

Keisha Nicole Hardeman, PhD, MLS(ASCP)^{CM}MB^{CM}

UTSW PROVIDES Fellow

Burroughs Wellcome Fund PDEP Fellow

Children's Research Institute

University of Texas Southwestern Medical Center

Dallas, TX 75390

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EDUCATION

Graduate

2011-2017

PhD in Cancer Biology

Vanderbilt University

Nashville, TN

Advisors: Joshua Fessel, MD, PhD
& Vito Quaranta, MD

Postbaccalaureate

2008-2010

Certification in Clinical Lab Sciences

Texas A&M University-Corpus Christi

Corpus Christi, TX

Advisor: Jean Sparks, PhD

Undergraduate

2001-2007

BS in Molecular and Cell Biology*

Texas A&M University

College Station, TX

*Minor: Philosophy

FELLOWSHIPS

UTSW PROVIDES (Provost's Initiative for Diverse Emerging Scholars) Fellow (first cohort selected), 2020-Present

- **UT Southwestern Medical Center**, Dallas, Texas
- Advisor: Prashant Mishra, MD, PhD
- Prior Advisor: Shawn Burgess, PhD (2020-2021)

Postdoctoral Researcher in Dept. of Cardiovascular Regeneration, 2019-2020

- **Houston Methodist Research Institute**, Houston, Texas
- Advisor: Daniel L. Kiss, PhD (co-advisor: Robert Rostomily, MD)

Clinical Chemistry Fellowship (Non-Research), 2018 – 2019

- **University of Kentucky**, Lexington, Kentucky

Postdoctoral Researcher in Dept. of Biochemistry, 2017-2018

- **Vanderbilt University**, Nashville, Tennessee
- Advisor: Vito Quaranta, MD

PUBLICATIONS

- Bishal Paudel, Joshua Lewis, **Keisha Hardeman**, Corey Hayford, Charles Robbins, Gabriela Codreanu, Stacy Sherrod, John McLean, Melissa Kemp, and Vito Quaranta, "Disruption of Redox Balance Enhances the Effects of Targeted Therapies in Melanoma." *Cancer Research*, 2020 Oct 15;80(20):4565-4577. PMID 33060170.
- Emily Warren, Miles Bryan, Patricia Morcillo, **Keisha Hardeman**, Michael Aschner, and Aaron Bowman, "Manganese-induced Mitochondrial Dysfunction Is Not Detectable at Exposures Below The Acute Cytotoxic Threshold In Neuronal Cell Types." *Toxicological Sciences*, 2020 Aug 1;176(2):446-459. PMID: 32492146.
- Dongya Jia*, Bishal Paudel*, Corey Hayford, **Keisha Hardeman**, Herbert Levine, Jose Onuchik, and Vito Quaranta, "Drug-Tolerant Idling Melanoma Cells Exhibit Theory-Predicted Metabolic Low-Low Phenotype." *Frontiers in Oncology*, 2020 Aug 14;10:1426. PMID: 32923395.
- Christian Meyer*, David Wooten*, Bishal Paudel*, Joshua Bauer, **Keisha Hardeman**, David Westover, Christine Lovly, Leonard Harris, Darren Tyson and Vito Quaranta, "Quantifying Drug Combinations Synergy Along Potency and Efficacy Axes." *Cell Systems*, 2019 Feb 27; 8(2):97-108e16. PMID: 30797775.
- Bishal Paudel, Leonard Harris, **Keisha Hardeman**, Arwa Abugable, Corey Hayford, Darren Tyson, and Vito Quaranta, "A Non-Quiescent, "Idling" Population State in Drug-Treated BRAF-Mutated Melanoma." *Biophysical Journal*, 2018 Mar; 114(6):1499-1511. PMID: 29590606.
- **Keisha Hardeman**, Chengwei Peng, Bishal Paudel, Christian Meyer, Thong Luong, Darren Tyson, Jamey Young, Vito Quaranta, and Joshua Fessel, "Dependence On Glycolysis Sensitizes BRAF-mutated Melanomas For Increased Response To Targeted BRAF Inhibitors." *Scientific Reports*, 2017 Feb 16;7:42604. PMID: 28205616.
- Leonard Harris*, Peter Frick*, Shawn Garbett, **Keisha Hardeman**, Bishal Paudel, Carlos Lopez, Vito Quaranta, and Darren Tyson, "An Unbiased Metric of Antiproliferative Drug Effects *In Vitro*." *Nature Methods*, 2016 Jun;13(6):497-500. PMID: 27135974.

