

## CURRICULUM VITA

### NAME AND AFFILIATION

Narasimhan Rajaram, Ph.D.  
Associate Professor  
Department of Biomedical Engineering  
University of Arkansas

### WORK ADDRESS

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### RESEARCH SUMMARY

My lab is interested in studying the relationship between tumor oxygenation and metabolism and the role that this relationship plays in promoting cancer progression, metastasis, and treatment resistance. To study this relationship, we develop clinically translational quantitative optical imaging technologies that can measure these two key hallmarks of cancer in pre-clinical animal models and patients.

### KEYWORDS

Optical spectroscopy, multiphoton microscopy, point-of-care technologies, radiation resistance, monitoring and predicting response to therapy, field cancerization, early detection, tumor metabolism, hypoxia, breast cancer, head and neck cancer, lung cancer

### EDUCATION and TRAINING

- 2010-13 Postdoctoral Associate, Duke University, Durham, NC  
**Mentors:** Nirmala Ramanujam, PhD and Mark W. Dewhirst, DVM, PhD  
**Research Focus:** Tumor hypoxia and metabolism
- 2010 Ph.D., Biomedical Engineering, The University of Texas at Austin, TX  
**Advisor:** James W. Tunnell, Ph.D.  
**Dissertation:** Spectral Diagnosis of Skin Cancer
- 2005 B.E., Electronics and Instrumentation Engineering, Anna University, Chennai, India

### POSITIONS HELD

- 2020-present Associate Professor, Biomedical Engineering, University of Arkansas, Fayetteville, AR  
2014-2020 Assistant Professor, Biomedical Engineering, University of Arkansas, Fayetteville, AR  
2013-14 Research Scientist, Duke University, Durham, NC

### AWARDS AND HONORS

- 2020 Outstanding Research Award, Biomedical Engineering, University of Arkansas  
2019 Arkansas Biosciences Institute (ABI) New Investigator of the Year  
2019 Faculty Early Career Development Award (CAREER), National Science Foundation (NSF)  
2019 Outstanding Teaching Award, Biomedical Engineering, University of Arkansas  
2018 Outstanding Teaching Award, Biomedical Engineering, University of Arkansas  
2013 Travel Award, Symposium on Metabolic Imaging and Spectroscopy, Philadelphia, PA  
2011 Best Contributed 'Hot Topics' Presentation and Travel Award, ECI - Advances in Optics for Biotechnology, Medicine and Surgery, Naples, FL  
2010 Fellow, American Society for Laser Medicine and Surgery (ASLMS)  
2008 Student Research Grant, American Society for Laser Medicine and Surgery  
2008 Newport-Spectra Physics Travel Award, International Society for Optical Engineering (SPIE)  
2007 Travel Award, ECI, Advances in Optics for Biotechnology, Medicine and Surgery, Naples, FL

2005 University Rank Certificate. Top 1% (Rank: 4/1005), Anna University

## ACADEMIC SERVICE

### University

2019 Chair, Systems Biology faculty search committee  
 2019 Member, Teaching Faculty search committee  
 2019-22 Alternate member, Institutional Animal Care and Use Committee  
 2016-17 Member, Institutional Animal Care and Use Committee

### External Committees

2020 Ad hoc member, Center for Scientific Review Advisory Council, National Institutes of Health (NIH)  
 2020 Ad hoc reviewer, Biomedical Imaging academic-industrial partnership SBIB-Q 57, NIH  
 2020 Ad hoc reviewer, Department of Defense (DoD) Congressionally Directed Medical Research Program (CDMRP)  
 2020 Ad hoc reviewer, Biomedical Imaging conflict study section SBIB-Q 03, NIH  
 2019 Ad hoc reviewer, Biomedical Imaging conflict study section SBIB-Q 03, NIH  
 2019 Ad hoc reviewer, DoD CDMRP  
 2019 Ad hoc reviewer, National Science Foundation (NSF) Chemical, Bioengineering, Environmental and Transport Systems (CBET)  
 2019 Ad hoc reviewer, DoD CDMRP  
 2018 Ad hoc reviewer, DoD CDMRP  
 2018 Ad hoc reviewer, NSF Graduate Research Fellowship Program (GRFP)  
 2016 Ad hoc reviewer, University of Wisconsin-Milwaukee Seed Grants

### Conference organization

2020 Section Chair, Basic and Translational Research, ASLMS Annual Conference, Phoenix, AZ  
 2020 Session Chair, Lung, OSA Biomedical Optics Congress  
 2020 Session Chair, Head and Neck, OSA Biomedical Optics Congress  
 2020 Program Committee, Optical Tomography and Spectroscopy, OSA Biomedical Optics Congress  
 2020 Program Committee, Clinical and Translational Biophotonics, OSA Biomedical Optics Congress  
 2019 Program Committee member, Clinical and Preclinical Diagnostics, ECBO, Munich, Germany  
 2018 Session Chair, Cancer Imaging, BMES Annual Meeting, Atlanta, GA  
 2017 Session Chair, Imaging Techniques in Clinical Translation; Fluorescence Imaging, Biomedical Engineering Society (BMES) Annual Meeting, Phoenix, AZ  
 2017 Session Chair, Multispectral Imaging, European Conferences on Biomedical Optics (ECBO), Munich, Germany  
 2017 Program Committee member, Clinical and Preclinical Diagnostics, ECBO, Munich, Germany

## RESEARCH SUPPORT

### CURRENT

Pilot Research Grant (PI)	07/01/20 – 05/15/2021	0.1 month
Arkansas Biosciences Institute	\$37,600	
Optical imaging of metabolic reprogramming associated with radiation resistance		
Team Science Award (PI: Tackett, Rajaram)	04/01/2020 – 03/31/2021	0.1 month
Winthrop P. Rockefeller Cancer Institute	\$100,000	
Noninvasive optical sensing of therapeutic responsiveness		

