**EMORY UNIVERSITY SCHOOL OF MEDICINE**

**STANDARD CURRICULUM VITAE**

Revised: *07/30/21*

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3. **E-mail Address:** kahayne@emory.edu
4. **Citizenship**: United States Citizen
5. **Current Titles and Affiliations**:
   1. Academic Appointments:
      1. Primary Appointments:  
         Assistant Professor of Biomedical Engineering, Wallace H. Coulter Department of Biomedical Engineering  
         Emory University School of Medicine, 2018 - present
6. **Previous Academic and Professional Appointments:**

Visiting Adjunct Professor of Biology, Biology Department, Davidson College, 2006 - 2008

Assistant Professor of Biomedical Engineering, School of Biological and Health Systems Engineering, Arizona State University, 2011 - 2018

Adjunct Professor of Biomedical Engineering, School of Biological and Health Systems Engineering  
Arizona State University, 2018 - 2019

1. **Education**:

BS, Biology, Florida Agricultural and Mechanical University, Tallahassee, FL, 1995 - 1999

PhD, Molecular Genetics, Washington University, St. Louis, MO, 1999 - 2006

1. **Postgraduate Training**:

Postdoctoral Research Fellow, Department of Biology, Davidson College, Davidson, NC  
Supervisor: A. Malcolm Campbell, PhD  
2006 - 2008

Postdoctoral Research Fellow, Department of Systems Biology, Harvard Medical School, Boston, MA  
Supervisor: Pamela A. Silver, PhD  
2008 - 2011