GRANTS

Burroughs Wellcome Fund Postdoctoral Enrichment Program, 2021-2024

- \$60,000 for research support and professional development (PI: K. Hardeman)

NCI GMAP Region 3 Pilot Funds to Support Research, 2021

- \$7,500 Distributed (PI: K. Hardeman)

NIH/NIDDK Diversity Supplement (PI: S. Burgess), 2021

- ~6 months of salary and funding for research supplies

UTSW PROVIDES Fellowship, 2020-present

- ~6 months of salary and funding for research supplies

Ruth L. Kirschstein National Research Service Award Pre-doctoral F31 Fellowship, 2012-2017

- Earned at the end of 1st year of grad school (PI: K. Hardeman)
- \$154,149 Distributed (Estimated Total for ~5 years)

Vanderbilt Institute for Clinical and Translational Research (VICTR) #VR16428, 2015

- CTSA Award No. UL1TR000445 from the National Center for Advancing Translational Sciences
- \$2,000 Distributed (PI: K. Hardeman)

Training Grant Appointment to Integrated Biological Systems Training in Oncology (PI: S. Hann), 2012**AWARDS AND HONORS**

Oral Talk Invitation, APPE Research Integrity Scholars and Educators (RISE) Symposium, February 2021

UTSW PROVIDES Scholar (first cohort), awarded Fall 2020

Clinical Chemistry Recognition Award for 2020, 2018, 2016 & 2014 (x4), American Association for Clinical Chemistry

- Award given to recognize sustained learner achievement; ~30 recipients or less per year
- Awardees available here <https://www.aacc.org/community/awards/clinical-chemists-recognition-award>

Induction as Full Member into Sigma Xi Scientific Research Society, Vanderbilt Chapter, 2018

Lawrence J. Crolla Award (Education Sponsorship), American Association for Clinical Chemistry, 2017

- Management Sciences and Patient Safety Division

Top Scoring Abstract & Oral Talk Invitation, 16th Annual Host-tumor Interactions Retreat, 2016

Induction as Associate Member into Sigma Xi Scientific Research Society, Vanderbilt Chapter, 2016

Top Scoring Abstract, 14th Annual Host-tumor Interactions Retreat, 2014

Top Scoring Abstract & Oral Talk Invitation, 12th Annual Host-tumor Interactions Retreat, 2012

3rd Place Poster Presentation, 11th Annual Host-tumor Interactions Retreat, 2011

DuPont Award for Outstanding Presentation, SACNAS National Conference, Anaheim, CA, 2010

American Society for Clinical Pathology National Student Honor Award, 2010

Dean's List (Fall 2009 & Spring 2010), Texas A&M University--Corpus Christi, TX, 2010

Ruby Talmage Scholarship, Texas A&M University--Corpus Christi, TX, 2010

Community Outreach Scholarship, Texas A&M University--Corpus Christi, TX, 2010

Texas Educator Excellence Grant, 2008

1st Place Poster, TAMU Research Week Symposium, Texas A&M University, College Station, TX, 2004

Barnes & Noble Scholar, Texas A&M University, College Station, TX, 2001

High School Valedictorian, National Merit Commendation, National Achievement Scholar

