

**Pinaki Sarder, PhD**  
**Assistant Professor**

January 31, 2019

Department of Pathology and Anatomical Sciences (Primary)  
Department of Biomedical Engineering (Adjunct)  
Jacobs School of Medicine and Biomedical Sciences  
Department of Biostatistics (Adjunct)  
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*Note*

- A gray text-box with ‘UB’ indicates work conducted at University at Buffalo.
- Underline indicates corresponding author.
- A <sup>†</sup> next to an author indicates Dr. Sarder’s graduate students.

## Education:

### *Terminal Degrees*

- 2010: Ph.D., Electrical Engineering, Washington University in St. Louis
  - Advisor: Prof. Arye Nehorai
  - Dissertation: *Statistical Design and Imaging of Position-Encoded 3D Microarrays*
- 2010: M.Sc., Electrical Engineering, Washington University in St. Louis
  - Advisor: Prof. Arye Nehorai
- 2003: B.Tech., Electrical Engineering, Indian Institute of Technology, Kanpur, India

### *Traineeships*

- Apr 2011 to Mar 2015: Postdoctoral Research Associate, Optical Radiology Laboratory, Division of Radiological Sciences, Mallinckrodt Institute of Radiology, Washington University School of Medicine
  - Mentor: Prof. Samuel Achilefu
  - Training: Fluorescence Molecular Imaging, including Multi-Photon & Fluorescence Lifetime (FLT) Imaging Microscopy of cells & tissues and FLT Molecular Tomography of small animals.
- Apr 2010 to Mar 2011: Research Fellow, Department of Biostatistics, Harvard School of Public Health
  - Training: Large Scale Data Mining
- Jan 2007 to Dec 2007: Imaging Sciences Fellow, Imaging Sciences Pathway Program, Division of Biology and Biomedical Sciences, Washington University School of Medicine

## Professional Appointments:

- Apr 2015 to Present: Assistant Professor, University at Buffalo – The State University of New York
  - Department of Pathology and Anatomical Sciences (Primary), Department of Biomedical Engineering (Adjunct), Jacobs School of Medicine and Biomedical Sciences
  - Department of Biostatistics (Adjunct), School of Public Health and Health Professions
  - Group: <http://www.acsu.buffalo.edu/~pinakisa/research.html>
  - Research: Digital Pathology, Microscopy Image Analysis, Medical Image Analysis
  - Teaching: Course Director of Introduction to Biomedical Image Analysis (BE 461 & 561)

## Awards & Honors:

- Recipient, University at Buffalo Exceptional Scholars - Young Investigator Award 2018.
- Senior Member, The Institute of Electrical and Electronics Engineers (IEEE), December 2015 to Present. [IEEE is the world's largest association of technical professionals with >433K members in >160 countries around the world. Only 9% of IEEE's members hold this grade, which requires extensive experience, and reflects professional maturity and documented achievements of significance.]
- Recipient, Travel Scholarship, Clinical and Translational Science Award Workforce Development Core, University at Buffalo, to attend *the 2017 Translational Science Meeting*, Washington, DC, USA, April 19 to April 21, 2017.

- Recipient, Imaging Sciences Pathway program Graduate Student Fellowship, Washington University School of Medicine, January 2007 to December 2007.
- Recipient, Travel Grant, Foundation for the National Institutes of Health, *2010 Human Microbiome Research Conference*, St. Louis, Missouri, USA, August 31 to September 2, 2010.
- Marshal, School of Engineering and Applied Science, Washington University in St. Louis, Commencement, May 21, 2010.
- First author of one of the 10 best “Editors’ Pick” articles in 2012-13 in *Biomicrofluidics* journal from American Institute of Physics.
- Who’s Who Recognition: Included in the “AcademicKeys Who’s Who in Sciences Higher Education and Who’s Who in Medicine Academia.”

**Professional Society Memberships:**

- Member, The American Society of Nephrology, 2015 to Present.
- Senior Member, The Institute of Electrical and Electronics Engineers (IEEE), 2015 to Present.
- Member, The Biophysical Society, 2015-16.
- Member, The International Society for Optics and Photonics (SPIE), 2015-16.
- Member, The Institute of Electrical and Electronics Engineers (IEEE), 2004-15.

## Invited Presentations:

### *International*

1. “Integrated biomedical signal processing in research and education,” Seminar at *School of Medical Science and Technology, Indian Institute of Technology, Kharagpur, India*, Aug. 6, 2014.
2. “Integrated biomedical signal processing in research and education,” Seminar at *Department of Electrical Engineering, Indian Institute of Technology, Delhi, India*, Aug. 4, 2014.
3. “Integrated biomedical signal processing in research and education,” Seminar at *Department of Electrical Engineering, Indian Institute of Technology, Madras, India*, Aug. 1, 2014.
4. “Integrated biomedical signal processing in research and education,” Seminar at *Department of Electrical Engineering, Indian Institute of Science, Bangalore, India*, Jul. 30, 2014.
5. “Integrated biomedical signal processing in research and education,” Seminar at *Department of Biomedical Engineering, Indian Institute of Technology, Hyderabad, India*, Jul. 29, 2014.
6. “Integrated biomedical signal processing in research and education,” Seminar at *Department of Biosciences and Bioengineering, Indian Institute of Technology, Bombay, India*, Jul. 22, 2014.
7. “Integrated biomedical signal processing in research and education,” Seminar at *Department of Electrical Engineering, Indian Institute of Technology, Kanpur, India*, Jul. 21, 2014.

### *National*

8. “Introduction to digital pathology using examples from renal pathology,” Seminar at *Department of Physics, Washington University in St. Louis, St. Louis, Missouri, USA*, Mar. 19, 2018. **UB**
9. “Toward using biological priors for quantitative biomedical image analysis,” Seminar at *Department of Electrical and Computer Engineering, Rowan University, Philadelphia, USA*, Apr. 26, 2016. **UB**
10. “Automated quantification of glomeruli features in renal pathology,” Conference platform talk at *SPIE Medical Imaging–Digital Pathology, San Diego, California, USA*, Mar. 3, 2016. **UB**
11. “Quantitative bio-imaging in research and education,” Seminar at *Department of Pathology and Anatomical Sciences, University at Buffalo – The State University of New York, Buffalo, New York, USA*, Oct. 21, 2014.
12. “Toward integrated optical imaging of deep tissues,” Seminar at *Department of Computer & Electrical Engineering and Computer Science, Florida Atlantic University, Boca Raton, Florida, USA*, Mar. 28, 2014.
13. “Deep tissue imaging using fluorescence microscopy and tomography,” Seminar at *Department of Bioengineering, Temple University, Philadelphia, Pennsylvania, USA*, Mar. 11, 2014.
14. “Deep tissue imaging using all–near-infrared multi-photon microscopy,” Seminar at *Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, New Jersey, USA*, Feb. 25, 2014.
15. “Statistical design of position-encoded microsphere arrays,” Seminar at *Department of Biomedical Engineering, Johns Hopkins University, Baltimore, Maryland, USA*, Feb. 1, 2011.
16. “Statistical design of position-encoded 3D microarrays,” Seminar at *University of Texas Southwestern Medical Center, Dallas, Texas, USA*, Feb. 11, 2010.

17. “Statistical design of position-encoded 3D microarrays,” Seminar at *Department of Biostatistics, Harvard School of Public Health, Boston, Massachusetts, USA*, Jan. 15, 2010.

