CURRICULUM VITAE
Kate Hayden

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Education

Ph.D. in Chemistry, University of Alabama at Birmingham. Birmingham, Al. Dec. 2014
Understanding non-helical nuclease resistant DNAs and their role in TLR9 mediated cellular invasion.
M.S. in Chemistry, University of Alabama at Birmingham. Birmingham, Al. Aug. 2013
Thermodynamic and structural characterization of non-helical DNAs
B.S. in Chemistry and Biology, University of Montevallo. Montevallo, Al. May 2006
Synthesis, purification, and characterization of a novel porphyrin

Honors and Awards

University of Montevallo Junior Alumni Board "15 within 15" Award 2022
President's Service Award, Birmingham-Southern College 2020
Nathalie Molton Gibbons Young Alumni Achievement Award, University of Montevallo 2018
The Bob Whetstone Faculty Development Award, Birmingham-Southern College 2017
Rising star in Healthcare, Birmingham Business Journal (July) 2016
Innovator who is changing the South, Southern Living Magazine (April) 2016
Innovations in Chemistry Instruction University of Alabama at Birmingham 2013

Academia

Assistant Professor Department of Biology, Chemistry Mathematics and Computer Science, University of Montevallo 2022- current

Developed curriculum, facilitated learning, and administered grades for Biochemistry (CHEM370), Basic Chem I and II (GOB CHEM101 and 102), Foundations of Chemistry (CHEM100) 2021 - 2022

Associate Professor Department of Chemistry and Physics, Birmingham-Southern College
Developed curriculum, facilitated learning, and administered grades for Biochemistry (CH308), Advanced Biochemistry (CH408), Medicinal Chemistry (CH418), Introductory Chemistry (CH101) and Internships in Chemistry (CH397).

Assistant Professor Department of Chemistry and Physics, Birmingham-Southern College 2015-2021
Developed curriculum, facilitated learning, and administered grades for Biochemistry (CH308), Advanced Biochemistry (CH408), Medicinal Chemistry (CH418), Introductory Chemistry (CH101) and Internships in Chemistry (CH397).

Visiting Assistant Professor Department of Chemistry and Physics, Birmingham-Southern College 2014-2015
Developed curriculum, facilitated learning, and administered grades for Biochemistry (CH308), and Organic Chemistry Lab (CH211L).

CIRTL Scholar Certification Center for the Integration of Research, Teaching, and Learning; UAB 2014
This certification was received after completing and presenting a teaching as research project.

CIRTL Practitioner Certification Center for the Integration of Research, Teaching, and Learning; UAB 2014
This certification was received after completing necessary courses in teaching at the college level.

CIRTL Fellow Certification Center for the Integration of Research, Teaching, and Learning; UAB 2013
This certification was received after completing necessary courses in teaching at the college level.

Teaching Assistant Department of Chemistry, UAB. Instructed, managed, developed new experiments, and administered grades for various laboratory courses in Chemistry including General Chemistry I Honors (CH114), General Chemistry II (CH115), Organic Chemistry (CH236), and Physical Chemistry I (CH325L) 2009-2013

Service

Search Committee - Assistant Professor of Chemistry - Physical Chemistry (2021)
Eureka! Advisory Board at Girls, Inc. of Central Alabama (2021 to current)
Faculty Advisory Committee (2018 to 2021, co-chair)
Transitioning Online Team at BSC (2020)
Search Committee – Chemistry Instructor (2020)
W.W. Norton Textbook review, Biochemistry 2E (2020)
E-term Showcase Planning – (2020-current)
BSC Ceremonial Marshall (2019/2020)
Reviewer – The Chemical Educator (2019 – current)
Local ACS Section Secretary for Central Alabama (2015 to 2021)
SERMACS 2021 Executive Planning Committee (2016 to 2021)
Hubbs Award Selection Committee (2017- 2019)
UAB Faculty Fellows in Engaged Scholarship – Service Learning (2019-2020)
New Faculty Mentor (2018-2019)
Experiential Learning Ambassador rise3 (2018-2019)
Search Committee – Instructional Technologist (2018)
Search Committee – Chemistry Instructor (2018)
Be-IT Rise3 Task Force (2018 - 2019)
IRB Committee (2017- 2018)
Flipped Chemistry Community Editor, MacMillan Publishers (2017 - 2018)
Academic Visioning – Immersive Learning visioning (2017 - 2018)
Academic Visioning – Distinction in Public Health program development (2016 - 2017)
Search Committee – Tenure Track in Accounting (2015)
Assessment Committee (2015-2017)

Industry

Co-Founder and Director of Research Blondin Bioscience, LLC Birmingham, Alabama 2013-2017
Oversee and implement the development of new research and products, grant writing, lab management, public relations.

