

## ELIZABETH VARGIS, PhD

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### Professional Experience

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<b>Affiliate Faculty Member</b> <i>Synthetic Biomanufacturing Center, Utah State University, Logan, UT</i>	2014 - present
<b>Assistant Professor</b> <i>Department of Biological Engineering, Utah State University, Logan, UT</i>	2013 - present
<b>Postdoctoral Research Associate</b> <i>Joint Institute for Biological Sciences, University of Tennessee, Knoxville, TN; Center for Nanophase Materials Sciences, Oak Ridge National Lab, Oak Ridge, TN</i>	2012 - 2013
<b>Research Assistant</b> <i>Life Science Division, Lawrence Berkeley National Lab, Berkeley, CA</i>	2003 - 2005

### Education

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<b>PhD, Biomedical Engineering</b> <i>Vanderbilt University, Nashville, Tennessee</i> “Correlating Raman Spectra with Changes in the Normal Cervix”	2012
<b>Graduate Teaching Certificate</b> <i>Vanderbilt University, Nashville, Tennessee</i>	2011
<b>MS, Biomedical Engineering</b> <i>Vanderbilt University, Nashville, Tennessee</i> “Virus Detection with DNA Logic Tags”	2007
<b>BS, Bioengineering</b> <i>University of California, Berkeley, Berkeley, California</i>	2004

### Selected Grants, Awards & Fellowships

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Nuclear Regulatory Commission, Department of Energy (Co-PI, 70% of \$312,145) <i>“Faculty Development Program to Integrate New Faculty in Nuclear Engineering Research at Utah State University”</i>	2016-2019
Utah NASA Space Grant Consortium Graduate Fellowship (\$30,000)	2015; 2016
Utah State University Library’s Open Access Funding Initiative (\$1500) <i>Support for Publication in Journal of Biological Engineering</i>	2015
Utah State University Research Catalyst Award (Co-PI, \$20,000) <i>“Polymer Encapsulated Flavonoids and Zinc Flavonolate Complexes as Antiviral Antioxidants to CMV Infectivity and Associated Oxidative Damage”</i>	2015
Oak Ridge Associated Universities (ORAU) Ralph E. Powe Junior Faculty Enhancement Award (PI, \$10,000) <i>“Examining the Role of Spatial Organization on Retinal Degeneration”</i>	2015
Knights Templar Eye Foundation Career Starter Grant (PI, \$59,665) <i>“Examining Retinal Vascularization in Pediatric Diseases by Controlling in vitro Cell Growth”</i>	2015
Utah State University Synthetic Biomanufacturing Institute (PI, \$40,000) <i>Seed Grant for Biomanufacturing Efforts</i>	2014

Utah State University Research Catalyst Award (PI, \$20,000) "Targeted, Surface-Enhanced Raman Spectroscopy Nanotags for Detecting B-Cell Lymphoma"	2014
Lai Sulin Scholarship for Research in Women's Cancer (PI, \$5000)	2012
Vanderbilt University Dissertation Enhancement Grant (PI, \$2000)	2010
Vanderbilt Institute for Clinical and Translational Research Grant (PI, \$5000)	2010
NIH Ruth L. Kirschstein National Research Service Predoctoral Fellowship (\$60K/year)	2006-2009
Newport Spectra-Physics Research Excellence Award	2009
Center for the Integration of Research, Teaching, and Learning (CIRTL) - Teaching as Research Award (PI, \$3000)	2009
National Science Foundation Graduate Research Fellowship, Honorable Mention	2006
Vanderbilt Institute of Integrative Biosystem Research and Education (VIIBRE) Fellowship (PI, \$25,000)	2005

## Publications

(<sup>+</sup>corresponding author; \*graduate student or in Vargis Lab;  
\*\*undergraduate student in Vargis Lab; †equal contribution)

### Journal (Peer-Reviewed)

Hanson C\*, Sieverts M\*\*, E Vargis<sup>+</sup>. Effect of PCA centering and scaling on classification of mycobacteria from Raman spectra. *Applied Spectroscopy* doi:10.1177/0003702816678867, 2016