*Local*

18. “AI for Biomedical & Clinical Applications: A Key for the Next Generation “Renaissance Scientists,” Grand round at *Department of Pathology and Anatomical Sciences, University at Buffalo – The State University of New York, Buffalo, New York, USA*, Jan. 10, 2019.
19. “Functional understanding of microbial communities using experimental data integration,” Seminar in *Program in Quantitative Genomics Working Group, Department of Biostatistics, Harvard School of Public Health, Boston, Massachusetts, USA*, Oct. 5, 2010.
20. “Statistical design of position-encoded 3D microarrays,” Seminar at *Department of Electrical and Systems Engineering, Washington University in St. Louis, St. Louis, Missouri, USA*, Feb. 8, 2010.
21. “Statistical design and imaging of an ultra-high density 3D microarray,” Seminar at *Department of Electrical and Systems Engineering, Washington University in St. Louis, St. Louis, Missouri, USA*, Jan. 16, 2009.
22. “Gene ranking using the Page-Rank algorithm,” Seminar in *Systems Analysis Group, Washington University in St. Louis, St. Louis, Missouri, USA*, Sep. 5, 2007.
23. “Locating quantum-dot encoded microparticles from ultra-high-density 3D microarrays,” Seminar in *Imaging Sciences Symposium, Division of Biology and Biomedical Sciences, Washington University School of Medicine, St. Louis, Missouri, USA*, Jul. 18, 2007.

## Service to the Profession:

### *Scientific Committees*

- Member, Steering Committee, Diabetic Complications Consortium, National Institutes of Health: National Institute of Diabetes and Digestive and Kidney Diseases, 2017 to Present.
- Member, Nephropathy Committee, Diabetic Complications Consortium, National Institutes of Health: National Institute of Diabetes and Digestive and Kidney Diseases, 2017 to Present.

### *Proposal Reviews & Panels*

- Reviewer, Diabetic Complications Consortium, National Institutes of Health: National Institute of Diabetes and Digestive and Kidney Diseases.
- Panel Member, Smart and Connected Health, National Science Foundation.

### *Journal Associate Editor*

- *Plos One*, 2018-21

### *Journal Reviewer (select ones)*

- *Nature Machine Intelligence*
- *Plos Computational Biology*
- *Scientific Reports - Nature*
- *Plos One*
- *IEEE Trans. on Medical Imaging*
- *IEEE Trans. on Image Processing*
- *IEEE Journal of Selected Topics in Signal Processing*
- *IEEE Signal Processing Magazine*
- *IEEE Signal Processing Letters*
- *IEEE Trans. on NanoBioscience*
- *Journal of Medical Imaging - SPIE*
- *Image and Vision Computing - Elsevier*
- *Biomedical Signal Processing and Control - Elsevier*
- *Journal of Biophotonics - Wiley*
- *Journal of Biomedical Optics - SPIE*
- *Optics Express - Optical Society of America*
- *Journal of Microscopy - The Royal Microscopical Society*
- *IEEE Sensors Journal*

### *Conference Committees & Reviewer*

- Member, Technical Program Committee, *BRAININFO 2019*, Rome, Italy, June 30 to July 4, 2019.
- Member, Program Committee, *Visualization and Data Analysis 2019*, Burlingame, USA, January 13 to January 17, 2019.
- Member, Technical Program Committee, *BRAININFO 2018*, Venice, Italy, June 24 to June 28, 2018.
- Member, Program Committee, *Visualization and Data Analysis 2018*, Burlingame, USA, January 28 to February 2, 2018.
- Member, Technical Program Committee, *BRAININFO 2017*, Nice, France, July 23 to July 27, 2017.
- Member, Program Committee, *Visualization and Data Analysis 2017*, Burlingame, USA, January 29 to February 2, 2017.
- Member, Technical Program Committee, *BRAININFO 2016*, Barcelona, Spain, November 13 to November 17, 2016.
- Reviewer, *IEEE International Conference on Signal and Image Processing Applications 2015*, Kuala Lumpur, Malaysia, October 19 to October 21, 2015.
- Member & Reviewer, Program Committee, *2015 IEEE International Workshop on Machine Learning for Signal Processing*, Boston, USA, September 17 to September 20, 2015.

### **University Service:**

- Senator, University at Buffalo Faculty Senate, 2018-19.
- Member & Reviewer, Life Sciences Panel, Innovative Micro-Programs Accelerating Collaboration in Themes (IMPACT), University at Buffalo.

### **Medical School Service:**

- Member, Select Committee on Facilities Planning, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, 2016-19.
- Advocate for Department of Pathology and Anatomical Sciences, Diversity and Inclusion, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, April 2015 to Present.
- Member, Admission Committee, PhD Program in Biomedical Sciences (PPBS), Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, 2016-17.

### **Departmental Service:**

- Member, Graduate Faculty Committee, Department of Pathology and Anatomical Sciences, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, April 2015 to Present.
- Member, Department Council, Department of Pathology and Anatomical Sciences, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, April 2015 to Present.
- Member, Review Committee, Graduate Program on Computational Cell Biology, Anatomy, and Pathology, Department of Pathology and Anatomical Sciences, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, April 2015 to April 2017.
- Member, Faculty Search Committee, Department of Pathology and Anatomical Sciences, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, April 2015 to August 2017.

## Courses Taught & Other Educational Activities:

- *2018*: Instructor, Pathology and Anatomical Sciences, University at Buffalo.
  - Course Title: PAS 520: Microscopic Imaging
  - Credits: 3
  - Total Enrollment:
    - \* Fall 2018: 12 (Graduate: 12)
  - Number of Lectures: 6 per semester
  - Course Evaluation Score:
    - \* Fall 2018: 4.1/5.0 (Course), 3.7/5.0 (Instructor)
- *2018*: Instructor, Pathology and Anatomical Sciences, University at Buffalo.
  - Course Title: PAS 505: Microscopic Anatomy & Computational Methods
  - Credits: 4
  - Total Enrollment:
    - \* Fall 2018: 6 (Graduate: 6)
  - Number of Lectures: 1 per semester
  - Course Evaluation Score:
    - \* Fall 2018: 4.5/5.0 (Course), 4.5/5.0 (Instructor)
- *2016 to Present*: Course Director & Instructor, Biomedical Engineering, University at Buffalo.
  - Course Title: BE 461/561: Introduction to Biomedical Image Analysis
  - Credits: 3
  - Total Enrollment:
    - \* Fall 2018: 28 (Graduate: 25, Undergraduate: 3)
    - \* Fall 2017: 7 (Graduate: 4, Undergraduate: 3)
    - \* Fall 2016: 21 (Graduate: 20, Undergraduate: 1)
  - Number of Lectures: 27 per semester
  - Course Evaluation Score:
    - \* Fall 2018: 4.0/5.0 (Course), 4.3/5.0 (Instructor)
    - \* Fall 2017: 4.5/5.0 (Course), 4.6/5.0 (Instructor)
    - \* Fall 2016: 4.1/5.0 (Course), 3.9/5.0 (Instructor)
- *May 2007 to Dec 2009*: Instructor, Center for Sensor Signal and Information Processing, Electrical & Systems Engineering Department, Washington University in St. Louis.
  - Study Groups: Detection and Estimation Theory, Introduction to Mathematical Statistics, Linear Statistical Models, Multivariate Analysis, and Matrices.
  - Responsibilities: Teaching as well as assigning, grading, and correcting homework for junior graduate students. Preparing lecture notes on Introduction to Mathematical Statistics, Linear Statistical Models, and Multivariate Analysis.



