

# Christine P. Hendon, PhD

Columbia University  
Electrical Engineering  
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DATE PREPARED: APRIL 20, 2018

## A. FIELD OF SPECIALIZATION

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**Biomedical optics, optical coherence tomography, optical spectroscopy, image processing, cardiac electrophysiology**

## B. ACADEMIC TRAINING

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### Case Western Reserve University

*PhD*, Biomedical Engineering.....May 2010  
Dissertation: Characterization of Cardiac Tissue using Optical Coherence Tomography  
Advisor: Andrew M. Rollins, PhD

### Case Western Reserve University

*MS*, Biomedical Engineering.....August 2007

### Massachusetts Institute of Technology

*BS*, Electrical Engineering and Computer Science.....June 2004

## C. ACADEMIC POSITIONS

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### Columbia University

*Associate Professor (without tenure)*.....January 2018 - present  
*Assistant Professor*.....September 2012 – December 2017  
School of Engineering and Applied Sciences, Department of Electrical Engineering

### Harvard Medical School and Massachusetts General Hospital

*Postdoctoral Research Fellowship*.....January 2010 – September 2012  
Biomedical Optics Wellman Center for Photomedicine

## D. HONORS, DISTINCTIONS AND SOCIETY MEMBERSHIPS

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### 1. Honors and Distinctions

1. Presidential Early Career Awards for Scientists and Engineers (PECASE).....2017
2. Womensphere Emerging Leaders Nominee.....2016
3. Rodriguez Family Junior Faculty Development Award, Columbia University SEAS.....2015
4. NSF CAREER Award.....2015
5. NIH DP2 New Innovators.....2014
6. MIT Technology Review: 35 Innovators under 35.....2013
7. Forbes 30 under 30 for Science and Healthcare.....2012
8. Loan Repayment Award. National Institute of Health/National Heart Lung and Blood Institute...2012 – 2014
9. Wellman-Bullock Postdoctoral Fellowship. Massachusetts General Hospital. "Optical myocardial biopsy using micro-Optical Coherence Tomography.".....2012

10. Diversity Supplement Postdoctoral Fellowship. National Institute of Health/National Heart Lung and Blood Institute. "Chemical Analysis of Coronary Atherosclerosis in Patients." .....2009 – 2012
11. National Research Service Award, Predoctoral Fellowship. National Institute of Health/National Heart Lung and Blood Institute. "3D functional and structural imaging of cardiac tissue," F31HL085939.....2006 – 2009
12. Carl Storm Minority Fellowship: Gordon Research Conferences.....2006
13. The Medtronic Foundation Fellowship for Medtronic Scholars.....2005-2006
14. Case Prime Fellowship: Case Western Reserve University.....2004-2005
15. McNair Scholar: Black Alumni/ae of MIT.....2004
16. Torchbearer: National Society of Black Engineers.....2004

## 2. Society Membership

Optical Society of America (OSA)  
 The International Society for Optics and Photonics (SPIE), Senior Member  
 National Society of Black Engineers (NSBE)

## E. TEACHING EXPERIENCE

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### 1. Courses Taught

#### **Optical Systems, *Electrical Engineering***

*Instructor*, Columbia University, Fall 2013, Fall 2014, Fall 2015, Fall 2016  
 Undergraduate and Graduate level course

#### **Digital Image Processing, *Electrical Engineering***

*Instructor*, Columbia University, Spring 2014, Spring 2016, Spring 2017  
 Undergraduate and Graduate level course

#### **Optics in Cardiology and Neuroscience, *Electrical and Biomedical Engineering***

*Instructor*, Columbia University, Spring 2013  
 Graduate level seminar course

#### **Signals and Systems, *Biomedical Engineering***

*Teaching Assistant*, Case Western Reserve University, Fall 2007, Fall 2008  
*Junior level, undergraduate course.*

#### **Biomedical Optical Diagnostics, *Biomedical Engineering***

*Teaching Assistant*, Case Western Reserve University, Spring 2005  
 Graduate level course

#### **Guest Lectures**

Egleston Scholars Seminar Series, Columbia University. Fall 2013, Fall 2015. Lectures (2)  
 The Center for Neural Engineering and Computation. Spring 2015. Lecture (1)  
 Advanced Microscopy Course, Columbia University. Spring 2013. Lecture (1)  
 Biomedical Engineering Seminar Series, Columbia University. Spring 2013. Lecture (1)  
 Cardiology Fellows Seminar Series, Columbia University. Spring 2013. Lecture (1)

