TABLE OF CONTENTS (This CV only has details from 2019-Present. Please see Nimmi's Archived CV for older publications and links)

NAME AND AFFILIATION
Nimmi Ramanujam, Ph.D.
Robert J. Carr Professor of Engineering
Faculty, Dept. Biomedical Engineering
Faculty, Dept. Pharmacology & Cancer Biology
Faculty, Duke Global Health Institute
Program Leader, Duke Cancer Institute
Director, Global Women's Health Technologies Center

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BRIEF BIO (Full Bio can be accessed here.)

Nirmala (Nimmi) Ramanujam is the Robert W. Carr Professor of Engineering and Professor of Cancer Pharmacology and Global Health at Duke University. She founded the Center for Global Women's Health Technologies (GWHT) in 2013 to catalyze impactful research, educational and community outreach activities that promote women's health. She is recognized for creating globally accessible technologies for women's health related to cancer screening, diagnosis, and treatment. In 2023, she won the I*EEE* Biomedical Engineering Award Technical Field Award given annually for outstanding contributions to the field of biomedical engineering. The award is sponsored by the IEEE Engineering in Medicine and Biology Society, the IEEE Circuits and Systems Society. She received the social impact Abie award in 2019 from the AnitaB organization for making a positive impact on women, technology and society. She has created Calla Health to commercialize her technologies. Further she has created a number of initiatives and consortia including WISH, (In)visible Organ and Ignite to have far reaching impact in cervical cancer, reproductive health and engineering design education, respectively.

EDUCATION

1995 Ph.D. Biomedical Engineering, University of Texas, Austin

POSITIONS HELD

1995-1996 Research Scientist, Biomedical Engineering Program, University of Texas, Austin
1996-1996 National Institutes of Health postdoctoral Fellow, Dept. Biochemistry and Biophysics (Prof. Britton Chance), University of Pennsylvania, Philadelphia
1999-2000 Assistant Professor, Dept. Biochemistry and Biophysics, University of Pennsylvania, Philadelphia
2000-2005 Assistant Professor, Dept. Biomedical Engineering and Medical Physics, University of Wisconsin, Madison
2005-2010 Associate Professor, Dept. Biomedical Engineering, Duke University, Durham, NC
2006- Founder of Zenalux Biomedical (previously known as Ends Optics Inc.), Durham, NC
2011- Professor, Dept. Biomedical Engineering, Duke University, Durham, NC
2013- Professor, Duke Global Health Institute, Duke University, Durham, NC
2013- Director and founder, Center for Global Women's Health Technologies, Duke University, Durham, NC
2014- Professor, Dept. Pharmacology and Cancer Biology, Duke University, Durham, NC
2019- Founder of Calla Health Foundation, Durham, NC

HONORS, AWARDS AND MEMBERSHIPS (RAMANUJAM)

**To access information before 2010 see Archived Honors

2011 Stansell Distinguished Research Award, Pratt School of Engineering, Duke University
2012 Fellow, American Institute of Medical and Biological Engineering (AIMBE)
2012-2018 Charter member, NIH BMIT-A study section
2013 Chair Elect, CDMRP Integration Panel for the BCRP program
2013 Fellow, Society of Photo-Optical Instrumentation Engineers (SPIE)
2014 Robert W. Carr Jr., Professor of Engineering, Duke University
2014-2018 Chair, DoD Breast Cancer Research Program, Integration Panel
2017 Fellow, National Academy of Inventors
2018 CUGH Emerging Leader in Global Health Innovation Faculty Award
2019 Women in Molecular Imaging Network Outstanding Leadership in Molecular Imaging Award, World Molecular Imaging Society
2019 Fulbright Global Scholar
2019 Social Impact Abie Award, AnitaB.org
2019 Program co-leader, Radiation Oncology and Imaging, Duke Cancer Institute
2019-2022 Associate Editor, Scientific Reports

2020 Biophotonics Technology Innovator Award, International Society for Optics and Photonics
2020-2021 EMBS Distinguished Lecturer
2020 Michael S. Feld Biophotonics Award
2020 MacArthur Foundation 100&Change;Top 100 proposals
2020 The WomC Global Impact Award. Duke University Women's Center
2023 IEEE Biomedical Engineering Award

CENTER FOR GLOBAL WOMEN'S HEALTH TECHNOLOGIES

FUNDING

**To access completed grants see Nimmi's Completed Support **

CURRENT FUNDING TOTAL:		$14,853,595	
Active Support (current year directs)			
Development and Validation of an Artificial-Intelligence-enabled Portable Colposcopy Device for Optimizing Triage Alternatives for HPV-based Cervical Cancer Screening			
1U01CA269192-01 NIH Ramanujam (PI)	5/20/22- 4/30/27	0.75 sum	$2,879,009 total

Novel see and treat strategies for cervical cancer prevention in low-resource settings			
1R01CA239268-01 NIH Ramanujam (PI)	2/1/19- 1/31/24	0.72 acad/ 1 sum	$3,882,947 total

Innovations in cervical cancer diagnosis for low resource settings using advanced optical imaging and machine learning diagnostic algorithms.			
4R44CA240019-02 NIH: SBIR Ramanujam (MPI)	07/01/22 — 06/30/24	No effort	$2,293,993 total

PUBLICATIONS

JOURNAL PUBLICATIONS

To access publications before 2019 see Archived Publications

1. Zhu, C., Li, M., Vincent, T., Martin, H. L., Crouch, B. T., Martinez, A. F., Madonna, M. C., Palmer, G. M., Dewhirst, M. W., & Ramanujam, N. “Simultaneous in vivo optical quantification of key metabolic and vascular endpoints reveals tumor metabolic diversity in murine breast tumor models.” *Journal of biophotonics*, 2019, *12*(4), e201800372.
2. Madonna, M. C., Fox, D. B., Crouch, B. T., Lee, J., Zhu, C., Martinez, A. F., Alvarez, J. V., & Ramanujam, N. “Optical Imaging of Glucose Uptake and Mitochondrial Membrane Potential to Characterize Her2 Breast Tumor Metabolic Phenotypes.” *Molecular cancer research : MCR*, 2019, *17*(7), 1545–1555.
3. Asiedu, M. N., Simhal, A., Chaudhary, U., Mueller, J. L., Lam, C. T., Schmitt, J. W., Venegas, G., Sapiro, G., & Ramanujam, N.“Development of Algorithms for Automated Detection of Cervical Pre-Cancers With a Low-Cost, Point-of-Care, Pocket Colposcope.” *IEEE transactions on biomedical engineering*, 2019 *66*(8), 2306–2318.
4. Crouch, B. T., Gallagher, J., Wang, R., Duer, J., Hall, A., Soo, M. S., Hughes, P., Haystead, T., & Ramanujam, N. “Exploiting heat shock protein expression to develop a non-invasive diagnostic tool for breast cancer.” *Scientific reports*, 2019, *9*(1), 3461.
5. Mueller, J. L., Dotson, M. E., Dietzel, J., Peters, J., Asturias, G., Cheatham, A., Krieger, M., Taylor, B., Broverman, S., & Ramanujam, N. “Using human-centered design to connect engineering concepts to sustainable development goals.” *AEE Journal*, 2020, 8(2).
6. Morhard, R., Mueller, J. L., Tang, Q., Nief, C., Chelales, E., Lam, C. T., Alvarez, D. A., Rubinstein, M., Katz, D. F., & Ramanujam, N.“Understanding Factors Governing Distribution Volume of Ethyl Cellulose-Ethanol to Optimize Ablative Therapy in the Liver.” *IEEE transactions on biomedical engineering*, 2020, *67*(8), 2337–2348.
7. Dotson, M. E., Alvarez, V., Tackett, M., Asturias, G., Leon, I., & Ramanujam, N. “Design thinking-based STEM Learning: Preliminary results on achieving scale and sustainability through the ignite model.” *Frontiers in Education*, 2020, 5.
8. Nichols, B. S., Chelales, E., Wang, R., Schulman, A., Gallagher, J., Greenup, R. A., Geradts, J., Harter, J., Marcom, P. K., Wilke, L. G., & Ramanujam, N. “Quantitative assessment of distant recurrence risk in early stage breast cancer using a nonlinear combination of pathological, clinical and imaging variables.” *Journal of biophotonics*, 2020, *13*(10), e201960235.
9. Asiedu, M. N., Agudogo, J. S., Dotson, M. E., Skerrett, E., Krieger, M. S., Lam, C. T., Agyei, D., Amewu, J., Asah-Opoku, K., Huchko, M., Schmitt, J. W., Samba, A., Srofenyoh, E., & Ramanujam, N. “A novel speculum-free imaging strategy for visualization of the internal female lower reproductive system.” *Scientific Reports*, 2020, 10(1).
10. Madonna, M. C., Duer, J. E., Lee, J. V., Williams, J., Avsaroglu, B., Zhu, C., Deutsch, R., Wang, R., Crouch, B. T., Hirschey, M. D., Goga, A., & Ramanujam, N. “In Vivo

Optical Metabolic Imaging of Long-Chain Fatty Acid Uptake in Orthotopic Models of Triple-Negative Breast Cancer." *Cancers*, 2021, *13*(1), 148.