1. **Committee Memberships:**
   1. National and International:
   2. Member, International Genetically Engineered Machines Competition (iGEM) Judges Committee, 2010 - present
   3. Member, Synthetic Biology Research Consortium (SynBERC) Board of Directors, 2015 - 2016
   4. Member and Diversity Director, Engineering Biology Research Consortium (EBRC) Council, 2016 - present
   5. Member, U.S. Army Synthetic Biology Roundtable Planning Committee, 2020 - 2021
   6. Member, National Science Advisory Board for Biosecurity (NSABB), 2021-2024
   7. Institutional:
   8. Member, Accreditation Board for Engineering and Technology (ABET) Committee, Arizona State University (ASU) Fulton Schools of Engineering (FSE), 2012
   9. Member, Fulton Undergraduate Research Initiative Application Review Committee, ASU FSE, 2012 - 2013
   10. Member, New Faculty Cohort Steering Committee, ASU FSE, 2012 - 2014
   11. Member, Departmental Seminar Committee, ASU FSE School of Biological and Health Systems Engineering (SBHSE), 2013 - 2014
   12. Member, Academic Standards Committee, ASU FSE, 2013 - 2017
   13. Member, Systems and Synthetic Biology Faculty Search Committee, ASU, 2013 - 2017
   14. Member, Molecular, Cellular and Tissue Bioengineering (MCTB) Committee, ASU FSE, 2014 - 2018
   15. Member, Synthetic Biology Working Group, ASU Office of Knowledge and Enterprise Development (OKED), 2015
   16. Coordinator, African American Faculty and Staff Association (AAFSA) Professional Development Committee, ASU, 2015 - 2018
   17. Member, BME Faculty Search Committee, GA Tech and Emory, 2019 - 2020
   18. Member, Biology Epigenetics Faculty Search Committee, Emory University, 2019 - 2020
   19. Faculty, Emory Winship Cancer Institute Cell and Molecular Biology Research Program, 2019 - present
   20. Member, Biomedical Engineering PhD Program Admissions Committee, GA Tech and Emory, 2019 - 2020
   21. Member, Biomedical Engineering Graduate Program Committee, GA Tech/ Emory, 2019 - 2020
   22. Faculty, Georgia Tech Bioengineering Graduate Program, 2020 - present
   23. Faculty, Parker H. Petit Institute for Bioengineering and Bioscience, Georgia Tech, 2020 - present
   24. Full Member, Emory Graduate Division of Biological and Biomedical Sciences (GDBBS), 2020 - present
2. **Peer Review Activities**:
   1. Grants:
      1. National and International:
         1. Undergraduate Science Education, Howard Hughes Medical Institute (HHMI), 2012
         2. NITROGEN, National Science Foundation (NSF), 2013
         3. Modeling and Analysis of Biological Systems (MABS), National Institutes of Health (NIH), 2013
         4. Joint Genome Institute (JGI), US Department of Energy (DOE), 2014 - 2018
         5. Molecular Genetics A (MGA), National Institutes of Health (NIH), 2017
         6. Biosystems Design, US Department of Energy (DOE), 2017
         7. CAREER, National Science Foundation (NSF), 2018
         8. Rosetrees Trust Interdisciplinary Prize, 2019
         9. Genomics, Computational Biology and Technology (GCAT), National Institutes of Health (NIH), 2020
         10. Molecular Genetics B (MGB), National Institutes of Health (NIH), 2020
         11. Canada Foundation for Innovation, 2020
         12. CAREER Systems and Synthetic Biology (SSB), National Science Foundation (NSF), 2020
         13. Innovative Molecular Analysis Technologies (IMAT), National Institutes of Health (NIH), 2021
      2. Regional:
         1. Villanova College Research Support Grants, 2014
         2. University of North Carolina Research Opportunities Initiative (ROI), 2018
         3. Inter-institutional Planning Grant Program, UNC General Administration, 2018
         4. Advanced Laureate Awards, Irish Research Council, 2018
   2. Manuscripts:
      1. *Nucleic Acids Research*, 2012 - 2020
      2. *ACS Synthetic Biology*, 2014 - 2020
      3. *Systems and Synthetic Biology*, 2014
      4. *Nature Reviews Genetics*, 2014
      5. *Nature Chemical Biology*, 2014
      6. *Cell Systems*, 2015
      7. *FEBS Letters*, 2017
      8. *Engineering Biology*, 2017
      9. *International Journal of Molecular Sciences*, 2019
      10. *Journal of Molecular Biology*, 2019
      11. *Molecular Therapy*, 2019
   3. Conference Abstracts:
      1. National and International:
         1. Synthetic Biology: Engineering, Evolution & Design (SEED), Abstract Reviewer, 2015, 2019
         2. Division of Biochemical Technology (BIOT) 257th ACS National Meeting, Abstract Reviewer, 2018
3. **Consultantships/Advisory Boards:** 
   1. Consultant, Institute on Science for Global Policy, Tucson, AZ, 2012
   2. Consultant for Student Biotech Projects, Alberta Innovates, Alberta, Canada, 2012 - 2016
   3. Consultant for Biocontainment Strategies, J. Craig Venter Institute, Rockland, MD, 2013
