



# Hadiyah-Nicole Green, PhD

- Founder, Ora Lee Smith Cancer Research Foundation
- Asst Professor, Dept of Surgery Morehouse School of Medicine
- Director, NanoBioPhotonics and Targeted Cancer Therapeutics Laboratory
  
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- OraLee.org | @OraLeeOrg



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## ■ HIGHLIGHTS

- Lead inventor on 4 patent-pending systems for targeted cancer therapy and nanoparticle fabrication
- Awarded \$1.1 million for developing targeted cancer treatment research
- Nationally celebrated STEM Trailblazer
- USA Today, 100 Women of the Century; Business Insider, Top 30 under 40 in HealthCare
- More than 14 million views on Facebook, NewsOne Now with Roland Martin Television Interview
- 11 peer-elected leadership positions and more than 1,000 volunteer service hours
- Top Secret Security Clearance with the United States Department of Defense

## ■ EDUCATION

The University of Alabama at Birmingham	Physics	PhD, 2012
The University of Alabama at Birmingham	Physics	MS, 2009
Alabama Agricultural and Mechanical University	Physics	BS, 2003

## ■ ACADEMIC APPOINTMENTS

- 2016-present **Assistant Professor of Surgery - Morehouse School of Medicine - Atlanta, Georgia**
- Establishing a competitive research program in NanoBioPhotonics and Targeted Cancer Therapeutics.
  - Research interests: cancer therapies, photo-nano-therapies, biomarker targeting, and drug delivery.
- 2013-2016 **Assistant Professor of Physics - Tuskegee University - Tuskegee, Alabama**
- Teaching area: Physics. Adjunct appointments in Biological Sciences and Materials Science Departments.
  - University service: Advisor for Mr. and Miss Tuskegee University and court, Honors Program Committee Member, planning committee member for technology implementation (university wide committee).
- 2012 **Post-Doctoral Researcher - Nanyang Technological University - Singapore, Singapore**
- Developed protocol for nano-polymer hybrid thin film fabrication for drug delivery.
  - Mentored and trained undergraduate students in nanoparticle fabrication and characterization techniques.

2005-2012 **Research Associate - The University of Alabama at Birmingham - Birmingham, Alabama**

Dissertation Title: A Minimally-Invasive Multifunctional Nano-Enabled Approach for Selective Targeting, Imaging, and NIR Photothermal Therapy of Tumors

Team Leader: initiated a partnership between the Departments of Physics, Pathology, and the Comprehensive Cancer Center. Performed all aspects of targeting, imaging, and therapy of tumors, which involved project conception, design, and reduction to practice. This included biocompatible nanoparticle fabrication and characterization, antibody conjugation chemistry, fluorescent labeling and imaging. This also involved designing optics, executing laser treatments on cells and mice, and performing histological techniques on tissue samples.

- Established several patent pending protocols. Designed nanoparticle fabrication method that is 40% more uniform in shape and size and  $1/10$  the cost of commercially available gold nanorods.
- Improved upon the field's standard for post-conjugation antibody binding efficiency by 33%.
- Designed a system to target, image, and treat tumors in mice resulting in ~40% tumor volume reduction.
- Developed a 10-minute nano-enabled laser treatment that resulted in ~100% elimination of tumors in mice.
- Certifications in Laser Safety, Radiation Safety, and Electron Microscope operation. Trained in Animal Research, Clinical & Translational Science, and sterile cell culture technique.
- Taught Physics and Lasers safety courses.

2011-2012 **Cancer Research Training Program Intern - MSM/TU/UAB - Birmingham, Alabama**

- Analyzed effects of conjugation molar ratios on nanoparticle clustering. Performed detection assays on cell cultures.
- Trained in Cancer Awareness and Community Outreach.

2009 **Department of Defense Laboratory for Physical Sciences Intern - College Park, Maryland**

- Obtained Top Secret Security Clearance, secured funding, executed assignments from the Department of Defense, and conducted experiments at the Laboratory of Physical Science.
- Programmed High Frequency Structural Simulator to characterize nanorods.