## Teaching Evaluations

Semester	Course	Enrollment	Course: Amount	Instructor: Overall
			Learned	Quality
Fall 2013	Optical Systems	17	4.65	4.88
Spring 2014	Digital Image Processing	33	4.5	4.57
Fall 2014	Optical Systems	17	4.07	4.5
Spring 2015	Leave			
Fall 2015	Optical Systems	27	4.08	4.08
Spring 2016	Digital Image Processing	34	4.79	4.73
Fall 2016	Optical Systems	8	5	5
Spring 2017	Digital Image Processing	34	4.47	4.56
Fall 2017	Leave			

## 2. Advising

### Doctoral Students

1. Soo Young Park, MS Electrical Engineering, PhD Candidate.....1/2018 - present
2. James McLean, Electrical Engineering, MS/PhD Candidate .....9/2016 - present
3. Diana Mohajed, Biomedical Engineering, MS/ PhD Candidate.....9/2016 - present
4. Rajinder Singh-Moon, MS, Electrical Engineering, PhD Candidate.....9/2014 - present
5. Theresa Lye, MS, Electrical Engineering, PhD Candidate.....9/2013 - present
6. Yuye Ling, PhD, Electrical Engineering.....9/2013 - 12/2017  
*Position after graduation: Columbia University EE Postdoctoral Fellowship*
7. Xinwen Yao, PhD, Electrical Engineering.....7/2013 - 11/2017  
*Position after graduation: Johns Hopkins Postdoctoral Fellowship*
8. Yu Gan, PhD, Electrical Engineering.....1/2013 - 2/2017  
*Position after graduation: Columbia University EE Postdoctoral Fellowship*

### Postdoctoral Fellows

1. Yuye Ling, PhD.....1/2018 - present
2. Yu Gan, PhD .....2/2017 - present

### Co-Advised Doctoral Students

1. Ching Lin, MS, Electrical Engineering, PhD Candidate.....9/2013 - present

### Medical Students

1. Ernest Chang, PhD, Columbia University College of Physicians and Surgeons.....7/2015 - 5/2017  
*Position after graduation: New York University Residency*

### Masters Students

1. Alicia Musa, Electrical Engineering.....9/2017 - present
2. Soo Young Park, Electrical Engineering .....1/2017- 12/2017
3. Brigid Angelini, Electrical Engineering .....1/2017 - 8/2017  
*Position after graduation: Clinical Research Coordinator Massachusetts General Hospital*
4. Mohammad Zaryab, Electrical Engineering.....1/2016 - 7/2017  
*Position after graduation: Technical Advisor, Haley Guiliano LLP*
5. Jiaqi Guo, Electrical Engineering.....6/2016 - 12/2016

- Position after graduation: Engineer, DJI Robomasters*
6. Wantong Li. Electrical Engineering.....9/2016 – 12/2016  
*Position after graduation: SoC Design Verification Engineer, Micron Technology*
  7. Long Yang. Electrical Engineering.....9/2016 – 12/2016  
*Position after graduation: Columbia University Materials PhD Program*
  8. Priya Balasubramanian. Electrical Engineering.....8/2015 – 8/2016  
*Position after graduation: Cornell University EE PhD Program*
  9. Syed Bin Amir. Electrical Engineering.....9/2013 – 5/2015  
*Position after graduation: University of Connecticut BME PhD Program*
  10. Dustin Tran. Electrical Engineering.....9/2014 – 5/2015  
*Position after graduation: University of Arizona EE PhD Program*
  11. Christopher Hermawi. Electrical Engineering.....5/2014 – 12/2014  
*Position after graduation: Intel Engineer*
  12. Christine Fung. Biomedical Engineering.....1/2014 – 12/2014  
*Position after graduation: Columbia University BME PhD Program*
  13. Rajinder Singh-Moon. Electrical Engineering...../2012 – 5/2014  
*Position after graduation: Columbia University EE PhD Program*
  14. Yang Zhao. Electrical Engineering.....4/2013 – 5/2014  
*Position after graduation: Duke BME PhD Program*

#### **Post-baccalaureate researchers**

1. Abdul Leite. Electrical Engineering Columbia University.....6/2015 – 8/2015
2. Andres Medina. Electrical Engineering Columbia University.....6/2015 – 7/2015
3. Jocelyn Eckert. Wellman Center for Photomedicine Massachusetts General Hospital... 6/2010 – 3/2011