Hanson C\*, Israelsen ND\*, Sieverts M\*\*, E Vargis<sup>+</sup>. Fabricating a UV-Vis and Raman Spectroscopy Immunoassay Platform. *Journal of Visualized* 117: e54795, doi:10.3791/54795, 2016

Fronk AH\* and E Vargis<sup>+</sup>. Methods for culturing retinal pigment epithelial cells *in vitro*: current protocols and future recommendations. *Journal of Tissue Engineering*, 7: 1-23, 2016

Israelsen ND\*, Wooley D\*\*, Hanson C\*, E Vargis<sup>+</sup>. Rational Design of a Surface-Enhanced Raman Scattering Immunoassay for Detecting Biomarkers on a Polystyrene Substrate. *Journal of Biological Engineering*, 10: (2), 2016

Li Q, Xiao L, Harihar S, Welch D, Vargis E, A Zhou<sup>+</sup>. In vitro evaluation of the role of Breast Cancer Metastasis Suppressor 1 (BRMS1) in breast cancer cells to chemotherapy using a multimodal approach. *Analytical Methods*, 7: 10162-10169, 2015

Israelsen ND\*\*, Hanson C\*\*†, E Vargis<sup>+</sup>. Nanoparticle Properties and Synthesis Effects on Surface-Enhanced Raman Scattering (SERS) Enhancement Factor: an Introduction. *Scientific World Journal*, 2015: 12 pages, Article ID 124582, 2015

O'Brien CM†, Vargis E†, Paria BC, Bennett KA, Mahadevan-Jansen A, J Reese<sup>+</sup>. Raman Spectroscopy Provides a Noninvasive Approach for Determining Biochemical Composition of the Pregnant Cervix In Vivo. *Acta Paediatrica*, 103: (7), 715-721, 2014

Vargis E, Peterson CB, Morrell-Falvey J, Retterer ST<sup>+</sup>, CP Collier<sup>+</sup>. The Effect of Retinal Pigment Epithelial Cell Patch Size on Growth Factor Expression. *Biomaterials*, 35: (13), 3999-4004, 2014

Pence IJ, Vargis E, A Mahadevan-Jansen<sup>+</sup>. Assessing Variability of In Vivo Tissue Raman Spectra. *Applied Spectroscopy*, 67: (7), 789-800, 2013

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

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

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

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

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

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

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

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

Shyamala G<sup>+</sup>, 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

*Submitted: Journal (Peer-Reviewed)*

Davis D, Doloman A, Podgorski GJ, Vargis E, NS Flann<sup>+</sup>. Exploiting Self-Organization in Bioengineered Systems: A Computational Approach. (submitted 9/1/16)

Baker QB, Podgorski GJ, Vargis E, NS Flann<sup>+</sup>. The Effect of Retinal Pigment Epithelial Cell Patch Size on VEGF Production: A Computational Study. (submitted 11/1/16)

Hanson C and E Vargis<sup>+</sup>. Contactless Dielectrophoresis Chip Design to Facilitate Isolation for Identification of Bacteria by Raman Spectroscopy. (submitted 11/30/16)

*Conference Proceedings (also presented as Conference Talks)*

Hanson C\*, Sieverts M\*, Tew K\*, Dykes A\*, Salisbury M\*, E Vargis<sup>+</sup>. The use of microfluidics and dielectrophoresis for separation, concentration, and identification of bacteria. *Microfluidics, BioMEMS, and Medical Microsystems XIV - SPIE Proceedings 97050E*, 2016

Baker QB, Podgorski GJ, Johnson CD, Vargis E and NS Flann<sup>+</sup>. Bridging the Multiscale gap: Identifying Parameters from Multicellular Data. *IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology*, 2015

O'Brien CM, Vargis E, Slaughter C, Rudin AP, Herington JL, Bennett KA, Reese J, A Mahadevan-Jansen<sup>+</sup>. Characterization of Human Cervical Remodeling throughout Pregnancy using In Vivo Raman Spectroscopy. *Photonic Therapeutics and Diagnostics XI – SPIE Proceedings 93032F*, 2015