2000-2003 **Research Assistant - Alabama A&M University - Normal, Alabama**

- Assisted laboratory technician in trouble-shooting and protocol development.
- Fabricated and tested fiber-optic Bragg Gratings.

2001, 2002 **Summer Intern - University of Rochester, Institute of Optics - Rochester, New York**

- Built Optical Michelson Interferometer for measuring dispersion in devices and fibers, replacing the lab's existing interferometer. Constructed a device used for dispersion compensation in Photonic Crystal Fibers.

2000 **Flight Project Intern - NASA Marshall Space Flight Center - Huntsville, Alabama**

- Minorities in Science and Engineering Scholar appointed to the Flight Projects Directorate.
- Calibrated lasers for International Space Station applications.

## ■ PUBLICATIONS

1. Mullen, M., **Green, H.N.**, Yang, F., Liu, X. & Yao, X. (2021). Therapeutic efficacy of syntelin mediated inhibition of CENP-E in triple negative breast cancer. *Molecular Pharmacology*, (Submitted).
2. Lee, G.Y., Mubasher, M., Pollack, B.P., McKenzie, T., Cothran, M.B., & **Green HN.** (2021). Combination

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- paclitaxel and Laser-Activated NanoTherapy for inducing cell death in head and neck squamous cell carcinoma. *Journal of Nanomedicine and Nanotechnology*, 12(1), 557.
3. Lee, G.Y., Myers, J.A., Perez, S.M., Singh, K.P., & **Green, H.N.** (2020). Cisplatin combined with laser-activated nanotherapy as an adjuvant therapy for head and neck cancer. *International Journal of Oncology*, 57, 1169-1178.
  4. Barry, R., Ray, P., & **Green, H.N.** (2019). Rethinking the Treatment of Pathologic Scars. *Biomedical Journal of Scientific & Technical Research*, 13(2).
  5. Song X, Liu W, Yuan X, Jiang J, Wang W, Mullen M, **Green HN**, Ding X, Wang D, Yao X, et al. "Acetylation of ACAP4 Regulates CCL18-Elicited Breast Cancer Cell Migration and Invasion." *Journal of Molecular Cell Biology* 10, no. 6 (2018): 559–72. doi:10.1093/jmcb/mjy058. PMID: 30395269.
  6. Duan H, Wang C, Wang M, Gao X, Yan M, Akram S, Peng W, Zou H, Wang D, Zhou J, Chu Y, Dou Z, Barrett G, **Green HN**, Wang F, Tian R, He P, Wang W, Liu X, Yao X: Phosphorylation of PP1 regulator Sds22 by PLK1 ensures accurate chromosome segregation. *The Journal of biological chemistry*. (2016) 291(50): 26239. PMID: 27941070.
  7. **Green HN**, Crockett S, Martyshkin D, Singh KP, Grizzle W, Rosenthal E, Mirov S: A histological evaluation and in vivo assessment of intratumoral NIR photothermal nanotherapy induced tumor regression. *International Journal of Nanomedicine*. 2014 Nov 5; 9: 5093-102. PMID: 25395847.
  8. Salaam AD, Hwang P, Poonawalla A, **Green HN**, Jun HW, Dean D: Nanodiamonds enhance therapeutic efficacy of doxorubicin in treating metastatic hormone-refractory prostate cancer. *Nanotechnology* 2014 Oct 24; 25(42):425103. doi: 10.1088/0957-4484/25/42/425103. Epub 2014 Oct 3. PMID: 25277401.
  9. Salaam AD, Hwang P, McIntosh R, **Green HN**, Jun HW, Dean D: Nanodiamond-DGEA peptide conjugates for enhanced delivery of doxorubicin to prostate cancer. *Beilstein Journal of Nanotechnology* 2014; 5:937-945. doi:10.3762/bjnano.5.107. PMID: 25161829.
  10. Frederick PJ, **Green HN**, Huang JS, Egger ME, Frieboes HB, Grizzle WE, McNally LR: Chemoresistance in ovarian cancer linked to expression of microRNAs. *Biotechnic & Histochemistry* 2013 October; 88(7): 403-409. PMID: 23672416.
  11. **Green HN**, Martyshkin DV, Rodenburg CM, Rosenthal EL, Mirov SB: Gold nanorod bioconjugates for active tumor targeting and photothermal therapy. *The Journal of Nanotechnology* 2011; (631753): 753-759.
  12. **Green HN**, Martyshkin DV, Rodenburg CM, Rosenthal EL, Mirov SB: A minimally invasive multifunctional nanoscale system for selective targeting, imaging, and NIR photothermal therapy of malignant tumors. *Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications III* 2011; (7910): 79100-79109.
  13. Saini V, Enervold MR, Perez A, Koploy A, Perkins G, Ellisman MH, **Green HN**, Mirov SB, Zharov VP, Everts M: Targeting nanoparticles to tumors using adenoviral vectors. *Technical Proceedings of The Nano Science and Technology Institute Nanotechnology Conference and Trade Show: Biomarkers and Nanoparticles* 2007; 2(4): 321-324.