PAST RESEARCH POSITIONS/WORK EXPERIENCE (BEFORE GRADUATE SCHOOL)**Research Intern, 2010-2011**

- Cancer Biology (Dr. Vito Quaranta), Vanderbilt University, Nashville, TN

Research Assistant, 2010

- Computing Sciences and Life Sciences (Drs. M. Thiyagarajan and L. Waldbeser), Texas A&M University, Corpus Christi, TX

High School Science Teacher, 2007-2008

- Taught Integrated Physics & Chemistry, board certified by Texas State Board of Education.
- Corpus Christi Independent School District, Supervisor(s): Dr. Lillian McLerran

International Research Experience for Undergraduates (IREU) Awardee, 2004

- Institute of Biochemical Sciences (Dr. Shyh-Horng Chiou), National Taiwan University, Taipei, Taiwan

Undergraduate Researcher, 2003

- Biochemistry and Biophysics (Dr. J. Sacchettini), Texas A&M University, College Station, TX

Undergraduate Researcher, 2002-2003

- Pathology and Laboratory Medicine (Dr. Gregg Wells), Texas A&M Health Science Center, College Station, TX

Undergraduate Technician, 2002

- Microbial and Molecular Pathogenesis (Dr. Jon Skaar), Texas A&M Health Science Center, College Station, TX

Undergraduate Researcher, 2001

- Life Sciences (Dr. Lillian Waldbeser), Texas A&M University, Corpus Christi, TX

Researcher, 2000

- Biochemistry and Biophysics (Dr. G. Rinehart), Texas A&M University, College Station, TX

RESEARCH PRESENTATION TRAVEL AWARDS

NIH National Cancer Institute's GMaP Region 1 North Travel Award Scholarship, 2019
NIH Award to CURE Program's Celebrating 21 Years of the Continuing Umbrella of Research Experiences (CURE), 2017
Travel Award from Graduate School of Vanderbilt Univ. for New England Science Symposium at Harvard University, 2015
Center for Quantitative Sciences Travel Award for New England Science Symposium, 2015
Carl Storm Underrepresented Minority Fellowship for Gordon Research Conference, 2013
Travel Award from the Graduate School of Vanderbilt University for Gordon Research Conference, 2013
AACR Scholar-in-Training Award from Susan G. Komen for AACR SABCS, San Antonio, TX, 2011
FASEB MARC Poster Presentation Travel Award for SACNAS Conference, Anaheim, CA, 2010
FASEB MARC Travel Award for SACNAS Conference, Dallas, TX, 2009

CONFERENCE TRAVEL AWARDS (NO PRESENTATION)

MSACL Trainee Travel Award/Grant for 2018 Annual Meeting in Palm Springs, CA, 2018
American Association for Clinical Chemistry Southeast Section Travel Award, 2017
NIH National Cancer Institute's GMaP Region 1 North Travel Award Scholarship, 2017
FASEB MARC Travel Award for Biomedical Engineering Society Annual Meeting, Atlanta, GA, 2012

PEER REVIEWED/SELECTED ORAL PRESENTATIONS

- "Fatty Acid Beta-Oxidation In BRAF-Mutated Melanomas Is Uncoupled From Proliferation." SACNAS National Diversity in Stem Conference, Honolulu, HI. (10/31/2019) (15 mins)
- "Dependence on Glycolysis Sensitizes BRAF-mutated Melanomas For Increased Response To Targeted BRAF Inhibition." 16th Annual Host-Tumor Interactions Retreat, Vanderbilt University, Nashville, TN. (2016) (10 mins)
- "Linking Dysregulated Cellular Metabolism To Therapeutic Response in BRAF-mutated Melanomas." Seahorse Symposium at Vanderbilt University, Nashville, TN. (3/16/2016) (20 mins)
- "Targeting Altered Redox Metabolism in Lapatinib-resistant Breast Cancer." Cell Growth and Proliferation Gordon Research Seminar, Mount Snow, VT. (6/22-23/2013, 15 mins) Received Travel Awards from the Graduate School of Vanderbilt University and the Carl Storm Underrepresented Minority Fellowship.
- "Targeting Altered Redox Metabolism in Lapatinib-resistant Breast Cancer." 12th Annual Host-Tumor Interactions Retreat, Vanderbilt University, Nashville, TN. (2012) (10 mins)
- "Heterogeneity of Lapatinib Responses in HCC1954 HER2-Overexpressing Breast Cancer Cells Revealed by Single-Cell Automated Microscopy." CTCRC-AACR San Antonio Breast Cancer Symposium, San Antonio, TX. Poster Discussion Format (combined poster and oral platform, 1 hr). Abstract and Poster Published; Received AACR Scholar-in-Training Award from Susan G. Komen. (2011)