## Research Supervision:

### *PhD Students*

1. Briana Santo, Pathology and Anatomical Sciences, University at Buffalo, 2018 to Present.
2. Darshana Govind, Pathology and Anatomical Sciences, University at Buffalo, 2016 to Present.
  - Thesis (tentative): *Algorithms for multimodal knowledge transfer in digital pathology*
  - Accomplishment: Publications include one first-authored peer-reviewed journal article and one first-authored peer-reviewed conference proceeding article. Presented one first-authored poster in national level conference.
3. Brendon Lutnick, Pathology and Anatomical Sciences, University at Buffalo, 2016 to Present.
  - Thesis (tentative): *Leveraging novel computational approaches for renal glomerular modeling*
  - Accomplishment: Publications include one first-authored peer-reviewed journal article in *Nature Machine Intelligence*. Presentations include three platform talks and two first-authored poster presentations in national level conferences.
4. Brandon Ginley, Pathology and Anatomical Sciences, University at Buffalo, 2016 to Present.
  - Thesis (tentative): *Precision computation for improvement in image based renal pathology assessment*
  - Accomplishment: Publications include two first-authored peer-reviewed journal articles, including one in *Scientific Reports - Nature*, and three first-authored peer-reviewed conference proceeding articles. Presentations include three platform talks and two first-authored poster presentations in national level conferences.

### *Master's Students*

1. Samuel P. Border, Biomedical Engineering, University at Buffalo, 2018 to Present.
2. Avinash Kammardi Shashiprakash, Biomedical Engineering, University at Buffalo, 2018 to Present.
3. Leema Murali Krishna, Biomedical Engineering, University at Buffalo, 2018 to Present.
4. Uma Mohan Joshi, Biomedical Engineering, University at Buffalo, 2018 to Present.

### *Graduate Research Associates*

1. Olivier Simon, Master's Student, Biomedical Engineering, University at Buffalo, Feb. 2017 to Dec. 2017. [Olivier Simon has a PhD from Johns Hopkins University, and he was assigned with a Post-doctoral Fellow's equivalent workload.]
  - Accomplishment: Publications include one first-authored peer-reviewed journal article in *Scientific Reports - Nature* and one first-authored peer-reviewed conference proceeding article. Presented a platform talk in national level conference.
  - Research: Computational image analysis of diabetic nephropathy renal biopsies
  - Now at University of Colorado at Denver

### *PhD Thesis Examination Committees (excluding the cases of own students)*

1. Jonathan Folmsbee, Biomedical Engineering, University at Buffalo, 2018 to Present.

2. Sean D. McGarry, Biophysics, Medical College of Wisconsin, 2018 to Present.
3. Joseph Costa, Pathology and Anatomical Sciences, University at Buffalo, 2015-18.
  - Thesis: *No Holds Barred: Investigating the Killing Bite of the Sabertooth Cat Homotherium serum*

*Master's Thesis Examination Committees (excluding the cases of own students)*

1. Siddhartha Dhiman, Biomedical Engineering, University at Buffalo, 2017-18.
  - Thesis: *Role of nuclear-FGFR1 in schizophrenia and ontogenic genome programming - A computational study*
2. Maninderpal Singh Cheema, Biomedical Engineering, University at Buffalo, 2017-18.
  - Thesis: *Task relevant source based brain computer interface: Exploration of independent component analysis based spatial filtering with reliability*
3. Ryan Therrien, Biomedical Engineering, University at Buffalo, 2016-17.
  - Thesis: *Role of training data variability on classifier performance and generalizability*
4. Snehal Salunke, Biomedical Engineering, University at Buffalo, 2016-17.
  - Thesis: *Data driven method for building 3D anatomical models*
5. Kritika Lakhotia, Biomedical Engineering, University at Buffalo, 2015-16.
  - Thesis: *Visualization and quantification of 3D tumor-host interface architecture reconstructed from digital histopathology slide*

*Undergraduate Research Trainees*

1. Dylan Williams, Biomedical Engineering, University at Buffalo, Nov. 2018 to Present.
  - Training: Digital Pathology
2. Israh Ibrahim, Biology, Medaille College, Buffalo, New York, Summer 2017.
  - Program: Collaborative Learning and Integrated Mentoring in the Biosciences (CLIMB) Undergraduate Program (UP) for Summer Research
  - Training: Computational Blood Smear Image Analytics
3. Brendon Lutnick, Biomedical Engineering, University at Buffalo, Mar. 2016 to Aug. 2016.
  - Training: Multi-Resolution Segmentation of Medical Images
4. Brandon Ginley, Biomedical Engineering, University at Buffalo (UB), June 2015 to Aug. 2016.
  - Program: UB Center for Undergraduate Research & Creative Activities (UB-CURCA)
  - Training: Microscopy Image Analysis
5. Julia Andrade Pessoa Morales, Biomedical Engineering, University at Buffalo, Sep. 2015 to Dec. 2015.
  - Program: UB-CURCA
  - Training: Digital Image Processing & Analysis

6. Erika Decosty, Biomedical Engineering, University at Buffalo, Jul. 2015 to Dec. 2015.
  - Program: UB-CURCA
  - Training: Digital Image Processing & Analysis
7. Vishal Suresh, Biomedical Engineering, University at Buffalo, Jul. 2015 to Dec. 2015.
  - Program: UB-CURCA
  - Training: Digital Image Processing & Analysis

## Grant Support:

*Active (external & competitive)*

1. Title: Computational Imaging of Renal Structures for Diagnosing Diabetic Nephropathy
  - Sponsor: National Institutes of Health - National Institute of Diabetes and Digestive and Kidney Diseases
  - Mechanism: R01 Research Project Grant
  - Award Number: R01 DK114485
  - Total Award Amount: \$1,485,400
  - Total Direct Cost: \$1,000,000
  - Person-Months Per Year Committed to Project: 1.51 (Year 1), 2.0 (Year 2), 2.4 (Year 3-5)
  - Total Award Period Covered: 09/15/2018-07/31/2023
  - Role: PI
  
2. Title: Computational Imaging of Renal Structures for Diagnosing Diabetic Nephropathy
  - Sponsor: Augusta University (Subcontract of NIH/NIDDK Grant DK076169 (PI: Richard A. McIndoe - Augusta University))
  - Mechanism: Diabetic Complications Consortium (DiaComp) Pilot and Feasibility Program (Mechanism organized by the prime awardee. The cost below defines the amount obtained from Augusta University via a competitive application toward this mechanism by the PI.)
  - Award Number: 32307-5
  - Total Award Amount: \$100,000
  - Total Direct Cost: \$64,827
  - Person-Months Per Year Committed to Project: 0.64
  - Total Award Period Covered: 11/01/2017-04/30/2019
  - Role: PI

*Active (University at Buffalo - internal & competitive)*

3. Title: Quantitative Study of NETs in Renal Pathobiology
  - Sponsor: University at Buffalo – The State University of New York
  - Mechanism: Buffalo Blue Sky
  - Total Award Amount: \$10,000
  - Total Award Period Covered: 11/15/2018-09/30/2020
  - Role: PI

*Active (University at Buffalo - internal)*

4. Title: Development of a Quantitative & Computational Imaging Program
  - Sponsor: Jacobs School of Medicine and Biomedical Sciences, University at Buffalo
  - Mechanism: Start-up
  - Total Award Amount: \$500,000
  - Total Award Period Covered: 04/01/2015-03/31/2020