   4. Consultant for Roadmapping, Center for Research and Interdisciplinarity, Paris, France, 2017
   5. Consultant, Square Table-2: National Science Foundation (NSF) Programmable Interfaces: Exploring the Intersection of Synthetic Biology, Biomaterials, and Soft Matter, 2019
4. **Editorships and Editorial Boards:**
   1. Associate Editor, *Frontiers in Bioengineering and Biotechnology*, 2015
   2. Editorial Board, *Epigenetics Insights*, 2018 - present
   3. Editorial Board, *Nucleic Acids Research*, 2019 - present
   4. Board of Reviewing Editors, *eLife*, 2020 - present
   5. Guest Editor, *Journal of Regenerative Engineering & Translational Medicine* (ISSN 2364-4141), 2021
5. **Honors and Awards:**
   1. Fellowship, Synthetic Biology Leadership Accelerator (SynBio LEAP) Program, 2012
   2. Outstanding Assistant Professor Award, ASU School of Biological and Health Systems Engineering, 2017
   3. Featured Engineer Profile, The Ella Project, 2018
   4. Cell Mentor (Cell Press) 1,000 inspiring Black Scientists in America, 2020
   5. COLOR Magazine Women of Color: Innovator in STEM award, 2021
6. **Society Memberships:**
   1. Councilor, Institute for Biological Engineering (IBE), 2011 - 2013
   2. Member, American Society for Biochemistry and Molecular Biology (ASBMB), 2011 - present
   3. Member, American Society for Cell Biology (ASCB), 2017 - present
   4. Member, American Institute of Chemical Engineers (AIChE) Society for Biological Engineering (SBE), 2018 - present
   5. Member, National Society of Black Engineers (NSBE), 2019 - present
7. **Organization of Conferences:**
   1. National and International:
      1. Administrative Positions:
         1. Member, Organizing Committee, 7th International Meeting on Synthetic Biology (SB7.0), 2017
         2. Chair, Organizing Committee, Synthetic Biology: Engineering, Evolution and Design (SEED), 2018
         3. Member, Organizing Committee, 2nd Epigenetics and Bioengineering Conference (EpiBio 2018), 2018
         4. Member, Organizing Committee, Synthetic Biology: Engineering, Evolution and Design (SEED), 2019
         5. Member, Organizing Committee, 3rd Epigenetics and Bioengineering Conference (EpiBio 2019), 2019
         6. Chair and Founder, AfroBiotech Conference, 2019 - 2021
         7. Member, Organizing Committee, Synthetic Biology: Engineering, Evolution & Design (SEED), 2021
         8. Co-Chair, Epigenetics and Bioengineering Conference (EpiBio), 2021
      2. Sessions as Chair:
         1. Chair, 6th International Conference on Synthetic Biology (SB6.0), Making and Using Standards, 2013
         2. Chair, Biomedical Engineering Society (BMES) Annual Meeting, Cell and Molecular Bioengineering: Systems Biology, 2014
         3. Chair, 257th ACS National Meeting Division of Biochemical Technology (BIOT) Upstream Processes Symposium, Mammalian: Media and Metabolism, 2019
         4. Sensing and Signaling within Multicellular Synthetic Biology, Synthetic Biology: Engineering, Evolution and Design (SEED), 2019
         5. Writing Epigenetic Modifications, Epigenetics and Bioengineering Conference (EpiBio), 2019
         6. Cellular and Molecular Bioengineering Track, Biomedical Engineering Society (BMES) Annual Meeting, 2021
   2. Regional:
      1. Administrative Positions:
         1. Member, Organizing Committee, Molecular, Cellular and Tissue Bioengineering (MCTB) Symposium, 2016
         2. Chair, Organizing Committee, Molecular, Cellular and Tissue Bioengineering (MCTB) Symposium, 2017
8. **Community Outreach:**
   1. General:
      1. Public Seminar “Adults' Night Out: Stem Cells,” Arizona Science Center, 2012
      2. Public Seminar “New Frontiers in Medical Science: From Copying Life to Building Life," Arizona Science Center, 2013
      3. Synberc Capitol Hill Briefing "Sustaining U.S. Leadership in Biotech," Washington, DC, 2014
      4. Public Seminar "Unbelievable Biomed," Arizona Science Center, 2014
      5. Multi-site Public Engagement in Science: Synthetic Biology, Boston Museum of Science, 2014
      6. ASU Center for Science and the Imagination, "Splice and Synthetic Biology's Monsters" Video Project, SIFF Film Center Seattle, 2015
      7. Hidden Figures Movie Screening and Panel, 100 Black Women Phoenix Metro Chapter, 2017
      8. SciGirls Virtual Coding Camp, 2021
   2. Media Appearances:
      1. The Scientist - Scientist to Watch, “Karmella Haynes: Turning the Dials,” 2013
      2. National Science Foundation Media Advisory, “Learn the latest on synthetic biology at a June 26 Capitol Hill briefing,” 2014
      3. Discover Magazine: Discover Events, “Sustaining U.S. Leadership in Biotech,” 2014
      4. People Behind the Science Podcast, “Dr. Karmella Haynes: Expressing Her Creativity Making Epigenetic Machinery and Designing Biological Devices,” 2015