OTHER ORAL PRESENTATIONS

- "Post-transcriptional Gene Regulation Amid Stress Responses in Glioblastoma." Center for Cardiovascular Regeneration Seminar, HMRI, Houston, TX. (Dec. 2019) (0.5 hr)
- "Cellular Metabolism Contributes to Therapeutic Responses in BRAF-mutated Melanoma." Pathology and Laboratory Medicine Department, University of Kentucky, Lexington, KY. (Nov. 2017) (1 hr)
- "The Cellular Metabolic Requirements of Malignant Melanoma." Mitochondria Interest Group, Vanderbilt University, Nashville, TN. (Sept. 2017) (1 hr)
- "Bitter(sweet) Death: How Over-Reliance on Glycolysis Attenuates Proliferation." Department of Pathology, Scott & White Memorial Hospital, Temple, TX. (May 2017) (1hr)
- "Cellular Metabolism Contributes to Therapeutic Responses in BRAF-mutated Melanoma." Pathology and Laboratory Medicine Department, University of Louisville, Louisville, KY. (Feb. 2017) (1 hr)
- "Bitter(sweet) Death: How Over-Reliance on Glycolysis Attenuates Proliferation." Department of Pathology, Vanderbilt University, Nashville, TN. (Dec. 2016) (1 hr)
- "Bitter(sweet) Death: How Over-Reliance on Glycolysis Attenuates Proliferation." Cancer Biology Department Seminar (Science Hour), Vanderbilt University, Nashville, TN. (Sept. 2016) (0.5 hr)
- "Linking Dysregulated Cellular Metabolism To Therapeutic Response in BRAF-mutated Melanomas." Cancer Biology Department Seminar (Science Hour), Vanderbilt University, Nashville, TN. (Jan. 2016) (0.5 hr)
- "Defining Metabolic Heterogeneity in BRAF-mutated Melanoma." Cancer Biology Department Seminar (Science Hour), Vanderbilt University, Nashville, TN. (2015) (0.5 hr)
- "Heterogeneity of Vemurafenib Responses in BRAF-mutated Melanoma." Systems Biology Interest Group, Vanderbilt University, Nashville, TN. (2014) (1.5 hrs)
- "Heterogeneity of Vemurafenib Responses in BRAF-mutated Melanoma." Cancer Biology Department Seminar (Science Hour), Vanderbilt University, Nashville, TN. (2014) (0.5 hr)

- “Metabolic Diversity Contributes to Heterogeneous Vemurafenib Responses in BRAF-mutated Melanoma.” Mitochondria Interest Group, Vanderbilt University, Nashville, TN. (2013) (1 hr)

TEACHING/MENTORING EXPERIENCE

Initiative to Maximize Research Education in Genomics at Baylor University, 2019-2020

- Worked with Dr. Debra Murray’s students and colleagues to provide feedback on personal essays, evaluate applications to the summer program in genomics, and invited guest to classroom discussion on graduate school

Poster Mentor for Spring Neuroscience Day, 2019

- Part of the 14th Annual Spring Conference of the University of Kentucky Center for Clinical and Translational Science (CCTS) held at Lexington Convention Center (April 2019)

Book Acknowledgment

- Thankful acknowledgement in the mentoring/training book by Dr. Michael Stein titled *Not Discussed-The Unspoken Rules for a Career In Academic Medical Research*, published 2018. I gave comments and helpful critiques to the book manuscript prior to publication.