- Role: PI

*Under Review (external & competitive)*

1. Title: SCICam: A Novel, Simple, Rapid Method for Evaluation of Donor Kidney Quality Assessed in Multicenter Retrospective Studies using Advanced Cohort Fusion Techniques
  - Sponsor: University of California, Davis (Subcontract of NIH/NIDDK application (PI: Farzad Fereidouni - University of California, Davis))
  - Mechanism: RC2 High Impact Research and Research Infrastructure Program (The cost below defines the amount requested from NIH/NIDDK via a competitive application toward this mechanism with the investigators from University of California, Davis, University of California, San Francisco, and Purdue University)
  - Total Award Amount: NA (University at Buffalo's part \$878,935)
  - Total Direct Cost: NA (University at Buffalo's part \$568,822)
  - Total My Part:  $\approx$  \$283,115
  - Person-Months Per Year Committed to Project: 1.2
  - Total Award Period Covered: 04/01/2019-03/31/2023 (tentative)
  - Role: Co-I (PI of the University at Buffalo subcontract)
2. Title: Computational Analysis of Neutrophil Extracellular Traps in Lupus Nephritis Renal Biopsies
  - Sponsor: University of Pennsylvania (Application for a subcontract of NIH/NIDDK Grant DK103225 (PI: Harold I. Feldman - University of Pennsylvania))
  - Mechanism: CKD Biomarkers Consortium Pilot and Feasibility Program (Mechanism organized by the prime awardee. The cost below defines the amount requested from University of Pennsylvania via a competitive application toward this mechanism by the PI.)
  - Total Award Amount: \$100,000
  - Total Direct Cost: \$64,787
  - Person-Months Per Year Committed to Project: 1.0
  - Total Award Period Covered: 01/01/2019-12/31/2019 (tentative)
  - Role: PI

*Under Review (international)*

3. Title: Virtual Reality and Machine Learning Enabled Novel Tools for Interdisciplinary Problems Like Lung Cancer, Diabetic Nephropathy, and Meso-Scale Architecture in Materials
  - Sponsor: Government of India
  - Mechanism: Scheme for Promotion of Academic and Research Collaboration
  - Total Award Amount: INR 98,00,000 ( $\approx$  \$138,000)
  - Total Award Period Covered: 2 years
  - Role: Co-PI

*Completed (University at Buffalo - internal & competitive)*

1. Title: Automated Digital Image Analysis of Microscopic Renal Structures for Early Diagnosis of Proteinuric Renal Disease
  - Sponsor: University at Buffalo – The State University of New York

- Mechanism: Innovative Micro-Programs Accelerating Collaboration in Themes (IMPACT)
- Total Award Amount: \$25,000
- Total Award Period Covered: 01/15/2017-06/30/2018
- Role: PI

**Career Citation Indices (Google Scholar):** Citations: 682, h-index: 10, i10-index: 11.

### Refereed Journal Publications:

#### *In Preparation for Peer Review*

1. B. Ginley<sup>†</sup>, B. Lutnick<sup>†</sup>, A. Fogo, K. Y. Jen, and **P. Sarder**, “Neural network segmentation of interstitial fibrosis, tubular atrophy, glomeruli, and sclerotic glomeruli in human transplant biopsies.” **UB**
2. D. Govind<sup>†</sup>, K. Matsukuma, K. Y. Jen, and **P. Sarder**, “Automatic estimation of Ki-67 index from whole slide images of human gastrointestinal neuroendocrine tumors.” **UB**

#### *In Revision*

3. B. Ginley<sup>†</sup>, J. E. Tomaszewski, B. Lutnick<sup>†</sup>, S. Jain, D. Salamon, R. Yacoub, A. Fogo, K. Y. Jen, and **P. Sarder**, “Computational segmentation and classification of diabetic glomerulosclerosis,” in revision for *Journal of American Society of Nephrology*. **UB**
4. B. Lutnick<sup>†</sup> and **P. Sarder**, “Unsupervised community detection using Potts model Hamiltonian, an efficient algorithmic solution, and application in digital pathology,” in revision for *Journal of Medical Imaging - SPIE*. **UB**

#### *Published/Accepted*

5. B. Lutnick<sup>†</sup>, B. Ginley<sup>†</sup>, D. Govind<sup>†</sup>, S. D. McGarry, P. S. LaViolette, R. Yacoub, S. Jain, J. E. Tomaszewski, K. Y. Jen, and **P. Sarder**, “An integrated iterative annotation technique for easing neural network training in medical image analysis,” to appear in *Nature Machine Intelligence*. **UB**
6. D. Maji, J. Lu, **P. Sarder**, A. H. Schmieder, G. Cui, X. Yang, D. Pan, M. D. Lew, S. Achilefu, and G. M. Lanza, “Cellular trafficking of Sn-2 phosphatidylcholine prodrugs studied with fluorescence lifetime imaging and super-resolution microscopy,” *Prec. Nanomed.*, vol. 1, no. 2, pp. 127-145, Jul. 2018. [Selected as Feature Article for the 2018(2) issue.]
7. D. Govind<sup>†</sup>, B. Lutnick<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, “Automated erythrocyte detection and classification from whole slide images,” *Journal of Medical Imaging - SPIE*, vol. 5, no. 2, pp. 027501:1–11, Apr. 2018. **UB**
8. O. Simon<sup>†</sup>, R. Yacoub, S. Jain, J. E. Tomaszewski, and **P. Sarder**, “Multi-radial LBP features as a tool for rapid glomerular detection and assessment in whole slide histopathology images,” *Scientific Reports - Nature*, vol. 8, pp. 2032:1–11, Feb. 2018. **UB**
9. B. Ginley<sup>†</sup>, T. Emmons, B. Lutnick<sup>†</sup>, C. Urban, B. H. Segal, and **P. Sarder**, “Computational detection and quantification of human and mouse neutrophil extracellular traps in flow cytometry and confocal microscopy,” *Scientific Reports - Nature*, vol. 7, pp. 17755:1–11, Dec. 2017. **UB**
10. E. Stachowiak, C. Benson, S. Narla, A. Dimitri, L. Chuye, S. Dhiman, K. Harikrishnan, S. Elahi, D. Freedman, K. Brenndand, **P. Sarder**, and M. Stachowiak, “Cerebral organoids reveal early cortical maldevelopment in schizophrenia—computational anatomy and genomics, role of FGFR1,” *Translational Psychiatry - Nature*, vol. 7, no. 6, pp. 1–24, Nov. 2017. **UB**
11. S. Narla, Y. Lee, C. Benson, **P. Sarder**, K. Brenndand, E. Stachowiak, and M. Stachowiak, “Common developmental genome deprogramming in schizophrenia—Role of integrative nuclear FGFR1 signaling (INFS),” *Schizophrenia Research*, vol. 185, pp. 17–32, Jul. 2017. **UB**

