

CURRICULUM VITA

NAME AND AFFILIATION

J. Quincy Brown, Ph.D.
Assistant Professor
Dept. Biomedical Engineering
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WORK ADDRESS

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EDUCATION

- 2005** *Doctor of Philosophy*, Biomedical Engineering, Louisiana Tech University, Ruston, LA.
2001 *Bachelor of Science*, Biomedical Engineering, Louisiana Tech University, Ruston, LA.

PROFESSIONAL EXPERIENCE

- 2012 – present** *Assistant Professor*, Dept. BME, Tulane University
2011 – 2012 *Assistant Research Professor*, Dept. BME, Duke University
2006 – 2012 *Founding Principal Engineer*, Zenalux Biomedical (formerly Endls Optics, Inc.)
2009 – 2010 *Senior Research Scientist*, Dept. BME, Duke University
2006 – 2009 *NIH NRSA Postdoctoral Fellow* (NCI), Dept. BME, Duke University
2005 – 2006 *Research Associate*, Dept. BME, Duke University

HONORS AND AWARDS

- 2013** AEMB Teacher of the Year, Tulane University BME
2013 Invited Speaker, *European Conferences on Biomedical Optics*, Munich, Germany
2012 Invited Speaker, *BMES Annual Meeting*
2010 Nominee (1 of 2 from Duke University), AACR Future Leaders in Translational Research Symposium
2010 Invited speaker, *SPIE Photonics West – BIOS*
2008 Paper selected for Poster Discussion Session, *San Antonio Breast Cancer Symposium*
2007 Duke Comprehensive Cancer Center Young Investigator Award
2006 NIH NRSA Individual Postdoctoral Fellowship (F32), National Cancer Institute (2006-2009)
2005 Academic Achievement Award (Outstanding Dissertation), Louisiana Tech University
2005 J. Evans Atwell-Welch Postdoctoral Fellowship, Rice University CNST (awarded)
2004 2nd Prize, Peterson Student Paper Competition, *4th Annual Diabetes Technology Meeting*
2004 Outstanding Ph.D. Student Researcher, Biomedical Engineering Program, Louisiana Tech University
2003 1st Prize, IEEE Sensors Conference Student Paper Competition, *2nd IEEE Sensors Conference*
2003 Outstanding Ph.D. Student, Institute for Micromanufacturing, Louisiana Tech University
2002 3rd Prize, Open Finalist, Student Paper Competition, *2nd Joint IEEE EMBS/BMES Conference*
2001 Predoctoral Fellowship, Louisiana Board of Regents
2001 Engineering Superior Graduate Scholarship, Louisiana Tech University
1996 Centennial Scholar, Louisiana Tech University

RESEARCH GRANTS

Ongoing:

1R21CA159936-01 Brown (PI) 03/01/2011-02/28/2013
NIH/NCI: R21 \$357,649 *total costs*
A Fluorescence Histology System for In Vivo Breast Tumor Margin Assessment
Role: Principal Investigator

Completed:

2R42CA128160-02 Ramanujam (PI) 09/30/2009-09/29/2011
NIH/NCI: STTR Phase II (Endls Optics Inc.) \$1,029,260 *total costs*

Fast Spectral Imaging Device for Tumor Margin Mapping

Role: Investigator

1F32CA124058-03 Brown (PI)
 NIH/NCI: Individual NRSA Fellowship
 Multi-label Molecular FLIM of Breast Cancer
 Role: Principal Investigator

09/01/2006-08/30/2009
 \$145,200 total costs

R41CA128160-01, Ramanujam (PI)
 NIH/NCI: STTR Phase I (Endls Optics Inc.)
 Optical surveillance of tumor margins in patients undergoing breast conserving surgery
 Role: Investigator

09/29/2007-08/31/2009
 \$195,843 direct costs

Carolina Photonics Consortium Pilot Funding Program (Brown, PI)
 Illuminus
 Role: Principal Investigator