Graduate Student Mentoring

- Mentored new lab member Clayton Wandishin (2017-2018)
- Mentored and trained Rotation Student Dalton L. Greenwood (2017)
- Mentored medical student Chengwei Peng (2013-2015)

Scientific Reviewer for Undergraduate Abstracts and Scholarship Applications

- Society for the Advancement of Chicanos & Native Americans in Science (SACNAS) 2020
- Society for the Advancement of Chicanos & Native Americans in Science (SACNAS) 2019
- Society for the Advancement of Chicanos & Native Americans in Science (SACNAS) 2017

Undergraduate Student Mentoring:

- Mentored and trained 4 undergraduate summer students (all students were either under-represented minorities or international—Luis Quintero, Linda Quinones, Chava Appiah, and Arwa Ahmed Abugable) (2011-2015)
- Also served as a mentor to middle school students in the Pen Pals with a Purpose program (2014-2016)

Invited Lecturer on “How Cells Obtain Energy,” 2014

- Topic for undergraduate Engineering course ChBE 220, 1.5 class sessions, instructor: John T. Wilson, PhD.

Invited Lecturer on “Cell Mediated Cytotoxicity” and “Hypersensitivity,” 2012

- Topics for undergraduate Immunology course BSCI 226, 2 class sessions, instructor: Clint E. Carter, PhD.

Invited Lecturer on “The Lab: Avoiding Research Misconduct,” 2012

- Led a presentation to undergraduate students using an interactive movie designed to address the long-term consequences of questionable research practices

High School Science Teacher, 2007-2008

- Corpus Christi Independent School District, Corpus Christi, Texas.
- Taught Integrated Physics & Chemistry, grades 9-12, approximately 100 students.
- Provided weekly tutoring sessions for TAKS (exit exam) remediation; awarded the Texas Educator Excellence Grant at the end of academic year.
- Certified by Texas State Board of Education (Composite Science, Standard Probationary Certificate for 1st Year Teachers who passed both Pedagogy and Content Exams).

TEACHING, EDUCATION, AND MANAGEMENT TRAINING

Research Mentor Training Workshop for Postdocs and PhD Research Staff, 2019

- Sponsored by the Gulf Coast Consortia and the National Research Mentoring Network
- Evidence-based mentoring training based in case studies, developed from grant U54GM19023

Practical Approaches to Quality Control in the Clinical Laboratory, 10 Credit HRS (Online), 2018

- Certificate Program, American Association for Clinical Chemistry

Cornell Interactive Theater Ensemble (CITE) Workshop: “LARA: Listen, Acknowledge/Affirm, Respond, Add Information”, 2018

- Sponsored by Provost Office of Faculty and Academic Affairs, Office of Inclusive Excellence
- Practical application and discussion model of maintaining professional relationships while discussing challenging issues/statements (i.e. how to profoundly disagree with colleagues)

Cornell Interactive Theater Ensemble (CITE) Workshop: “It Depends On the Lens,” 2018

- Sponsored by Provost Office of Faculty and Academic Affairs, Office of Inclusive Excellence
- Complex, realistic interaction of a demo search committee, to stimulate discussion about the behaviors, assumptions and biases present in academic search committees.

Cornell Interactive Theater Ensemble (CITE) Workshop: “Hang In There and Be Tough,” 2018

- Sponsored by Provost Office of Faculty and Academic Affairs, Office of Inclusive Excellence
- Interactive session focused on nuanced classroom issues, identity abrasions (created by well-intentioned teachers), and effects on student self-esteem/academic performance.