R15CA238861-01A1 (PI: Muldoon) NIH/NCI Development and testing of a clinically compatible multimodal spectroscopic probe for noninvasive sensing of tumor oxygenation and metabolism in oral cancer Role: co-Investigator	3/1/2020 – 2/28/2023 \$419,383	1.0 month
W81XWH-19-1-0762 (PI) DoD Lung Cancer Research Program Identifying metabolic hallmarks of cancer initiation in lung tumor-adjacent normal tissue	9/1/2019 – 8/31/2020 \$145,082	1.5 months
R01CA238025-01A1 (PI) NIH/NCI Determination of functional and molecular biomarkers of treatment resistance with multimodal optical spectroscopy	8/13/2019 – 7/31/2024 \$2,032,459	2.0 months
1847347 (PI) NSF CBET CAREER: A multimodal imaging platform to investigate spatiotemporal changes in tumor bioenergetics that drive treatment resistance	5/1/2019 – 4/30/2024 \$554,948	1.0 month
Pilot Research Grant (PI) Arkansas Breast Cancer Research Program Noninvasive molecular sensing of breast cancer therapeutics using Raman spectroscopy	2/1/2019 – 8/31/2021 \$75,000	1.5 months
Innovation Grant (PI: Jennings) Chancellor's Discovery and Collaboration Fund Identifying signaling pathways responsible for treatment resistance of triple negative breast cancer brain metastases Role: co-Investigator	7/1/2018 – 6/30/2021 \$75,000	No effort
R15AR069913 (PI: Greene) NIH/NIAMS Mitochondrial Degeneration - the root of skeletal muscle atrophy Role: co-Investigator	7/1/2017 – 6/30/2021 \$412,668	0.5 month
R15CA208798 (PI: El-Shenawee) NIH/NCI Terahertz Imaging for Margin Assessment of Three-dimensional Breast Cancer Tumors Role: co-Investigator	3/1/2017 – 2/28/2021 \$424,081	0.6 month
<b>COMPLETED</b>		
R15CA202662 (PI: Muldoon) NIH/NCI The role of optical biomarkers in endoscopic detection and therapeutic monitoring of gastrointestinal cancer Role: co-Investigator	3/1/2016 – 2/29/2020 \$422,000	0.75 month
Pilot Research Grant (PI) Arkansas Biosciences Institute Optical metabolic imaging of biomarkers of tumor recurrence and treatment resistance in human lung cancer specimens	7/1/2018 – 5/16/2019 \$20,751	0.1 month
Instrumentation Grant (PI) Department of Energy Cesium Irradiator Research Program	9/1/2017 – 8/31/2018 \$135,000	No effort
Pilot Research Grant (PI) Arkansas Biosciences Institute Optical imaging of bioenergetic changes during tobacco-induced field cancerization in oral cancer	7/5/2017 – 5/11/2018 \$13,582	0.1 month

Student Grant (PI: Lee) American College of Sports Medicine A novel mechanism for cardioprotection through mitochondrial mRNA translation inhibition	7/1/2017 – 6/30/2018 \$5,000	No effort
Student Research Grant (PI: Alhallak) American Society for Laser Medicine and Surgery Diffuse optical spectroscopy to distinguish between metastatic and non-metastatic breast cancers Role: Mentor	7/1/2016 – 6/30/2017 \$5,000	No effort
Pilot Research Grant (PI) Arkansas Biosciences Institute Acquisition of an X-ray biological radiator for cancer therapeutics, biology, and imaging	7/1/2016 – 5/16/2017 \$60,000	No effort
Pilot Research Grant (PI) Arkansas Biosciences Institute Identifying early functional biomarkers of radiation therapy resistance in tumors	7/1/2016 – 5/16/2017 \$24,110	0.1 month
Investigator Research Grant (PI) Women's Giving Circle Determining early tumor response to therapy	1/1/2016 – 12/31/2016 \$22,000	0.1 month
Seed Grant (PI) College of Engineering, University of Arkansas Identifying metabolic hallmarks of breast cancer metastases	7/1/2015 – 6/30/2016 \$24,857	0.5 month
Pilot Research Grant (PI) Arkansas Biosciences Institute Optical imaging of clinically translational biomarkers of radiation resistance in head and neck cancer in vivo	7/1/2015 – 5/14/2016 \$22,575	0.1 month
Pilot Research Grant (PI) American Head and Neck Society Optical biomarkers of radiation resistance in head and neck cancers	7/1/2015 – 5/14/2016 \$10,000	0.1 month

## PATENTS

Rajaram N and Tunnell JW. "Systems and methods for diagnosis of epithelial lesions," US Provisional Pat. App. Serial No. 13/029,992

## INVITED BOOK CHAPTERS

Rajaram N and Ramanujam N. "One-photon autofluorescence microscopy," Natural Biomarkers in Cellular Metabolism. Ed. Vladimir Ghukasyan and Ahmed Heikal. CRC Press, 2014.

## REFEREED JOURNAL PUBLICATIONS

1. Dadgar S, Troncoso JR, Siegel ER, Griffin RJ, Dings PM, and Rajaram N. *Spectroscopic investigation of radiation-induced reoxygenation in radiation-resistant tumors*. Neoplasia (accepted).
2. Lee DE, Brown JL, Rosa-Caldwell ME, Perry RA, Brown LA, Haynie WS, Washington TA, Wiggs MP, Rajaram N, and Greene NP. *Cancer-induced Cardiac Atrophy Adversely Affects Myocardial Redox State and Mitochondrial Oxidative Capacity*. Journal of Cachexia, Sarcopenia, and Muscle (JCSM) Rapid Communications, <https://doi.org/10.1002/rco2.18>.
3. Mundo AI, Greening GJ, Fahr, MJ Jr., Hale LN, Bullard EA, Rajaram N, Muldoon TJ. *Diffuse reflectance spectroscopy to monitor murine colorectal tumor progression and therapeutic response*. Journal of Biomedical Optics **25(3)**: 035002, 2020.