11. Rossman, A. H., Reid, H. W., Pieters, M. M., Mizelle, C., von Isenburg, M., Ramanujam, N., Huchko, M. J., & Vasudevan, L. "Digital Health Strategies for Cervical Cancer Control in Low- and Middle-Income Countries: Systematic Review of Current Implementations and Gaps in Research." *Journal of medical Internet research*, 2021, *23*(5), e23350.
12. Nief, C., Morhard, R., Chelales, E., Adrianzen Alvarez, D., Bourla Bs, I., Lam, C. T., Sag, A. A., Crouch, B. T., Mueller, J. L., Katz, D., Dewhirst, M. W., Everitt, J. I., & Ramanujam, N. "Polymer-assisted intratumoral delivery of ethanol: Preclinical investigation of safety and efficacy in a murine breast cancer model." *PloS one*, 2021, *16*(1), e0234535.
13. Chelales, E., Morhard, R., Nief, C., Crouch, B., Everitt, J., Sag, A., Ramanujam, N. "Radiologic-pathologic Analysis of Increased Ethanol Localization and Ablative Extent Achieved by Ethyl Cellulose." *Scientific Reports.* October 2021.
14. Lai, Y. E., Morhard, R., Ramanujam, N., & Nolan, M. W. "Minimally invasive ethyl cellulose ethanol ablation in domesticated cats with naturally occurring head and neck cancers: Six cats." *Veterinary and comparative oncology*, 2021, *19*(3), 492–500.
15. Wang, R., Alvarez, D. A., Crouch, B. T., Pilani, A., Lam, C., Zhu, C., Hughes, P., Katz, D., Haystead, T., & Ramanujam, N. "Understanding the sources of errors in *ex vivo* Hsp90 molecular imaging for rapid-on-site breast cancer diagnosis." *Biomedical optics express*, 2021, *12*(4), 2299–2311.
16. Nief, C., Gonzales, A., Chelales, E., Agudogo, J., Crouch, B., Nair, S., Ramanujam, N. "Targeting Tumor Acidosis and Regulatory T Cells Unmasks Anti-Metastatic Potential of Local Tumor Ablation in Triple-Negative Breast Cancer." *Int J Mol Sci.* July 2022.
17. Nief,C., Swartz, A., Chelales, E., Sheu, L., Crouch, B., Ramanujam, N., Nair, S. "Ethanol Ablation Therapy Drives Immune-Mediated Antitumor Effects in Murine Breast Cancer Models." *Cancers, MDPI.* October 2022.
18. Dotson ME, Cuenca E, Krieger M, Ramanujam N, Garcia P (2021) "Acceptability and Feasibility of Callascope Self-Imaging of the Cervix among women in Ventanilla, Peru: A Mixed Methods Pilot Study." *J Women's Health Reprod Med,* 2021 Vol.5 No.3:12.
19. Agudogo, J.S., Asiedu, M.N., Dotson, M.E., Krieger, M.S., Huchko, M., Suneja, G., Jenson, D., Proeschold-Bell, R.J., Hogan, W., Ramanujam, N. "Utilization and Perceptions of a Novel Cervical Visualization Tool, The Callascope, For Home-Based Self-Cervical Examinations". *J Women's Health Gyn,* 2021. 1: 1-24
20. Gupta, A., Brown, E., Davis, J. T., Sekabira, J., Ramanujam, N., Mueller, J., Fitzgerald, T. N., "KeyLoop: Mechanical Retraction of the Abdominal Wall for Gasless Laparoscopy." *Surgical Innovation*, 2022; 29(1):88-97
21. Solingapuram Sai, K. K., Chen, X., Li, Z., Zhu, C., Shukla, K., Forshaw, T. E., Wu, H., Vance, S. A., Pathirannahel, B. L., Madonna, M., Dewhirst, M. W., Tsang, A. W., Poole, L. B., Ramanujam, N., King, S. B., Furdui, C. M. "[18F]fluoro-DCP, a first generation pet radiotracer for monitoring protein sulfenylation in vivo." 2022. *Redox Biology*, 49, 102218.

22. Ramanujam N, Madonna M. Editorial overview: Biomedical Engineering and Women's Health-Breaking new ground in gender and sex-specific research. *Current Opinion in Biomedical Engineering.* 2022 Mar 30:100392.
23. Deutsch R***,** D'Agostino V*, Kwan M, Sunassee E, Madonna M, Palmer G, Crouch B, Ramanujam N. "A Spectroscopic Technique to Simultaneously Characterize Fatty Acid Uptake, Mitochondrial Activity, Vascularity, and Oxygen Saturation for Longitudinal Studies *In Vivo*." *Metabolites*. 2022. 12, no. 5: 369.
24. Shin, M. B., Garcia, P. J., Dotson, M. E., Valderrama, M., Chiappe, M., Ramanujam, N., Krieger, M., Ásbjörnsdóttir, K., Barnabas, R. V., Iribarren, S. J., Gimbel, S. "Evaluation of women's empowerment in a community-based human papillomavirus self-sampling Social Entrepreneurship Program (Hope Project) in Peru: A mixed-method study." *Frontiers in Public Health,* 10. June 2022.
25. Madonna, M.C., Duer J. E., McKinney B. J., Sunassee, E., Crouch, B. T., Hirschey, M. D., Alvarez, J. V., Ramanujam. "In vivo imaging identifies lipid vulnerability in Her2+ breast cancer residual disease and recurrence." *NPJ Breast Cancer.* September 2022
26. Skerrett, E., Miao, Z., Asiedu, M.N., Richards, M., Crouch, B., Sapiro, G., Qiu, Q., Ramanujam, N. "Multicontrast Pocket Colposcopy Cervical Cancer Diagnostic Algorithm for Referral Populations." *BME Front.* September 2022.
27. Coole, J.B., Brenes, D., Possati-Resende, J., Antoniazzi, M., Fonseca, B., Maker, Y., Vohra, I., Schwarz, R., Carns, J., Souza, K., Santana, I., Kreitchmann, R., Salcedo, M., Ramanujam, N., Schmeler, K., Richards-Kortum,R. "Development of a Multimodal Mobile Colposcope for Real-Time Cervical Cancer Detection." *Biomedical Optics Express,* October 2022.
28. Perez, L., Tran, K., Alvarenga-Bezerra, V., Chadha, D., Dotson, M. E., Assir, F., Cordioli, E., Gomes, M., Podgaec, S., Silva-Filho, A., Ramanujam, N., Moretti-Marques, R. "Cervical Cancer-Related Knowledge, Attitudes, Practices and Self-Screening Acceptance Among Patients, Employees, and Social Media Followers of Major Brazilian Hospital." *Cancer Control*. November 2022.
29. Natarajan J, Mathur S, Vishnubhatla S, Kumar S, Vashist S, Ramanujam N, Singhal S, Meena J, Tanwar P, Bhatla N. "Can Portable Colposcopes Replace Standard-of-care Colposcopes? A Crossover Trial of Two Portable Colposcopes with a Standard-of-Care Video Colposcope." *Asian Pac J Cancer Prev.* December 2022
30. Wang, R., Deutsch, R. J., Sunassee, E. D., Crouch, B. T., & Ramanujam, N. (2023). "Adaptive design of fluorescence imaging systems for custom resolution, fields of view, and geometries." BME Frontiers, 4, 0005. '
31. Rickard AG, Mikati H, Mansourati A, Stevenson D, Krieger M, Rocke D, Esclamado R, Dewhirst MW, Ramanujam N, Lee WT, et al. "A Clinical Study to Assess Diffuse Reflectance Spectroscopy with an Auto-Calibrated, Pressure-Sensing Optical Probe in Head and Neck Cancer." *Current Oncology*. 2023; 30(3):2751-2760. https://doi.org/10.3390/curroncol30030208
32. Breen K., Asturias G., Mariucci Pena, D., Arzu, A., Madonna, M. C., & Ramanujam, N. "Community-Centered Design Thinking as a Scalable STEM Learning Intervention." *Advances in Engineering Education.* Volume 11, Issue 2. April 2023.