P.R.I.D.E. Training in Allyship/Safe Zone Training, The Office of LGBTQI+, 2017

- ½ day session on how to be an Ally for others

Vanderbilt Human Resources, “Leading Teams Through Conflict,” 2017

- Interactive ½ day session with Human Resources Dept. on directly mediating high stakes situations; included role-playing as both negotiator/mediator and distressed employee; Led by Tammy Key

Clinical Laboratory Leadership and Management, 12 Credit HRS (Online), 2017

- Certificate Program, American Association for Clinical Chemistry

Vanderbilt’s Center for Teaching, 2011-2013

- Certificate in Teaching Program (2011-2013), completed a 3 cycle program
- Scholarship of Teaching and Learning Scholars Program (2012-2013)
- Participated in 10-12 sponsored events

Completed 30+ hours additional education training, 2007-2008

- Provided by Corpus Christi Independent School District; topics included differentiated instruction, effective group learning, how to grade efficiently, classroom management, etc.

Alternative Certification Training, 2007

- A Career In Teaching’s Summer Academy for Classroom Management (40+ hours) and in-class observation days

LEADERSHIP ACTIVITIES**National Black Postdoctoral Association and BlackInX events, 2020-present**

- Membership in the NBPA, and volunteered on the Bylaws Committee (2022)
- Currently founding inaugural BPA group at UTSW, to be connected to other groups across the nation
- Membership in #BlackinCancer, #BlackinChem, and The Black Women In Computational Biology Network
- Volunteered on Planning Committee of #BlackinChem for Fall 2021

SACNAS Postdoc Leadership Institute, 2019

- Competitively selected group (~16) in leadership training program focused on goal setting, action planning & management. Served as Mentor Judge (posters and graduate oral presentations), participated in 1-on-1 Individual Mentoring as SACNAS Leader.

Vanderbilt Graduate Honor Council, 2013-2017

- Investigator & Panel Member (2013-2017): investigated and reported allegations of honor code violations (typically plagiarism, use of unauthorized aid, and inappropriate collaboration) & chaired panel hearings.
- Vice-President (elected 2014-2015): appointed Core and At-large members, reviewed evidence and organized panel hearings, counseled and advised accused students, and reported findings to the Graduate School, our advisor Dean Richard Hoover, PhD, and the Associate Dean G.L. Black, JD, in the Office of Student Accountability, Community Standards, and Academic Integrity.
- President (elected 2015-2016): same duties as Vice-President & Investigator, but also represented the GHC at orientations, activity fairs, and graduate school-related functions.

Vanderbilt Graduate Diversity and Inclusion Committee, 2016

- Served to help collect and communicate information about issues of diversity and inclusion on campus.
- Worked to create alliances and collaborations with other groups and administrators across campus, and planning events to help foster inclusion for our graduate peers (Book Club series, Safe Spaces, etc.).
- Advised Chancellor [Nicholas Zeppos](#) (luncheon 11/01/2016), Vice Chancellor for Equity, Diversity and Inclusion [George Hill](#) (dinner meeting 11/03/2016), and Sirota Consulting Group for collection of data used in Chancellor’s Report & Recommendation from the [Committee On Diversity, Inclusion, and Community](#), in Appendix B (4/27/2016).

Graduate Student Council Member, 2014-2017

- GSC Executive Board (2014-2016): I served on the GSC Executive Board and voted on monetary sponsorship issues, quality of life issues related to graduate students, and provided input and support for event planning and provided feedback regarding graduate student access to resources, graduate student needs, etc.
- GSC Member (2014-2017): I also volunteered with the operation and completion of Social, Community and Academic events like the Pen Pals with a Purpose program (2014-2016) and Three Minute Thesis/3MT events; also contributed as a Graduate Student Advisor for various programming committees including the 2015 ISSS Director Search Committee alongside administrators, Deans, and other representatives.