4. Dadgar S, [Rajaram N](#). *Optical imaging approaches to investigating radiation resistance*. *Frontiers in Oncology, Special Section on Radiation Oncology*, **9** (1152), 2019. (invited review)
5. Greene ES, Flees J, Dadgar S, Mallman B, Orlowski S, Rochell SJ, Kidd M, Whitefield H, Brearley C, [Rajaram N](#), Walk C, Dridi S. *Quantum blue reduces the severity of Woody Breast myopathy via modulation of oxygen homeostasis-related genes in broiler chickens*. *Frontiers in Physiology* **10**(1251), 2019.
6. Lee DE, Perry RA, Brown JL, Rosa-Caldwell ME, Brown LA, Haynie WS, [Rajaram N](#), Washington TA, and Greene NP. *Mitochondrial mRNA Translation Initiation Contributes to Oxidative Metabolism in the Myocardia of Aged, Obese Mice*. *Experimental Gerontology* **121**: 62-70, 2019.
7. Paidi SK,\* Diaz PM,\* Dadgar S,\* Jenkins SV, Quick CM, Griffin RJ, Dings RPM, [Rajaram N](#),† and Barman I.† *Label-free Raman spectroscopy reveals signatures of radiation resistance in the tumor microenvironment*. *Cancer Research* **79** (8): 2054-2064, 2019. (\* equal first author; † corresponding authors)
8. Vohra N, Bowman T, Diaz PM, [Rajaram N](#), Bailey K, and El-Shenawee M. *Pulsed terahertz reflection imaging of tumors in a spontaneous model of breast cancer*. *Biomedical Physics and Engineering Express*, **4**(6): 065025, 2018.
9. Ravindranathan S, Nguyen KG, Kurtz SL, Frazier HN, Smith SG, Koppolu B, [Rajaram N](#), Zaharoff DA. *Tumor-derived granulocyte-colony stimulating factor diminishes efficacy of breast tumor cell vaccines*. *Breast Cancer Research*, **20**(1): 126, 2018.
10. Vargas I, Alhallak K, Kolenc O, Jenkins SV, Griffin RJ, Dings PM, [Rajaram N](#), Quinn KP. *Rapid quantification of mitochondrial fractal dimension in individual cells*. *Biomedical Optics Express*, **9**(11): 5269-5279, 2018.
11. Greening GJ, Mundo A, [Rajaram N](#), Muldoon TJ. *Sampling depth of a diffuse reflectance spectroscopy probe for in vivo physiologic quantification of murine subcutaneous tumor allografts*. *Journal of Biomedical Optics* **23**(8): 085006, 2018.
12. Diaz PM, Jenkins SV, Alhallak K, Semeniak D, Griffin RJ, Dings RPM, and [Rajaram N](#). *Quantitative diffuse reflectance spectroscopy of short-term changes in tumor oxygenation after radiation in a matched model of radiation resistance*. *Biomedical Optics Express* **9**(8): 3794-3804, 2018.
13. Lee DE\*, Alhallak K\*, Jenkins SV, Lopez IV, Greene NP, Quinn KP, Griffin RJ, Dings RPM, and [Rajaram N](#). *A radiosensitizing inhibitor of HIF-1 alters the optical redox state of human lung cancer cells in vitro*. *Scientific Reports* **8**(1): 8815, 2018.
14. Dadgar S, Troncoso JR, and [Rajaram N](#). *Optical spectroscopic sensing of tumor hypoxia*. *Journal of Biomedical Optics* **23**(6): 067001, 2018.
15. Martinez AF, McCachren SS, Lee M, Murphy HA, [Rajaram N](#), Ashcraft KA, Dewhirst MW, and Ramanujam N. *Metabolopectics: Visualization of the tumor functional landscape via metabolic and vascular imaging*. *Scientific Reports*, **8**: 4171, 2018.
16. Bowman T, Chavez T, Khan K, Wu J, Chakraborty A, [Rajaram N](#), Bailey K, and El-Shenawee M. *Pulsed Terahertz imaging of breast cancer in freshly excised murine tumors*. *Journal of Biomedical Optics* **23**(2):026004, 2018.
17. Alhallak K, Jenkins SV, Lee DE, Greene NP, Quinn KP, Griffin RJ, Dings RPM\*, and [Rajaram N](#)\*. *Optical imaging of radiation-induced metabolic changes in radiation-sensitive and resistant cancer cells*. *Journal of Biomedical Optics* **22**(6): 060502, 2017. (\*corresponding authors)
18. Alhallak K, Rebello L, Muldoon TJ, Quinn KP, [Rajaram N](#). *Optical redox ratio identifies metastatic potential-dependent changes in breast cancer cell metabolism*. *Biomedical Optics Express* **7**(11):4364-4374, 2016.
19. Greening GJ, [Rajaram N](#), Muldoon TJ. *Multimodal imaging and spectroscopy fiber-bundle microendoscopy platform for non-invasive, in-vivo tissue analysis*. *Journal of Visualized Experiments* (116), e54564, 2016.
20. Lam NT, Muldoon TJ, Quinn KP, [Rajaram N](#), and Balachandran K. *Valve interstitial cell contractile strength and metabolic state are dependent on its shape*. *Integrative Biology* **8**(10): 1089-1099, 2016.
21. Greening GJ, James HM, Dierks MK, Osterholm S, Vongkittiarngorn N, [Rajaram N](#)\*, and Muldoon TJ\*. *Towards monitoring dysplastic progression in the oral cavity using a hybrid fiber-bundle imaging and spectroscopy probe*. *Scientific Reports*, **6**: 26734, 2016 (\* co-corresponding authors).
22. Im J and [Rajaram N](#). *Optical molecular imaging and spectroscopy of oxygenation and metabolism in tumors*. *IEEE Journal of Selected Topics in Quantum Electronics, (Invited paper)*, **22**(3): 1-11, 2016.