33. Natarajan, J., Krieger, M., Ramanujam, N. et al."Feasibility and Outcome of Training Field Workers to Use the Transvaginal Colposcope for Point of Care Diagnosis and Management of Precancerous Cervical Lesions." *Indian J Gynecol Oncolog*. 2023.
34. Sunassee, E. D., Jardim-Perassi, B. V., Madonna, M. C., Ordway, B., & Ramanujam, N. "Metabolic Imaging as a Tool to Characterize Chemoresistance and Guide Therapy in Triple-Negative Breast Cancer (TNBC)." *Molecular Cancer Research, MCR-22*. 2023.
35. Rickard, G., Mowery, Y.M., Bassil, A.…Ramanujam, N. et al. "Evaluating Tumor Hypoxia Radiosensitization Via Electron Paramagnetic Resonance Oxygen Imaging (EPROI)." *Mol Imaging Biol* (2023).
36. Quang TT, Yang J, Kaluzienski ML, Parrish A, Farooqui A, Katz D, Crouch B, Ramanujam N, Mueller JL. "In Vivo Evaluation of Safety and Efficacy of Ethyl Cellulose-Ethanol Tissue Ablation in a Swine Cervix Model." *Bioengineering*. 2023; 10(11):1246.
37. Quang, T.T., Yang, J., Mikhail, A.S., Wood, B.J., Ramanujam, N., Mueller, J. "Locoregional Thermal and Chemical Tumor Ablation: Review of Clinical Applications and Potential Opportunities for Use in Low- and Middle-Income Countries." *JCO Global Oncology* no. 9. 2023.
38. Wang, R., Ekem, L., Gallagher, J., Factor, R.E., Hall, A., Ramanujam, N. "A Color-Based Tumor Segmentation Method for Clinical Ex Vivo Breast Tissue Assessment Utilizing a Multi-Contrast Brightfield Imaging Strategy." *Journal of Biophotonics*. 2023. *Under revision*.
39. Sunassee, E.D., Deutsch, R., D'Agostino, V., Castellano-Escuder, P., Siebeneck, E., Ilkayeva, O., Crouch, B.T., Madonna, M. C., Everitt, J., Alvarez, J. V., Palmer, G.M., Hirschey, M.D., Ramanujam, N. "Optical Imaging Reveals Chemotherapy-Induced Metabolic Reprogramming of Residual Disease and Recurrence," *Science Advances,* 2023. *Under revision*.

BOOKS

Boas, D.A., Pitris, C., & Ramanujam, N. (Eds.). *Handbook of Biomedical Optics (1st ed.).* CRC Press. 2011. https://doi.org/10.1201/b10951

Ramanujam, N., Crouch, BT. *Biomedical Engineering for Global Health: Cancer, Inequity, and Technology.* Cambridge University Press. In press.

PRESENTATIONS

INVITED TALKS AND SEMINARS

To access information before 2019 see **Archived Presentations

1. Ramanujam, N., "Empowering Women through Technology, Self-Exploration and Art." Rubenstein Arts Center, Duke University, Durham, NC. February 2019.

2. Ramanujam, N, "Start-ups in Healthcare," Health Sector Management (HSM) and the Duke Clinical & Translational Science Institute (CTSI) Discussion Panel. February, 2019.
3. Ramanujam, N., Lam, C., Krieger, M., Roberts, E., Dotson, M.E., "Pocket Colposcope and Callascope." NASEM Expanding Cervical Cancer Screening and Preventive Therapy. March 4th, 2019.
4. Ramanujam, N., "An Evening with Duke's Best and Brightest: Philadelphia." Philadelphia, PA. March 2019.
5. Ramanujam, N., "Panel on Global Health." DGHI DC event, Washington D.C. April 2019.
6. Ramanujam, N., "Scaling Cervical Cancer Prevention in Peru." DGHI Board Meeting, Durham, NC. April 2019.
7. Ramanujam, N, "Talking Tech and Healthcare," Duke Sheroes. Duke University, Durham, NC. April, 2019.
8. Ramanujam, N, "Applying the UBER model to democratize health care – a strategy for cervical cancer prevention," Duke GRADx. Duke University, Durham, NC. April, 2019.
9. Ramanujam, N., "Duke in Napa Valley." Duke University, Durham, NC. May 22, 2019.
10. Ramanujam, N., "Xcelerator workshop: Innovator Stories Session." USAID SEED Program. May 2019.
11. Ramanujam, N, "Pocket colposcope - concept to impact," USAID Accelerator Workshop. Duke University, Durham, NC. May, 2019.
12. Ramanujam, N., "Pay Less, Expect More—a 21st Century Model for Cancer Care." World Molecular Imaging Conference (WMIC), Paris, France. September 4, 2019.
13. Ramanujam, N., Women in Bio - RTP: Demystifying Entrepreneurship, Durham, NC. September 12th, 2019. (panelist)
14. Ramanujam, N., "Empowering Women to Improve Women's Health Through Tech, Education, & Engagement." Grace Hopper Conference, Orlando, FL. October 3, 2019.
15. Ramanujam, N., "Ignite: Teaching Design Thinking and Global Citizenship in a Horizontally and Vertically Integrated Classroom." UNC World View Symposium, Chapel Hill, NC. October 16, 2019
16. Ramanujam, N., "Meet Female Entrepreneurs Discovering New Ways to Solve Problems with Technology." Cisco, Rock-IT. October 22, 2019.
17. Ramanujam, N, "Talent from all Corners: How Immigration Helps Shape Scientific Leadership," Duke University Science and Society. November, 2019.
18. Ramanujam, N, "Increasing Cervical Cancer Detection in the Developing World by Using New Technology Developed by Women for Women," The International Society for Optical Engineering (SPIE) and the Optical Society of America (OSA) Student Chapter. Columbia University. November, 2019.
19. Ramanujam, N, "A Technological Approach to Tackling Invisible Barriers to Cancer Progression and Death," Biophotonics Distinguished Seminar Series. University of California, Davis. December, 2019.

20. Ramanujam, N, "Beyond a Game: Funding Innovative Technology around the Globe," Prevent Cancer Foundation Awesome Games Done Quick 2020 Marathon. January, 2020.
21. Ramanujam, N, "Strategies for local control and prevention of recurrence in breast cancer," Moffitt Cancer Center. January, 2020.
22. Ramanujam, N., "The Pocket Colposope: Concept to Scale." Regulatory session in the Advanced Biomedical Clinical Diagnostic and Surgical Guidance Systems Conference, SPIE, San Francisco, CA. Feb 2020
23. Ramanujam, N, "From cell ecosystems to Global Ecosystems: Tackling Cancer from Different Angles," UCSF Mission Bay Campus. February, 2020.
24. Ramanujam, N, "Remarkable journeys. Real conversations. Disrupting stereotypes. Inspiring role models," Duke Sheroes. Duke University. February, 2020.
25. Ramanujam, N, "Designing Innovations for Women's Health," Duke University Scholars Program Spring Symposium. February, 2020.
26. Ramanujam, N, "WISH (Women Inspired Strategies for Healthcare)," Geneva Health Forum. April, 2020.
27. Ramanujam, N., "E4USA 'Meet the Engineer.'" Engineering For Us All (E4USA) project. May 2020
28. Ramanujam, N., "Women Inspired Strategies for Health." Prevent Cancer Virtual Dialogues. June 2020.
29. Ramanujam, N., "Women Inspired Innovative Strategies for Health." 42nd Annual International Conferences of the IEEE Engineering in Medicine and Biology Society. (EMBC), Montréal, Canada. July 2020.
30. Ramanujam, N, Guest Speaker at National Cancer Institute Cancer Imaging Program. August, 2020.
31. Ramanujam, N, Guest Speaker for Duke University Medical Scientist Training Program Seminar. September, 2020.
32. Ramanujam, N, "Addressing the Structural and Social Barriers to Global Cancer Inequities through Biomedical Innovation," University of California, Irvine. October, 2020.
33. Ramanujam, N, "Addressing Structural and Social Barriers to Global Cancer Inequities Through Biomedical Innovation," Boston University Photonics Center. December, 2020.
34. Ramanujam, N, "Addressing Inequities in Women's Health/ Education Through a Technology Lens," Boston University BME 17th Annual QBP/TRB/SB2 Graduate Research Symposium. December, 2020.
35. Ramanujam, N., "Women's Health and STEM Education - The Common Denominator." World Molecular Imaging Society. Feb 22, 2021.
36. Ramanujam, N, "Addressing the Structural and Social Barriers to Global Cancer Inequities through Biomedical Innovation," Notre Dame Electrical Engineering Seminar Series. February, 2021.
37. Ramanujam, N, "Optical Methodologies to Characterize the Metabolic Underpinnings of Breast Cancer". Single Cell Metabolomics Workshop by Duke University. Feb 26, 2021.