Quality Control Analyst/NMR Specialist Avanti Polar Lipids, Inc. Alabaster, Alabama 2006-2009
Performed GMP analytical method development and validation for new and current lipid products on HPLC, GC, NMR, IR, and UV-Vis. Performed quality control assays on HPLC. GC, NMR, TLC, and UV-Vis for the release of GMP products. Managed and maintained NMR and Blood Lab facilities.

Professional Development

SERMACS *Regional Conference* November 2021. Birmingham, Al. Student presented poster entitled "Kinetic Characterization of GAPDH from Infectious Microorganisms" – M. Hurd and G. Thrash

SERMACS *Regional Conference* November 2021. Birmingham, Al. Expo co-chair and Session co-chair of "Frontiers in Nucleic Acids"

Gulf-Coast Summit on Service Learning and Civic Engagement in Higher Ed *Regional Conference* March 2021 Online. Poster Presentation "The Chemistry of Service Learning"

UAB Service-Learning Fellows *UAB, Birmingham, Al.* 2019-2020.

GRC-Chemistry Education Research and Practice *National Conference* Jun 2019 Lewiston, Me. Poster Presentation "Activating Potentials in Early Chemistry Education"

SERMACS *Regional Conference* Oct 2018. Augusta, Ga. Student presented poster entitled "Impact of anti-cancer KP1019 and KP1013 on human epithelial breast cancer cell lines" – A. Holt and D. Gaines.

255th National ACS *National Conference* March 2018. New Orleans, La. Oral presentation entitled "Activating Potentials in Chemistry Education: Assessing the impact on critical thinking through active learning"

255th National ACS *National Conference* March 2018. New Orleans, La. Student presented poster entitled "Effect of anticancer drug KP1019 on DNA in vitro" – A. Groover

255th National ACS *National Conference* March 2018. New Orleans, La. Student presented poster entitled "Analysis of Cryptosporodium parvum pyruvate kinase and its novel disulfide bridge" - J. Potts
CIRTL@UAB Guest Lecture *Local Lecture* July 2017. Birmingham, Al. "My experiences in teaching as research"
UAB Sci-Tech CAT Scoring Workshop June 2017. Birmingham, Al. Workshop leader/trainer
ACS Teaching Workshop June 2017. Greenville, SC. Workshop participant
Taste of Science *Local Lecture* April 2017. Birmingham, Al. Oral presentation entitled "The Chemistry of Immortality"
Mercer University Guest Lecture *Out of state lecture* March 2017. Macon, Ga. Oral presentation entitled "Unlocking Telomeres"
SERMACS *Regional Conference* Oct 2016. Columbia, SC. Student presented poster entitled "Kinetic analysis of pyruvate kinase from Cryptosporidium parvum and the effects of a novel disulfide bridge" – E. Ballew
SERMACS *Regional Conference* Oct 2016. Columbia, SC. Student presented poster entitled "Effects of chemotherapy treatment on cell-free telomeric DNA of AML cell lines through qPCR analysis" – M. Habash
BCCE. *National Conference* Aug 2016. Greely, CO. Oral presentation entitled "Assessing Critical Thinking in the Flipped Classroom"
CORD. *Local lecture* July 2016. Birmingham, Al. Invited speaker. "Circumventing convention: A millennial's guide to careers in science"
Sloss Tech. *National Conference for Entrepreneurship* July 2016. Birmingham, Al. Invited speaker for the "Startup Panel"
TA3 Symposium. *International Symposium hosted by Lawson State and Innovation Depot* June 2016. Birmingham, Al. Invited speaker for the "Innovation Panel"
Assessing Critical Thinking at Birmingham-Southern College Workshop. Jan and Feb 2016. Birmingham, AL. Co-host
SciX *National Conference* Sep. 2015, Providence, RI. Invited Speaker "Social Media in the Classroom"
Critical Thinking and Blended Learning in the Liberal Arts Workshop May 2015. Birmingham, AL. Co-host
CIRTL Forum *National Conference* Apr. 2015, Houston, TX. Poster presentation entitled "Integrating Active Learning into the Undergraduate Chemistry Curriculum"
SERMACS *Regional Conference* Oct. 2014, Nashville, TN. Oral presentation entitled "Isolation and Purification of Telomeric DNA using PNAs"
BCCE *National Conference* Aug. 2014, Grand Rapids, MI. Oral presentation entitled "Utilizing active learning approach to create authentic research experiences for first year chemistry majors"
SEBIO *Local Conference* May. 2014, Birmingham, AL. Oral presentation entitled "F.A.C.T.: Fluorescent Analysis of Cell-free Telomeres"