23. Greening GJ, Powless AJ, Hutcheson JA, James HM, Dierks MK, [Rajaram N](#), and Muldoon TJ. *Fiber-bundle microendoscopy with sub-diffuse reflectance spectroscopy and intensity mapping for multimodal optical biopsy of stratified epithelium*. Biomedical Optics Express **6**(12): 4934-4950, 2015.
24. [Rajaram N](#), Reesor AF, Mulvey CS, Frees AE, and Ramanujam N. *Non-invasive, simultaneous quantification of vascular oxygenation and glucose uptake in tissue*. PLoS ONE **10**(1): e0117132, 2015.
25. Frees AE, [Rajaram N](#), McCachren SS III, Fontanella AN, Dewhirst MW, and Ramanujam N. *Delivery-corrected imaging of fluorescently-labeled glucose reveals distinct metabolic phenotypes in murine breast cancer*. PLoS ONE **9**(12): e115529, 2014.
26. Lim L, Nichols BS, Migden MR, [Rajaram N](#), Reichenberg JS, Markey MK, Ross MI, and Tunnell JW. *Clinical study of noninvasive in vivo melanoma and non-melanoma diagnosis*. Journal of Biomedical Optics **19**(11): 117003, 2014.
27. Yu B, Shah A, Wang B, [Rajaram N](#), Wang Q, and Ramanujam N, Palmer GM, Dewhirst MW. *Measuring tumor cycling hypoxia and angiogenesis using a side-firing fiber optic probe*. Journal of Biophotonics **7**(7): 552-564, 2014.
28. Fontanella AN, Schroeder T, Hochman DW, Chen RE, Hanna G, Haglund MM, [Rajaram N](#), Frees AE, Secomb TW, Palmer GM, and Dewhirst MW. *Quantitative mapping of hemodynamics in the lung, brain, and dorsal window chamber-grown tumors using a novel, automated algorithm*. Microcirculation **20**: 724-735, 2013.
29. [Rajaram N](#), Frees AE, Fontanella AN, Zhong J, Hansen K, Dewhirst MW, and Ramanujam N. *Delivery rate affects uptake of a fluorescent glucose analog in murine models of metastatic breast cancer*. PLoS ONE **8**(10): e56724, 2013.
30. Barrott JJ, Hughes PF, Osada T, Yang XY, Hartman ZC, Loisel DR, Spector N, Neckers L, [Rajaram N](#), Hu F, Ramanujam N, Vaidyanathan G, Affleck DJ, Zalutsky MR, Lyerly HK and Haystead T. *Tethered inhibitors of hsp90 carrying optical or radio-iodinated probes reveal active internalization of ectopic hsp90 in breast tumor cells*. Chemistry and Biology **20**(9): 1187-1197, 2013.
31. Zhong J, [Rajaram N](#), Brizel DM, Frees AE, Ramanujam N, Batinic-Haberle I, and Dewhirst MW. *Radiation induces aerobic glycolysis through reactive oxygen species*. Radiotherapy and Oncology **106**(1): 390-396, 2013.
32. Liu C, [Rajaram N](#), Vishwanath K, Jiang T, Palmer GM, and Ramanujam N. *Experimental validation of an inverse fluorescence Monte Carlo model to extract concentrations of metabolically relevant fluorophores from turbid phantoms and a murine tumor model*. Journal of Biomedical Optics **17**(7): 077012, 2012.
33. Nichols BS, [Rajaram N](#), and Tunnell JW. *Optimization of an experimental lookup table (LUT)-based approach to measuring optical properties of tissue*. Journal of Biomedical Optics **17**(5): 057001, 2012.
34. Bish SF, [Rajaram N](#), Nichols BS, and Tunnell JW. *Development of a non-contact diffuse optical spectroscopy probe for measuring tissue optical properties*. Journal of Biomedical Optics **16**(12): 120505, 2011.
35. Zaman RT, [Rajaram N](#), Nichols BS, Rylander HG, Wang T, Tunnell JW, and Welch AJ. *Changes in morphology and optical properties of sclera due to hyper-osmotic agent*. Journal of Biomedical Optics **16**(7): 077008, 2011.
36. Barman I, Dingari NC, [Rajaram N](#), Tunnell JW, Dasari RR, and Feld MS. *Rapid and accurate determination of tissue optical properties using least-squares support vector machines*. Biomedical Optics Express **2**(3): 592-599, 2011.
37. Lim L, Nichols BS, [Rajaram N](#), and Tunnell JW. *Probe pressure effects on human skin diffuse reflectance and intrinsic fluorescence spectroscopy measurements*. Journal of Biomedical Optics **16**(1): 011012, 2011.
38. Zaman RT, [Rajaram N](#), Walsh A, Oliver J, Rylander HG, Tunnell JW, Welch, AJ, and Mahadevan-Jansen, A. *Variation of fluorescence in tissue with temperature*. Lasers in Surgery and Medicine **43**(1): 36-42, 2011.
39. [Rajaram N](#), Reichenberg JS, Migden MR, Nguyen TH, and Tunnell JW. *Pilot clinical study for quantitative spectral diagnosis of non-melanoma skin cancer*. Lasers in Surgery and Medicine **42**(10): 716-727, 2010.
40. [Rajaram N](#), Gopal A, Zhang XJ, and Tunnell JW. *Experimental validation of the effects of microvasculature pigment packaging on in vivo diffuse reflectance spectroscopy*. Lasers in Surgery and Medicine **42**(7): 680-688, 2010.

41. Rajaram N, Aramil T, Lee K, Reichenberg J, Nguyen TH, and Tunnell JW. *Design and validation of a clinical instrument for spectral diagnosis of cutaneous malignancy*. Applied Optics **49(2)**: 142-152, 2010.
42. Rajaram N, Nguyen TH, and Tunnell JW. *Lookup table-based inverse model for determining the optical properties of turbid media*. Journal of Biomedical Optics **13(5)**:050501, 2008.
43. Zaman RT, Diagaradjane P, Wang JC, Swartz J, Rajaram N, Gill-Sharp KL, Cho SH, Rylander HG, Payne DJ, Krishnan S, and Tunnell JW. *In vivo detection of gold nanoshells in tumors using diffuse optical spectroscopy*. IEEE Journal of Selected Topics in Quantum Electronics **13(6)**: 1715-1720, 2007.

#### Manuscripts under review

1. Dadgar S, Greene ES, Dhamad A, Mallman B, Dridi S, and Rajaram N. *Diffuse reflectance spectroscopy identifies heat stress-induced changes in hemoglobin concentration in chicken breast*

#### CONFERENCE PROCEEDINGS

1. Lee DE, Perry RA, Brown JL, Rosa-Caldwell ME, Brown LA, Haynie WS, Rajaram N, Washington TA, and Greene NP. Cancer-induced metabolic cardiotoxicity characterized through optical metabolic imaging. FASEB Journal **32(1)**, 2018.
2. Dadgar S, Troncoso JR, Rajaram N. Diffuse Reflectance Spectroscopy (DRS) of radiation-induced re-oxygenation in sensitive and resistant head and neck tumor xenografts. *Proceedings of SPIE, Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology* 10469: 1046912, 2018.
3. Rasul RB, Harper MG, and Rajaram N. Intravital imaging of tumor bioenergetics in metastatic and non-metastatic breast cancer. *Proceedings of SPIE, Diagnosis and Treatment of Diseases in the Breast and Reproductive System IV*, 10472: 104720E, 2018
4. Rebello L, MG Harper, Rajaram N. Optical imaging of metabolic adaptability in metastatic and non-metastatic breast cancer. *Proceedings of SPIE, Diagnosis and Treatment of Diseases in the Breast and Reproductive System IV*, 10472: 104720V, 2018
5. Rasul RB, Rajaram N. Intravital optical imaging of tumor vascular oxygenation and metabolism in murine breast cancer xenografts of varying metastatic potential. *Molecular Cancer Research*, **16(8)**: 73-74, 2018.
6. Bowman T, Alhallak K, Esparza T, Khan MK, Lee D, Rajaram N, Wu J, Chakraborty A, Bailey K, El-Shenawee M, Terahertz Imaging of Freshly Excised Breast Cancer using Mouse Model, 42nd International Conference on Infrared, Millimeter and Terahertz Waves, Cancun, Mexico, 27 August – 1 September 2017.
7. Bowman T, Rajaram N, Chakraborty A, Bailey K, El-Shenawee M, Terahertz Imaging and Segmentation of Freshly Excised Xenograft Mouse Tumors, 2017 URSI General Assembly and Scientific Symposium, Montreal, Quebec, Canada, 19-26 August 2017.
8. Bowman T, Rajaram N, Bailey K, El-Shenawee M, Terahertz Pulsed Imaging of Freshly Excised Xenograft Breast Cancer Tumors in Mice, Proc. of 101st Annual Meeting of the Arkansas Academy of Sciences, Conway, AR, 7-8 April 2017.
9. Bowman T, Walter A, Rajaram N, Wu Y, Gauch J, Campbell L, Bailey K, and El-Shenawee M, Advances in Terahertz Imaging of Human Breast Carcinomas and Tumor Phantoms, Proc. of Pittcon 2017, Chicago, IL, 5-9 March 2017.
10. Diaz PM, Semeniak D, Alhallak K, Lee DJ, Dings RPM, and Rajaram N. Optical imaging and spectroscopy of microenvironmental changes associated with radiation resistance in tumors. European Conferences on Biomedical Optics, Munich, Germany, June 25-29, 2017
11. Greening GJ, Rajaram N, Muldoon TJ. In vivo measurement of non-keratinized squamous epithelium using a spectroscopic microendoscope with multiple source-detector separations, *Proceedings of SPIE, Optical Diagnostics and Sensing XVI: Toward Point-of-Care Diagnostics*, 97150Z, 2016
12. Frees AE, Rajaram N, McCachren S, Vaz A, Dewhirst MW, Ramanujam N. Optical monitoring of glucose demand and vascular delivery in a preclinical murine model. *Proceedings of SPIE Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XII* 8947: 894705, 2014