38. Ramanujam, N, "Addressing Structural and Social Barriers to Global Cancer Inequities Through Biomedical Innovation," UW Madison Global Health Innovation Club. March, 2021.
39. Ramanujam, N, "Addressing Structural and Social Barriers to Global Cancer Inequities Through Biomedical Innovation," Electrical and Computer Engineering (ECE) department. Iowa State University. April, 2021.
40. Ramanujam, N., "Biomedical Innovations to Address Global Cancer Inequities." Department of Surgery Grand Rounds for Memorial Sloan Kettering Cancer Center. May 1st, 2021. (invited speaker)
41. Ramanujam, N. and Madonna, M, Duke University OSI Virtual Research Town Hall: The Role of Mentoring in Managing Research Team Communication. May, 2021.
42. Ramanujam, N, "Injustice has a Cure: Paul Farmer & Duke Global Health Projects in Latin America & the Caribbean," Duke Global Health Institute. May, 2021.
43. Ramanujam, N., "Low-cost portable medical devices." Chan Zuckerburg Initiative, Medical Imaging Workshop. July 15, 2021.
44. Ramanujam, N., "President's Symposium: The Importance of Creativity in Science." AAPM. July 25, 2021.
45. Ramanujam, N., "Developing new technologies for LMICs." Affordable Cancer Technologies Conference. Sept 23, 2021.
46. Ramanujam, N., "Women Inspired Strategies for Health: Tackling Cancer Prevention and Control from Different Angles." Miniaturized Systems for Chemistry and Life Sciences (MicroTAS). October 13, 2021.
47. Ramanujam, N., "Design Thinking and Sustainable Development Goals." North Carolina Association for Biomedical Research's (NCABR) Bridging the Gap: Uniting North Carolina K-16 STEM Education conference. Oct 26, 2021.
48. Ramanujam, N, "Global Research and Educational Initiatives in the Design and Implementation of Women's Health Solutions," Duke Community Engaged Scholarship Collaborative. October, 2021.
49. Ramanujam, N, "Biomedical Innovations to Address Global Cancer Inequities," Emory University. November, 2021.
50. Ramanujam, N, "Accelerating global cervical cancer prevention through Biomedical Innovations," AOGIN India (virtual). December, 2021.
51. Ramanujam N, "Accelerating the Impact of Biomedical Innovations on Global Health Inequalities," SPIE Photonics West, Invited Oral Presentation. San Francisco, California. January, 2022.
52. Ramanujam, N, Panelist. "Conquering Cancer: Documentary Panel Response," Cervivor. January, 2022.
53. Ramanujam, N, Panelist. "Reproductive Women's Health," Duke Research Week. February, 2022.
54. Ramanujam, N, "Biomedical Solutions for Women's Cancer," CREOL Colloquium. University of Central Florida. February, 2022.
55. Ramanujam, N, Panelist. "The Acceleration of Medical Device Development: How to Build and Plan for Successful Execution of Early-Stage Product Development," BioscienceLA and UCLA Biodesign. March, 2022.
56. Ramanujam, N, "Program and Research Updates from the Center for Global Women's Health Technologies," Global Duke Meeting. March, 2022.

57. Ramanujam, N. "Patient Centered Solutions for Global Cancer Applications," Distinguished Lecturer, Engineering in Medicine and Biology Society. University of Illinois, Chicago. March, 2022.
58. Ramanujam, N. "Biomedical Innovations for Global Cancer," BME Graduate Seminar Series. Penn State University. March, 2022.
59. Ramanujam, N. "Low Cost Therapeutics for Cancer Treatment for Global Health." Duke Radiation Oncology and Imaging Program Annual Retreat. May 3, 2022
60. Ramanujam, N. "Accelerating the Impact of Technology and Innovation for Global Cervical Cancer Prevention." Center for Bioengineering Innovation and Design Seminar, Johns Hopkins University. September 2022.
61. Ramanujam, N., "Accelerating the Impact of Biomeical Innovations on Global Health Inequities." Invited Oral Presentation. BMES October 2022.
62. Ramanujam, N. "Accelerating the Impact of Technology and Innovation for Global Cervical Cancer Prevention." Fischell Department of Bioengineering Seminar, University of Maryland. November 2022
63. Ramanujam, N. "Accelerating the Impact of Technology and Innovation for Global Cervical Cancer Prevention." SPIE BiOS, Invited Oral Presentation. San Francisco, California. March 6, 2023
64. Ramanujam, N. "Accelerating the Impact of Technology and Innovation for Global Cervical Cancer Prevention." Distinguished Seminar speaker, Weldon School of Biomedical Engineering, Purdue University. March 2023.
65. Ramanujam, N. "Navigating the Technology Industry." Panel. IEEE Vision, Innovation, and Challenges Summit. Atlanta, Georgia. May 2023.
66. Ramanujam, N. "Biomedical Innovations Can Close Health Inequity Gaps." Keynote Speaker. International Conference of the IEEE Engineering in Medicine and Biology Society. Sydney, Australia. July 2023
67. Ramanujam, N. "Triumphs and Challenges of Developing and Translating Medical Technology in Low or Middle-Income Countries." Panel. International Conference of the IEEE Engineering in Medicine and Biology Society. Sydney, Australia. July 2023

REPRESENTATIVE INTERVIEWS AND FEATURED ARTICLES

1. Ramanujam, N. "From reluctant engineer to leader of audacious projects on behalf of women." NIH, National Institute of Biomedical Imaging and Bioengineering. 2019
2. Ramanujam, N. "Nirmala Ramanujam: The 2020 SPIE Biophotonics Technology Innovator Award." SPIE. November 13, 2019
3. Ramanujam, N. "Talent From All Corners." Duke Science and Society. December 9, 2019
4. Ramanujam, N. "Women's Health: It's Personal for Nimmi Ramanujam." Marla Broadfoot, Duke University School of Medicine. January 2020
5. Ramanujam, N. "If you Treat People with Integrity, You Will Treat Science with Integrity." Emilia Chiscop-Head, Duke Office of Scientific Integrity. February 25, 2020
6. Nimmi Ramanujam, "The Human Dimension: Biomedical Engineer Designs Technologies for Fighting Female Cancers." Cindy Atoji Keene, Diversity in Action. March 2020.
7. Ramanujam N. "Reimagining Biomedical Engineering". Pandemic Punditry. July 2020

8. Ramanujam N. "Spotlight on Women in Health Ventures." Theia Podcast. August 21 2020.
9. Ramanujam N. Johns Hopkins CBID Podcast on Women Leaders in Healthcare Innovation. Sept 2020
10. Ramanujam N. W(omen)INN(ovat)ING Health Podcast. January 2021
11. Ramanujam, N. "Top 2023 IEEE Biomedical Engineering Awardee Professor Nimmi Ramanujam Shares Deep Insights." Stephen Ibaraki, Forbes. September 2022.