#### **Undergraduates researchers**

1. Rhiana Rivas. Biomedical Engineering.....9/2016 - present
2. Tonye Brown. Computer Science.....6/2016 – 12/2016
3. Diego Song. Electrical Engineering.....1/2016 – 5/2016
4. Jillian Ross. Chemical Engineering.....9/2015 – 5/2016
5. Alexandra Della Santina. Electrical Engineering.....9/2015 – 12/2015
6. Antonio Basukoski. Electrical Engineering.....9/2015 – 12/2015
7. Gary Lin. Electrical Engineering.....11/2013 – 5/2014
8. Maria Van Keulen. Electrical Engineering.....10/2013 – 5/2014
9. Akachi Ukwu. Chemical Engineering.....3/2013 – 5/2015
10. Linda Sun. Electrical Engineering.....4/2013 – 5/2014
11. Melissa Haskell. Wellman Center for Photomedicine.....6/2011 – 8/2011

#### **High School Students**

1. Agastya Vaidya HYPOTHEkids.....6/2017 – 8/2017
2. Helen Nazarenko, HYPOTHEkids.....6/2016 – 8/2016
3. Kevin Li, Scarsdale High School.....6/2015 – 5/2016
4. Bryan Webb, Horizon Science Academy.....12/2007 – 5/2009

#### **Experience as an Examiner**

1. Venkata Voleti, Biomedical Engineering. Proposal Committee .....2018
2. Youngwan "Willis" Kim, Electrical Engineering. Proposal Committee.....2017
3. Alex Meng, Electrical Engineering. Doctoral Thesis Committee.....2017
4. Wenze Li, Electrical Engineering. Proposal Committee.....2017
5. Jinyu Liao, Electrical Engineering. Doctoral Thesis Committee.....2017
6. Wang (Frank) Yao, Mechanical Engineering. Doctoral Thesis Committee.....2017

7. Lev Givon, Electrical Engineering. Doctoral Thesis Committee .....2016
8. Abdulkadir Elmas, Electrical Engineering. Doctoral Thesis Committee .....2016
9. Henry Kuo, Electrical Engineering. Proposal Committee.....2016
10. Dat Tien Hoang, Chemistry. Doctoral Thesis Committee.....2016
11. Christine Chen, Electrical Engineering. Doctoral Thesis Committee .....2016
12. Jinyu Liao, Electrical Engineering. Proposal Committee.....2015
13. Daniel Bellin, Electrical Engineering. Doctoral Thesis Committee.....2015
14. Lee Zhu , Electrical Engineering. Doctoral Thesis Committee.....2015
15. Qi Li , Electrical Engineering. Doctoral Thesis Committee.....2015
16. Wang (Frank) Yao, Mechanical Engineering. Proposal Committee.....2014
17. Zhi-De Deng, Electrical Engineering. Doctoral Thesis Committee.....2013
18. Yevgeniy Slutskiy, Electrical Engineering. Doctoral Thesis Committee.....2013

### Student Group Advising

National Society of Black Engineers Columbia University Student Chapter Faculty Advisor .....2016 – present  
 SPIE Columbia University Student Chapter Faculty Advisor.....2014 – present

### Student Group Meetings

*Spring 2014:* Grad Society of Women Engineers, Columbia University (1).

*Fall 2013:* Diversity in Graduate Education Group, Columbia University (1).

*Summer 2013:* Minority Postdoc Coalition, Columbia University (1).

*Spring 2013:* National Society of Black Engineers, Columbia University (1). Society of Women Engineers, Columbia University (1). Grad Society of Women Engineers, Columbia University (1).

## F. PUBLICATIONS

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### 1. Published Work

*h-index = 15, source Google Scholar (April 20, 2018)*

#### Peer-Reviewed Journal Papers

- J1. Theresa H Lye, Kevin P Vincent, Andrew D McCulloch, and **Christine P Hendon**. Tissue-Specific Optical Mapping Models of Swine Atria Informed by Optical Coherence Tomography. *Biophysical Journal*. (2018) *In Press*
- J2. Xinwen Yao, Yu Gan, Yuye Ling, Charles C. Marboe and **Christine P. Hendon**. Multi-contrast Endomyocardial Imaging By Single-channel High Resolution Cross-polarization Optical Coherence Tomography. *Journal of Biophotonics*. (2018) *In Press*
- J3. James P. McLean, Yuye Ling, and **Christine P Hendon**. Frequency-Constrained Robust Principal Component Analysis: A Sparse Representations approach to segmentation of dynamic features in Optical Coherence Tomography imaging. *Optics Express*. 25(21). Pp. 25819-25830. (2017)
- J4. Richard S Ha, Lauren Friedlander, **Christine P Hendon**, Hanina Hibshoosh, Sheldon Feldman, Soojin Ahn, MD; Hank Schmidt, Margaret Akens, MaryAnn Fitzmaurice, Brian Wilson, Victoria Mango. Optical Coherence Tomography: A novel imaging method for post lumpectomy breast margin assessment - A multi-reader study. *Academic Radiology Journal*. (2017) *In Press*
- J5. Yuye Ling, Xinwen Yao, and **Christine P Hendon**. Highly phase-stable 200 kHz swept-source optical coherence tomography based on KTN electro-optic deflector. *Biomedical Optics Express*. 8(8).pp. 3687-