Vargis E, Foster C, Peterson CB, Morrell-Falvey JL, Retterer ST, CP Collier<sup>+</sup>. Developing In Vitro Models of the Sub-Retinal Microenvironment. *Proceedings of the 4<sup>th</sup> Annual Biomedical Sciences and Engineering Conference (BSEC)*, 21-23 May 2013 – **Peer-reviewed**

Vargis E, Webb CN, Paria BC, Bennett KA, Reese J, Al-Hendy A, A Mahadevan-Jansen<sup>+</sup>. Detecting Changes during Pregnancy with Raman Spectroscopy. *Proceedings of the 3<sup>rd</sup> Annual Biomedical Sciences and Engineering Conference (BSEC)*, pp.1-4, 15-17 March 2011 – **Peer-reviewed**

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

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

Vargis E and A Mahadevan-Jansen<sup>+</sup>. 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**

Vargis E, Robertson K, Al-Hendy A, Reese J, A Mahadevan-Jansen<sup>+</sup>. 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

#### Magazine Articles

Hanson C\* and E Vargis<sup>+</sup>. Microscopy and Raman Imaging: Open-system Raman Microscopy. *Laser Focus World*. May 5, 2015

Mahadevan-Jansen A<sup>+</sup>, 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

#### Technical Notes

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

#### Invited Talks

Vargis E. Spectroscopic Applications in the Life Sciences. Webcast for *BioOptics World*. March 2014

#### Conference Talks (\*graduate student in Vargis Lab; \*\*undergraduate student in Vargis Lab)

Farjood F\* and E Vargis. Isolation Affects VEGF Expression in Retinal Pigment Epithelial Cells. *Institute of Biological Engineering*. April 2016

Hanson C\* and E Vargis. The Use of Microfluidics and Dielectrophoresis for Separation, Concentration, and Identification of Bacteria. *SPIE Photonics West: Microfluidics, BioMEMS, and Medical Microsystems XIV*. February 2016

Israelsen ND\* and E Vargis. Raman Microscope System for the Detection of B-cell Malignancies using Surface-Enhanced Raman Scattering. *Biophotonic Imaging for Medicine: A Digital Conference*. June 2015

Gertsch S, Bedingfield S\*\*, Lawanto S\*\*, E Vargis. Targeted Drug Delivery System for Kidney and/or Liver Failure Patients using Human Serum Albumin. *National Conference on Undergraduate Research*. April 2015

Fronk A\* and E Vargis. Culturing the Retinal Pigment Epithelium. *USU's Student Research Symposium*. April 2015

Hanson C\* and E Vargis. Use of Surface-Enhanced Raman Spectroscopy to Identify Mycobacteria. *USU's Student Research Symposium*. April 2015

Israelsen ND\*, Wooley D,\*\* E Vargis. Multiplex B-Cell Cancer Marker Detection Using Surface-Enhanced Raman Spectroscopy. *USU's Student Research Symposium*. April 2015

Jarvis JL\*\*, Smiley R\*\*, Patterson B\*\*, E Vargis. Effects of Leachables and Extractables in Single Use Bioprocess Containment Systems on Chinese Hamster Ovary Cell Growth and Quality. *USU's Student Research Symposium*. April 2015

Gertsch S, Bedingfield S\*\*, Lawanto S\*\*, E Vargis. Targeted Drug Delivery System for Kidney and/or Liver Failure Patients using Human Serum Albumin. *USU's Student Research Symposium*. April 2015 – **First Place in Undergraduate Sciences Podium Presentation**

O'Brien CM, Vargis E, Slaughter C, Rudin AP, Bennett K, Reese J, A Mahadevan-Jansen. Detection of Maturation Changes in the Pregnant Human Cervix Using In Vivo Raman Spectroscopy. *Society of Reproductive Investigation Annual Meeting in San Francisco, Hot Topics Session*. March 2015

Gertsch S, Bedingfield S\*\*, Lawanto S\*\*, and E Vargis. Targeted Drug Delivery System for Kidney and/or Liver Failure Patients using Human Serum Albumin. *Institute of Biological Engineering*. March 2015