REGULATORY CLEARANCES
Pocket colposcope, US FDA 510 K Clearance, Sept 2018

PATENTS (issued)
US Patent 7,818,154 entitled, "Monte Carlo based model of fluorescence in turbid media and methods and systems for using same to determine intrinsic fluorescence of turbid media," issued 10/19/2010

US Patent 8,804,115, entitled, "Systems and methods for performing optical spectroscopy using a self-calibrating fiber optic probe," issued 12/8/2014

US Patent, 9,820,655, entitled, "Systems and methods for spectral analysis of a tissue mass using an instrument, an optical probe, and a Monte Carlo or a diffusion algorithm" issued 11/21/17

US Patent 8,369,915 entitled, "Integrated Miniaturized Fiber Optic Probe," issued 2/5/2013

US Patent 7,570,988 entitled, "Method for Extraction of Optical Properties from Diffuse Reflectance Spectra," issued 8/4/2009

US Patent 7,570,988 entitled, "Method for Extraction of Optical Properties from Diffuse Reflectance Spectra," issued 11/2/2006

US Patent 9,091,637 entitled, "A smart fiber optic sensor system for quantitative tissue optical spectroscopy," issued 7/28/2015

US Patent 7,835,786 entitled, "Methods, systems, and computer program products for optimization of probes for spectroscopic measurement in turbid media," issued 11/16/2010

US Patent 11,805,994 entitled "Colposcopes, Mammoscopes, and Inserters Having Curved Ends and Associated Methods," issued 11/7/2023

European Patent 3435837B1 entitled, "Coploscopes and Mammascopes Having Curved Ends and Flat Ends, Associated Methods, and Speculum-Free Imaging Methods," issued 6/1/2022

COURSES
I offer a suite of courses that cover four distinct topics that directly link to the activities of the center – women's health and technologies, optical imaging and cancer hallmarks,

general STEM and health education and awareness through two Bass Connections program, and two additional Bass Connections programs in cervical cancer prevention and global surgery. These courses serve to cover concepts in human-centered design, the scientific method, and implementation science all of which are essential for translating ideas to impact.

To access Courses taught before 2016 see Nimmi's Archived Courses

- **BME 230 – Global Women's Health Technologies:** Exploration of the intersection of technology, women's health, and global poverty. Analysis of case studies related to human-centered design and applications of engineering to solve global health challenges. Hands-on learning of engineering concepts. Application of course knowledge in a design challenge based on a need from a real-world client in a low-resource setting.
- **BME 290L.01 – Tech Design for Global Health:** This course will build students' ability to understand the relationship between global health and engineering, build prototypes, and fully immerse themselves in the human-centered design process. Students will learn about the history of global health and public health, and work to understand the unique cultural context for their selected design challenge in groups. With collaborative projects driven by global partnerships and human-centered design at the core of this course, groups of students will build their solutions in parallel to the content of the course to better unite theory, application, and reflection through a global lens.
- **BME 290.02 – Biomedical Engineering and Global Health:** This course provides a thorough introduction to the historical and current role that technology and innovation has played in cancer management and prevention in the 21st century in relation to its capacity to bridge disparities. Through the lens of technology, students will explore a variety of perspectives impacting the complexity of cancer care. Students will develop knowledge and skills applicable to a future career in medical technology development, public health implementation science, and biomedical research, including design-thinking, statistical analysis, and clinical trial design
- **BME 290L.01 Ignite: Improving Students' STEM-Identity Through Human-Centered Design (Bass Connections):** This project team will develop a research framework for engineering education to govern future Ignite implementations in Durham and inform the larger engineering education field. In the fall, team members will learn the current Ignite curriculum and evaluation metrics, including the previous Ignite team's online platform. Then, they will establish a mixed-methods research framework, including embedded metrics, pre- and post-surveys, field notes, informal reflection interviews with students and guardians, and student artifacts to examine how programs like Ignite transform students' iterative practices and affect longer-term STEM participation. In the spring, the team will implement Ignite and its research metrics in partnership with the Museum of Life and Science. This will provide approximately 60 middle school and 20 high school students with an eight-week engineering program that includes a multimodal virtual curriculum and three structured

weekend trips to the museum for hands-on learning. Team members will choose one of three curricula (Clean Energy, Clean Water or Good Health) and work through the "hear, create and deliver" phases of human-centered design. Their work will culminate in a conference at Duke where prototypes will be presented, and final metrics will be collected.

SERVICE

To access Service Committees before 2019 see Archived Service

2019 Member, Search committee, Vice-provost for the Arts, Duke University
2019 Member, Conflict of Interest Committee
2019 Member, President's Art Planning Committee
2019- DCI Executive Committee
2019 AACR Distinguished Lectureship on the Science of Cancer Health Disparities Committee
2019 Guest Editor for Biomedical Optics Express, Global Health Edition
2020 Women In Molecular Imaging Network (WIMIN) Leadership Committee
2020 AACR Committee for Leadership Awards
2020 Member, Selection Committee for Vice Provost for Duke Arts
2020 Member Center for Duke In vivo Microscopy Center Advisory Group
2021 Guest Editor for the Futures of Biomedical Engineering section of Current Opinion in Biomedical Engineering
2021 Steering Committee for International Symposium of Resource-Appropriate Technologies for Global Oncology
2021 Member, Search Committee for BME Department Chair, Duke University
2022 Ad Hoc President's Committee to Explore Future Directions in the Science of Physics in Medicine for American Association of Physicists in Medicine
2022 Technical University of Munich (TUM) Center for Translational Cancer Research, evaluation committee
2023 Innovation Equity Forum Steering Committee
2023 Member, Duke Health Leadership Structure Consultative Committee

TRAINEES

CONTRIBUTED TALKS AND POSTERS

**To access Talks & Posters information before 2019 see: Archived Talks & Posters

1. Madonna, MC, Fox, DB, Duer, J, Zhu, C, Alvarez, J, and Ramanujam N, "Optical Metabolic Imaging Differentiates Breast Tumor Dormancy and Recurrence," Biomedical Engineering Society Annual Fall Meeting, Philadelphia, Pennsylvania. October, 2019.
2. Morhard R, Mueller J, Nief C, Yen-Hao E, Katz D, Nolan M, Dewhirst MW, and Ramanujam N, "Reducing Leakage Associated With Ethanol Ablation Through Incorporation Of Ethyl Cellulose," Biomedical Engineering Society Annual Fall Meeting, Philadelphia, Pennsylvania. October, 2019.

3. Nief C, Morhard R, Mueller J, and Ramanujam N, “Improved Localization of Intratumoral Injections of Ethanol for Low-Cost Tumor Ablation and Small Molecule Delivery,” Biomedical Engineering Society Annual Fall Meeting, Philadelphia, Pennsylvania. October, 2019.
4. Mueller J, Morhard R, Nief C, Adrianzen Alvarez D, Katz D, and Ramanujam N, “Optimizing delivery and distribution of ethanol ablation towards enabling low-cost treatment of cervical pre-cancer at the point of care,” Biomedical Engineering Society Annual Fall Meeting, Philadelphia, Pennsylvania. October, 2019.
5. Mueller J, Dietzel J, Dotson E, and Ramanujam N, “Ignite: Teaching design thinking and global citizenship in a horizontally and vertically integrated classroom,” Biomedical Engineering Society Annual Fall Meeting, Philadelphia, Pennsylvania. October, 2019.
6. Skerrett E, Asiedu M, Richards M, Schmitt J, and Ramanujam N, "Development of a Speculum-Free Liquid Applicator for At-Home Cervical Cancer Screening," IEEE EMBS Special Topic Conference on Healthcare Innovations and Point-of-Care Technologies, Bethesda, Maryland. November, 2019. (Best Poster Award)
7. Duer J, and Ramanujam N, “Monitoring Fatty Acid Uptake *in vivo* in a Murine Breast Cancer Model Using Bodipy FL c16,” Duke University Department of Biology Graduation with Distinction Thesis Presentation, Durham, North Carolina. December, 2019.
8. Madonna MC, Duer J, Fox D, Alvarez J, and Ramanujam N, "In vivo metabolic imaging reveals mitochondrial membrane potential reprogramming following Her2-targeted therapy and dormant disease," paper TTu1B.3 in *Biophotonics Congress: Biomedical Optics 2020 (Translational, Microscopy, OCT, OTS, BRAIN)*, OSA Technical Digest. April, 2020.
9. Wang R, Deutsch R, Alvarez DA, Lam C, Crouch BT, Haystead T, and Ramanujam N, "Leveraging Surface Hsp90 Expression for Rapid-on-site Breast Cancer Diagnostics," paper TM4B.2 in *Biophotonics Congress: Biomedical Optics 2020 (Translational, Microscopy, OCT, OTS, BRAIN)*, OSA Technical Digest. April, 2020.
10. Asiedu MN, Skerrett E, Sapiro G, and Ramanujam N, “Combining multiple contrasts for improving machine-learning based classification of cervical cancers with a low-cost point-of-care Pocket Colposcope,” IEEE Engineering in Medicine and Biology Society Conference (EMBC), Montreal, Canada (Virtual). July, 2020.
11. Asiedu MN, Srofenyoh E, and Ramanujam N, “A Novel, Low-cost, Callascope for Clinical and Self Cervical Cancer Screening: Clinical feasibility Studies in Accra, Ghana and Durham,” 11th Annual Consortium of Universities for Global Health Conference, Washington, DC. April, 2020. (Conference canceled)
12. Nief CA, Chelales E, Morhard R, Everitt J, Mueller J, Yao J, Dewhirst MW, and Ramanujam N, “Averting tumor growth in rodent breast cancer models with a liquid ablation approach,” 5243-5243, August, 2020.
13. Chelales E, Morhard R, Sag AA, and Ramanujam N, “Polymer-Enhanced Ethanol Ablation Localizes Injected Ethanol and Increases Tumor Treatment Efficacy (poster presentation),” Biomedical Engineering Society Annual Meeting (virtual). October, 2020.
14. Chelales E, Morhard R, Sag AA, and Ramanujam N, “Radiologic-Pathologic Analysis of Novel Ethanol Gel Formulation for Percutaneous Ablation in an Animal