11/01/2007-04/30/2008
 \$10,000 total costs

PUBLICATIONS

Journal Publications

1. Fu HL, Mueller JL, Javid M, Mito J, Kirsch DG, Ramanujam N, **Brown JQ**, "Optimization of a widefield structured illumination microscope for non-destructive assessment and quantification of nuclear features in tumor margins of a primary mouse model of sarcoma," Accepted, in press, PLOS ONE.
2. Mueller J, Harmany Z, Mito J, Kim Y, Geradts J, Kirsch D, Willett R, **Brown JQ**, Ramanujam N, "Quantitative segmentation of fluorescence microscopy images of heterogeneous tissue: Application to the detection of residual disease in tumor margins," Accepted, in press, PLOS ONE.
3. **Brown JQ***, Bydlon TM*, Kennedy SA, Gallagher J, Caldwell M, Junker M, Wilke LG, Barry WT, Geradts J, Ramanujam N, "Optical surveillance of breast tissue landscapes for detection of residual disease in breast tumor margins," Accepted with Minor Revisions, PLOS ONE.
4. Lo J, **Brown JQ**, Dhar S, Yu B, Jokerst NM, Ramanujam N, "Wavelength optimization for quantitative spectroscopic imaging of breast tumor margins," *PLOS ONE*, 8(4):e61767. **2013**.
5. Bydlon TM, Barry WT, Kennedy SA, **Brown JQ**, Gallagher JE, Wilke LG, Geradts J, and Ramanujam N. "Advancing optical imaging for breast tumor margin assessment: a systematic analysis of excisional time, cautery, and LymphazurinTM on underlying sources of optical contrast," *PLOS ONE*, 7(12):e51418, **2012**.
6. Millon SR, Ostrander JH, **Brown JQ**, Rajeha A, Ramanujam N, "Uptake of 2-NBDG as a method to monitor therapy response in breast cancer cell lines," *Breast Cancer Research and Treatment*, 126:55-62, **2011**.
7. Kennedy SA, Geradts J, Bydlon TM, **Brown JQ**, Gallagher J, Junker M, Barry WT, Ramanujam N, Wilke LG, "Optical breast cancer margin assessment: An observational study on the effects of tissue heterogeneity on optical contrast," *Breast Cancer Research*, 12:R91, **2010**.
8. **Brown JQ**, Bydlon TM, Richards LM, Yu B, Kennedy SA, Wilke LG, Geradts J, Junker M, Gallagher J, Ramanujam N, "Optical assessment of tumor resection margins in the breast," Invited paper, *IEEE Journal of Selected Topics on Quantum Electronics*, 16:530-544. **2010**.
9. Ostrander JH, McMahon CM, Lem S, Millon S, **Brown JQ**, Seewaldt V, Ramanujam N., "Optical redox-ratio differentiates breast cancer cell lines based on receptor status," *Cancer Research*, 70:4759-66, **2010**.
10. Bydlon TM, Kennedy SA, Richards LM, **Brown JQ**, Yu B, Junker MK, Gallagher J, Geradts J, Wilke LG, Ramanujam N., "Performance metrics of an optical spectral imaging system for intra-operative assessment of breast tumor margins," *Optics Express*, 18:8058-8076, **2010**.
11. Millon SR, Ostrander JH, Yazdanfar S, **Brown JQ**, Bender JE, Rajeha A, Ramanujam N., "Preferential accumulation of ALA-induced PpIX in breast cancer: A comprehensive study on six breast cell lines," *Journal of Biomedical Optics*, Vol. 15, 018002 (Feb. 18, **2010**).
12. Wilke LG, **Brown JQ**, Bydlon TM, Kennedy SA, Richards LM, Junker M, Gallagher J, Barry WT, Geradts J, Ramanujam N, "Rapid non-invasive optical imaging of tissue composition in breast tumor margins." *American Journal of Surgery*, 198:566-574, **2009**.
13. **Brown JQ**, Vishwanath K, Palmer GM, Ramanujam N., "Advances in quantitative UV-visible spectroscopy for clinical and pre-clinical application in cancer," *Current Opinion in Biotechnology*, 20:119-131, **2009**.