12. B. Ginley<sup>†</sup>, J. E. Tomaszewski, R. Yacoub, F. Chen, and **P. Sarder**, “Unsupervised labeling of glomerular boundaries using Gabor filters and statistical testing in renal histology,” *Journal of Medical Imaging - SPIE*, vol. 4, no. 2, pp. 021102:1–13, Feb. 2017. **UB**
13. E. Ringhausen, T. Wang, J. Pitts, **P. Sarder**, and W. Akers, “Evaluation of dynamic optical projection of acquired luminescence for sentinel lymph node biopsy in large animals,” *Technology in Cancer Research & Treatment*, vol. 15, no. 6, pp. 787–795, Dec. 2016.
14. R. Gilson, R. Tang, A. Som, C. Klajer, **P. Sarder**, G. Sudlow, W. Akers, and S. Achilefu, “Protonation and trapping of a small pH-sensitive near-infrared fluorescent molecule in acidic tumor environment delineates diverse tumors *in vivo*,” *Molecular Pharmaceutics*, vol. 12, no. 12, pp. 4237–4246, Oct. 2015.
15. **P. Sarder**, D. Maji, and S. Achilefu, “Molecular probes for fluorescence lifetime imaging,” *Bioconjugate Chemistry*, vol. 26, no. 6, pp. 963–974, May 2015.
16. X. Xu, Z. Li, **P. Sarder**, N. Kotagiri, and A. Nehorai, “Simultaneous detection of multiple biological targets using optimized microfluidic microsphere-trap arrays,” *Journal of Micro/Nanolithography, MEMS, and MOEMS*, vol. 13, no. 1, pp. 13017:1–10, Jan. 2014.
17. D. Hu\*, **P. Sarder\***, P. Ronhovde, S. Orthaus, S. Achilefu, and Z. Nussinov, “Automatic segmentation of fluorescence lifetime microscopy images of cells using multiresolution community detection—a first study,” *Journal of Microscopy*, vol. 253, no. 1, pp. 54–64, Jan. 2014. [\*DH and PS contributed equally.]
18. **P. Sarder**, K. Gullicksrud, S. Mondal, G. Sudlow, S. Achilefu, and W. Akers, “Dynamic optical projection of acquired luminescence for aiding oncologic surgery,” *Journal of Biomedical Optics*, vol. 18, no. 12, pp. 12501:1–3, Dec. 2013. [Selected as one of the top 10 most downloaded articles on the journal’s webpage (Mar. 2014 to Apr. 2014).]
19. **P. Sarder\***, S. Yazdanfar\*, W. Akers, R. Tang, G. Sudlow, C. Egbulefu, and S. Achilefu, “All–near-infrared multiphoton microscopy interrogates intact tissues at deeper imaging depths than conventional single and two photon near-infrared excitation microscopes,” *Journal of Biomedical Optics*, vol. 18, no. 10, pp. 106012:1–11, Oct. 2013. [\*PS and SY contributed equally; Selected as one of the top 10 most downloaded articles on the journal’s webpage (Nov. 2013 to Feb. 2014).]
20. X. Xu, **P. Sarder**, N. Kotagiri, S. Achilefu, and A. Nehorai, “Performance analysis and design of position-encoded microsphere arrays using the Ziv-Zakai bound,” *IEEE Trans. on NanoBioscience*, vol. 12, no. 1, pp. 29–40, Mar. 2013.
21. X. Xu\*, **P. Sarder\***, Z. Li\*, and A. Nehorai, “Optimization of microfluidic microsphere-trap arrays,” *Biomicrofluidics*, vol. 7, no. 1, pp. 014112:1–16, Feb. 2013. [\*XX, PS, and ZL contributed equally; Selected among the 20 most cited articles (2014); Selected for the Research Highlights on the journal’s webpage, and also selected as one of the top 20 most downloaded articles (Mar. 2013 to Sep. 2013); Selected among the 10 best “Editors’ Pick” articles (2012-13).]
22. R. Nothdurft\*, **P. Sarder\***, S. Bloch, J. Culver, and S. Achilefu, “Fluorescence lifetime imaging microscopy using near-infrared contrast agents,” *Journal of Microscopy*, vol. 247, no. 2, pp. 202–207, Aug. 2012. [\*RN and PS contributed equally.]
23. **P. Sarder** and A. Nehorai, “Statistical design of position-encoded microsphere arrays,” *IEEE Trans. on NanoBioscience*, vol. 10, no. 1, pp. 16–29, Mar. 2011.
24. **P. Sarder**, W. Schierding, J. P. Cobb, and A. Nehorai, “Estimating sparse gene regulatory networks using a Bayesian linear regression,” *IEEE Trans. on NanoBioscience*, vol. 9, no. 2, pp. 121–131, June 2010.



25. **P. Sarder** and A. Nehorai, “Estimating locations of quantum-dot–encoded microparticles from ultra-high density 3D microarrays,” *IEEE Trans. on NanoBioscience*, vol. 7, no. 4, pp. 284–297, Dec. 2008.
26. **P. Sarder**, A. Nehorai, P. H. Davis, and S. Stanley, “Estimating gene signals from noisy microarray images,” *IEEE Trans. on NanoBioscience*, vol. 7, no. 2, pp. 142–153, June 2008.
27. **P. Sarder** and A. Nehorai, “Deconvolution methods for 3D fluorescence microscopy images: An overview,” *IEEE Signal Processing Magazine*, vol. 23, no. 3, pp. 32–45, May 2006. [“Sarder and Nehorai review perhaps the most heavily studied signal processing topic related to fluorescence microscopy: the deconvolution of images to remove blurring inherent in microscope image acquisition.” —J. Kovačević and R. F. Murphy (commented in their article, “Molecular and cellular bioimaging,” *IEEE Signal Processing Magazine*, vol. 23, no. 3, p. 19, May 2006).]

### Book Chapters:

28. S. T. Narla, B. Decker, **P. Sarder**, E. Stachowiak, and M. Stachowiak, “Induced pluripotent stem cells reveal common developmental genome deprogramming in schizophrenia,” in *Human Neural Stem Cells*, (pp. 137–62, L. Buzanska, Ed.) *Results and Problems in Cell Differentiation*, vol. 66, Springer, Cham, 2018. **UB**
29. **P. Sarder**, W. Zhang, J. P. Cobb, and A. Nehorai, “Gene reachability using Page ranking on gene co-expression networks,” in *Link Mining: Models, Algorithms, and Applications*, (Ch. 21, pp. 557–568, P. S. Yu, J. Han, and C. Faloutsos, Eds.) Springer, New York, 2010.

### Dissertation:

30. **P. Sarder**, *Statistical Design and Imaging of Position-Encoded Three Dimensional Microarrays*, Ph.D. dissertation, Washington University in St. Louis, MO, USA, 2010.

### Refereed Conference Papers:

31. A. Majumder<sup>†</sup>, K. Y. Jen, S. Jain, J. E. Tomaszewski, and **P. Sarder**, “Examining structural patterns and causality in diabetic nephropathy using inter-glomerular distance and Bayesian graphical models,” *Proc. of SPIE–Medical Imaging 2019: Digital Pathology*, vol. 10956, pp. 10956XX:1–6, San Diego, California, USA, Feb. 2019. **UB**
32. S. Dhiman<sup>†</sup>, I. Singh, and **P. Sarder**, “Computational analysis of cerebrovascular structures imaged using two-photon microscopy,” *Proc. of SPIE–Medical Imaging 2019: Digital Pathology*, vol. 10956, pp. 10956XX:1–6, San Diego, California, USA, Feb. 2019. **UB**
33. D. Govind<sup>†</sup>, B. Ginley<sup>†</sup>, B. Lutnick<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, “Glomerular detection and segmentation from multimodal microscopy images using a Butterworth band-pass filter,” *Proc. of SPIE–Medical Imaging 2018: Digital Pathology*, vol. 10581, pp. 1058114:1–7, Houston, Texas, USA, Feb. 2018. **UB**
34. B. Lutnick<sup>†</sup>, R. Yacoub, K. Y. Jen, J. E. Tomaszewski, S. Jain, and **P. Sarder**, “Deep variational auto-encoders for unsupervised glomerular classification,” *Proc. of SPIE–Medical Imaging 2018: Digital Pathology*, vol. 10581, pp. 105810C:1–7, Houston, Texas, USA, Feb. 2018. **UB**
35. O. Simon<sup>†</sup>, R. Yacoub, S. Jain, J. E. Tomaszewski, and **P. Sarder**, “Examining structural changes in diabetic nephropathy using inter-nuclear distances in glomeruli,” *Proc. of SPIE–Medical Imaging 2018: Digital Pathology*, vol. 10581, pp. 105810B:1–10, Houston, Texas, USA, Feb. 2018. **UB**
36. B. Ginley<sup>†</sup>, J. E. Tomaszewski, K. Y. Jen, A. Fogo, S. Jain, and **P. Sarder**, “Computational analysis of the structural progression of human diabetic nephropathy glomeruli,” *Proc. of SPIE–Medical Imaging 2018: Digital Pathology*, vol. 10581, pp. 105810A:1–7, Houston, Texas, USA, Feb. 2018. **UB**