Model (poster presentation)," Symposium on Clinical Interventional Oncology (virtual), October, 2020.

15. Deutsch R, Madonna M, Zhu C, Goga A, and Ramanujam N, "Optical Fluorescence Spectroscopy Identifies Changes in Fatty Acid Metabolism During Tumor Regression," Biomedical Engineering Society (BMES) Annual Meeting (virtual). October, 2020.
16. Chelales E, Morhard R, Nief, C, Sag AA, Crouch B, and Ramanujam N, "Radiologic-Pathologic Analysis of Novel Ethanol Gel Formulation for Percutaneous Ablation in a Rat Liver Model (oral presentation)," Society of Interventional Oncology Annual Scientific Meeting (virtual). February, 2021.
17. Dotson L, Shin M, and Ramanujam N, "Evaluation of Women's Empowerment in a Community-Based HPV Self-Sampling Social Entrepreneurship in Peru: Mixed-Method Study," Translational Science 2021 Conference (virtual). March-April, 2021.
18. Nief CA, Agudogo JS, Gonzales A, Previs RA, Nair SK, and Ramanujam N, "Resetting the tumor microenvironment to favor anti-tumor immunity after local ablation," 2561-2561. ASCO Annual Meeting (virtual). June, 2021.
19. Agudogo JS, Nief CA, Chelales E, Gonzales A, Mueller J, Crouch B, Previs RA, and Ramanujam N, "A novel treatment for recurrent localized cervical cancer using point-of-care ethyl cellulose ethanol ablation with concurrent cytotoxic therapy," e17507-e17507. ASCO Annual Meeting (virtual). June, 2021.
20. Skerrett E, Miao Z, Asiedu MN, Qiu Q, Asiedu MN, Sapiro G, and Ramanujam N, "Cervical Cancer Detection Algorithms on a Class-Imbalanced Dataset," SPIE Photonics West, San Francisco, California. January, 2022.
21. Deutsch R, Wang R, Crouch B, Ramanujam N, "Development of a fluorescence illumination optimization algorithm for mobile imaging applications in resource limited settings," SPIE Photonics West, San Francisco, California. January, 2022.
22. Chelales E, Kwan M, Crouch B, Sag AA, Katz DF, and Ramanujam N, "Ethanol Gel Enhances Percutaneous Intratumoral Chemotherapy Injection: In Vitro and In Vivo Studies of Drug Retention, Tumor Destruction, and Overall Survival (poster presentation)," Society of Interventional Oncology Annual Scientific Meeting, San Francisco, California, March, 2022. (Best Basic Science Poster Award).
23. D'Agostino V, Deutsch R, Kwan M, Crouch BT, Madonna M, Palmer G, and Ramanujam N, "Methods to Simultaneously Track Oxidative Phosphorylation and Fatty Acid Oxidation Longitudinally In Vivo," Cancer Metabolism Showcase and Workshop (virtual). April, 2022.
24. Madonna, M.C., Breen, K., Knudsen, D., Asturias, G., Saterbak, A., Ramanujam N. "Ignite: Scaffolded, Place-Based Human-Centered Design to Promote Global Citizenship in Engineering." BMES October 2022.
25. Coole, J. B., Mitbander, R., Brenes, D., Kortum, A., Maker, Y., Monteiro, E., ... Ramanujam, N. et al. "Multi-modal mobile colposcope for real-time cervical precancer detection: a pilot study in Mozambique." SPIE. March 2023.
26. R. J. Deutsch, R. Wang, E. D. Sunassee, M. C. Madonna, B. T. Crouch, and N. Ramanujam, "Development of a multi-scale platform to quantify metabolic heterogeneity in vivo." Optical Molecular Probes, Imaging and Drug Delivery, Vancouver, BC, Canada. April 2023.

27. E. D. Sunassee, B. Crouch, M. Madonna, G. Palmer, and N. Ramanujam, "In Vivo Metabolic Imaging Reveals Mitochondrial Membrane Potential Reprogramming During Residual Disease Following Chemotherapy," Optical Molecular Probes, Imaging and Drug Delivery, Vancouver, BC, Canada. April 2023.

AWARDS, HONORS AND FELLOWSHIPS (TRAINEES)

** To access Awards, Honors and Fellowships by Nimmi's trainees before 2019 see Archived Awards, Honors and Fellowships (Trainees).

2018-2019 **Mercy Asiedu**, DGHI Doctoral Scholar
2018-2019 **Erica Skerrett,** MITP Fellowship
2018-2019 **Erika Chelales,** John T. Chambers
2018-2019 **Megan Madonna**, Departmental Service Award
2019 **Chris Lam,** Best Dissertation Award
2019 **Mercy Asiedu**, Lemelson-MIT Graduate Student "Cure it" Winner
2019 **Mercy Asiedu**, 2nd place in the CISCO GPS Challenge
2019 **Mercy Asiedu**, Schmidt Science Fellow Postdoc, MIT
2019 **Riley Deutsch**, Fredrick Thurstone Fellowship, Duke BME Department
2019 **Erika Cheales,** Fredrick Thurstone Fellowship, Duke BME Department
2019 **Enakshi Sunassee**, John T. Chambers Fellowship in the Fitzpatrick Institute for Photonics
2019 **Luiza Perez**, Hart Leadership Program Fellowship
2019 **Karina Moreno**, Center for Latin American and Caribbean Studies Research Award
2019-2021 **Robert Morhard,** Ruth L. Kirschstein National Research Service Award (NRSA) for Individual Predoctoral Fellows (F31)
2019-2022 **Victoria D'Agostino**, NSF Graduate Research Fellowship
2019-2021 **Megan Madonna,** NIH Ruth L. Kirschstein Predoctoral Individual National Research Service Award NCI F31 Fellow
2019-2024 **Erica Skerrett**, NSF Graduate Research Fellowship
2020 **Enakshi Sunassee,** Clinton Global Initiative Cohort of 2020
2020 **Roujia Wang,** DGHI Fellowship
2020 **Erika Cheales**, NSF Graduate Research Fellowship
2020 **Riley Deutsch**, National Defense Science & Engineering Graduate Fellowship
2020 **Enakshi Sunassee,** The Howard G. Clark III Fellowship
2020 **Alana Gonzales**, John T. Chambers Fellowship
2021 **Erika Cheales,** Duke BME Departmental Service Award
2021 **Riley Deutsch,** Duke BME Recognition for Service to BME Community
2021 **Victoria D'Agostino,** Duke BME TA of the year
2022 **Victoria D'Agostino,** Duke BME Departmental Service Award
2022 **Erika Chelales**, Best Basic Science Poster, Society of Interventional Oncology Annual Scientific Meeting
2022 **Megan Madonna**, BMES Young Investigator Award
2023 **Erika Chelales**, Dean's Award for Excellence in Mentoring.