13. Yu B, Palmer GM, Wang B, Shah A, Rajaram N, Ramanujam N. Measuring tumor cycling hypoxia and angiogenesis using a side-firing fiber optic probe. *Proceedings of SPIE Optical Tomography and Spectroscopy of Tissue X*, 8578:85781E, 2013
14. Rajaram N, Kovacic D, Migden MR, Reichenberg JS, Nguyen TH, Tunnell JW. *In vivo* determination of optical properties and fluorophore characteristics of non-melanoma skin cancer. *Proceedings of SPIE Photonic Therapeutics and Diagnostics V*, 7161: 716102, 2009
15. Zaman RT, Rylander HG, Rajaram N, Wang T, Asokan N, Tunnell JW, Welch AJ. Changes in morphology and optical properties of sclera due to hyper-osmotic agent. *Proceedings of SPIE 7175: 71750D*, 2009
16. Rajaram N, Aramil T, Lee K, Tunnell JW. A clinical instrument for spectral diagnosis of cutaneous malignancy. *Proceedings of SPIE Advanced Biomedical and Clinical Diagnostic Systems VI 6848: 68480R*, 2008

#### INVITED TALKS

1. Multiscale functional and molecular optical imaging of tumor fate. Department of Electrical Engineering, University of South Florida, Tampa, FL, April 24, 2020.
2. Multiscale functional and molecular optical imaging of tumor fate. Winthrop P. Rockefeller Cancer Institute Forum, Little Rock, AR, October 21, 2019.
3. Functional and molecular optical sensing of tumor fate. Arkansas Children's Hospital Nutrition Center, Distinguished seminar series, Little Rock, AR, September 28, 2018.
4. Optical imaging and spectroscopy of microenvironmental changes associated with radiation resistance in tumors. European Conferences on Biomedical Optics, Munich, Germany, June 25-29, 2017.
5. Optical biomarkers of radiation resistance in tumors. Conference: Eliminating Risks from High Activity Radioactive Materials through the Adoption of Alternative Technologies, Office of Radiological Health, New York City Health Department, NY, June 12, 2017.
6. Quantitative optical sensing of radiation resistance in tumors. Radiation Oncology retreat, University of Arkansas for Medical Sciences, Little Rock, AR, March 9, 2017
7. Molecular and metabolic imaging of tumors to inform therapeutic interventions. OSA Frontiers in Optics: Special Symposium on translational biophotonics – Focus on Cancer, Tucson, AZ, Oct 19-23, 2014.
8. Functional optical imaging to guide cancer therapy. Department of Biomedical Engineering, University of Arkansas, Fayetteville, AR, April 2014.
9. Imaging the tumor micro-environment to predict long-term tumor fate. Department of Bioengineering, Temple University, Philadelphia, PA, March 2014.

#### CONTRIBUTED CONFERENCE TALKS AND POSTERS

1. Dadgar S, Paidi S, Barman I, Rajaram N. Multimodal Optical Spectroscopy of Functional and Molecular Changes in Tumors after Radiation Therapy. OSA Biophotonics Congress: Biomedical Optics, Fort Lauderdale, FL, Apr 20 – 23, 2020
2. Rebello LR, Rajaram N. Optical Metabolic Imaging of Hypoxic Exposure in Breast Cancer Cells of Varying Metastatic Potential. OSA Biophotonics Congress: Biomedical Optics, Fort Lauderdale, FL, Apr 20 – 23, 2020
3. Diaz PM, Quinn KP, Rajaram N. Optical Imaging of Metabolic Changes in Human Lung Tumor-Adjacent Normal Tissue. OSA Biophotonics Congress: Biomedical Optics, Fort Lauderdale, FL, Apr 20 – 23, 2020
4. Dadgar S, Troncoso JR, Jules AF, Dotson AR, Rajaram N. Label-free Raman spectroscopy to study radiation-induced biomolecular changes in animal model of head and neck cancer. SPIE Photonics West Symposium on Multiscale Imaging and Spectroscopy, San Francisco, CA, Feb 1-6, 2020
5. Rebello L, Rajaram N. Optical metabolic imaging of the effects of acute and intermittent hypoxia in murine breast cancer cells. San Antonio Breast Cancer Symposium, San Antonio, TX, Dec 10-14, 2019.
6. Dadgar S, Troncoso JR, Dotson A, and Rajaram N. Optical monitoring of radiation response in an animal model of head and neck cancer. Radiation Research Society Annual Meeting, San Diego, CA, Nov 3-6, 2019.