Israelsen ND\* and E Vargis. Surface-enhanced Raman Spectroscopy Based Detection of Leukemia Cell Surface Markers. *SciX 2014 Conference Presented by FACSS*. September 2014

Hanson C\* and E Vargis. Application of SERS Magnetic Nanoparticles to Concentrate, Detect, and Identify Mycobacteria. *SciX 2014 Conference Presented by FACSS*. September 2014

O'Brien CM, Vargis E, Reese J, Bennett K, A Mahadevan-Jansen. In Vivo Raman Spectroscopy as a Clinical Tool to Detect Biomedical Changes in the Pregnant Cervix. *SPIE Photonics West*. January 2014

Hanson C\* and E Vargis. A Simple Method for Bacterial Concentration, Detection and Identification Using SERS Magnetic Nanoparticles. *USU's Graduate Research Symposium*. April 2014

Vargis E. Development of Tissue Models and Spectroscopy Disease Detection Platforms for Biomedical Applications. *nanoUtah*. October 2013.

O'Brien CM, Vargis E, Brown N, Paria BC, Reese J, A Mahadevan-Jansen. Characterization of Cervical Tissue from Preterm Labor Mouse Models Using In Vivo Raman Spectroscopy and Ex Vivo Biomechanical Testing. *Biomedical Engineering Society (BMES) Annual Meeting*. October 2012

Vargis E, Webb CN, Bennett K, Al-Hendy A, A Mahadevan-Jansen. Raman Spectroscopy: an Effective Method of Detecting Biochemical Changes of the Pregnant Cervix. *SPIE Photonics West: Biomedical Vibrational Spectroscopy VII: Advances in Research and Industry*. January 2012

Pence IJ, Vargis E, Nguyen T-Q, Patil C, Ellis D, A Mahadevan-Jansen. In vivo Raman Spectroscopy of the Skin: Advances and Issues for Clinical Implementation. *SPIE Photonics West: Photonics in Dermatology and Plastic Surgery*. January 2012

Pence IJ, Patil CA, Vargis E, Walsh A, Krishnamoorthi H, Cayce J, Paras C, Makowski A, Keller MD, Bi X, Mackanos M, Jansen ED, Ellis DL, A Mahadevan-Jansen. Analysis of Reliability of Multiple Raman Spectroscopy Systems in vivo for Clinical Implementation. *SPIE Photonics West: Design and Quality for Biomedical Technologies IV*. January 2011

Vargis E, Byrd T, Roberts EC, Khabele D, A Mahadevan-Jansen. Using Raman Spectroscopy to Detect Cervical Dysplasia in Minority Populations. *SPIE: Photonics West: Advanced Biomedical and Clinical Diagnostic Systems VIII, Clinical Diagnostics Systems I*. January 2010

Vargis E, Kanter EM, A Mahadevan-Jansen. Detecting Cervical Cancer with Raman Spectroscopy. *SPIE: Photonics West: Advanced Biomedical and Clinical Diagnostic Systems VIII, Raman Spectroscopy*. January 2009

Perez JW, Vargis E, Wright DW, Haselton FR. Nano Tools for Viral Detection. *Southeast Region of the American Chemical Society Annual Meeting*. October 2007

### **Selected Conference Posters** (\*graduate student in Vargis Lab; \*\*undergraduate student in Vargis Lab)

Harding C\*, Takemoto J, E Vargis. In Vitro Modeling of Microgravity-Induced Muscle Atrophy and Spaceflight Radiation. *American Society for Gravitational and Space Research Annual Meeting (ASGSR) Annual Meeting*. October 2016

Wadsworth I\*\*, Singh H\*\*, Caldwell L\*\*, Jensen Z\*\*, Hansen B\*\*, Lewis R, E Vargis. Optimizing The Growth and Characterization of Retinal Pigment Epithelial Cells. *BMES Annual Meeting*. October 2016

Glaittli K, Caldwell L\*\*, Dykes A\*\*, Harding C\*, Britt D, E Vargis. Comparison of Polysulfone and Collagen Substrates as a Membrane for the Growth of Murine Myoblast Cell Culture. *BMES Annual Meeting*. October 2016