DOCTORAL, MASTERS AND PRELIM EXAM COMMITTEES

To access Committee Participation before 2019 see Archived Committees

1. Mercy Asiedu, Final Defense, Dept. Biomedical Engineering, Duke University, June 2019.
2. Roujia Wang, Preliminary Exam, Dept. Biomedical Engineering, Duke University, September 2019.
3. Charlene Chabata, Preliminary Exam, Dept. of Pharmacology & Cancer Biology, Duke University, November 2019.
4. Robert Morhard, Final Defense, Dept. Biomedical Engineering, Duke University, August 2020.
5. Megan Madonna, Final Defense, Dept. Biomedical Engineering, Duke University, September 2020.
6. Erika Cheales, Preliminary Exam, Dept Biomedical Engineering, Duke University, October 2020
7. Riley Deutsch, Preliminary Exam, Dept Biomedical Engineering, Duke University, October 2020
8. Erica Skerrett Preliminary Exam, Dept Biomedical Engineering, Duke University, December 2020
9. Victoria D'Agostino, Preliminary Exam, Dept Biomedical Engineering, Duke University, August 2021
10. Enakshi Sunassee, Preliminary Exam, Dept Biomedical Engineering, Duke University, September 2021
11. Charlene Chabata, Defense, Dept. of Pharmacology & Cancer Biology, Duke University, November 2021
12. Corrine Nief, Final Defense, Dept Biomedical Engineering, Duke University, April 2022
13. Lillian Ekem, Preliminary Exam, Dept Biomedical Engineering, Duke University, September 2022
14. Roujia Wang, Final Defense, Dept Biomedical Engineering, Duke University, January 2023
15. Erika Chelales, Final Defense, Dept Biomedical Engineering, Duke University, April 2023
16. Riley Deutsch, Final Defense, Dept Biomedical Engineering, Duke University, June 2023
17. Kerry Eller, Preliminary Exam, Dept Biomedical Engineering, Duke University, August 2023

TRAINEES AND STUDENTS

Postdoctoral Student	Tenure	Degree Sought	Position after Tenure
Gargi Vishnoi	1998-2000	Postdoc training	Asst Professor, IIT, Bombay
Quincy Brown	2005-2012	Postdoc training	Asst Professor, Tulane University

Bing Yu	2005-2012	Postdoc training	Asst Professor, Univ. of Akron
Karthik Vishwanath	2006-2011	Postdoc training	Senior Scientist, RMD Inc.,
Narasimhan Rajaram	2010-2014	Postdoc training	Asst Professor, Univ. of Arkansas
Christine Mulvey	2010-2014	Postdoc training	Instructor, Duke University
Amy Frees	2017-2017	Postdoc training	Program manager, Vanderbilt
Brandon Nichols	2017-2018	Postdoc training	Research Scientist, Cook Medical
Caigang Zhu	2014-2019	Postdoc training	Asst Professor, Univ. of Kentucky
Jenna Mueller	2015-2020	Postdoc training	Asst Professor, Univ. of Maryland
Brian Crouch	2018-2019	Postdoc training	Asst Professor, Duke University
Chris Lam	2018-2019	Postdoc training	Optical Engineer, Masimo
Sultan Erturk	2020-2022	Postdoc training	Senior MRI Scientist, Merck

Graduate Student	**Tenure**	**Degree Sought**	**Position after tenure**	**Thesis**
Matthew Caldwell	2009-2011	MS, BME	Integration Engineer, EPIC	N/A
Sisira Gorthala	2013-2015	MS, GH	Unknown	N/A
Betsy Asma	2013-2015	MS, GH	Research Assoc, Duke University	N/A
Daniel Salo	2014-2016	MS, BME	ECE Ph.D student Duke	N/A
Denali Dahl	2015-2017	MS, GH	BME Ph.D student UNC-Chapel Hill	N/A
Quan Liu	2000-2005	Ph.D, BME	Asst Prof, BME, Nanyang	
Greg Palmer	2001-2005	Ph.D, BME	Asst Prof, Duke University	
Changfang Zhu	2002-2007	Ph.D, ECE	Senior Scientist, Boston Scientific	
Melissa Skala	2002-2007	Ph.D, BME	Assoc Professor, UW Madison	Multiphoton microscopy, fluorescence lifetime imaging and optical spectroscopy for the diagnosis of neoplasia

Stacy Millon	2004-2010	Ph.D, BME	Proposal Developer, Quintiles	Metabolic Exogenous Contrast Agents for use in Breast Cancer Detection and Therapy Monitoring
Vivide Chang	2005-2010	Ph.D, BME	Consultant, L.E.K. Consulting	Exploiting Optical Contrasts for Cervical Precancer Diagnosis via Diffuse Reflectance Spectroscopy
Janelle Bender	2006 -2010	Ph.D, BME	Res. Ana., CAN's center for Naval Analyses	Diffuse Reflectance Spectroscopy Characterization for Extraction of Tissue Physiological Parameters
Torre Bydlon	2006-2012	Ph.D, BME	Senior Scientist, Philips Research	Intra-operative Assessment of Breast Tumor Margins Using Diffuse Reflectance Spectroscopy
Stephanie Kennedy	2006-2012	Ph.D, BME	Senior Consultant, ICON plc	Exploring Optical Contrast in Ex-Vivo Breast Tissue Using Diffuse Reflectance Spectroscopy and Tissue Morphology
Justin Lo	2006-2012	Ph.D, BME	Data Scientist at Chevron, Texas	Development of a Wide Field Diffuse Reflectance Spectral Imaging System for Breast Tumor Margin Assessment
Henry Fu	2007-2014	Ph.D, BME	Senior Scientist, BD Technologies	Development of Clinically Translatable Technologies for Optical Image-Guided Breast Tumor Removal Surgery
Amy Frees Martinez	2010-2017	Ph.D, BME	Program Manager, Office of Research, Vanderbilt University Medical Center	Metaboloptics: In vivo optical imaging to visualize key metabolic endpoints in cancer
Jenna Mueller	2009-2015	Ph.D, BME	Asst Prof, University of Maryland	Micro-Anatomical Quantitative Imaging Towards Enabling Automated Diagnosis of Thick Tissues at the Point of Care
Fangyao Hu	2010-2017	Ph.D, BME	Associate Scientist, Genentech	Noninvasive Vascular Characterization with Low-cost, Label-free Optical Spectroscopy and Dark Field Microscopy Enables Head

				and Neck Cancer Diagnosis and Prognosis
Brandon Nichols	2011-2017	Ph.D, BME	Senior Project Engineer, PathSpot	Systems and Methods for Quantitative Functional Imaging of Breast Tumor Margin Morphology
Brian Crouch	2013-2018	Ph.D, BME	Asst Director of Research, BME, Duke University	Leveraging Tumor Stress Responses for a See and Treat Paradigm in Breast Cancer: Applications in Local and Global Health
Christopher Lam	2012-2018	Ph.D, BME	Senior Optical Engineer, Masimo	The Pocket Colposcope, a Novel Low Cost Digital Colposcope, to Improve Access to Cervical Screening in Resource Limited Settings
Mercy Asiedu	2014-2019	Ph.D, BME	Postdoc, Schmidt Science Fellow, MIT	Development of a Toolbox for Automated, Speculum-Free, Self-Cervical Cancer Screening with Applications to Resource-Limited Settings
Robert Morhard	2014-2020	Ph.D, BME	NIH Postdoc National Cancer Institute	Development and characterization of a novel low-cost ablative therapy
Megan Madonna	2015-2020	Ph.D, BME	Research Scientist, BME, Duke University	Harnessing Optical Imaging for Assessing Metabolic Reprogramming in Breast Cancer
Corrine Nief	2016-2021	Ph.D, BME	Medical Student, Stanford University	Designing a Low-Cost Cancer Therapeutic with Ethanol Ablation and Immunomodulation
Roujia Wang	2017-2022	Ph.D, BME	Senior Scientist, Bioinformatics, Merck	Leveraging Surface HSP90 Expression for Rapid On-site Breast Cancer Diagnostics
Erica Skerrett	2018-	Ph.D, BME	TBD	
Erika Cheales	2018-2023	Ph.D, BME	TBD	Injectable Ablation Technique for Cancer Treatment Across Clinical Settings
Riley Deutsch	2018-2023	Ph.D, BME	Postdoctoral Research Fellow, Massachusetts Center for Systems Biology	A Multiplexed, Multi-scale Optical Imaging Platform to Quantify Tumor Metabolic Heterogeneity