37. K. Black, M. Zhou, **P. Sarder**, M. Kuchuk, A. Al-Yasiri, S. Gunsten, K. Liang, H. Hennkens, W. Akers, R. Laforest, S. Brody, C. Cutler, and S. Achilefu, “Dual-radiolabeled nanoparticle probes for depth-independent *in vivo* imaging of enzyme activation,” *Proc. of SPIE—Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications*, vol. 10508, pp. 1050805:1–5, San Francisco, California, USA, Jan. 2018.
38. B. Lutnick<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, “Leveraging unsupervised training sets for multi-scale compartmentalization in renal pathology,” *Proc. of SPIE—Medical Imaging 2017: Digital Pathology*, vol. 10140, pp. 101400I:1–7, Orlando, Florida, USA, Feb. 2017. **UB**
39. B. Ginley<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, “Automatic computational labeling of glomerular textural boundaries,” *Proc. of SPIE—Medical Imaging 2017: Digital Pathology*, vol. 10140, pp. 101400G:1–7, Orlando, Florida, USA, Feb. 2017. **UB**
40. B. Ginley<sup>†</sup>, T. Emmons, P. Sasankan, C. Urban, B. H. Segal, and **P. Sarder**, “Identification and characterization of neutrophil extracellular trap shapes in flow cytometry,” *Proc. of SPIE—Medical Imaging 2017: Digital Pathology*, vol. 10140, pp. 101400D:1–7, Orlando, Florida, USA, Feb. 2017. **UB**
41. **P. Sarder**, B. Ginley<sup>†</sup>, and J. E. Tomaszewski, “Automated renal histopathology: Digital extraction and quantification of renal pathology,” *Proc. of SPIE—Medical Imaging 2016: Digital Pathology*, vol. 9791, pp. 97910F:1–12, San Diego, California, USA, Mar. 2016. **UB**
42. D. Hu\*, **P. Sarder\***, P. Ronhovde, S. Achilefu, and Z. Nussinov, “Community detection for fluorescent lifetime microscopy image segmentation,” *Proc. of SPIE—Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XXI*, vol. 8949, pp. 89491K:1–13, San Francisco, California, USA, Feb. 2014. [\*DH and PS contributed equally.]
43. D. Maji, M. Zhou, **P. Sarder**, and S. Achilefu, “Near-infrared fluorescence quenching properties of copper (II) ions for potential applications in biological imaging,” *Proc. of SPIE—Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications*, vol. 8956, pp. 89560K:1–6, San Francisco, California, USA, Feb. 2014.
44. **P. Sarder**, W. Akers, G. Sudlow, S. Yazdanfar, and S. Achilefu, “Quantitative determination of maximal imaging depth in all-NIR multiphoton microscopy images of thick tissues,” *Proc. of SPIE—Multiphoton Microscopy in the Biomedical Sciences XIV*, vol. 8948, pp. 894827:1–7, San Francisco, California, USA, Feb. 2014.
45. X. Xu, Z. Li, N. Kotagiri, **P. Sarder**, S. Achilefu, and A. Nehorai, “Microfluidic microsphere-trap arrays for simultaneous detection of multiple targets,” *Proc. of SPIE—Microfluidics, BioMEMS, and Medical Microsystems XI*, vol. 8615, pp. 86151E:1–11, San Francisco, California, USA, Feb. 2013.
46. X. Xu\*, **P. Sarder\***, Z. Li\*, and A. Nehorai, “Optimization of microfluidic trap-based microsphere arrays,” *Proc. of SPIE—Microfluidics, BioMEMS, and Medical Microsystems XI*, vol. 8615, pp. 86150V:1–12, San Francisco, California, USA, Feb. 2013. [\*XX, PS, and ZL contributed equally.]
47. X. Xu, **P. Sarder**, and A. Nehorai, “Statistical design of position-encoded microsphere arrays at low target concentrations,” *45th Asilomar Conf. on Signals, Systems, and Computers*, pp. 1694–1698, Pacific Grove, California, USA, Nov. 2011.
48. **P. Sarder** and A. Nehorai, “Statistical design of a 3D microarray with position-encoded microspheres,” *Proc. Third International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, pp. 161–164, Aruba, Dutch Antilles, Dec. 2009.

49. **P. Sarder** and A. Nehorai, “Performance analysis of quantifying fluorescence of target-captured microparticles from microscopy images,” *Proc. Fourth IEEE Workshop on Sensor Array and Multi-Channel Processing*, pp. 289–293, Waltham, Massachusetts, USA, Jul. 2006.

## Other Professional Presentations:

### Conference Abstracts

1. A. Majumder<sup>†</sup>, K. Y. Jen, S. Jain, J. E. Tomaszewski, and **P. Sarder**, “Examining structural patterns and causality in diabetic nephropathy using inter-glomerular distance and Bayesian graphical models,” *SPIE Medical Imaging–Digital Pathology*, San Diego, California, USA, Feb. 20 to Feb. 21, 2019. **UB**
2. S. Dhiman<sup>†</sup>, I. Singh, and **P. Sarder**, “Computational analysis of cerebrovascular structures imaged using two-photon microscopy,” *SPIE Medical Imaging–Digital Pathology*, San Diego, California, USA, Feb. 20 to Feb. 21, 2019. **UB**
3. K. Y. Jen, B. Ginley<sup>†</sup>, B. Lutnick<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, “Deep learning for segmentation of glomeruli and tubular atrophy in renal biopsies,” *ASN Kidney Week 2018*, San Diego, California, USA, Oct. 26 to Oct. 28, 2018. **UB**
4. B. Ginley<sup>†</sup>, B. Lutnick<sup>†</sup>, D. Govind<sup>†</sup>, R. Yacoub, K. Y. Jen, S. Jain, J. E. Tomaszewski, and **P. Sarder**, “Towards computationally assisted evaluation in renal histology,” *Renal Imaging Workshop - The National Institute of Diabetes and Digestive and Kidney Diseases 2018*, Bethesda, Maryland, USA, Jul. 12 to Jul. 13, 2018. **UB**
5. E. Stachowiak, L. Chue, A. Dimitri, S. Narla, C. Benson, S. Dhiman, **P. Sarder**, and M. Stachowiak, “Delineation of neuro-ontogenic mechanisms of schizophrenia using induced pluripotent stem cells (iPSCs),” *World Conference of Neurology and Mental Disorders*, Rome, Italy, May 14 to May 16, 2018. **UB**
6. D. Govind<sup>†</sup> and **P. Sarder**, “Glomerular boundary detection from multimodal microscopy images using Butterworth band-pass filter,” *SPIE Medical Imaging: Digital Pathology*, Houston, Texas, USA, Feb. 11 to Feb. 12, 2018. [Selected for a poster presentation by Ms. D. Govind.] **UB**
7. B. Lutnick<sup>†</sup>, R. Yacoub, K. Y. Jen, J. E. Tomaszewski, S. Jain, and **P. Sarder**, “Deep variational auto-encoders for unsupervised glomerular classification,” *SPIE Medical Imaging: Digital Pathology*, Houston, Texas, USA, Feb. 11 to Feb. 12, 2018. [Selected for a platform presentation by Mr. B. Lutnick.] **UB**
8. O. Simon<sup>†</sup>, R. Yacoub, S. Jain, J. E. Tomaszewski, and **P. Sarder**, “Examining structural changes in diabetic nephropathy using inter-nuclear distances in glomeruli,” *SPIE Medical Imaging: Digital Pathology*, Houston, Texas, USA, Feb. 11 to Feb. 12, 2018. [Selected for a platform presentation by Dr. O. Simon.] **UB**
9. B. Ginley<sup>†</sup>, J. E. Tomaszewski, K. Y. Jen, A. Fogo, S. Jain, and **P. Sarder**, “Computational analysis of the structural progression of human diabetic nephropathy glomeruli,” *SPIE Medical Imaging: Digital Pathology*, Houston, Texas, USA, Feb. 11 to Feb. 12, 2018. [Selected for a platform presentation by Mr. B. Ginley.] **UB**
10. K. Black, M. Zhou, **P. Sarder**, M. Kuchuk, A. Al-Yasiri, S. Gunsten, K. Liang, H. Hennkens, W. Akers, R. Laforest, S. Brody, C. Cutler, and S. Achilefu, “Dual-radiolabeled nanoparticle probes for depth-independent *in vivo* imaging of enzyme activation,” *SPIE BiOS–Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications X*, San Francisco, California, USA, Jan. 29 to Jan. 30, 2018.
11. B. Lutnick<sup>†</sup>, R. Yacoub, K. Y. Jen, J. E. Tomaszewski, S. Jain, and **P. Sarder**, “Cross-species knowledge transfer between murine and human histopathology using artificial intelligence,” *Visualization and Data Analysis 2018*, Burlingame, California, USA, Jan. 28 to Feb. 2, 2018. [Selected for a platform and poster presentations by Mr. B. Lutnick.] **UB**