Hanson C\* and E Vargis. A proposed cDEP device design for improved device reusability and range of applied voltage. *SciX 2016 Conference Presented by FACSS*. September 2016

Farjood F\* and E Vargis. Effect of Isolation and Aging on VEGF Expression in ARPE-19 Cells. *Association for Research in Vision and Ophthalmology (ARVO)*. May 2016

Hanson C\* and E Vargis. Use of SERS Magnetic Nanoparticles to Concentrate and Identify Mycobacteria. *American Institute of Chemical Engineers–AES Electrophoresis Society Annual Meeting*. November 2015

Harding C\*, Takemoto J, E Vargis. Prevention of Oxidative Stress and Microgravity-Induced Muscular Atrophy with Mesobiliverdin-IXa. *ASGSR Annual Meeting*. November 2015 – **3<sup>rd</sup> Place Winner**

Hanson C\* and E Vargis. Comparison of Machine Learning Methods to Identify Bacteria using Raman Spectroscopy. *SciX 2015 Conference Presented by FACSS*. September 2015

Harding C\*, Takemoto J, E Vargis. Prevention of Microgravity-Induced Muscular Atrophy with Mesobiliverdin-IXa. *Hansen Life Sciences Retreat*. September 2015 - **Poster Award Winner**

Hanson C\* and E Vargis. Use of SERS Magnetic Nanoparticles to Concentrate and Identify Mycobacteria. *nanoUtah*. October 2014

Israelsen ND\* and E Vargis. Surface-Enhanced Raman Scattering (SERS) Nanoprobes for Detecting Hematological Malignancies. *nanoUtah*. October 2014

Byrd TT, Vargis E, O'Brien CM, Logan Q, Khabele D, A Mahadevan-Jansen. In Vivo Raman Spectroscopy Detects Cervical Intraepithelial Neoplasia with High Accuracy in Diverse Population. *Society for Gynecologic Investigation (SGI)*. March 2014

O'Brien CM, Herrington J, Vargis E, Brown N, Paria BC, Reese J, A Mahadevan-Jansen. In Vivo Detection of Biochemical Differences in the Pregnant Mouse Cervix between Wild Type and COX-1 KO Mice. *SGI*. March 2014

O'Brien C, Vargis E, Brown N, Reese J, Paria BC, A Mahadevan-Jansen. In Vivo Detection of Biochemical Change in the Pregnant Cervix in Humans and Mouse Models. *SGI*. March 2013

Vargis E, Mortensen N, Foster C, Retterer S, CP Collier. Using Microfluidic Devices to Study Diseases of the Eye. *BMES Annual Meeting*. October 2012

O'Brien C, Vargis E, Brown N, Paria BC, Reese J, Bennett KA, A Mahadevan-Jansen. Early Detection of Preterm Labor in vivo Using Raman Spectroscopy. *Biophotonics and Imaging Graduate Summer School 2012 (BIGSS 12)*. June 2012 – **2<sup>nd</sup> Place**

Vargis E, Webb CN, Al-Hendy A, Bennett KA, A Mahadevan-Jansen. Detecting Biochemical Changes in the Human Cervix with Raman Spectroscopy. *SGI*. March 2012

Vargis E, Byrd T, Khabele D, A Mahadevan-Jansen. Detecting Cervical Dysplasia in Minority Populations using Raman Spectroscopy. *National Cancer Institute: Cancer Detection and Diagnostic Technologies for Global Health*. August 2011

Vargis E, Webb CN, Paria BC, Bennett KA, Reese J, Al-Hendy A, A Mahadevan-Jansen. Raman Spectroscopy: An Effective Method of Detecting Biochemical Changes of the Pregnant Cervix. *SGI*. March 2011

Vargis E, Byrd T, Reese J, Khabele D, Al-Hendy A, A Mahadevan-Jansen. Detecting Changes in the Cervix with Raman Spectroscopy. *International Conference on Raman Spectroscopy (ICORS)*. August 2010