      5. Public Radio International Science Friday, “Just How Easy Is It to Edit DNA?” 2016
      6. Genemods Podcast, “Chr-Ho Ho Ho-matin with Professor Karmella Haynes,” 2017
      7. Benchtalk Magazine, "Spotlight - Karmella Haynes: Synthetic Biologist, Artist, Advocate, and Ultimate Puzzle Solver," 2019
      8. GROW Magazine, "The Cell Conductor," 2020
      9. NOVA/ PBS, “Gene Editing Reality Check,” 2020
      10. Forbes, “A New Approach To A Deadly Breast Cancer Offers Hope To The Black Women It Affects Most,” 2020
      11. Haynes KA, Yau C, Bild A, Laughney A, Morsut L, Yang X, Zaugg J, Hsu P, Pancaldi V, Iyer-Biswas S. “How Has the COVID-19 Pandemic Changed How You Will Approach Research and Lab Work in the Future?” Cell Systems Voices, 2020, 11:550-554.
      12. Epigenetics Podcast from Active Motif Episode 52: Synthetic Chromatin Epigenetics
9. **Formal Teaching:**
   1. Graduate Programs:
      1. Fellowship Programs:
         1. Instructor and Founder, Synthetic Biology Summer Course, Cold Spring Harbor Laboratory, 2013 - 2018, 40 hours/weeks for 2 weeks
      2. Master’s and PhD Programs:
         1. Professor, Master’s Applied Projects (BME593), Arizona State University (ASU), 2012 - 2016, 3 hours/week
         2. Professor, Advanced Synthetic Biology (BME598), ASU, 2012, 3 hours/week
         3. Professor, Molecular Synthetic Biology (BME494/598), ASU, 2014 - 2018, 3 hours/week
         4. Guest lecturer, Mechanical Engineering (ME 3141), Georgia Tech (online), Spring 2020, 1 hour
         5. Guest lecturer, Biomedical Systems and Modeling (BME 3520), Georgia Tech (online), Spring 2020, 1 hour
         6. Guest lecturer, Project ENGAGES, Georgia Tech (online), Spring 2020, 1 hour
         7. Professor, Advanced Seminar: Cellular and Biomolecular Engineering (BMED 7301), Georgia Tech (online), Summer 2020, 4 hours/week
         8. Guest lecturer, Principles of Cancer Biology I (CB533/ IBS524), Emory University (online), Fall 2020, 3 hours
         9. Guest Instructor (virtual), BIOS 313 Experimental Synthetic Biology undergrad course, Rice University, 2020, 1 hours/week for 6 weeks
10. **Supervisory Teaching:**
    1. Undergraduate Thesis Students Directly Supervised
       1. Keith Dyson, BS, 2012
       2. Joseph Flay, BS, 2012
       3. Daniel Gary, BS, 2012
       4. Madeline Grade, BS, 2012
       5. Ryan Muller, BS, 2015
       6. Cameron Gardner, BS, 2015
       7. David Barclay, BS, 2016
       8. Jan Simper, BS, 2016
       9. Paige Steppe, BS, 2021
       10. Lauren Hong, BS, 2022
       11. Chavis Ferguson, BS 2021, University of Missouri
    2. Masters Students Directly Supervised:
       1. Behzad Damadzadeh, MS, 2012 - 2014   
          Associate Scientist, Astrazeneca
       2. Fatima Hamna, MS, 2018 - 2019
       3. Daniel Vargas, MS, 2015 - 2019  
          Clinical Molecular Technologist, Castle Biosciences
    3. PhD Students Directly Supervised:
       1. Rene Daer, PhD, 2012 - 2017  
          Research Scientist, Progenity Inc.
       2. Cassandra M. Barrett, PhD, 2015 - 2019  
          Genetic Counseling Masters student, University of Utah
       3. Stefan J. Tekel, PhD, 2015 - 2019  
          Strain Engineer, Sustainable Conversion Ventures
       4. Cara Shields, PhD, 2020 - present
       5. Kierra Franklin, PhD, 2020 - present
    4. Postdoctoral Fellows Directly Supervised
       1. Isioma Enwerem, postdoc, 2020 - present
    5. Thesis Committees:
       1. Rebecca McKenna, ASU Chemical Engineering PhD, 2014
       2. Taraka Sai Pavan Grandhi, ASU Biomedical Engineering PhD, 2016
       3. Matthew Christensen, ASU Chemical Engineering PhD, 2016
       4. Fuqing Wu, ASU Biomedical Engineering PhD, 2017
       5. Karan Syal, ASU Biological Design PhD, 2017
       6. David Menn, ASU Biomedical Engineering PhD, 2018
       7. Michael Machas, ASU Biomedical Engineering PhD, 2019
       8. Jessica Lin, Emory/ GA Tech Biomedical Engineering PhD, 2019 - present
       9. Kalifa Shabazz, Emory Genetics and Molecular Biology MS, 2020
       10. Haotian Gao, Center for Research and Interdisciplinarity (CRI) Paris PhD, 2020
       11. Luke Knudson, Emory Cell Biology PhD, 2020
    6. Other:
       1. ASU iGEM Team (Abhinav Markus, Hyder Hussain, Amanda Ispas, Ryan Muller, Rohit Rajan, Nisarg Patel, Ellen Qin, Madeline Sands, Ethan Ward), International Genetically Engineered Machines summer research, Arizona State University, 2012
       2. ASU iGEM Team (Abhinav Markus, Hyder Hussain, Nathan Palmer, Ryan Muller, Nisarg Patel, Julia Smith, Rohit Rajan, Joseph Yun), International Genetically Engineered Machines summer research, Arizona State University, 2013
       3. ASU iGEM Team (Scott Ashmore, David Reynolds, Vallari Somayaji, Michael Waddington, Mathew Ykema), International Genetically Engineered Machines summer research, Arizona State University, 2014