3699 (2017)

- J6. Yuye Ling, Yu Gan, Xinwen Yao, and **Christine P Hendon**. Phase noise analysis on swept-source optical coherence tomography system. *Optics Letters*. 42(7) 1333-1336. (2017)
- J7. Yuye Ling, Xinwen Yao, Ute T. Gamm, Emilio S. Arteaga-Solis, Charles W. Emala, Michael A. Choma, and **Christine P. Hendon**. Ex vivo visualization of human ciliated epithelium and quantitative analysis of induced flow dynamics by using optical coherence tomography. *Lasers in Surgery and Medicine*. 49(3) 270–279. (2017) (*Selected as Editor's Choice Paper*)
- J8. Xinwen Yao \*\*, Yu Gan \*\*, Ernest Chang, Hanina Hibshoosh, Sheldon Feldman, and **Christine P Hendon**. Visualization and tissue classification of human breast cancer images using ultrahigh-resolution OCT. *Lasers in Surgery and Medicine*. 49(3) 258–269. (2017) (*Selected as Feature of the Week on octnews.org*)
- J9. Nathan C Lin, **Christine P Hendon**, Elizabeth Olson. Paper. Signal competition in optical coherence tomography and its relevance for cochlear vibrometry. *The Journal of the Acoustical Society of America*. 141 (1), 395 – 405. (2017)
- J10. Dovina Qu, Philip J Chuang, Sagaw Prateepchinda, Priya Balasubramanian, Xinwen Yao, Stephen Doty, **Christine P Hendon**, and Helen H Lu. Micro- and Ultrastructural Characterization of Age-Related Changes at the Anterior Cruciate Ligament-to-Bone Insertion. *ACS Biomaterials Science & Engineering*. 3(11), 2806-2814. (2016)
- J11. Wang Yao \*\*, Yu Gan \*\*, Kristin Myers, Joy Vink, Ronald Wapner, and **Christine P. Hendon**. Pregnant and Non-Pregnant Collagen Fiber Orientation and Dispersion of the Upper Cervix. *PLoS One*. 11(11): e0166709. (2016) \*\* denotes equal contribution.
- J12. Yu Gan, David Tsay, Syed Bin Amir, Charles C. Marboe, and **Christine P. Hendon**. Automated classification of optical coherence tomography images of human atrial tissue. *Journal of Biomedical Optics*. Vol 21 (10), 101407 (2016)
- J13. Xinwen Yao, Yu Gan, Charles C. Marboe, and **Christine P. Hendon**. Myocardial Imaging using Ultrahigh Resolution Spectral Domain Optical Coherence Tomography. *Journal of Biomedical Optics*. 21(6), 061006 (2016)
- J14. Rajinder P. Singh-Moon, Charles C. Marboe, and **Christine P. Hendon**. A near-infrared spectroscopy integrated catheter for characterization of myocardial tissues: preliminary demonstrations to radiofrequency ablation therapy for atrial fibrillation. *Biomedical Optics Express*. Vol 6(7) pp. 2494-2511 (2015)
- J15. Kristin M Myers, **Christine P Hendon**, Yu Gan, Wang Yao, Joy Vink, and Ronald Wapner. A continuous Fiber Distribution Material Model for Human Cervical Tissue. *Journal of Biomechanics*. 48(9) pp. 1533-1540 (2015).
- J16. Yu Gan, Wang Yao, Kristin M Myers, Joy Y Vink, Ronald J Wapner, and **Christine P Hendon**. Analyzing three-dimensional ultrastructure of human cervical tissue using optical coherence tomography. *Biomedical Optics Express*. 6(4) pp. 1090-1108 (2015).
- J17. Yu Gan and **Christine P Fleming**. Three-dimensional quantification and tractography of fibers in myocardial tissues using optical coherence tomography. *Biomedical Optics Express*. 4(10) pp. 2150-2165 (2013)