14. **Brown JQ**, Wilke LG, Geradts J, Kennedy S, Palmer GM, Ramanujam N, "Quantitative optical spectroscopy: A robust tool for direct measurement of breast cancer vascular oxygenation and total hemoglobin content *in vivo*," *Cancer Research*, 69:2919-2926, **2009**.
15. Bender JE, Vishwanath K, Moore LK, **Brown JQ**, Chang V, Palmer GM, Ramanujam, N. "A Robust Monte Carlo Model for the Extraction of Biological Absorption and Scattering in Vivo," *IEEE Trans BME*, 56:960-968, **2009**.
16. **Brown JQ**, Srivastava R, Zhu H, McShane MJ, "Enzymatic Fluorescent Microsphere Glucose Sensors: Evaluation of Response Under Dynamic Conditions," *Diabetes Technology and Therapeutics*, 8:288-295. **2006**.
17. **Brown JQ**, McShane MJ, "Modeling of Spherical Enzymatic Fluorescent Glucose Microsensor Systems: Design of Smart Tattoos," *Biosensors and Bioelectronics*, 21:1760-1769. **2006**.
18. Zhu H, Srivastava R, **Brown JQ**, McShane MJ, "Combined Physical and Chemical Immobilization of Glucose Oxidase in Alginate Microspheres Improves Stability of Encapsulation and Activity," *Bioconjugate Chemistry*, 16:1451-1458. **2005**.
19. Srivastava R, **Brown JQ**, Zhu H, McShane MJ, "Stable Encapsulation of Active Enzyme by Application of Multilayer Nanofilm Coatings to Alginate Microspheres," *Macromolecular Bioscience*, 5:717-727. **2005**.
20. Srivastava R, **Brown JQ**, Zhu H, McShane MJ, "Stabilization of Glucose Oxidase in Alginate Microspheres with Photoreactive Diazoresin Nanofilm Coatings," *Biotechnology and Bioengineering*, 91:124-131. **2005**.
21. **Brown JQ**, Srivastava R, McShane MJ, "Encapsulation of Glucose Oxidase and an Oxygen-Quenched Fluorophore in Polyelectrolyte-Coated Calcium Alginate Microspheres as Optical Glucose Sensor Systems," *Biosensors and Bioelectronics*, 21:212-216. **2005**.
22. **Brown JQ**, McShane MJ, "Core-Referenced Ratiometric Potassium Ion Sensors Using Self-Assembled Ultrathin Films on Europium Nanoparticles," *IEEE Sensors Journal*, 5:1197-1205. **2005**.
23. **Brown JQ**, McShane MJ, "Nanoengineered Polyelectrolyte Micro- and Nano-Capsules as Fluorescent Potassium Ion Sensors," *IEEE-EMBS Magazine*, 22:118-123. **2003**.
24. McShane MJ, **Brown JQ**, Guice KB, Lvov YM, "Polyelectrolyte Microshells as Carriers for Fluorescent Sensors: Loading and Sensing Properties of a Ruthenium-Based Oxygen Indicator," *Journal of Nanoscience and Nanotechnology*, 2: 411-416. **2002**.
25. Duchesne TA, **Brown JQ**, Guice KB, Lvov YM, McShane MJ, "Encapsulation and Stability Properties of Nanoengineered Polyelectrolyte Capsules for use as Fluorescent Sensors," *Sensors and Materials*, 14:293-308. **2002**.

Book chapters

1. **Brown JQ**, Vishwanath K, Chang V, Palmer GM, Ramanujam N, "Clinical applications of UV-VIS spectroscopy in head and neck, cervical, and breast cancers," in *In Vivo Clinical Imaging and Diagnosis*, Ed. James Tunnell, McGraw-Hill, New York. pp. 239-285, **2011**.
2. Vishwanath K, Palmer GM, **Brown JQ**, Ramanujam N, "Non-invasive and quantitative sensing of tumor physiology and function via steady-state diffuse optical spectroscopy," in *Biosensors and Molecular Technologies for Cancer Diagnostics*, Ed. KE Herold and A Rasooly, CRC Press, **2012**.