       4. ASU iGEM Team (Brady Dennison, Brittany Flores, Ernesto Luna, Rob Schultz, Jiaqi Wu, Jimmy Xu), International Genetically Engineered Machines summer research, Arizona State University, 2016
       5. ASU iGEM Team (Xylaan Livingstone, Amber Mani, Chris Connot, Christina Smith, Briana Lopez), International Genetically Engineered Machines summer research, Arizona State University, 2017
       6. Bhoomika Reddy, ASU-PES University Summer Exchange Program, Arizona State University, 2017
11. **Lectureships, Seminar Invitations, and Visiting Professorships:**
    1. National and International:
       1. 3rd US-Turkey Advanced Study Institute on Global Healthcare Challenges, "Advances in Synthetic Biology," July 10, 2012, Antalya, Turkey
       2. Workshop on Research Agendas in the Societal Aspects of Synthetic Biology, "Opening Plenary: What Kind of Work Do We Want?" November 4, 2014, Tempe, AZ
       3. 2nd International Synthetic and Systems Biology Summer School (SSBSS), "Designing CRISPR for the Engineering of DNA in Mammalian Cells," July 5, 2015, Taormina, Sicily, Italy
       4. NCI Synthetic Biology Approaches to Cancer Systems Workshop, "Teaching Synthetic Transcription Factors to Read the Histone Code in Human Cancer Cells," February 16, 2016, Rockville, MD
       5. Charting Future Paths of Open Synthetic Biology, “Engineering the Human Genome as Chromatin,” October 5, 2017, Paris, France
       6. NIH CSSI Science Day, “Engineered Chromatin to Support Epigenetic Research and Drug Development for Cancer,” June 7, 2018, Bethesda, MD
       7. Cold Spring Harbor Summer Course: Synthetic Biology, “Chromatin Epigenetic Engineering in Triple Negative Breast Cancer,” July 23, 2019, Cold Spring Harbor, NY
       8. Black in Nanotechnology Week, "Engineering chromatin proteins to regulate genes in triple negative breast cancer," December 9, 2020, online live
    2. Regional:
       1. What You Can Be With a Ph.D: Navigating Interdisciplinary Research In Engineering and Life Sciences, "Innovative Research," February 1, 2014, Decatur, GA
       2. Monsanto Science Fellows Symposium, “Teaching Synthetic Transcription Factors to Read the Histone Code,” April 14, 2016, St. Louis, MO
       3. NSURP BIPOC Seminar Series, "Gene surgery with CRISPR on your home computer," August 4, 2020, onlive live
    3. Institutional:
       1. ASU School of Biological and Health Systems Engineering Seminar Series, “Rewiring the Histone Code With Synthetic Biology," October 21, 2011, Tempe, AZ
       2. UNC Charlotte Bioinformatics Seminar Series, "No More Magic Bullets: Combining Synthetic Biology With Bioinformatics for Engineering Medicine," February 24, 2012, Chapel Hill, NC
       3. Davidson College Science Pipeline ConNEXTion, "Innovative Research Science – Rewards of Not Playing It Safe," April 5, 2013, Davidson, NC
       4. MIT Synthetic Biology Working Group, “Engineering of Human Chromatin,” October 30, 2014, Boston, MA
       5. Cold Spring Harbor Summer Course: Synthetic Biology, “Synthetic Chromatin in Human Cells,” August 4, 2016, Cold Spring Harbor, NY
       6. Lawrence University Recent Advances in Biology Lecture Series, "In Vitro Development of Synthetic Chromatin Proteins That Function in Live Cells," April, 10, 2017, Appleton, WI
       7. Harvard Systems Biology Retreat, “Chromatin Engineering: From Protein Motifs to Whole Genome Analysis,” June 8, 2017, Phippsburg, ME
       8. UC Irvine Biomedical Engineering Lecture Series, “In Vitro Development of Chromatin-Based Biologics for Breast Cancer,” October 20, 2017, Irvine, CA
       9. BNAAC University of Illinois Urbana-Champaign Lecture, “A Synthetic Biology Approach to Epigenetic Therapy for Cancer,” March 2, 2018, Champaign, IL
       10. UCLA Bioengineering Department Seminar Series, “A Pipeline to Engineer Synthetic Epigenetic Proteins Derived From Chromatin,” May 17, 2018, Los Angeles, CA
       11. Mayo Clinic Research Seminar Series, “Engineered Chromatin Systems to Support Epigenetic Therapy of Cancer,” May 24, 2018, Scottsdale, AZ
       12. Fred Hutchinson Cancer Research Center Current Biology Seminar Series, “Investigating the Behavior and Impact of Rationally-Designed Histone 'Readers' in the Context of Cancer Epigenomes,” October 2, 2018, Seattle, WA
       13. UCSC Molecular, Cell and Developmental Biology Department Seminar Series, "Development and Application of Synthetic Chromatin-Binding Proteins for Cell Biology Research," November 3, 2018, Santa Cruz, CA
       14. Biomedical Engineering Seminars at Emory, "Chromatin Engineering for Macrogenomic Control of Transcription in Triple Negative Breast Cancer," April 19, 2019, Atlanta, GA