Vargis E, Byrd T, Khabele D, A Mahadevan-Jansen. Using Raman Spectroscopy to detect cervical dysplasia in minority populations. *Society of Gynecologic Oncologists (SGO)*. March 2010

Vargis E, Robertson K, Reese J, Al-Hendy A, A Mahadevan-Jansen. Detection of Preterm Labor with Raman Spectroscopy. *Advances in Optics for Biotechnology, Medicine and Surgery XI: Clinical Challenges and Research Solutions*. June 2009

Vargis E, Kanter EM, Majumder S, Jones H III, A Mahadevan-Jansen. Cervical Cancer Detection with Raman Spectroscopy. *SPEC 2008: Shedding Light on Disease: Optical Diagnosis for the New Millennium*. October 2008

Vargis E, Kanter EM, Majumder S, Jones H III, A Mahadevan-Jansen. Cervical Cancer Detection with Raman Spectroscopy. *Vanderbilt-Ingram Cancer Center Retreat*. May 2008 – **Honorable Mention**

Vargis E, Perez JW, Wright DW, FR Haselton. Development of DNA Logic Tags to Improve Detection by Antibodies. *BMES Annual Meeting*. September 2007

Shyamala G, Chou Y-C, E Vargis. Impact of c-neu/erbB2 on Estrogen and Estrogen Receptor  $\alpha$ -Dependent Proliferation of Mammary Epithelial Cells. *Era of Hope Conference*. June 2005

## Teaching Experience

*Utah State University* – Department of Biological Engineering: Course Instructor

Introduction to Research and Engineering Design (BENG 1000)	Fall 2015, 2016
Graduate Research Seminar (BENG 6510/7510)	Fall 2015
Introduction to Biophotonics (BENG 5840/6840)	Fall 2014
Tissue Engineering (BENG 5890/6890)	Spring 2014, 2016

*University of California, Berkeley*

Teaching Assistant, Department of Plant and Microbial Biology	Spring 2005
Destination: College!, an AmeriCorps program, Berkeley, CA	2002 - 2003

## Student Advising

*PhD Dissertation Committees - Chair*

Farhad Farjood, MS Biochemical Engineering	2015 - present
PhD, Biological Engineering, expected 2018	
Charles Harding	2015 - present
PhD, Biological Engineering, expected 2019	
2015, 2016 Utah NASA Space Grant Consortium Fellowship (\$15,000)	
Cynthia Hanson, MS Nuclear Engineering	2013 - present
PhD, Biological Engineering, expected 2017	
2014/2015 Dissertation Enhancement Award	
2015 Optics and Photonics Education Scholarship by SPIE 2015	
Biological Engineering Graduate Researcher of the Year	

*PhD Dissertation Committees - Member*

Thomas Harris	2015 - present
PhD, Biological Engineering, expected 2018	
Lei Sun	2014 - present
PhD, Biological Engineering, expected 2018	
Qanita Bani Baker	2014 - 2015
PhD, Computer Science, Summer 2015	

*Master's Thesis Committees – Chair*

Nathan Israelsen	2014 - 2015
MS, Biological Engineering	
Aaron Fronk	2013 - 2015
MS, Biological Engineering	

*Master's Thesis Committees - Member*

Robert Alan Burgess	2014 - present
MS, Chemistry, expected 2016	



David Hoyt	2015 - present
MS, Biological Engineering, expected 2016	
Sherissa Ward	2014
MS, Biological Engineering, Fall 2014	

*Undergraduate Students*

## Biological Engineering

Active: Andrew Merkely (2016-), Matt Clegg (2016-), Chase Paterson (2016-), Cameron Zabriskie (2016-), Taylor Clegg (2016-), Zach Jensen (2016-), Ian Wadsworth (*Undergraduate Research and Creative Opportunities (URCO) Recipient Fall 2016, 2015-*), Annelise Dykes (2015-), Harsh Singh (2014-), Lori Caldwell (*URCO Recipient Fall 2015; 2014-*)