Invited Presentations

1. **Brown JQ**, "Towards high-throughput fluorescence microscopy for intraoperative tumor margin imaging," *European Conferences on Biomedical Optics*, Munich, Germany, **2013**.
2. **Brown JQ**, "Spectral surveillance of histological landscapes to detect positive breast tumor margins," *BMES Annual Meeting*, Atlanta, GA, **2012**.
3. **Brown JQ**, "Assessment of breast tumor margins via quantitative spectral reflectance imaging," SPIE Photonics West, San Francisco, CA, **2010**.
4. **Brown JQ**, "Intraoperative assessment of breast physiology via *in vivo* optical biopsy: Potential for cancer diagnostics," *Duke Comprehensive Cancer Center Annual Meeting*, March 12, **2007**.
5. **Brown JQ**, "Optical Spectroscopy as an Aid in the Diagnosis and Treatment of Breast Cancer," *Pratt School of Engineering Annual Retreat*, October 8, **2007**.
6. **Brown JQ**, Ramanujam N, "Physiologic, structural, and metabolic alterations in breast cancer: Assessment via optical technologies," *OSA Annual Meeting FiO 2006/LS XXII*, October 12, **2006**, Rochester, NY.

7. **Brown JQ**, Duchesne TA, Lvov YM, McShane MJ, "Nanoengineered Polyelectrolyte Microshells as Carriers for Fluorescent Sensors," *Invited Poster, Focus on Bio- & Information Technologies*, LA EPSCoR, Baton Rouge, LA, April 10-11, **2002**.