- J18. **Christine P Fleming**, Jocelyn Eckert, Elkin F Halpern, Joseph A Gardecki, and Guillermo J Tearney. Depth resolved detection of lipid using spectroscopic optical coherence tomography. *Biomedical Optics Express*. 4(8) pp. 1269-1284 (2013).
- J19. **Christine P Fleming**, Noah Rosenthal, Andrew M Rollins, Mauricio M Arruda. First in vivo Real-Time Imaging of Endocardial Radiofrequency Ablation by Optical Coherence Tomography: Implications on Safety and The Birth of “Electro-structural” Substrate-Guided Ablation. *Innovations in Cardiac Rhythm Management*. 2: 199-201 (2011)
- J20. **Christine P Fleming**, Kara J Quan, and Andrew M Rollins. Towards Guidance of Epicardial Cardiac Radiofrequency Ablation Therapy using Optical Coherence Tomography. *Journal of Biomedical Optics*. 15(4): 041510 (2010)
- J21. **Christine P Fleming**, Hui Wang, Kara J Quan, and Andrew M Rollins. Real-time Monitoring of Cardiac Radiofrequency Ablation Lesion Formation using an Optical Coherence Tomography Forward Imaging Catheter. *Journal of Biomedical Optics*. 15(3): 030516 (2010)
- J22. **Christine P Fleming**, Kara J Quan, Hui Wang, Guy Amit, and Andrew M Rollins. In vitro characterization of cardiac radiofrequency ablation lesions using optical coherence tomography. *Optics Express* 18(3): 3079–3092 (2010)
- J23. William J Hucker, Crystal M Ripplinger, **Christine P. Fleming**, Vadim V Fedorov, Andrew M Rollins, and Igor R Efimov. Bimodal biophotonic imaging of the structure-function relationship in cardiac tissue. *Journal of Biomedical Optics*. 13(5): 054012 (2008)
- J24. **Christine P Fleming**, Crystal M Ripplinger, Bryan Webb, Igor R Efimov, and Andrew M Rollins. Quantification of cardiac fiber orientation using Optical Coherence Tomography. *Journal of Biomedical Optics*. 13(3): 030505 (2008)
- J25. Hui Wang, **Christine P Fleming**, and Andrew M Rollins. Ultrahigh-resolution optical coherence tomography at 1.15  $\mu\text{m}$  using photonic crystal fiber with no zero-dispersion wavelengths. *Optics Express*. 15(6): 3085-3092 (2007)

## Book Chapters

- B1. Piao Z, **Hendon CP**, Bouma BE, Tearney GJ. Emerging Methods to Enhance OCT Imaging: New Frontiers in OCT Imaging. *Book Chapter* for Clinical Atlas of Intravascular Optical Coherence Tomography. PCR Publishing. Radu MD, Raber L, Garcia-Garcia HM, Serrugs PW, eds. (2017)
- B2. **Hendon CP** and Rollins AM. Real-Time Imaging of Microstructure and Function Using Optical Coherence Tomography. Chapter 7 in Handbook of Optical Biomedical Diagnostics, 2<sup>nd</sup> Edition, V. Tuchin, ed., SPIE, Bellingham, WA (2016)
- B3. **Fleming CP**, Bouma BE, and Tearney GJ. New frontiers in OCT Imaging. *Book Chapter* for Clinical Atlas of Intravascular Optical Coherence Tomography. PCR Publishing. Radu MD, Raber L, Garcia-Garcia HM, Serrugs PW, eds. (2012)

## 2. Conference Papers

### Conference Proceedings

- C1. Rhiana N. Rivas; Theresa H. Lye; **Christine P. Hendon**. Impact of radiofrequency ablation geometry on

electrical conduction. Proceedings Volume 10471, Diagnostic and Therapeutic Applications of Light in Cardiology 2018; 104710Q (2018)