Mitochondrial Interest Group, 2013-2018

- Participate as member and oral presenter (2x).
- Worked as part of a demo team that tested the automation and suitability of a bioanalyzer, and provided data in support of a Shared Instrumentation Grant (S10 OD018015) for the purchase of a Seahorse Extracellular Flux Analyzer from Biosciences (recently acquired by Agilent).
- Top Seahorse user and expert at Vanderbilt (invited oral presenter)

Patient Derived Xenograft Repository, 2015-2016

- Received specialized training on the generation and maintenance of Melanoma Patient Derived Xenografts (PDXs): tissues taken directly from patients were passed directly from surgical oncologists to be immediately implanted into mice, expanded and harvested for future experiments (a bio-repository).

ASPIRE programming participant, 2014-2018

- Augmenting Scholar Preparation and Integration with Research-related Endeavors, this multi-year program helps broaden training and education in areas that are crucial for success (like communication, networking, mentoring, planning, etc.), as supported by NIH's BEST Awards.
- I have participated in ASPIRE to Connect (Spring 2014), ASPIRE to PLAN (Fall 2014), and the ASPIRE Modules (1) EQ+IQ=Career Success on conflict resolution and effective communication (Fall 2015), (2) Business Principles for Scientists (Spring 2016), and (3) Clinical Laboratory Medicine: Applying Your PhD To Patient Care (Spring 2017).

Clinical Lab Science Club, Texas A&M University, Corpus Christi, TX, 2009-2010

- Elected as Treasurer; managed budget and organized fundraisers to support our group's travel and representation at the Texas Association for Clinical Laboratory Science Annual Meeting in El Paso, TX

Texas A&M University Undergraduate Journal of Science, 2001-2005

- Writer, Editor and Editor-in-Chief of a premier undergraduate science journal (~2,000 print copies/year distributed freely); at the height of funding I managed a budget ~\$10,000 to go to press and fund advertisements (per issue)

QUANTITATIVE & DATA SCIENCE TRAINING**Data Science 201: Going Further with R, Tackling Clinical Laboratory Data Manipulation and Modeling, MSACL 2-day Course, Palm Springs, California, 2018**

- Taught by Patrick Mathias (Informatics Division, University of Washington) and Randall Julian (CEO of Indigo BioAutomation)
- Topics included functional programming, Tidyverse, data cleanup, report generation, and data visualization

Systems Biology and Biotechnology Specialization, 2018

- Icahn School of Medicine at Mount Sinai on Coursera
- Introduction to Systems Biology, Partial Only
- Experimental Methods in Systems Biology, February 18, 2018 (6 weeks)

10th Annual Isotope Tracers Course in Metabolic Research, NIH-Sponsored 5 day Course, 2017

- Taught primarily by Robert Wolfe (University of Arkansas), Henri Brunengraber (Case Western Reserve University), Stephen Previs (Merck) and Elizabeth Parks (University of Missouri).
- Topics included mass spectrometry, tracer enrichment and dilution, metabolic flux and physiology. October 30-November 3, 2017, Nashville, TN.

"Bioinformatics II: Discovery Oriented Data Science," 12 Credit HRS, 2017

- Center for Quantitative Sciences (CQS) Summer Institute, Vanderbilt University

"Biostatistics II: Advanced Biostatistics," 12 Credit HRS, 2017

- Center for Quantitative Sciences (CQS) Summer Institute, Vanderbilt University

Genomic Data Science Specialization, 2015-2016

- Johns Hopkins University on Coursera: 7 courses to teach common tools for analyzing genomic data from next-generation sequencing. Only course not completed was Capstone practicum.
- Algorithms for DNA Sequencing, February 15, 2016 (4 weeks)
- Statistics for Genomic Data Science, January 6, 2016 (4 weeks)
- Bioconductor for Genomic Data Science, October 3, 2015 (4 weeks)
- Python for Genomic Data Science, October 3, 2015 (4 weeks)
- Command Line Tools for Genomic Data, August 30, 2015 (4 weeks)
- Genomic Data Science with Galaxy, August 4, 2015 (4weeks)
- Introduction on Genomic Technologies, August 4, 2015 (4 weeks)