       15. UGA Department of Genetics Seminars, "Challenges and Opportunities for Epigenetic Engineering in Triple Negative Breast Cancer," November 13, 2019, Athens, GA
       16. UCSD Quantitative Biology Seminar Series, "Chromatin epigenetic engineering: combining synthetic biology with molecular bioinformatics," January 27, 2020, San Diego, CA
       17. Davidson College Genomics Program Seminar Series, "Genomic analysis to achieve multi-gene regulation by chromatin design," February 10, 2020, Davidson, NC
       18. Rensselaer Polytechnic Institute Department of Chemical and Biological Engineering Seminar Series, "Human chromatin epigenetic engineering guided by evolutionary biology," November 11, 2020, online live
       19. University of Washington Department of Biochemistry Seminar Series, "Leveraging chromatin to activate tumor suppressors in triple negative breast cancer," November 17, 2020, online live
       20. Oxford University Synthetic Biology Society Seminar Series, "Using engineered chromatin proteins to fill gaps in epigenetic therapy," December 7, 2020, online live
       21. UCSF Biochemistry & Biophysics Department Seminar Series, "Engineering chromatin proteins to activate dormant tumor suppressor genes," January 5, 2021, online live
       22. UCSF Behind the Science Seminar Series, "Behind the Science: Dr. Karmella Haynes," January 8, 2021, online live
       23. California State University East Bay Department of Biological Sciences Research Seminar Series, "Chromatin engineering to control genes in triple negative breast cancer," February 16, 2021, online live
       24. Synthego, "Fireside Chat About Diversity Equity and Inclusion," February 18, 2021, online live
       25. University of Louisville Department of Biochemistry Seminar Series, "Synthetic effectors: thinking beyond chromatin editors for cancer epigenetic therapy," March 1, 2021, virtual
       26. Northwestern University Center for Synthetic Biology Seminar Series, "Chromatin engineering for epigenetic therapy in triple negative breast cancer," March 9, 2021, online live
       27. UC Berkeley Department of Molecular and Cellular Biology Marian E. Koshland Seminar Series, "Engineering chromatin reader-effectors for epigenetic engineering in breast cancer," April 16, 2021, online live
12. **Invitations to National/International, Regional, and Institutional Conferences:**
    1. National and International:
       1. 8th International Conference on Bioinformatics: From Genomics to Synthetic Biology, “Rewiring the Histone Code With Synthetic Biology,” November 2011, Atlanta, GA
       2. Synthetic Biology Engineering Research Center (SynBERC) Fall 2012 Retreat, “Synthetic Epigenetics for Mammalian Cell Engineering,” September 21, 2012, Cambridge, MA
       3. Synthetic Biology Engineering Research Center (SynBERC) Spring 2013 Retreat, “Contextual Behaviour of a Synthetic Chromatin Protein,” March 25, 2013, San Francisco, CA
       4. 7th International Structural Biology and Functional Genomics Conference, "Synthetic Chromatin for Engineering Multicellular Systems," December 5, 2013, Singapore
       5. Synthetic Biology Engineering Research Center (SynBERC) Fall 2013 Retreat, "Epigenetic Control of Pancreatic Cells with DNA-Packing Sensors and Actuators," September 28, 2013, Boston, MA
       6. 2014 Keck Annual Research Conference: Quantitative Synthetic Biology, "Foundations for the Engineering of Human Chromatin," November 7, 2014, Huston, TX
       7. 3rd Cold Spring Harbor Asia Conference on Synthetic Biology, "Foundations for the Engineering of Human Chromatin," December 4, 2014, Suzhou, China
       8. 2nd International Mammalian Synthetic Biology Workshop (MSB 2.0), “Regulating Human Cancer Epigenomes With Synthetic Chromatin,” April 25, 2015, Boston, MA
       9. Epigenetics Gordon Research Conference, “Epigenetic Engineering of Human Cells with Fusion Proteins,” August 6, 2015, Waltham, MA
       10. GTC Bio Epigenetic Enzymes in Drug Discovery, "Synthetic Transcription Factors that Read The Histone Code," March 2, 2016, San Diego, CA
       11. 3rd Synthetic Biology Congress, “Controlling Gene Expression With Synthetic Histone-Binding Proteins,” October 20, 2016, London, UK
       12. 7th International Meeting on Synthetic Biology (SB7.0), “Chromatin Engineering for Human Health,” June 14, 2017, Singapore
       13. Engineering Biology Research Consortium (EBRC) 2017 Fall Retreat, "In Vitro Development of Synthetic Chromatin Effectors for Breast Cancer," September 22, 2017, Atlanta, GA
       14. 2017 Southeastern Regional Meeting of the ACS (SERMACS), "Manipulation of chromatin to enhance CRISPR activity," November 9, 2017, Charlotte, NC
       15. 1st Epigenetics and Bioengineering Conference, “Synthetic Readers and Writers of Chromatin to Advance Cell Engineering,” December 13, 2017, Miami, FL