- C2. James P McLean, Yuye Ling, **Christine Hendon**. A temporal-frequency variant on robust-principle component analysis for segmentation of motile cilia in optical coherence tomography images. SPIE Medical Imaging 2018: Image Processing
- C3. Rajinder P. Singh-Moon, Xinwen Yao, Mohammad Zaryab, Vivek Iyer, and **Christine Hendon**. Optical Coherence Tomography Ablation Catheter for Intraprocedural Assessment of Cardiac Lesion Development. Biophotonics Congress: Biomedical Optics Congress 2018 (Microscopy/Translational/Brain/OTS) OSA Technical Digest (Optical Society of America, 2018), paper OTh2D.4
- C4. Yu Gan, Theresa Lye, Xinwen Yao, Charles Marboe, and **Christine Hendon**. Characterization of Human Endomyocardium Using a Human Cardiac Optical Coherence Tomography Atlas. Biophotonics Congress: Biomedical Optics Congress 2018 (Microscopy/Translational/Brain/OTS) OSA Technical Digest (Optical Society of America, 2018), paper OTh2D.6
- C5. James P McLean, Dovina Qu, Helen Lu, **Christine Hendon**. Automatic Measurement of Crimped Collagen Fiber Insertion Angle in Optical Coherence Tomography Images of the Anterior Cruciate Ligament. · Biophotonics Congress: Biomedical Optics Congress 2018 (Microscopy/Translational/Brain/OTS) OSA Technical Digest (Optical Society of America, 2018), paper OF3D.2
- C6. Yuye Ling, James P McLean, **Christine P Hendon**. Data Compression of Time-lapse Optical Coherence Tomography Images Based On Low-rank Plus Sparse Reconstruction. Biophotonics Congress: Biomedical Optics Congress 2018 (Microscopy/Translational/Brain/OTS) OSA Technical Digest (Optical Society of America, 2018), paper JW3A.35
- C7.
- C8. Xingchen Ji, Xinwen Yao, Mohammad A. Tadayon, Aseema Mohanty, **Christine P. Hendon**, and Michal Lipson. High Confinement and Low Loss Si<sub>3</sub>N<sub>4</sub> Waveguides for Miniaturizing Optical Coherence Tomography. CLEO Conference Proceedings: Science and Innovations, SM3C. 4 (2017)
- C9. Priya S. Balasubramanian, Jiaqi Guo, Xinwen Yao, Dovina Qu, Helen H. Lu, and **Christine P. Hendon**. Automated Fiber Tracking and Tissue Characterization of the Anterior Cruciate Ligament with Optical Coherence Tomography. Proceedings of *SPIE Photonics West BiOS*. International Society for Optics and Photonics. Vol (10067) 1006719-1 (2017).
- C10. Yu Gan, Xinwen Yao, David Tsay, Charles C. Marboe, **Christine P. Hendon**. Characterization of ventricular endomyocardial tissue using Optical Coherence Tomography Proceedings of *SPIE Photonics West BiOS*. International Society for Optics and Photonics. Vol (10042) 1004207 (2017).
- C11. Theresa H. Lye, Yu Gan, **Christine P. Hendon**. Mapping the human atria with optical coherence tomography. Proceedings of *SPIE Photonics West BiOS*. International Society for Optics and Photonics Vol (10042) 1004203 (2017).
- C12. Mohammad Zaryab, Rajinder P. Singh-Moon, **Christine P. Hendon**. Robust classification of contact orientation between tissue and an integrated spectroscopy and radiofrequency ablation catheter. Proceedings of *SPIE Photonics West BiOS*. International Society for Optics and Photonics Vol (10042) 1004200 (2017).
- C13. Yu Gan, Xinwen Yao, Ernest Chang, Syed Bin Amir, Hanina Hibshoosh, Sheldon Feldman, **Christine P. Hendon**. Comparative study of texture features in OCT images at different scales for human breast



tissue classification. Proceedings of IEEE Engineering in Medicine and Biology. pp. 3926 - 3929 (2016)

- C14. Lye T, Vincent K, McCulloch A, and **Hendon CP**. Normal and Radiofrequency Ablated Atrial Models Enabled by Optical Coherence Tomography Tissue Characterization. *Biomedical Optics 2016*, OSA Technical Digest. Optical Society of America, OTh2B.3. (2016)
- C15. Gan Y, Gutbrod SR, Efimov IR, and **Hendon CP**. Towards Geometric Modeling of the Atria using Optical Coherence Tomography. *Biomedical Optics 2016*, OSA Technical Digest. Optical Society of America, JM3A. 26 (2016)
- C16. Singh-Moon RP, Yao X, Marboe CC, and **Hendon CP**. Optical spectroscopy facilitated characterization of acute atrial lesions. *Biomedical Optics 2016*, OSA Technical Digest. Optical Society of America, JTu3A. 39 (2016)
- C17. Yao X, Chang E, Hibshoosh H, Feldman S, and **Hendon CP**. Towards in vivo high-resolution OCT based ductal imaging. *Biomedical Optics 2016*, OSA Technical Digest. Optical Society of America, JTu3A. 33 (2016)
- C18. Meiniel W, Gan Y, **Hendon CP**, Olivo-Marin JC, Laine A, and Angelini E. A Sparsity-Based Image Simplification Method for Spectral Domain Optical Coherence Tomography. Proceedings of IEEE international symposium on biomedical imaging. pp. 373-376 (2016)
- C19. Singh-Moon RP and **Hendon CP**. Towards optical monitoring of radiofrequency ablation extent for atrial fibrillation. Proceedings of IEEE international symposium on biomedical imaging. pp.751-755 (2015)
- C20. Gan Y, Angelini E, Laine A, and **Hendon CP**. BM3D-Based ultrasound image denoising via brushlet thresholding. Proceedings of IEEE international symposium on biomedical imaging. pp. 667-670 (2015)
- C21. Singh-Moon RP and **Hendon CP**. Cardiac tissue characterization using near-infrared spectroscopy. Proceedings of *SPIE BiOS*. International Society for Optics and Photonics, Vol 8926, pp. 89263N (2014).
- C22. Gan Y, Yao W, Myers KM, and **Hendon CP**. An automated 3D registration method for optical coherence tomography volumes. Proceedings of IEEE Engineering in Medicine and Biology, 3873-3876 (2014).

