, Angela L., Speaker. **(2016)** College Experience: What to expect from the viewpoint of an Asst Professor of LUC. Ralph Ellison High School (CICS), Chicago, IL.

3. Mahaffey, Angela L., Speaker/Presenter **(2016)** The “Pros and Cons” of Developing a New Forensic Chemistry or Environmental Chemistry Degree Program. Department of Chemistry, Illinois Institute of Technology, Chicago, IL.

2. Mahaffey, Angela L. **(2016)** Panelist Speaker. FYRE Program (“First-Year Research Experience with about 100 Loyola students, explicitly chosen from underrepresented groups in STEM research fields (women, racial minorities, and commuter students”), Loyola University Chicago, Chicago, IL.

1. Mahaffey, Angela, *Speaker*. **(2015)** Study of Catalytic Role of *Escherichia coli* ADP-Glucose Pyrophosphorylase in Glycogen Biosynthesis: Biochemical and Computation Analysis of Conserved Residues Arg32 and Lys42. Department of Chemistry, North Park University, Chicago, IL.

TEACHING & COURSE DEVELOPMENT

Year/Semester	Courses	
Marcella Niehoff School of Nursing,		
Loyola University-Chicago Courses Developed & Taught:		
SPRING 2021	GNUR156	Human Physiology Lectures
FALL 2020	GNUR160	Chemistry for Health Professions Lectures
SPRING 2020	GNUR156	Human Physiology Lectures
FALL 2019	GNUR160	Chemistry for Health Professions Lectures
SPRING 2019	GNUR156	Human Physiology
	GNUR156L	Human Physiology Lab
FALL 2018	GNUR160	Chemistry for Health Professions Lectures
	GNUR160L	Chemistry for Health Professions Labs
SPRING 2018	GNUR156	Human Physiology Lectures
	GNUR156L	Human Physiology Labs
FALL 2017	GNUR160	Chemistry for Health Professions Lectures

Arrupe Jr. College to MNSON 2+3 Year Bridge Program, Loyola University-Chicago
Online Course Development:

GNUR160	Tutorial (Modules) Chemistry for Health Professions
GNUR156	Co-Designed, Tutorial (Modules) Human Physiology

Hybrid-ABSN, Marcella Niehoff School of Nursing, Loyola University-Chicago
Online Course Development:

FALL 2017 – SPRING 2018	GNUR160	Hybrid-ABSN	Chemistry for Health Professions
	GNUR160L	Hybrid-ABSN	Chemistry for Health Professions Lab
	GNUR203	Hybrid-ABSN	Microbiology for Health Professions

Dept. of Chemistry & Biochemistry, Loyola University-Chicago Courses Taught:

SUMMER 2021	CHEM102	General Chemistry B Lectures/Disc.
SUMMER 2020	CHEM102	General Chemistry B Lectures/Disc.
SUMMER 2019	CHEM102	General Chemistry B Lectures/Disc.
SUMMER 2018	CHEM101	General Chemistry A Lectures/Discussion
	CHEM102	General Chemistry B Lectures/Discussion
SUMMER 2017	CHEM102	General Chemistry B Lectures/Disc.
	CHEM112	General Chemistry B Lab
SPRING 2017	CHEM112	General Chemistry B Labs
FALL 2016	CHEM111	General Chemistry A Labs
SUMMER 2016	CHEM102	General Chemistry B Lectures/Discussion
	CHEM112	General Chemistry B Lab
SPRING 2016	CHEM112	General Chemistry B Labs
FALL 2015	CHEM111	General Chemistry A Labs