       16. Engineering Biology Research Consortium (EBRC) 2018 Fall Retreat, "BifC-PD: Fluorescent Sensors to Illuminate the Impact of Chromatin on the Nuclear Uptake and Expression of Recombinant DNA," September 14, 2018, Fort Collins, CO
       17. 2nd Epigenetics and Bioengineering Conference, “Histone-Binding Domains as Modules for Custom Fusion Proteins,” October 6, 2018, San Francisco, CA
       18. Telluride Workshop on Physical Genomics and Transcriptional Engineering, "Synthetic histone reader-effectors as agents for macrogenomic engineering," February 25, 2019, Telluride, CO
       19. Chromatin and Epigenetics: Inheritance and Design, "Synthetic Reader-Effectors for Epigenetic Reprogramming of Genes in Cancer," April 1, 2019, Munich, Germany
       20. Synthetic Biology: Engineering, Evolution and Design (SEED), "Epigenetic engineering in triple negative breast cancer," June 26, 2019, New York, NY
       21. 3rd International Conference on CRISPR Technologies (ICCT), "Inhibition and recovery of CRISPR/spCas9 activity at closed chromatin in a human cell line," September 17, 2019, Wurzburg, Germany
       22. 2019 TERMIS-Americas Annual Conference, "Applying Multi-Cellular Engineered Living Systems (M-CELS) Ethics in the Lab," December 4, 2019, Orlando, FL
       23. 2020 PepTalk Conference, "A Nuclear Genetic Sensor to Measure and Optimize Delivery of Non-Viral DNA into Human Cells," January 20, 2020, San Diego, CA
       24. Black in Nanotechnology Week, "Engineering chromatin proteins to regulate genes in triple negative breast cancer," December 9, 2020, online live
       25. 4th International Conference on Epigenetics and Bioengineering (EpiBio), "Engineering transcription factors that sense histone modifications in cancer cells," October 10, 2020, online live
       26. 2020 American Institute for Chemical Engineers (AIChE), "Epigenetic Engineering to Target an Anti-Cancer Gene Module in Breast Cancer," November 18, 2020, virtual
       27. Society of Women Engineers Women in Academia Committee Seminar Series, "Service and Strategy: The Value of Conference Committees and Public Engagement for Early Tenure-Track Faculty," February 11, 2021, online live
       28. Mammalian Synthetic Biology Workshop 7.0, "Silencing Panel," July 21, 2021, online live
    2. Regional:
       1. Purdue University Student Pugwash Midwest Regional Conference, “Synthetic Biology With Standardized Parts,” March 30, 2012, West Lafayette, IN
       2. ASU Molecular, Cellular and Tissue Bioengineering Symposium, “In Vitro Development of Synthetic Chromatin Proteins That Function in Live Cells,” April 1, 2017, Phoenix, AZ
       3. Georgia-Alabama Louis Stokes Alliance Minority Participation (GA-AL LSAMP) Conference, "Keynote: Next-Level Gene Engineering to Study and Fight Cancer," April 6, 2019, Atlanta, GA
    3. Institutional:
       1. University of Oregon Engineering Biomolecules Mini-Symposium, “Drugging the Cancer Epigenome with Synthetic Chromatin-based Proteins,” June 22, 2018, Eugene, OR
       2. UMSL Basic to Biotech Symposium, "Using Engineered Proteins to Control Genes in Hard-to-Treat Cancer Cells," November 8, 2019, St. Louis, MO
       3. Rice University Department of Bioengineering Colloquium, "Epigenetic co-regulation of genes with engineered sensor-actuator proteins," November 10, 2020, online live
       4. University of Pennsylvania 2021 Bioengineering Graduate Student Symposium, "Keynote: Cancer epigenetic therapy meets chromatin epigenetic engineering," January 12, 2021, online live
13. **Abstract Presentations at National/International, Regional, and Institutional Conferences:**
    1. National and International:
       1. **Haynes KA.\*** ASCB 2011 Annual Meeting, "Rewiring the Histone Code Using Synthetic Effectors," December 4, 2011, Denver, CO (oral presentation)
       2. Hom C, Damadzadeh B, Barclay D, **Haynes KA.\*** Engineering chromatin with DNA-packing Actuators and Sensors. Biomedical Engineering Society (BMES) 2014 Annual Meeting, San Antonio, TX, 2014 (oral presentation)
       3. Hom C, Gardner C, **Haynes KA.\*** Manipulating Human Chromatin With Synthetic Proteins. 2015 Annual Conference of the Institute for Biological Engineering, St. Louis, MO, 2015 (oral presentation)
       4. Nyer DB, Vargas D, **Haynes KA.\*** Teaching Synthetic Transcription Factors to Read an Epigenetic Code. 2016 Synthetic Biology: Engineering, Evolution & Design (SEED), Chicago, IL, 2016 (oral presentation)
       5. Tekel S, Vargas D, **Haynes KA.\*** In Vitro Development of Synthetic Chromatin Proteins That Function in Live Cells. American Society for Biochemistry and Molecular Biology (ASBMB) 2017 Annual Meeting, Chicago, IL, 2017 (oral presentation)
14. **Research Focus:**