Conference Papers, Proceedings, and Abstracts

1. Dorsey P, **Brown JQ**, Colli J, Elfer K, Grossman L, Wang L, McCaslin R, Lee BR, "SPECTROSCOPIC TISSUE ANALYSIS OF RENAL ISCHEMIA AND RECOVERY DURING PARTIAL NEPHRECTOMY: WHAT IS THE QUANTITATIVE BENEFIT OF SEGMENTAL RENAL ARTERY VS MAIN RENAL ARTERY CLAMPING?," American Urological Association, San Diego, CA. **2013**.
2. Fu H, Mueller JL, Javid M, Kirsh D, Ramanujam N, **Brown JQ**, "Optimization of illumination frequency and preclinical validation of a wide-field structured illumination microscope designed for imaging *in situ* tumor margins," CLEO, San Jose, CA, **2013**.
3. Fu H, Mueller J, Javid M, Harmany Z, Kirsh D, Geradts J, Willett R, Ramanujam N, **Brown JQ**, "Towards high throughput microscopy and quantitative pathology for intraoperative identification of residual disease in cancer surgery," *Clinical and Biomedical Spectroscopy*, European Conferences on Biomedical Optics, Munich, Germany, 2013.
4. Fu H, Ramanujam N, **Brown JQ**, "Design and development of a wide-field structured illumination fluorescence imaging system for breast tumor margin assessment," *Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues X*, SPIE Photonics West – BIOS, San Francisco, CA. **2012**.
5. Harmany ZT, Mueller JL, **Brown JQ**, Ramanujam N, Willett RM. Tissue quantification in photon-limited microendoscopy. *Proceedings of SPIE* **2011**. p. 81380F-F-6.
6. **Brown JQ**, Mueller J, Mito J, Harmany Z, Kirsch D, Willett R, Geradts J, Ramanujam N, "High-resolution vital fluorescence imaging for *in vivo* detection of microscopic residual disease in cancer surgery," *Clinical and Biomedical Spectroscopy and Imaging II*, SPIE European Conferences on Biomedical Optics, Munich, Germany. **2011**.
7. Yu B, **Brown JQ**, Lo JY, Bydlon TM, Fu HL, Kennedy SA, Junker M, Keuch TF, Geradts J, Wilke LG, Ramanujam N. "Quantitative spectral imaging for intraoperative breast tumor margin assessment," *Clinical and Biomedical Spectroscopy and Imaging II*, SPIE European Conferences on Biomedical Optics, Munich, Germany. **2011**.
8. Mueller J, Kennedy S, Harmany Z, Mito J, Kim Y, Geradts J, Kortum R, Kirsch D, Willett R, Ramanujam N, **Brown JQ**, "High resolution vital fluorescence imaging of tumor microanatomy for surgical margin assessment," *Department of Defense Breast Cancer Research Program Era of Hope Meeting*, Orlando, FL, **2011**.
9. Mueller M, Harmany Z, Mito J, Kennedy S, Kim Y, Geradts J, Kirsch D, Willett R, Ramanujam N, **Brown JQ**, "High resolution vital fluorescence imaging and analysis of tumor microanatomy for surgical margin assessment," *Advances in Optics for Biotechnology, Medicine, and Surgery XII, Engineering Conferences International (ECI)*, Naples, FL, **2011**.
10. Mueller M, Harmany Z, Mito J, Kennedy S, Kim Y, Geradts J, Kirsch D, Willett R, Ramanujam N, **Brown JQ**, "Sparse decomposition as a tool for quantitative pathology," *Duke Workshop on Sensing and Analysis of High-Dimensional Data (SAHD)*, Durham, NC, **2011**.
11. Kennedy S, Mueller J, Bydlon T, **Brown JQ**, Ramanujam N, "Using wide-field quantitative diffuse reflectance spectroscopy in combination with high resolution imaging for margin assessment," *Advanced Biomedical and Clinical Diagnostic Systems IX*, SPIE Photonics West-BIOS Conference Proceedings v. 7573, San Francisco, CA. **2011**.
12. **Brown JQ**, Bydlon TM, Kennedy SA, Geradts J, Wilke LG, Richards LM, Junker M, Gallagher J, Ramanujam N, "Assessment of breast tumor margins via quantitative spectral reflectance imaging," *Invited paper, Biomedical Applications of Light Scattering IV*, SPIE Photonics West – BIOS Conference Proceedings v. 7573, San Francisco, CA. **2010**.
13. **Brown JQ**, Yu B, Ramanujam N, "Tissue-mimicking phantoms for system calibration and validation in Quantitative Diffuse Reflectance Spectroscopy (Q-DRS)," *Design and Performance Validation of Phantoms used in Conjunction with Optical Measurement of Tissue III*, SPIE Photonics West – BIOS, San Francisco, CA. **2010**.
14. Bydlon TM, **Brown JQ**, Barry WT, Geradts J, Wilke LG, Kennedy SA, Richards LM, Junker MK, Ramanujam N, "Rapid optical imaging of breast tumor margins: Final results from a 100-patient clinical

study," presented at 32nd Annual San Antonio Breast Cancer Symposium, *Cancer Research*, 69:770S-771S, Suppl. 3, **2009**.