Publications (*mentored undergraduate students as co-authors are underlined*)

Norbert Schormann, Chapelle Ayres , Olga Senkovich, Marissa Eckley, Surajit Banerjee, Abigail Holt, Julia Potts, **Katherine Hayden**, Glen Ulett and Debasish Chattopadhyay. "Crystal structure and plasmin-binding affinity of four surface mutants of Streptococcus agalactiae Glyceraldehyde 3-phosphate dehydrogenase". (manuscript in review, submitted May 2022). Acta Crystallographica Section F

Schormann, N.; Campos, J.; Motamed, R.; **Hayden, K. L**.; Gould, J. R.; Green, T. J.; Privilege, P.; Ulett, G. and Chattopadhyay, D. (2020) "High Resolution Crystal Structure of Chlamydia trachomatis Glyceraldehyde 3-phosphate dehydrogenase". Protein Science, 2020, 1-13. https://doi.org/10.1002/pro.3975

Bowman, L.; Motamed, R.; Lee, P.; Aleem, K.; Berawala, A. S.; **Hayden, K. L**.; Bzik, D. J.; and Chattopadhyay, D. (2019) "A simple and reliable method for determination of optimum pH in coupled enzyme assays". BioTechniques, 68, 4, 200-203. https://doi.org/10.2144/btn-2019-0126

Schormann, N.; **Hayden, K. L**.; Lee, P.; Banerjee, S.; and Chattopadhyay, D. (2019) "An overview of structure, function and regulation of pyruvate kinases". Protein Science, 2019; 1– 14. https://doi.org/10.1002/pro.3691

Styers, M. L.; Van Zandt, P. A.; and **Hayden, K. L**. (2018) "Active learning in introductory and advanced STEM courses promotes development of critical thinking skills". CBE – Life Sciences Education, 17, 3, 1-13.

Tuominen, S.; Stoltz, K.; Habash, M.; Groover, A.; Bartlett, T.; Ousley, J.; **Hayden, K.L**.; Tuomela, J.M.; Jukkola-Vuorinen, A.; Harris, K.W.; Selander, K.S. (*Submitted 3/2018 – In revision*) "Cell-free telomere DNA as a measurement of treatment response and tumor burden in breast cancer" Breast Cancer Research and Treatment.

Tuomela, J.M., Sandholm; J.A., Kaakinen, M.; **Hayden, K.L**.; Haapasaari, K.M.; Jukkola-Vuorinen, A.; Kauppila, J.H.; Lehenkari, P.P.; Harris, K.W.; Graves, D.E.; and Selander, K.S. (2016) "Telomeric G-quadruplex-forming DNA fragments induce TLR9-mediated and LL-37-regulated invasion in breast cancer cells in vitro" Breast Cancer Research and Treatment, 155, 261-271.

Hayden, K.L.; and Graves, D.E. (2014) "Addition of Bases to the 5' end of Human Telomeric DNA: Influences on thermodynamics and energetics of unfolding" Molecules, 19, 2286-2298. doi:10.3390/molecules19022286

Tidwell, C.P.; Bharara, P.; Rudeseal, G.; Rudeseal, T.; Rudeseal, F.H., Jr; Simmer, C.A.; McMillan, D.; **Lanier, K**.; Fondren, L.D.; Folmar, L.L.; Belmore, K. (2007) "Synthesis and Characterization of 5,10,15,20-Tetra[3-(3-trifluoromethyl)phenoxy] Porphyrin".Molecules, 12, 1389-1398.

Grants and Financial Awards

National Academies of Science, Engineering and Medicine Gulf Research Program (2021) "STEMMing the Tide: Empowering Youth to Meet Coastal Environmental Challenges" Co-Investigator. $1,250,000/5 years.

Associated Colleges of the South (ACS) Grant (2020) "ChemTutor 2.0". Co-investigator. $27,600/1 year.

Associated Colleges of the South (ACS) Grant (2018) "Activating Potentials in Early Chemistry Education" Principle Investigator. $21,770/1 year.

Associated Colleges of the South (ACS) Planning Grant (2017) "Inclusive Chemistry" Principle Investigator. $2,000/1 year.

Associated Colleges of the South (ACS) Faculty Advancement/Blended Learning Grant (2015) "Assessing the efficacy of blended learning as a means of improving critical thinking in STEM education" Co-Investigator. $10,500/1 year.

NIH Small Business Innovation Research Program (2015-2017) "Development and Validation of a Novel Biomarker Assay for Cancer Diagnostics" Phase I 1R43TR001283-01. Co-Investigator. $750,000/2 years.