My research has focused on investigating the function of chromosome structures (chromatin) and applying this knowledge to engineer gene-regulation systems. For the past seven years, I have focused on synthetic biology. I have developed fusion proteins that target aberrant chromatin and activate therapeutic genes in cancer cells.

1. **Patents:**
   1. Pending:
      1. The Synthetic Histone-Binding Regulator Protein PcTF Activation of Cell Growth Suppression, U.S., Application #62/655,709/M18-188L, 2018
      2. Synthetic Transcription Factors that Bind Modified Histones, U.S., Application #62/630,352/M18-129L, 2018
      3. Manipulation of DNA Packing to Enhance and Suppress CRISPR/Cas9-Mediated Genome Editing in Human Cells, U.S., Application #62/553,325/M18-226L, 2018
2. **Grant Support:**
   1. Active Support:
      1. Federally Funded:
         1. PI, National Institutes of Health NCI, *Predictable control of gene regulation through epigenetic engineering*, R21, $179,671, 2 years
      2. Other:
         1. PI, Wallace H. Coulter Department of Biomedical Engineering, *Murine Model to Identify Epigenetic Mediators of Obesity-associated Drug Resistance in Triple Negative Breast Cancer*, Seed grant: Animal Model Development to Study Mechanisms of Health Disparities, $25,000, 1 year
         2. PI, Genentech Research Award Program, $50,000, 1 year
         3. Co-PI, Aflac/ Emory Cancer and Blood Disorders Program, *Delineating the Impact of Anti-Galectin-9 immunotherapy on T-cell ALL Epigenetics and Survival*, CURE Childhood Cancer Pilot Funding Mechanism, $75,000, 1 year
   2. Previous Support:
      1. PI, National Science Foundation SynBERC, *Epigenetic control of pancreatic cells with DNA-packing sensors and actuators*, Sub-Award, $142,745, 2 years
      2. PI, National Institutes of Health NCI, *Synthetic chromatin for cancer research*, K01 Research Scientist Development Award, $474,443, 3 years
      3. PI, Arizona Department of Health Services, *Synthetic biology for cancer research*, Arizona Biomedical Research Commission Early Stage Investigator Award, $225,000, 3 years
      4. PI, ASU Foundation Women and Philanthropy, *SB.ASU – Sharing DNA Materials to Build Medical Innovations*, $75,257, 1 year
      5. Co-PI, National Science Foundation CBET, *Manipulating epigenetic mechanisms to enhance non-viral transgene expression*, Standard Grant, $426,386, 5 years
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