Enakshi Sunassee	2019-	Ph.D, BME	TBD	
Victoria D'Agostino	2019-	Ph.D, BME	TBD	
Alana Gonzales	2020-2022	MS, BME	Associate Research Scientist, SiPhox, Inc.	
Lilliam Ekem	2020-	Ph.D, BME	TBD	
Kerry Eller	2021-		TBD	
Katriana von Windheim	2022-			

Post Baccalaureate Student	**Tenure**	**Degree Sought**	**Position after Tenure**
Sam McCachren	2013-2015	BS, BME	MD/Ph.D student, Emory Medical School
Rhea Chitalia	2013-2015	BS, BME	Ph.D Student, BME, University of Pennsylvania
Hannah Martin	2016-2017	BS, BME	Ph.D. / DVM Student at UW
Max Kellish	2016-2018	BS, BME	Unknown
Jenna Peters	2017-2018	BS, Neuroscience	Project Manager, Centre for Effective Altruism
Julia Agudogo	2017-2018	BS, BME	Medical Student, Duke University
Libby Dotson	2018-2019	BS, Intl. Studies	Staff, GWHT
Jennifer Dietzel	2018-2019	BS, Biology	Medical Student, University of Wisconsin
Elena Roberts	2018-2019	BS, Biology	Medical Student, University of South Carolina
Andrea Kim	2018-2019	BS, Intl. Studies	Graduate Student, MIT
Carolyn Rapp	2019-2020	BS, Quant. Biology	Medical Student, University of Central Florida
Keny Murillo	2019-2020	BS, Biology	Medical Student, University of North Carolina
Luiza Perez	2019-2020	BS, Biology	HartFellowship
Joy Duer	2019-2020	BS, Biology	Medical Student, Wake Forest School of Medicine
Akshata Ladwa	2019-2020	BS, Biochemistry	Product Manager, Proficient Health

Kimberly Breen	2020-2022	BS, Biology	Patent Examiner, U.S. Dept of Commerce
Nama Naseem	2021-present	BS, Biology	Medical Student, Carle Illinois College of Medicine
Katriana Von Windheim	2021-2022	BS, Polymer and Color Chemistry	Ph.D student, BME, Duke University

Undergraduate Students	**Tenure**	**Degree Sought**	**Position after Tenure**
Crystal Marshek	2000-2002	BS, BME	Guidant Technologies
Kristin Vrotsos	2002-2004	BS, Zoology	University of Milwaukee, Medical School
Kristin Riching	2004-2005	BS, BME	Ph.D Student, Pharmacology, UW Madison
Melissa Skala	2001	SURE-REU	Ph.D student, BME, UW Madison
Adam Johnson	2001	SURE-REU	Ph.D student, BME, University of Minnesota
Christine McMahon	2006-2007	BS, BME	Medical student, Duke University
Emily Spataro	2006-2007	BS, BME	Medical student, Washington University
Hafeez Dhalla	2006-2007	BS, BME	Ph.D student, BME, Duke University
Laura Moore	2007-2008	BS, BME	MD/Ph.D student, Northwestern University
Lisa Richards	2006-2008	BS, BME	Ph.D student, UT Austin
Daniel Klein	2008-2009	BS, BME	Field Engineer, Schlumberger
Kevin Chang	2009-2010	BS, BME	Masters student, Stanford University
Yufeng Deng	2009-2010	BS, BME	Ph.D student, Duke University
Amy Shah	2010-2010	BS, BME	Ph.D student, Vanderbilt University
Tony Jiang	2010-2012	BS, BME	Medical student, University of Cincinnati
Ruobing He	2012-2013	BS, BME/ME	Technical Services, Epic Systems
Alex Chien	2012-2013	BS, BME	Ph.D student, University of California, Berkeley
Adam Roth	2012-2014	BS, BME	Medical student, Indiana University

Alex Vaz	2012-2014	BS, BME	MD/Ph.D student, Duke University
Andrew Reesor	2012-2014	BS, BME	Risk Advisory, RSM McGladrey
Leighanne Oh	2013-2014	BS, BME	MS student, BME Duke University
Crystal Chukwurah	2013-2014	BS, BME	Business Technology Analyst, Deloitte
Chisom Amalunweze	2013-2014	BS, BME	Equity Trader at Deusche Bank
Sam McCachren	2013-2015	BS, BME	MD/Ph.D student, Emory Medical School
Christine Schindler	2013-2015	BS, BME	Fellow at Clinton Global Initiative University
Kendall Covington	2013-2015	BS, BME	CBID Masters Student, John Hopkins
Mikayla Wickman	2013-2015	BS, BME	Project Manager, ChargeItSpot
Rhea Chitalia	2013-2015	BS, ME	Ph.D Student, BME, University of Pennsylvania
Katharine Livingstone	2013-2015	BS, BME	MBID Masters Student, Georgia Inst. of Tech.
Michael Sutton	2015-2015	BS, BME	Ph.D Student, Columbia Univ
Helen Murphy	2014-2017	BS, BME	Computer Engineer, Briger Photonics Inc.
Jenna Peters	2015-2016	BS, Neuroscience	Post-bac associate, Duke
Stella Belonwu	2015-2016	BS, Biology	Ph.D Student, UCSF
Heather Liu	2015-2016	BS, BME	Ph.D Student, Columbia University
Ambika Viswanath	2016-2016	BS, Comp Sci	Princeton University
Ralitsa Kalfas	2016-2016	BS, Global Health	Columbia University
Marianne Lee	2016-2016	BS, BME	MEng Student, BME, Duke University
Raina Kishan	2015-2017	BS, BME	Product Analyst, Tia
Kailani Montane	2015-2017	BS, BME	Manufacturing Engineer, Biorep Technologies
Collyn Heier	2015-2017	BS, BME	M.S.E Student, John Hopkins University
Julia Agudogo	2015-2017	BS, BME	Post-bac associate, BME, Duke University
Libby Dotson	2017-2018	BS, Intl. Studies	Post-bac GWHT

Carlos Castedo	2015-2018	BS, BME	TBD
Yannet Daniel	2017-2018	BS, Biology	Manufacturing Specialist, GSK
Gabriela Asturias	2017-2018	BS, Neuroscience	Medical student, Stanford Univ.
Jihong Lee	2016-2018	BS, BME	Reg Affairs Assistant, LGChem
Jasmine Syed	2017-2018	BS, Comp Sci	Cloud Solution Engineer, Oracle
Jennifer Dietzel	2017-2018	BS, Biology	Postbac at GWHT, Duke
Lillian Zhu	2018-2019	BS, Biology	TBD
Martin Li	2016-2017	BS, BME	Consulting Analyst, Accenture
Usamah Chaudhary	2016-2017	BS, BME	TBD (Class of 2020)
Joy Duer	2017-2019	BS, Biology	Post-bac at GWHT, Duke
Rema Shah	2017-2018	BS, Neuroscience	Medical Student, Yale
Thomas Vincent	2018-2019	BS, BME	Grad Student, Univ of Washington
Kristel Black	2018-2019	BS, Sociology	Post-Bac, Univ of Pennsylvania
Diane Lee	2018-2019	BS, Neuroscience	TBD
Megan Richards	2019-	BS, BME	TBD
Aditi Pilani	2019-2020	BS, BME	TBD
Amelia Goldstein	2019-	BS, Environmental	TBD
Evelyn Putri	2019-	BS, BME	TBD
Julia Parks	2020-2020	BS, BME	TBD
Ben Simon	2020-2023	BS, BME	DPhil/PhD student Biomedical Engineering, Oxford University
Michelle Kwan	2021-	BS, Biology	TBD

High School Student Mentored	**Year**
Crispen Odem	2004-2004
Vikram Pattabi	2012-2012
Chelyn Lee	2012-2012
David Choi	2013-2013
Zihui Yang	2013-2013
Samantha Michael	2013-2013
Zihui Yang	2014-2014

Priyanka Purohit	2014-2014
Emma Myers	2014-2014
Zihui Yang	2014-2014
Jatzyri Perez	2017-2017
Osaze Osagie	2017-2017
Emily Wang	2017-2017
Khushi Tyagi	2019-2019
Marwa Bakri	2019-2019
Julia Gottschalk	2019-2019