Elizabeth Vargis

Postdoctoral Research Associate
Nanofabrication Research Laboratory
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Education

Vanderbilt University, Nashville, TN	Biomedical Engineering	PhD, 2012
Vanderbilt University, Nashville, TN	Biomedical Engineering	MS, 2007
University of California, Berkeley, Berkeley, CA	Bioengineering	BS, 2004

Professional Experience

2012-present	Postdoctoral Research Associate, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
2008-2012	Graduate Research Assistant, PhD Program, Vanderbilt University
2006-2009	Predoctoral Fellow, Ruth L. Kirschstein National Research Service Award Program
2005-2007	Graduate Research Assistant, MS Program, Vanderbilt University
2005-2006	Predoctoral Fellow, Vanderbilt Institute of Integrative Biosystem Research and Education
2003-2005	Research Assistant, Life Sciences Division, Lawrence Berkeley National Laboratory

Professional and Synergistic Activities

2006, 2010-present	Member, Biomedical Engineering Society (BMES)
2008-present	Member, Society of Photo-Optical Instrumentation Engineers (SPIE)
2008-2010	Member, American Society for Engineering Education (ASEE)

Honors and Awards

2011	Lai Sulin Scholarship for Cancer Research in Women's Health
2011	Dissertation Enhancement Award, Vanderbilt University
2007-2011	Travel Award, Vanderbilt University (awarded annually)
2009	Research Excellence Award, Newport Spectra-Physics
2009	SPIE Student Officer Travel Award
2009	Research Award, Center for the Integration of Research, Teaching and Learning (CIRTL)

Publications

Full publication list follows CV.

Research Synopsis

Studying biological systems in microfluidic environments

The goal of this work is to use the small-scale settings of microfluidic devices to control the growth, differentiation and properties of various cell types. Results from this work provide information on fundamental cellular processes, such as energy consumption, spatial and temporal effects and the initiation and progression of disease.

Graduate and Postdoctoral Advisors

Graduate Advisors:	Anita Mahadevan-Jansen, Rick Haselton (Vanderbilt University)
Postdoctoral Advisors:	Pat Collier and Scott Retterer (Oak Ridge National Lab)

PUBLICATIONS

Elizabeth Vargis, PhD

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Journal Publications (Peer-Reviewed)

1. Byrd T, Vargis E, Logan Q, Khabele D, A Mahadevan-Jansen. Effectiveness of Colposcopically-Directed Raman Spectroscopy in Detecting Cervical Intraepithelial Neoplasia. (in preparation, 2012)

2. Pence IJ, Vargis E, A Mahadevan-Jansen. Variability of Raman Spectra of the Skin. (submitted, June 2012)

3. Vargis E, Brown N, Williams KC, Paria BC, Al-Hendy A, Reese J, A Mahadevan-Jansen. Detecting Biochemical Changes that Occur in the Rodent Cervix during Pregnancy Using Raman Spectroscopy. *Annals of Biomedical Engineering* , 40: (8), 1814-1824, 2012

4. Vargis E, Tang Y-W, Khabele D, A Mahadevan-Jansen. Near-Infrared Raman Microspectroscopy Detects High-Risk Human Papillomaviruses. *Translational Oncology*, 5: (3), 172-179, 2012

5. Vargis E, Byrd T, Logan Q, Khabele D, A Mahadevan-Jansen. Sensitivity of Raman Spectroscopy to Normal Patient Variability. *Journal of Biomedical Optics*, 16: (11), 117004-1-9, 2011

6. Keller MD, Vargis E, Granja ND, Robert TH, Mycek MA, Kelley MC, A Mahadevan-Jansen. Development of a Spatially Offset Raman Spectroscopy Probe for Breast Tumor Surgical Margin Evaluation. *Journal of Biomedical Optics*, 16: (7), 077006-1-8, 2011

7. Vargis E, Kanter EM, Majumder S, Keller MD, Beaven RB, Rao GG, A Mahadevan-Jansen. Effect of Normal Variations on Classification of Raman Spectra of Cervical Tissue. *Analyst*, 136: (14), 2981-2987, 2011

8. Perez JW, Vargis E, Russ PK, Haselton FR, DW Wright. Detection of Respiratory Syncytial Virus Using Nanoparticle Amplified Immuno-PCR. *Analytical Biochemistry*, 410: (1), 141-148, 2011

9. Kanter EM, Vargis E, Majumder S, Keller MD, Beaven RB, Rao GG, A Mahadevan-Jansen. Application of Raman spectroscopy for Cervical Dysplasia Diagnosis. *Journal of Biophotonics*, 2: (1-2), 81-90, 2009

10. Kanter EM, Majumder S, Vargis E, Robichaux-Viehoever A, Kanter G, Shappell H, III Jones H, A Mahadevan-Jansen. Multiclass Discrimination of Cervical Precancers using Raman Spectroscopy. *Journal of Raman Spectroscopy*, 40: (2), 205-211, 2009

11. Shyamala G, Chou Y-C, Cardiff RD, E Vargis. Effect of c-neu/ErbB2 Expression Levels on Estrogen Receptor alpha-Dependent Proliferation in Mammary Epithelial Cells: Implication for Breast Cancer Biology. *Cancer Research*, 66: (21), 10391-10398, 2006

Conference Proceedings

1. Vargis E, Webb CN, Paria BC, Bennett KA, Reese J, Al-Hendy A, A Mahadevan-Jansen. Detecting changes during pregnancy with Raman spectroscopy. *Proceedings of the 3rd Annual Biomedical Sciences and Engineering Conference (BSEC)*, pp.1-4, 2011
   Peer-reviewed

2. Vargis E, Webb N, Paria BC, Bennett K, Reese J, Al-Hendy A, A Mahadevan-Jansen. Using Raman Spectroscopy to Study the Onset of Labor: A Pilot Study. *Advanced Biomedical and Clinical Diagnostic Systems IX - SPIE Proceedings*, 7890-45, 2011

3. Vargis E, Byrd T, Reese J, Khabele D, Al-Hendy A, A Mahadevan-Jansen. Detecting Changes in the Cervix with Raman Spectroscopy. *American Institute of Physics Conference Series*, 1267, 441-442, 2010

4. Vargis E and A Mahadevan-Jansen. Implementing and assessing a challenge-based module for spectroscopy in a biomedical optics class. *Proceedings of the 2010 American Society for Engineering Education (ASEE) Annual Conference and Exposition*, (CD-ROM), Session AC 2010-1759: 18 Pages, 2010
   Peer-reviewed

5. Vargis E, Robertson K, Al-Hendy A, Reese J, A Mahadevan-Jansen. Detecting changes during pregnancy with Raman spectroscopy. *Biomedical Vibrational Spectroscopy VI: Advances in Research and Industry, Raman Spectroscopy and Non-Cancer Applications - SPIE Proceedings* 7560-18, 2010

Technical Notes and Magazine Articles

1. Vargis E and A Mahadevan-Jansen. Using Raman Spectroscopy to Detect Malignant Changes In Vivo. *Princeton Instruments' Technical Note*, 2011.

2. Mahadevan-Jansen A, Keller MD, Vargis E, Caldwell B, Nguyen T-Q, Granja NdM, Sanders M, MC Kelley. Looking Below the Surface of Breast Tissue during Surgery. *Spectroscopy*. June 1, 2011.