### ■ PATENT

1. **H. N. Green**, Mirov SB, Rosenthal EL, Castellanos PC, Martyshkin DV: Photothermal Nanostructures in Tumor Therapy. Provisional patent filed in March 2012. Full patent application filed in March 2013. Pub. No.: US 20130261444A1. Pending.

### ■ COMPETITIVE GRANTS, SCHOLARSHIPS, AND FELLOWSHIPS

2016-2021     \$1.1 Million Funded Grant, Principal Investigator, Veterans Affairs HBCU Research Scientist Training Program Career Development Award, 1K2RX001866-01A1 Grant

2014-2015     \$10,000 Funded Grant, Principal Investigator, Pre-Pilot Project Award, University of Alabama at

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Birmingham Comprehensive Cancer Center, Tuskegee University, and Morehouse School of Medicine (UAB/TU/MSM) Partnership, U54 CA118623 National Institutes of Health/National Cancer Institute Grant

2011-2012	\$20,000 Graduate Assistance in Areas of National Need (GAANN) Fellowship, tuition and fees
2007-2012	\$100,000 National Physical Science Consortium Fellowship
2005-2007	\$60,000 National Science Foundation Bridge to the Doctorate Fellowship plus tuition and fees
2003-2009	\$100,000 David and Lucile Packard Foundation, American Association for the Advancement of Science Fellowship
2002	\$1,000 NASA Space Grant Consortium Scholarship
2001	\$1,000 Tom Joyner Morning Show Scholarship
1999-2003	Alabama Agricultural and Mechanical University Presidential Scholarship for tuition, room, board, fees and books

#### ■ AWARDS AND HONORS

2021	50 Champions For The Culture, Forbes
2021	Pioneer of the Year Award, National Society of Black Engineers
2021	28 Dream in Black Future Makers, AT&T
2020	Scientist to Watch, The Scientist Magazine
2020	100 Women of the Century, USA Today
2020	STEM Hero, Women's History Month Feature, STEM Awareness Campaign, General Electric
2020	1,000 Most Inspiring Black Scientists in America, Cell Press
2019	Top 30 Under 40 in Healthcare, named by Business Insider
2019	STEAM Hero, Black History Month Feature, STEAM Awareness Campaign, Verizon
2018	BET Her Cancer Advocate of the Year Award, Breast Cancer Awareness Campaign, BET Television Station, Online and Social Media Channels
2018	Professional Achievement in Industry Award, Women of Color in STEM, Career Communications Group, Inc.
2018	Women of Power Honor, named by Black Enterprise Magazine as one of 25 Black Women Who are Changing the World
2018	STEM's New Guard, named by Essence Magazine as one of 15 Women Who Are Paving the Way and Paying it Forward
2017	Unseen Stars Honor, featured on the ceiling of Grand Central Station as one of 12 women leaders in science, sponsored by General Electric, New York, New York
2017	National Trailblazer of the Year Award, 100 Black Men of America, Inc., New Orleans, Louisiana
2017	Black History Achievement Award, Berean SDA Church, Atlanta, Georgia
2016	Power100, named by EBONY Magazine as one of the 100 most influential African Americans in the United States
2016	The Root 100, named by The Root Magazine as one of the 100 most influential African Americans leaders in the United States, New York, New York
2016	Distinguished Trailblazer Award, The National Coalition of 100 Black Women, Metropolitan Atlanta Chapter
2016	Research Advocate of the Year Award, Southern Company
2016	National Icon Award, City of Selma, Selma, Alabama