7. Troncoso JR and Rajaram N. Diffuse reflectance spectroscopy of breast tumors to differentiate between indolent and aggressive disease. BMES Annual Meeting, Oct 16-19, 2019.
8. Dadgar S, Troncoso JR, Dotson A, and Rajaram N. Characterization of radiation-induced reoxygenation in head and neck tumor xenografts using diffuse reflectance spectroscopy. OSA Biophotonics Congress, Tucson, AZ, Apr 15-17, 2019.
9. Rebello L, Rajaram N. Optical metabolic imaging of the effects of acute and intermittent hypoxia in murine breast cancer cells. AACR Annual Meeting, Atlanta, GA, March 29 – Apr 3, 2019.
10. Abdelgawad A, Dadgar S, and Rajaram N. Investigation of acute radiation-induced changes in oxygenation in a murine breast tumor model. BMES Annual Meeting, Atlanta, GA, Oct 17-20, 2018.
11. Troncoso JR and Rajaram N. Diffuse reflectance spectroscopy of breast tumors to differentiate between indolent and aggressive disease. 38<sup>th</sup> Annual Meeting of the American Society for Laser Medicine and Surgery, Dallas, TX, Apr 11-15, 2018.
12. Lee DE, Alhallak K, Lopez IV, Jenkins SV, Quinn KP, Griffin RJ, Dings RPM, and Rajaram N. Optical metabolic imaging identifies HIF-1-dependent radiation resistance in A549 lung cancer cells. AACR-RRS Winter Workshop, Big Sky, MT, Feb 28 – Mar 2, 2018.
13. Paidi SK, Diaz PM, Jenkins SV, Quick CM, Griffin RJ, Dings RPM, Rajaram N, and Barman I. Raman spectroscopic mapping identifies microenvironmental features of radiation resistance in lung tumor xenografts. AACR-RRS Winter Workshop, Big Sky, MT, Feb 28 – Mar 2, 2018.
14. Dadgar S, Troncoso JR, Rajaram N. Diffuse Reflectance Spectroscopy (DRS) of radiation-induced reoxygenation in sensitive and resistant head and neck tumor xenografts. SPIE Photonics West Symposium on Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology, San Francisco, CA, Jan 27-31, 2018
15. Rasul RB, Harper MG, and Rajaram N. Intravital imaging of tumor bioenergetics in metastatic and non-metastatic breast cancer. SPIE Photonics West Symposium on Diseases in the Breast and Reproductive System IV, San Francisco, CA, Jan 27-31, 2018 (**Awarded Best Student Paper**).
16. Rebello L, MG Harper, Rajaram N. Optical imaging of metabolic adaptability in metastatic and non-metastatic breast cancer. SPIE Photonics West Symposium on Diseases in the Breast and Reproductive System IV, San Francisco, CA, Jan 27-31, 2018.
17. Lee DJ, Kolenc O, Jones J, Quinn KP, Rajaram N. Optical imaging of field cancerization in the oral cavity. BMES Annual Meeting, Phoenix, AZ, Oct 11-14, 2017.
18. Allison JP, Rebello L, Harper MG, and Rajaram N. Optical imaging of breast cancer cell metabolism in response to varying periods of hypoxic stress. BMES Annual Meeting, Phoenix, AZ, Oct 11-14, 2017.
19. Vargas Lopez I, Alhallak K, Rajaram N, Quinn KP. Rapid Quantification of Mitochondrial Fractal Dimension in Individual Cells. BMES Annual Meeting, Phoenix, AZ, Oct 11-14, 2017.
20. Rasul RB, Rajaram N. Intravital optical imaging of tumor vascular oxygenation and metabolism in murine breast cancer xenografts of varying metastatic potential. AACR Advances in Breast Cancer Research. Los Angeles, CA, Oct. 7-10, 2017
21. Bowman T, Alhallak K, Esparza T, Khan K, Lee D, Rajaram N, Wu J, Chakraborty A, Bailey K, and El-Shenawee M. Terahertz Imaging of Freshly Excised Breast Cancer using Mouse. 42nd International Conference on Infrared, Millimeter and Terahertz Waves, Aug 21-24, 2017.
22. Diaz PM, Semeniak D, Alhallak K, Lee DJ, Dings RPM, and Rajaram N. Quantitative diffuse optical spectroscopy of short-term reoxygenation kinetics in radiation-resistant and sensitive tumors. OSA Biophotonics Congress, San Diego, CA, April 2-5, 2017.
23. Semeniak D, Diaz PM, Dings RPM, and Rajaram N. Determining the sensitivity of diffuse reflectance spectroscopy to dose- and depth-dependent changes in tumor oxygenation after radiation therapy. OSA Biophotonics Congress, San Diego, CA, April 2-5, 2017.
24. Harper MG, Alhallak K, Rebello L, Nguyen K, Ravindranathan S, Lee D, Greene N, Muldoon TJ, Zaharoff DA, Quinn KP, and Rajaram N. Optical metabolic imaging of TWIST inhibition in 4T1 breast cancer cells. OSA Biophotonics Congress, San Diego, CA, April 2-5, 2017.

25. Rasul R, Jamshidi-Parsian A, Lee D, Greene N, Dings RPM, Rajaram N and Griffin RJ. Identifying cancer stem cell characteristics in lung cancer cells pre-exposed to hypoxia or radiation. BMES Annual Meeting, Minneapolis, MN, October 5-8, 2016.
26. Diaz PM, Alhallak K, Lee DJ, Dings RPM, Rajaram N. Quantitative diffuse optical spectroscopy of radiation therapy resistance in tumors. BMES Annual Meeting, Minneapolis, MN, October 5-8, 2016.
27. Alhallak K, Rebello LG, Muldoon TJ, Quinn KP, Rajaram N. Optical imaging of cell metabolism in metastatic and non-metastatic breast cancer cells. BMES Annual Meeting, Minneapolis, MN, October 5-8, 2016.
28. Alhallak K, Rebello LG, and Rajaram N. Optical imaging of cancer cell metabolism in murine metastatic breast cancer. Biomedical Optics Congress, Ft. Lauderdale, FL, April 24 – 28, 2016.
29. Martinez AF, McCachren SS, Lee M, Murphy HA, Rajaram N, Dewhirst MW, and Ramanujam N. Hyperspectral imaging of glucose uptake, mitochondrial membrane potential, and vascular oxygenation differentiates breast cancers of different metastatic potential in vivo. Biomedical Optics Congress, Ft. Lauderdale, FL, April 24 – 28, 2016.
30. Alhallak K, Dings RPM, and Rajaram N. Optical metabolic imaging of response to radiation in radiation-sensitive and resistant lung cancer cells. American Association for Cancer Research (AACR) Annual Meeting, New Orleans, LA, April 16 - 20, 2016.
31. Greening GJ, Rajaram N, Muldoon TJ. In vivo measurement of non-keratinized squamous epithelium using a spectroscopic microendoscope with multiple source-detector separations ", SPIE Photonics West, Optical Diagnostics and Sensing XVI, February 13-18, 2016
32. Alhallak K, Dings RPM, and Rajaram N. Optical imaging of tumor metabolism in a matched model of radiation resistance. BMES Annual Meeting, Tampa, FL, October 7-10, 2015.
33. Rajaram N, Murphy HA, and Ramanujam N. Optical spectroscopy of tumor oxygenation and metabolism in pre-clinical head and neck tumors that fail radiation therapy. American Association for Cancer Research (AACR) Meeting on Metabolism and Cancer, Seattle, WA, June 7-10, 2015.
34. Martinez AF, McCachren SS, Rajaram N, Dewhirst MW, and Ramanujam N. Optical toolbox for *in vivo* analysis of glucose uptake, vascular oxygenation, and mitochondrial membrane potential in breast cancer. American Association for Cancer Research (AACR) Meeting on Metabolism and Cancer, Seattle, WA, June 7-10, 2015.
35. Frees AE, Rajaram N, McCachren S, Vaz A, Dewhirst MW, and Ramanujam N. Optical monitoring of glucose demand and vascular delivery in a preclinical murine model. SPIE Photonics West, San Francisco, CA, Feb 2-5, 2014.
36. Rajaram N, Frees AE, Zhong J, Dewhirst MW, and Ramanujam N. Optical imaging and spectroscopy of tumor bioenergetics. BMES Annual Meeting, Seattle, WA, Sep 25-28, 2013.
37. Yu B, Shah A, Wang B, Rajaram N, Wang Q, Ramanujam N, Palmer GM, and Dewhirst MW. Monitoring of tumor cycling hypoxia and angiogenesis in FaDu head and neck tumors using a side-firing fiber sensor. SPIE Photonics West, San Francisco, CA, Feb 2-5, 2013.
38. Rajaram N, Frees AE, Zhong J, Dewhirst MW and Ramanujam N. Molecular imaging of spatiotemporal glucose demand in tumors in vivo. Gordon Research Conference on Lasers in Medicine and Biology. Holderness, NH, Jul 22-27, 2012.
39. Rajaram N, Frees AE, Palmer GM, Dewhirst MW and Ramanujam N. Optical longitudinal imaging of tumor metabolic and vascular response to hypoxia. Keystone Symposia on Molecular and Cellular Biology: Tumor Metabolism, Banff, Alberta, Feb 12-17, 2012.
40. Frees AE, Rajaram N, Dewhirst MW and Ramanujam N. Effect of hypoxic duration on breast cancer metabolism and redox status. Keystone Symposia on Molecular and Cellular Biology: Tumor Metabolism, Banff, Alberta, Feb 12-17, 2012.
41. Lim L, Nichols B, Rajaram N, Reichenberg J, Migden M, and Tunnell JW. Clinical study for spectral diagnosis of in vivo melanoma and non-melanoma skin cancer diagnosis. SPIE International Symposium on Biomedical Optics, San Jose, CA January 21-26, 2012.