"Making Sense of High-throughput Gene Data", 14.5 Credit HRS, 2015

- Center for Quantitative Sciences Summer Institute, Vanderbilt University

Statistical Methods For Clinical Laboratorians, 7.5 Credit HRS (Online), 2014

- Certificate Program, American Association for Clinical Chemistry

Foundations of Bioinformatics, 2011

- Vanderbilt Course, taught by David Tabb, PhD (now at Stellenbosch University, South Africa)

CLINICAL TRAINING AND LABORATORY MEDICINE PRACTICA

Clinical Topic	Training Site/Hospital	Rotation, Module or Conference Duration
Professional Practice in Clinical Chemistry	Dallas, Texas	2.5 days (April 24-27, 2019)
College of American Pathology Inspection Team Member (POC/Core Chem/Spec Chem & Toxicology Checklists)	Alabama (exact site can't be disclosed), medium-sized medical center	2 days (March 12-13, 2019)
Clinical Consultancy/Call Duties (Pager)	University of Kentucky	6 weeks (2018-2019)
Clinical Chemistry Didactic Training -Approx. 65 lectures on core chemistry topics including pathophysiology, analytes, and instrumentation	University of Kentucky Alison Woodworth, PhD, DABCC Ronald Whitley, PhD, DABCC Min Yu, MD, PhD, DABCC	9 months (2018-2019)
NIH Office of Clinical Research: Principles of Clinical Pharmacology -Online Course of 50+ Lectures	N/A (Online Self-Paced Study)	3 months (Fall 2018)
Diagnostic Management Teams Conf.	Galveston, Texas	2 days (February 2018)
Mass Spectrometry: Applications for Clinical Lab Meeting	Palm Springs, California	3 days (January 2018)
AACC Annual Scientific Meeting	San Diego, California	3 days (Summer 2017)
Clinical Laboratory Medicine Module -Clinical Microbiology Diagnostic Management Team -Clinical Chemistry Diagnostic Management Team	Vanderbilt Univ. Medical Center Jonathan Schmitz, MD, PhD, D(ABMM) Jennifer Colby, PhD, DABCC	3 weeks (Spring 2017)
Diagnostic Management Teams Conf.	Galveston, Texas	2 days (Spring 2017)
AACC Annual Scientific Meeting	Chicago, Illinois	3 days (Summer 2014)
Molecular Biology (ASCP Board Exam)	N/A (Board Exam Self-Study)	3 years (2012-2014)
Blood Banking and Molecular Diagnostics	Driscoll Children's Hospital, CC, TX	3 weeks (Summer 2010)
Serology, Urinalysis, and Chemistry Sections	Doctor's Regional Med Ctr, CC, TX	6 weeks (Summer 2010)
Special Chemistry Sections	C. Spohn Shoreline Hospital, CC, TX	1 week (Summer 2010)
Hematology Section	Bay Area Medical Center, CC, TX	6 weeks (Spring 2010)
Phlebotomy and Microbiology Sections	C. Spohn Memorial Hospital, CC, TX	4 weeks (Summer 2010)

LICENSURES AND CERTIFICATIONS**Inspector Team Member Training, College of American Pathologists**

- 2019, Online educational activity/certification required for hospital lab inspection team members

CITI Program Training

- 2019, Basic Course for Biomedical Investigators and Key Personnel

Technologist in Molecular Biology, American Society for Clinical Pathology, MB(ASCP)^{CM}

- Valid 2015-present

Medical Laboratory Scientist, American Society for Clinical Pathology, MLS(ASCP)^{CM}

- Valid 2010-present

Medical Laboratory Professional License, TN State Health Related Boards, License #22814

- Valid 2010-2018; Currently in Retired Status

High School Science Teacher, Science Composite Standard, Texas State Board of Education

- Valid 2007-2008 (Passed Pedagogy and Content State Exams)