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- 2011 Best Abstract Award Recipient, Summer Cancer Research Training Program Annual Meeting, Birmingham, Alabama
- 2011 Best Poster Award Recipient, 3rd International Conference on Nanotechnology (IC4N), Heraklion, Crete, Greece
- 2011 2<sup>nd</sup> Place Poster Award Recipient, Nano-Biophotonics Summer Institute, University of Illinois Urbana-Champaign, Illinois
- 2007 National Science Foundation Graduate Student Research Program Fellowship Honorable Mention
- 2007 Platinum Poster Award Recipient, National Science Foundation Experimental Program to Stimulate Competitive Research (EPSCoR), Waikoloa, Hawaii
- 2003 Who's Who Among American College Students
- 2003 The National Dean's List
- 2002 Alabama Agricultural and Mechanical University President's Cup Award 4.0 GPA
- 2001 Torch Bearer Award, National Society of Black Engineers

## ■ KEYNOTE, INVITED AND CONTRIBUTED LECTURES

- 2021 **Panelist**, Research Partnerships Program, U.S. Department of Veterans Affairs
- 2021 **Keynote Speaker**, SciCafe, McWane Science Center
- 2018 **Invited Speaker**, NPR sponsored "Ask a Scientist" Session, Atlanta Science, Public Broadcasting Atlanta, Historic Academy of Medicine, Atlanta, Georgia
- 2018 **Keynote Speaker**, STEM Forward Conference: Shattering the STEM Ceiling, University of Alabama, Tuscaloosa, Alabama
- 2017 **Panelist**, STEM Diversity Program, Hewlett Packard Enterprise Headquarters, Palo Alto, California
- 2017 **Session Speaker**, Otolaryngology Session, 101st Pacific Coast Oto-Ophthalmological Society Meeting, Big Island, Hawaii
- 2017 **Featured Speaker**, National Convention for 100 Black Men of America, Inc., New Orleans, Louisiana
- 2017 **Invited Speaker**, Deep South Resource Center for Minority Aging Research Advisory Committee Meeting, Atlanta, Georgia
- 2017 **Keynote Speaker**, iPraxis STEM Middle School Program, Philadelphia, Pennsylvania
- 2017 **Featured Speaker**, Culture Shifting Awards Brunch, Menlo Park, California
- 2017 **Invited Speaker**, Research Day, Department of Veterans Affairs, Birmingham Medical Center, Birmingham, Alabama
- 2016 **Featured Speaker**, Congressional Black Caucus Gala, Washington, D.C.
- 2016 **Keynote Speaker**, Thornton Fractional North High School, Calumet City, Illinois
- 2016 **Featured Speaker**, Culture Shifting Think Tank, Menlo Park, California
- 2016 **Invited Speaker**, STEM Alabama Afterschool Community Network Conference, Jefferson State Community College, Birmingham, Alabama
- 2016 **Keynote Speaker**, Athens State University, Women's Leadership Symposium, Athens, Alabama
- 2015 **Invited Speaker**, Grand Rounds, Pediatric Plastic Surgery, Children's Hospital, University of Alabama at Birmingham, Birmingham, Alabama