42. Lim L, Nichols BS, Rajaram N, Reichenberg JS, Migden MR, and Tunnell JW. Clinical non-invasive *in vivo* diagnosis of melanoma skin cancer using multimodal spectral diagnosis. Biomedical Engineering Society (BMES) Annual Meeting, Hartford, CT, October 12-15, 2011.
43. Barman I, Dingari NC, Rajaram N, Tunnell JW, Dasari RR, and Feld MS. Enhanced optical property determination in biological tissues using a non-linear calibration framework. Annual Meeting of the Federation of Analytical Chemistry and Spectroscopy Studies (FACSS), Reno, NV, October 2-7, 2011.
44. Rajaram N, Frees AE, Jiang TT, Millon SR, Fontanella AN, Dewhirst MW and Ramanujam N. Optical molecular imaging of tumor metabolic demand and vascular oxygen saturation: Effect of cycling hypoxia. ECI Advances in Optics for Biotechnology, Medicine and Surgery, Naples, FL, June 5-8, 2011. **(Selected as 1 of 6 'Hot Topics' presentations from over 55 submitted abstracts and awarded Best Talk)**
45. Frees AE, Rajaram N, Millon SR, Fontanella AN, Dewhirst MW and Ramanujam N. Utilizing 2-NBDG fluorescence to study hypoxia-induced changes in breast cancer glycolysis. ECI Advances in Optics for Biotechnology, Medicine and Surgery, Naples, FL, June 5-8, 2011. **(Awarded Best Poster)**
46. Nichols BS, Rajaram N, and Tunnell JW. Performance of a lookup table-based inverse model for steady-state diffuse optical spectroscopy. ECI Advances in Optics for Biotechnology, Medicine and Surgery, Naples, FL, June 5-8, 2011.
47. Lim L, Nichols BS, Rajaram N, Migden MR, Reichenberg JS, and Tunnell JW. Clinical study for spectral diagnosis of *in vivo* melanoma and nonmelanoma skin cancer diagnosis. ECI Advances in Optics for Biotechnology, Medicine and Surgery, Naples, FL, June 5-8, 2011.
48. Reichenberg JS, Rajaram N, and Tunnell JW. Pilot clinical study for non-invasive diagnosis of non-melanoma skin cancer. 69<sup>th</sup> Annual Meeting of the American Academy of Dermatology, New Orleans, LA, February 4-8, 2011
49. Rajaram N, Nichols BS, Reichenberg JS, and Tunnell JW. Diffuse optical spectroscopy for non-invasive diagnosis of skin cancer: An optimized lookup table-based model for determining tissue optical properties. 30<sup>th</sup> Annual Meeting of the American Society for Laser Medicine and Surgery, Phoenix, AZ, April 16-18, 2010
50. Rajaram N, Reichenberg JS, Migden MR, Nguyen TH, and Tunnell JW. Pilot clinical study for quantitative spectral diagnosis of non-melanoma skin cancer. OSA Biomedical Optical Spectroscopy and Diagnostics, Miami, FL, April 10-14, 2010
51. Lim L, Rajaram N, Nichols BS, and Tunnell JW. Time-resolved study of probe pressure on skin fluorescence and reflectance spectroscopy measurements. OSA Biomedical Optical Spectroscopy and Diagnostics, Miami, FL, April 10-14, 2010
52. Sun J, Rajaram N, Wang T, Wang X, Migden MR, Reichenberg JS, and Tunnell JW. Parametric and empirical spectral analysis for non-invasive diagnosis of basal cell carcinoma. OSA Biomedical Optical Spectroscopy and Diagnostics, Miami, FL, April 10-14, 2010
53. Nichols BS, Rajaram N, and Tunnell JW. Optimization of a lookup-table based model for extracting optical properties of cutaneous malignancy. Biomedical Engineering Society (BMES) Annual Meeting, Pittsburgh, PA, October 7-10, 2009
54. Rajaram N, Kovacic D, Migden MR, Reichenberg JS, Nguyen TH, and Tunnell JW. Clinical Spectral Diagnosis of Non-Melanoma Skin Cancer: Initial Pilot Study. European Conferences on Biomedical Optics (ECBO), Munich, Germany June 14-18, 2009
55. Rajaram N, Gopal A, Zhang XJ, and Tunnell JW. Spectral diagnosis of cutaneous malignancy: Effect of pigment packaging on diffuse reflectance measurements in tissue. 29<sup>th</sup> Annual Meeting of the American Society for Laser Medicine and Surgery, National Harbor, MD, April 3-5, 2009
56. Zaman RT, Rajaram N, Walsh A, Oliver J, Rylander HG, Tunnell JW, Welch AJ, and Mahadevan-Jansen A. Changes in tissue fluorescence due to temperature. 29<sup>th</sup> Annual Meeting of the American Society for Laser Medicine and Surgery, National Harbor, MD, April 3-5, 2009
57. Rajaram N, Kovacic D, Migden MR, Reichenberg JS, Nguyen TH, and Tunnell JW. *In vivo* determination of optical properties and fluorophore characteristics of non-melanoma skin cancer. SPIE International Symposium on Biomedical Optics: Photonics in Dermatology and Surgery, San Jose, CA January 24-29, 2009.