15. **Brown JQ**, Bydlon TM, Kennedy SA, Richards LM, Junker MK, Palmer GM, Geradts J, Wilke LG, Ramanujam N, "Intraoperative optical breast characterization device for tumor margin assessment," Poster Discussion Session, 31st Annual San Antonio Breast Cancer Symposium, December 2008, *Cancer Research*, 69:101S, Suppl. S, **2009**.
16. **Brown JQ**, Wilke LG, Geradts J, Bydlon TM, Kennedy SA, Palmer GM, Ramanujam N, "Quantitative Physiology of the Breast: Impacting Patient Care on Multiple Levels," *2008 BMES Annual Meeting*, St. Louis, MO, October **2008**.
17. **Brown JQ**, Wilke LG, Geradts J, Kennedy SA, Palmer GM, Ramanujam N, "Intraoperative in vivo reflectance spectroscopy for discrimination of normal, benign, and malignant breast tissues," Presented at 30th Annual San Antonio Breast Cancer Symposium, December 2007, *Breast Cancer Research and Treatment*, 106:S209-S210, **2007**.
18. **Brown JQ**, Wilke LG, Geradts J, Tochacek L, Palmer GM, Ramanujam N, "Intraoperative assessment of breast physiology via in vivo optical biopsy: Potential for cancer diagnostics," *AACR Annual Meeting 2007*, April 14-18, **2007**, Los Angeles, CA.
19. **Brown JQ**, McShane, M.J., "Nanoengineered Optical Glucose Microsensors," *4th Annual Diabetes Technology Meeting*, Philadelphia, PA, October **2004**.
20. **Brown JQ**, McShane MJ, "Optimal Design of Nanoengineered Optical Sensors Using a Genetic Algorithm," *26th International IEEE EMBS Conference*, San Francisco, CA, USA, September, **2004**.
21. **Brown JQ**, Chopra S, Grant PS, McShane MJ, "Glucose Micro- and Nano-Sensors Based on Nanoassembled Enzyme/Polymer/Dye Composites," *SPIE International Biomedical Optics Conf.*, San Jose, CA, **2004**
22. **Brown JQ**, Guice KB, Simpson RT, McShane MJ, "Electrostatic self-assembly of nanocomposite hybrid fluorescent sensors," *Proceedings of the SPIE*, Volume 5331, pp. 52-59 (**2004**).
23. **Brown JQ**, Guice KB, McShane MJ, "Internally-Referenced Chemical Transducers Using Molecular Probes Assembled on Fluorescent Nanoparticles," *IEEE Sensors Conference*, Toronto, Ontario, Canada, October 21-24, **2003**.

PRINT AND BROADCAST MEDIA

- "New device may reduce number of breast cancer surgeries," *ABC World News Tonight with Charles Gibson*, December 15, **2008**. URL: <http://abcnews.go.com/Health/MedicineCuttingEdge/story?id=6465428&page=1>
- "Choosing the best therapy for breast cancer," *BioPhotonics*, July **2009**.
- "New frontiers in breast cancer research, Part I," *Medtech Insight*, August **2009**.

INTELLECTUAL PROPERTY

WO 2009/043045 A1 (International PCT application, pending)
 WO 2009/043050 A2 (International PCT application, pending)
 US Application 61448005 (Provisional application)

TEACHING

-*BMEN 6931: Introduction to Biomedical Optics* (Fall 2012)

SERVICE AND PROFESSIONAL ACTIVITIES

-*Thesis committees:*

-Committee Co-chair: Henry Fu (Ph.D., Duke University);

J. Quincy Brown

-Committee member: Matthew Caldwell (M.S. Thesis, Duke University); Anna Brown (B.S. Honors Thesis, Duke University); Matthew Giannetti (M.S. Thesis, Tulane University); Nguyen Hoang (M.S. Thesis, Tulane University)

-Thesis reader: Elsie Rodebeck, Senior Research Thesis, Tulane University; Gisele Calderon, Senior Research Thesis, Tulane University

-Team design mentor: Team Little Gasp (2012-2013).

-Faculty Panelist: Team Ordure (Team Design, 2012-2013)

-Societies:

Member: SPIE, OSA, IEEE EMBS, BMES

Chapter Advisor: IEEE EMBS Tulane Student Branch

-Peer-reviewer: PLOS ONE, Applied Optics, Journal of Biomedical Optics, Optics Letters, Lasers in Surgery and Medicine, IEEE Transactions on Biomedical Engineering, Analytical Chemistry, Australian Journal of Chemistry, Technology in Cancer Research and Treatment, IEEE Transactions on Biomedical Circuits and Systems, Biomedical Optics Express, International Journal of Cancer, Journal of Biophotonics, Sensors

-Conference service:

- Session chair, Clinical and Biomedical Spectroscopy Track, *SPIE European Conference on Biomedical Optics*, Munich, Germany 2011
- Sub-program committee and reviewer, Session Chair, Clinical and Biomedical Spectroscopy Track, *SPIE European Conference on Biomedical Optics*, Munich, Germany, 2013