12. A. Dimitri, L. Chuye, S. Dhiman, **P. Sarder**, M. Stachowiak, and E. Stachowiak, "iPSC derived cerebral organoids reveal early developmental malformations in schizophrenia," *American Society for Cell Biology | European Molecular Biology Organization 2017*, Philadelphia, Pennsylvania, USA, Dec. 2 to Dec. 6, 2017. **UB**
13. L. Chuye, A. Dimitri, S. Narla, C. Benson, S. Dhiman, **P. Sarder**, E. Stachowiak, M. Stachowiak, "Delineation of neuroontogenic mechanisms of schizophrenia using induced pluripotent stem cells (iPSCs)," *American Society for Cell Biology | European Molecular Biology Organization 2017*, Philadelphia, Pennsylvania, USA, Dec. 2 to Dec. 6, 2017. **UB**
14. **P. Sarder**, R. Yacoub, and J. E. Tomaszewski, "Estimating microscopic structures of glomeruli in renal pathology," *Translational Science 2017*, Washington, D.C., USA, Apr. 19 to Apr. 21, 2017. **UB**
15. B. Lutnick<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, "Leveraging unsupervised training sets for multi-scale compartmentalization in renal pathology," *SPIE Medical Imaging: Digital Pathology*, Orlando, Florida, USA, Feb. 12 to Feb. 13, 2017. [Selected for a platform presentation by Mr. B. Lutnick.] **UB**
16. B. Ginley<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, "Automatic computational labeling of glomerular textural boundaries," *SPIE Medical Imaging-Digital Pathology*, Orlando, Florida, USA, Feb. 12 to Feb. 13, 2017. [Selected for a platform presentation by Mr. B. Ginley.] **UB**
17. B. Ginley<sup>†</sup>, T. Emmons, P. Sasankan, C. Urban, B. H. Segal, and **P. Sarder**, "Identification and characterization of neutrophil extracellular trap shapes in flow cytometry," *SPIE Medical Imaging-Digital Pathology*, Orlando, Florida, USA, Feb. 12 to Feb. 13, 2017. [Selected for a platform presentation by Mr. B. Ginley.] **UB**
18. B. Lutnick<sup>†</sup>, J. E. Tomaszewski, R. Yacoub, B. Ginley<sup>†</sup>, and **P. Sarder**, "Unsupervised multi-scale glomerular compartmentalization in renal pathology," *2016 Pathology Visions*, San Diego, California, USA, Oct. 23 to Oct. 25, 2016. [Selected for a poster presentation by Mr. B. Lutnick.] **UB**
19. B. Ginley<sup>†</sup>, J. E. Tomaszewski, and **P. Sarder**, "Automatic labeling of glomeruli to aid renal histopathology," *2016 Pathology Visions*, San Diego, California, USA, Oct. 23 to Oct. 25, 2016. [Selected for a poster presentation by Mr. B. Ginley.] **UB**
20. B. Ginley<sup>†</sup>, T. Emmons, C. Urban, B. H. Segal, and **P. Sarder**, "A novel approach for automated detection of neutrophil extracellular traps," *2016 Pathology Visions*, San Diego, California, USA, Oct. 23 to Oct. 25, 2016. [Selected for a poster presentation by Mr. B. Ginley.] **UB**
21. P. Sasankan, B. Ginley<sup>†</sup>, M. J. Grimm, **P. Sarder**, and B. H. Segal, "Neutrophil extracellular traps: Digital quantification and role in antifungal host defense," *Buffalo Niagara Medical Campus Extramural Biomedical Research Conference*, Buffalo, New York, USA, Aug. 5, 2016. **UB**
22. B. Ginley<sup>†</sup>, P. Tripathi, F. Chen, E. Anand, J. E. Tomaszewski, and **P. Sarder**, "Automated quantification of glomeruli features in renal pathology," *SPIE Medical Imaging-Digital Pathology*, San Diego, California, USA, Feb. 27 to Mar. 3, 2016. **UB**
23. D. Maji, M. Zhou, **P. Sarder**, M. Shokeen, J. Culver, and S. Achilefu, "Quantitative fluorescence molecular tomography for *in vivo* measurement of targeted and activatable near infrared fluorescent molecular probes," *2015 Biomedical Engineering Society's Annual Meeting*, Tampa, Florida, USA, Oct. 7 to Oct. 10, 2015.
24. S. Elahi, S. Narla, C. Benson, B. Birkaya, **P. Sarder**, B. Ginley<sup>†</sup>, M. Stachowiak, and E. Stachowiak, "Modeling human neurodevelopmental disorders with iPSC-derived 3D-cerebral organoids," *4<sup>th</sup> Annual WNYSTEM Stem Cell Symposium*, Buffalo, New York, USA, June 12, 2015.