58. Zaman RT, Rylander HG, Rajaram N, Wang T, Asokan N, Tunnell JW, Welch AJ. Changes in morphology and optical properties of sclera due to hyper-osmotic agent. SPIE International Symposium on Biomedical Optics: Optical Interactions with Tissues and Cells XX, San Jose, CA January 24-29, 2009
59. Reichenberg J, Kovacic D, Rajaram N, Nguyen T, and Tunnell JW. Spectral Diagnosis of cutaneous malignancy. Central Texas Clinical Research Forum. Austin, TX, May 9, 2008
60. Rajaram N and Tunnell JW. Determining the optical properties of turbid media using a lookup table-based inverse model. OSA Biomedical Optical Spectroscopy and Diagnostics, St. Petersburg, FL, March 16-19, 2008
61. Rajaram N and Tunnell JW. Lookup table-based inverse model for determining optical properties of turbid media. 26<sup>th</sup> Annual Meeting of the Houston Society for Engineering in Medicine and Biology (HSEMB). Houston, TX, February 7-8, 2008
62. Rajaram N and Tunnell JW. Determining the optical properties of turbid media using a LUT-based inverse model. Lasers in Modern Biology and Medicine – AJ Welch Symposium. Austin, TX, January 28-29, 2008
63. Rajaram N, Aramil TJ, Lee K, and Tunnell JW. A clinical instrument for spectral diagnosis of cutaneous malignancy. SPIE International Symposium on Biomedical Optics: Advanced Clinical and Diagnostic Systems VI, San Jose, CA January 19-24, 2008
64. Park J, Rajaram N, and Tunnell JW. Combined fluorescence and reflectance hyperspectral imaging for cancer detection. ECI Advances in Optics for Biotechnology, Medicine and Surgery, Naples, Florida June 10-14, 2007
65. Rajaram N, Aramil TJ, Lee K, and Tunnell JW. A clinical spectrometer for spectral diagnosis of cutaneous malignancy. ECI Advances in Optics for Biotechnology, Medicine and Surgery, Naples, Florida June 10-14, 2007
66. Rajaram N, Dagani GT, Fakhoury JR, Zhang XJ, and Tunnell JW. Effect of inhomogeneous distribution of chromophores on diffuse reflectance measurements in tissue. 25<sup>th</sup> Annual Meeting of the Houston Society for Engineering in Medicine and Biology (HSEMB). Houston, TX, February 8-9, 2007
67. Aramil TJ, Lee K, Rajaram N, and Tunnell JW. A clinical spectrometer for the spectral diagnosis of cutaneous melanoma. Houston Society for Engineering in Medicine and Biology (HSEMB). Houston, TX, February 8-9, 2007

## **SERVICE AND PROFESSIONAL ACTIVITIES**

### **Manuscript Reviews**

Applied Optics, Biomedical Optics Express, Cancer Research, Clinical and Translational Radiation Oncology, European Journal of Nuclear Medicine and Molecular Imaging, Frontiers in Physics, IEEE Transactions on Biomedical Engineering, Journal of Biomedical Optics, Journal of Biophotonics, Journal of Innovative Optical Health Sciences, Lasers in Surgery and Medicine, Neoplasia, Optics Express, Optics Letters, Photochemistry and Photobiology B: Biology, PLoS ONE, Physical Biology, Scientific Reports, Technology in Cancer Research and Treatment, Translational Biophotonics

### **Society Memberships**

Optical Society of America (OSA), American Association for Cancer Research (AACR), American Society for Laser Medicine and Surgery (ASLMS), Radiation Research Society (RRS), International Society for Optical Engineers (SPIE)

### **Thesis committees**

Doctoral Committee Chair: Sina Dadgar (Biomedical Engineering), Lisa Rebello (Cell and Molecular Biology)

Doctoral committee member: Sruthi Ravindranathan (Biomedical Engineering), Gage Greening (BMEG), David E. Lee (Exercise Science), Colette Robinson (Chemistry), Jake Jones, Olivia Kolenc, Ariel Mundo (BMEG)

Master's Thesis Chair: Daria Semeniak (BMEG), Brandon Sturgill (BMEG)

Master's Thesis member: Klaire Wilson (BMEG), Tanny Chavez Esparza (Electrical Engineering), Isaac Vargas Lopez (BMEG)

## **MENTORING**

### Graduate Students

Daria Semeniak, M.S., BME, 2015 – 2017  
Brandon Scott Sturgill, M.S., BME, 2017 – 2019  
Lisa Rebello, 2015 –  
Sina Dadgar, 2016 –  
Paola Monterroso Diaz, 2018 -  
April Jules, 2019 –  
Joel Rodriguez Troncoso, 2020 –  
Erin Elizabeth Drewke, 2020 –

### Undergraduate students (B.S., BME unless noted)

#### **Current**

Natalie Curry, 2018 –  
Sanidhya Tripathi, 2018 –  
Jared McPeake, 2018 –  
Alric Fernandes, 2019 –  
Davin Means, 2020 –

#### **Alumni (B.S. BMEG unless noted)**

Jesse Ivers\*, Luke Felton\*, Drew Folgmann\*, Johnny Kennedy, Kinan Alhallak\*†‡\$, Mason Harper\*^, Raisa Rasul\*^,  
Andrew Briley, Dakory Lee, Jessica Mai, Paola Monterroso Diaz, Jake Allison\* (Biological Sciences), Alaa  
Abdelgawad%\$, Joel Rodriguez Troncoso^, Austin Dotson\*, Ryan Gant

\*Honors College Research Grant

†Seahorse Biosciences Travel Award – AACR Annual Meeting 2016

‡ASLMS Student Research Grant, 2016

\$Jean R. Ostermeier Excellence in Cancer Research

^ASLMS Student Travel Grant, 2018

%BMES Student Travel Award, 2018