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- 2014 **Contributed Talk**, UAB/MSM/TU Partnership Advisory Committee Annual Meeting, Birmingham, Alabama
- 2014 **Keynote Speaker**, Materials Science Engineering and Integrated Biosciences Program, Tuskegee University, Tuskegee, Alabama
- 2014 **Keynote Speaker**, Statewide Science and Technology Open House, National Science Foundation Alabama EPSCoR, Montgomery, Alabama
- 2014 **Invited Speaker**, Seminar Series, College of Veterinary Medicine, Tuskegee University, Tuskegee, Alabama
- 2014 **Invited Speaker**, Seminar Series, Biology Department, Morehouse College, Atlanta, Georgia
- 2013 **Invited Speaker**, NanoBio Summit, National Science Foundation Alabama EPSCoR and Alabama State University, Montgomery, Alabama
- 2011 **Contributed Talk** and Poster Presentation, Summer Cancer Research Training Program, Birmingham, Alabama
- 2011 **Contributed Talk**, SPIE (The International Society for Optics and Photonics) Conference, San Francisco, California
- 2009 **Invited Speaker**, Seminar Series, Laboratory for Physical Sciences, College Park, Maryland

## ■ SYNERGISTIC AND PROFESSIONAL ACTIVITIES

- 2021-present Advisory Council on Diversity, Equity, and Inclusion, Member, Syneos Health
- 2021 ABC News Feature, “Black scientist fights to fund her potential cancer laser treatment: Bias in health funding”
- 2018 *Forbes* feature of *Quora Session* community outreach articles “How close are we to the cure for cancer?” and “Can cancer be cured without chemotherapy?”
- 2018 *Apple News* feature of *Quora Session* community outreach articles “What are some alternative cancer treatments if chemotherapy does not work?” and “What does cancer research do?”
- 2017 CBS 42, Television Special Feature, “Local War on Cancer” with Sherri Jackson
- 2017 History Channel, Interview Feature, History Now
- 2017 NPR, Radio Interview, On Second Thought with Celeste Headlee
- 2017 President’s Cancer Panel on Pricing and Payment Strategies for Cancer Drugs, Panelist, Philadelphia, Pennsylvania
- 2017-present Karen Hunter Show, Radio Interview, Wellness Wednesdays
- 2016 NewsOne Now with Roland Martin, Television Show Guest, more than 14 million views on Facebook
- 2016 Black Enterprise TechConneXt Technology Summit: The Intersection of Innovation and Opportunity, Panelist, San Francisco, California
- 2016 Tom Joyner Morning Show, Radio Interview, Wellness Wednesdays
- 2016 PBS, Television Interview, “Spotlight on Education” with Don Dailey
- 2016-present Founding President, Ora Lee Smith Cancer Research Foundation
- 2016-2018 Newspaper and magazine feature articles including NBC News, New York Times, Forbes, People.com, Huffington Post, Madam Noire, The Pittsburgh Courier, Rolling Out, Vice, Essence, Ebony, Black Enterprise, US Black Engineer, BET.com, Face2Face Africa, Huntsville Times, BlackDoctor.org and Style Blueprint
- 2015 Faculty Research and Education Development Program, Scholar, American Society for Cell Biology Minority Affairs Committee, National Science Foundation

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- 2014 Health Disparities Research Training Program for Junior Faculty, Scholar, Minority Health and Health Disparities Research Center
- 2013 Competent Communicator, Toastmasters International Organization for Public Speaking
- 2012 Electrochemical Society, Member
- 2012 American Association for Cancer Research, Member
- 2011 Student Representative to Congress, Society of Photo-Optical Instrumentation Engineers (SPIE)
- 2009-present Radio and television show guest appearances to encourage women and minorities to pursue S.T.E.M. careers
- 2008-2010 Golden Key Honor Society, Undergraduate Student Advisor, Member
- 2005-present Delta Sigma Theta Sorority, Inc., Physical Health Awareness Advocate
- 2003-2009 Member, American Association for the Advancement of Science
- 2002-2003 Official University Spokesperson, Miss Alabama A&M University
- 2002 National Society of Black Physics Students Conference, Program Committee Member
- 2002 National Society of Black Engineers, Outreach Committee Member
- 2000-present Volunteer Physics and Math Tutor, Student Mentor, and Teen Summit Motivational Speaker
- 1999-2003 Founding President, Greater St. Louis Student Association