Past: Michael Sieverts (2015-2016), Ammon Hepworth (2015-2016), Cody Maughn (2015-2016), Luke Jarvis (*URCO Recipient Spring 2015; 2014-2016*), Stephanie Lawanto (*College of Engineering Undergraduate Research Program (EURP) Fellow 2014; URCO Recipient Spring 2014; 2014-2015*), Donald Wooley (*Summer URCO Recipient Summer 2014, 2014-2016*), Robert Smiley (*URCO Recipient Spring 2015, 2013-2016*), Karen Tew (2014-2015)

Other departments: Jessica Burt (Biology, 2016- ) Bret Hansen (Business; 2015- ), Kara Swenson (Biochemistry, 2015- ), Michaela Salisbury (Nutrition, 2015), Peter Haight (Biology; *URCO Recipient Spring 2015, 2014-2015*), Ethan Williams (Applied Math; 2014)

Prior to USU: Cristen Peterson (ORNL), Marcus Gates (Fisk / Vanderbilt University)

*Other Mentees*

Chidinma Iwueke, Laboratory Technician, Vanderbilt University	2007
Kendra Haver, Hunters Lane High School teacher, Vanderbilt University	2006
<i>Participant in Research Experience for Teachers, an NSF program</i>	

*Honors Contracts*

Kara Swenson, Biochemistry	2016
Karen Tew, Biological Engineering	2015
Sean Bedingfield, Biological Engineering	2014

*Directed Studies*

Austin Heywood, Biological Engineering, 1 credit, undergraduate	Spring 2014
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*Senior Design Groups (Biological Engineering)*

Lori Caldwell, Annelise Dykes, Katie Glaittli	2016 - present
<i>URCO Recipient - Summer 2016, \$1000</i>	
Justus Clark, Dallon Durfey, Jared Theurer	2016 - present
<i>URCO Recipient - Spring 2016, \$1000</i>	
Sean Bedingfield, Sara Gertsch, Stephanie Lawanto	2014
<i>URCO Recipient - Spring 2014, \$1300</i>	

**Professional Service***External*

**Grant Reviewer:** NSF Graduate Research Fellowship Program 2015, 2016; Biomedical Research Foundation of Northwest Louisiana 2016

**Conferences:** Reviewer, BMES annual meeting; Session Chair, BMES 2014; Session Chair, Institute of Biological Engineering 2015, 2016

**Journal Reviewer:** American Journal of Physiology - Heart and Circulatory Physiology, Analyst, Annals of Biomedical Engineering, European Journal of Cancer, Investigative Ophthalmology and Visual Science, Journal of Biomedical Optics, Journal of Biomedical Science, Journal of Biophotonics, Nanotechnology, Proceedings of the National Conference of Undergraduate Research, SPIE Press

**Professional Affiliations:** Biomedical Engineering Society, American Heart Association, Association for Research in Vision and Ophthalmology, Institute of Biological Engineering

**Outreach:** Utah Women in Higher Education Network (UWHEN) contributor

*University / College*

Society of Women Engineers (SWE) <b>Faculty Advisor</b>	2016 - present
Biomedical Engineering Society <b>Faculty Advisor</b> <i>Chartered by national society, May 2016</i>	2015 - present
Undergraduate Research Advisory Board – <b>College of Engineering Representative</b>	2015 - present
Engineering State <b>Workshop Leader</b>	June 2015
ARTsySTEM Symposium <b>Panel Member</b> – Sponsored by the National Endowment for the Arts 2015 Art Work Grant	April 2015
Research Week: Graduate Research Symposium and Undergraduate Research Showcase Oral and Poster Presentation <b>Judge</b>	April 2014, 2015
SWE Engineering Extravaganza <b>Workshop Leader, Panelist</b>	April 2014, 2015
SPIE Student Chapter, <b>Founder &amp; President</b> , Vanderbilt University	2009 - 2010

*Departmental*

Undergraduate Curriculum Committee, <b>Member</b>	2013 - present
Graduate, ABET Committees, <b>Member</b> <i>Utah State University</i>	2013 - 2015
Biomedical Engineering Graduate Student Council, <b>Founder, President, Representative At-large</b> <i>Vanderbilt University</i>	2006 - 2010