25. S. Narla, B. Birkaya, K. Brennan, C. Benson, S. Elahi, **P. Sarder**, M. Stachowiak, and E. Stachowiak, "Utilizing induced pluripotent stem cells (iPSCs) to delineate the neurodevelopmental genomic base of schizophrenia," *4<sup>th</sup> Annual WNYSTEM Stem Cell Symposium*, Buffalo, New York, USA, June 12, 2015.
26. R. Gilson, R. Tang, **P. Sarder**, and S. Achilefu, "Time-dependent intracellular association of photosensitizers with organelles modulates the efficacy of photodynamic therapy," *37<sup>th</sup> Meeting of the American Society for Photobiology*, San Diego, California, USA, June 14 to June 19, 2014.
27. E. Ringhausen, **P. Sarder**, T. Wang, K. Gullicksrud, S. Mondal, S. Achilefu, and W. Akers, "Clinical feasibility of optical projection of acquired luminescence for sentinel lymph node biopsy," *Society of Nuclear Medicine and Molecular Imaging–2014 Annual Meeting*, St. Louis, Missouri, USA, June 7 to June 11, 2014.
28. D. Hu\*, **P. Sarder\***, P. Ronhovde, S. Orthaus, S. Achilefu, and Z. Nussinov, "Automatic segmentation of fluorescence lifetime microscopy images of cells using multi-resolution community detection," *SPIE BiOS–Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XXI*, San Francisco, California, USA, Feb. 1 to Feb. 6, 2014. [\*DH and PS contributed equally.]
29. D. Maji, M. Zhou, **P. Sarder**, and S. Achilefu, "Novel copper quenched fluorescent activatable molecular probes," *SPIE BiOS–Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications*, San Francisco, California, USA, Feb. 1 to Feb. 6, 2014.
30. **P. Sarder**, S. Yazdanfar, W. Akers, G. Sudlow, C. Egbulefu, and S. Achilefu, "Comparison of near-infrared confocal and multiphoton microscopy modalities in deep tissue imaging using cyanine contrast agents," *SPIE BiOS–Multiphoton Microscopy in the Biomedical Sciences XIV*, San Francisco, California, USA, Feb. 1 to Feb. 6, 2014.
31. R. Gilson, R. Tang, **P. Sarder**, and S. Achilefu, "Synthesis and study of novel targeted photosensitive for use in invasive breast cancer," *SPIE BiOS–Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic Therapy XXIII*, San Francisco, California, USA, Feb. 1 to Feb. 6, 2014.
32. **P. Sarder**, K. Gullicksrud, S. Mondal, G. Sudlow, S. Achilefu, and W. Akers, "Dynamic projection of fluorescence molecular imaging information for aiding oncologic surgery," *2013 World Molecular Imaging Congress*, Savannah, Georgia, USA, Sep. 18 to Sep. 21, 2013.
33. **P. Sarder**, S. Yazdanfar, W. Akers, G. Sudlow, and S. Achilefu, "Comparison of near-infrared (NIR) confocal, existing multi-photon, and all-NIR multi-photon microscopy modalities in imaging deep tissues using cyanine dyes," *2013 World Molecular Imaging Congress*, Savannah, Georgia, USA, Sep. 18 to Sep. 21, 2013.
34. X. Xu\*, **P. Sarder\***, Z. Li\*, and A. Nehorai, "Optimization of microfluidic trap-based microsphere arrays," *SPIE–Microfluidics, BioMEMS, and Medical Microsystems XI*, San Francisco, California, USA, Feb. 2013. [\*XX, PS, and ZL contributed equally.]
35. **P. Sarder**, N. Segata, D. Gevers, J. Izard, and C. Huttenhower, "Functional understanding of microbial communities using experimental data integration," *2010 Human Microbiome Research Conference*, St. Louis, Missouri, USA, Aug. 31 to Sep. 2, 2010.

*Posters (listing the ones where I was the first author or presenting author)*

36. "Computational analysis of cerebrovascular structures imaged using two-photon microscopy," with S. Dhiman<sup>†</sup> and I. Singh in *SPIE Medical Imaging–Digital Pathology*, San Diego, California, USA, Feb. 20, 2019. **UB**

37. “Towards computationally assisted evaluation in renal histology,” with B. Ginley<sup>†</sup>, B. Lutnick<sup>†</sup>, D. Govind<sup>†</sup>, R. Yacoub, K. Y. Jen, S. Jain, and J. E. Tomaszewski in *Renal Imaging Workshop - The National Institute of Diabetes and Digestive and Kidney Diseases 2018, Bethesda, Maryland, USA*, Jul. 12, 2018. **UB**
38. “Estimating microscopic structures of glomeruli in renal pathology,” with R. Yacoub and J. E. Tomaszewski in *Translational Science 2017, Washington, D.C., USA*, Apr. 19, 2017. **UB**
39. “Automatic quantification of glomerular structural features in renal pathology,” with B. Ginley<sup>†</sup>, B. Lutnick<sup>†</sup>, R. Yacoub, R. Quigg, and J. Tomaszewski in *University at Buffalo Department of Medicine Research Day, Buffalo, New York, USA*, June 5, 2016. [Selected as “Poster of Distinction.”] **UB**
40. “A novel approach for automated detection of neutrophil extracellular traps,” with B. Ginley<sup>†</sup>, T. Emmons, D. Govind<sup>†</sup>, J. Tomaszewski, C. Urban, and B. Segal in *University at Buffalo Department of Medicine Research Day, Buffalo, New York, USA*, June 5, 2016. [Selected as “Poster of Distinction.”] **UB**
41. “Community detection for fluorescent lifetime microscopy image segmentation,” with D. Hu, P. Ronhovde, S. Orthaus, S. Achilefu, and Z. Nussinov in *Mallinckrodt Institute of Radiology Poster Session, Washington University School of Medicine in St. Louis, St. Louis, Missouri, USA*, Mar. 25, 2014.
42. “Automatic segmentation of fluorescence lifetime microscopy images of cells using multi-resolution community detection,” with D. Hu, P. Ronhovde, S. Orthaus, S. Achilefu, and Z. Nussinov in *SPIE BiOS–Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XXI, San Francisco, California, USA*, Feb. 1 to Feb. 6, 2014.
43. “Comparison of near-infrared confocal and multiphoton microscopy modalities in deep tissue imaging using cyanine contrast agents,” with S. Yazdanfar, W. Akers, G. Sudlow, C. Egbulefu, and S. Achilefu in *SPIE BiOS–Multiphoton Microscopy in the Biomedical Sciences XIV, San Francisco, California, USA*, Feb. 1 to Feb. 6, 2014.
44. “Comparison of near-infrared (NIR) confocal, existing multi-photon, and all-NIR multi-photon microscopy modalities in imaging deep tissues using cyanine dyes,” with S. Yazdanfar, W. Akers, G. Sudlow, and S. Achilefu in *2013 World Molecular Imaging Congress, Savannah, Georgia, USA*, Sep. 18 to Sep. 21, 2013.
45. “Comparison of NIR confocal, existing multiphoton, and all-NIR multiphoton microscopes in deep tissue imaging,” with W. Akers, G. Sudlow, and S. Achilefu in *Mallinckrodt Institute of Radiology Poster Session, Washington University School of Medicine in St. Louis, St. Louis, Missouri, USA*, Mar. 26, 2013.
46. “Fluorescence lifetime imaging microscopy using near-infrared contrast agents,” with R. Nothdurft, S. Bloch, J. Culver, and S. Achilefu in *Mallinckrodt Institute of Radiology Poster Session, Washington University School of Medicine in St. Louis, St. Louis, Missouri, USA*, Feb. 21, 2012.
47. “Functional understanding of microbial communities using experimental data integration,” with N. Segata, D. Gevers, J. Izard, and C. Huttenhower in *2010 Human Microbiome Research Conference, St. Louis, Missouri, USA*, Aug. 31 to Sep. 2, 2010.
48. “Complementary DNA microarray image segmentation,” with A. Nehorai in *Imaging Sciences Retreat, Division of Biology and Biomedical Sciences, Washington University School of Medicine, St. Louis, Missouri, USA*, Apr. 18, 2008.
49. “Performance analysis of quantifying fluorescence of target-captured microparticles from microscopy images,” with A. Nehorai in *Fourth IEEE Workshop on Sensor Array and Multi-Channel Processing, Waltham, Massachusetts, USA*, Jul. 14, 2006.

*Invited Web Talks*

50. “Quantitative bio-imaging in research and education,” Seminar for *Department of Electronics and Electrical Communication Engineering, Indian Institute of Technology, Kharagpur, India*, Nov. 28, 2014.
51. “Quantitative bio-imaging in research and education,” Seminar for *Department of Electrical Engineering, Indian Institute of Technology, Roorkee, India*, Nov. 25, 2014.
52. “Quantitative bio-imaging in research and education,” Seminar for *Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore, India*, Oct. 13, 2014.
53. “Integrated biomedical signal processing in research and education,” Seminar for *Department of Electronics and Communication Engineering, Indian Institute of Technology, Roorkee, India*, Jul. 8, 2014.
54. “Integrated biomedical signal processing in research and education,” Seminar for *Department of Electrical Engineering, Indian Institute of Technology, Hyderabad, India*, June 13, 2014.
55. “Statistical design and imaging of an ultra-high density 3D microarray,” Seminar for *Department of Electrical Engineering, Indian Institute of Technology, Bombay, India*, Nov. 20, 2009.