### Conference Abstracts and Presentations

- A1. Xinwen Yao, Yu Gan, Yuye Ling, Charles C. Marboe, **Christine P. Hendon**. Functional endomyocardial imaging by single-channel high resolution cross-polarization OCT. SPIE BiOS. 28 January 2018
- A2. Theresa H. Lye, Kevin P. Vincent, Andrew D. McCulloch, **Christine P. Hendon** Optical mapping models of human atria including heterogeneous tissue types as informed by optical coherence tomography. SPIE BiOS . 28 January 2018
- A3. Nathan C. Lin, Elika Fallah, Clark E. Strimbu, **Christine P. Hendon**, Elizabeth S. Olson. Customizing a commercial spectral domain optical coherence tomography system for standard free-space and fiber optic probe intracochlear measurements. SPIE BiOS. 28 January 2018
- A4. Rhiana N. Rivas, Theresa H. Lye, **Christine P. Hendon**. Impact of radiofrequency ablation geometry on electrical conduction. SPIE BiOS . 28 January 2018

- A5. Soo Young Park, Rajinder P. Singh-Moon, **Christine P. Hendon**. Towards multispectral endoscopic imaging of cardiac lesion assessment and classification for cardiac ablation therapy. SPIE BiOS. 28 January 2018
- A6. Rajinder P. Singh-Moon, Vivek Iyer M.D., **Christine P. Hendon**. Multi-chamber, multivariate model for online evaluation of lesion depth in cardiac tissue using optical spectroscopy. SPIE BiOS . 28 January 2018
- A7. Yu Gan, Wang Yao, Kristin M. Myers, Joy-Sarah Y. Vink, Ronald J. Wapner, **Christine P. Hendon**. Heterogeneity study of the human cervix between the internal os and the external os using optical coherence tomography. SPIE BiOS . 28 January 2018
- A8. Yuye Ling, William Meiniel, Jean-Christophe Olivo-Marin, Elsa D. Angelini, **Christine P. Hendon**. Implementation and demonstration of compressed sensing enabled phase-resolved swept-source optical coherence tomography. SPIE BiOS. 28 January 2018
- A9. Theresa H. Lye, **Christine P. Hendon**. Mapping the human left atrium and pulmonary veins with optical coherence tomography. SPIE BiOS. 29 January 2018
- A10. Rajinder P. Singh-Moon, Xinwen Yao, Mohammad Zaryab, Vivek Iyer M.D., **Christine P. Hendon**. Intraoperative, multimodal guidance of cardiac ablation therapy using an optical coherence tomography and optical spectroscopy (OCT-OS) integrated ablation catheter. SPIE BiOS. 29 January 2018
- A11. Victoria L. Mango, Lauren C. Friedlander, Hanina Hibshoosh, Soojin Ahn, Margarete Akens, Hank Schmidt, Sheldon Feldman, MaryAnn Fitzmaurice, **Christine Hendon**, Brian C. Wilson, Richard Ha. Optical Coherence Tomography (OCT): A Novel Imaging Method for Ex-Vivo Breast Specimens-A Reader Feasibility Study. Radiological Society of North America Annual Meeting. Chicago, IL. November 2017
- A12. Yu Gan, Xinwen Yao, David Tsay, Charles C. Marboe. **Christine P. Hendon**. Characterization of ventricular endomyocardial tissue using optical coherence tomography. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A13. Yuye Ling, **Christine P. Hendon**. Investigating mechanically induced phase response of the tissue by using high-speed phase-resolved optical coherence tomography. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A14. Mohammad Zaryab, Rajinder P. Singh-Moon, **Christine P. Hendon**. Robust classification of contact orientation between tissue and spectroscopic RF catheter. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A15. Rajinder P. Singh-Moon, Mohammad Zaryab, **Christine P. Hendon**. Towards optical spectroscopic anatomical mapping for lesion validation in cardiac tissue. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A16. Rajinder P. Singh-Moon, **Christine P. Hendon**. Lesion transmural assessment using multi-fiber diffuse reflectance. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A17. Theresa H. Lye, Yu Gan, **Christine P. Hendon**. Mapping the human atria with optical coherence tomography. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A18. Yu Gan, Xinwen Yao, Ernest W. Chang, Syed A. Bin Amir, Hanina Hibshoosh, Sheldon Feldman, **Christine P. Hendon**. Automated adipose map generation for assessing cancerous human breast tissue using

optical coherence tomography. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation

- A19. Xinwen Yao, Yu Gan, Ernest W. Chang, Hanina Hibshoosh, Sheldon Feldman, **Christine P. Hendon**. Visualization and tissue classification of human breast cancer images using ultrahigh-resolution OCT. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A20. Priya S. Balasubramanian, Jiaqi Guo, Dovina Qu, Helen H. Lu, **Christine P. Hendon**. Automated fiber tracking in the anterior cruciate ligament. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Poster Presentation
- A21. Theresa H. Lye, Kevin P. Vincent, Andrew D. McCulloch, **Christine P. Hendon**. Optical mapping models of heterogeneous atria tissue informed by optical coherence tomography. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A22. Yu Gan, Wang Yao, Kristin M. Myers, Joy-Sarah Y. Vink, Ronald J. Wapner, **Christine P. Hendon**. Depth analysis of collagen directionality on axial human uterine cervical tissue using optical coherence tomography. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A23. Yuye Ling, Ute A. Gamm, Xinwen Yao, Emilio Arteaga-Solis, Charles W. Emala, Michael A. Choma, **Christine P. Hendon**. Visualization of ex vivo human ciliated epithelium and induced flow using optical coherence tomography. February 2017. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A24. Ling Y and **Hendon CP**. Functional cardiac imaging platform by using ultrahigh phase stable swept source optical coherence tomography. February 2016. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A25. Lye TH, McCulloch AD, and **Hendon CP**. Optical mapping models of the atria enabled by OCT tissue characterization. February 2016. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A26. Singh-Moon RP and **Hendon CP**. Real-time optical monitoring of permanent lesion progression during RF ablation: implications for treatment of atrial fibrillation. February 2016. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A27. Yao X, Marboe CC, and **Hendon CP**. Endomyocardial imaging using ultrahigh resolution spectral domain optical coherence tomography (SD-OCT). February 2016. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A28. Gan Y, Tsay D, Amir SB, Marboe CC, and **Hendon CP**. Automated tissue classification of intracardiac optical coherence tomography images. February 2016. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A29. Gan Y, Yao W, Myers KM, Vink JY, Wapner RJ, and **Hendon CP**. Dispersion analysis of collagen fiber networks in cervical tissue using optical coherence tomography. February 2016. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A30. Lye T and **Hendon CP**. Atria models enabled by OCT tissue characterization. October 2015. BMES. Tampa, FL. Poster Presentation.
- A31. Gan Y, Tsay D, Fung C, Marboe C, and **Hendon CP**. Automated three dimensional segmentation of atrial optical coherence tomography images. October 2016. BMES. Tampa, FL. Poster Presentation

- A32. Singh-Moon RP and **Hendon CP**. Catheter-based optical determination of met-myoglobin content for estimating radiofrequency ablated, chronic lesion formation in atrial tissue. September 2016. SPIE/NIH Biophotonics from Bench to Bedside Workshop. Bethesda, MD. Poster Presentation
- A33. Gan Y, Tsay D, Amir SB, Marboe CC, and **Hendon CP**. Towards the automated classification of endomyocardial tissues for intracardiac OCT. September 2016. SPIE/NIH Biophotonics from Bench to Bedside Workshop. Bethesda, MD. Poster Presentation
- A34. Yao X, Marboe CC, and **Hendon CP**. Ultrahigh resolution myocardial imaging using spectral domain (SD) OCT system with low-noise supercontinuum light source. September 2016. SPIE/NIH Biophotonics from Bench to Bedside Workshop. Bethesda, MD. Poster Presentation
- A35. Yao W, Gan Y, **Hendon CP**, Vink J, Wapner RJ, and Myers KM. The collagen directionality and dispersion and mechanical indentation response in nonpregnant human cervical tissue. June 2015. Summer Biomechanics, Bioengineering and Biotransport Conference. Snobird Resort, UT. Platform Presentation
- A36. Ling Y, Yao X and **Hendon CP**. Nonlinear amplification and detection for swept-source optical coherence tomography. June 2015. OSA/SPIE European Conference on Biomedical Optics. Munich, Germany. Poster Presentation
- A37. Singh-Moon RP and **Hendon CP**. An optically-integrated ablation catheter for lesion verification in pulmonary vein isolation. May 2015. Heart Rhythm Society Annual Scientific Sessions. Boston, MA. Poster Presentation
- A38. Gan Y, Angelini E, Laine AF, and **Hendon CP**. BM3D-Based Ultrasound Image Denoising via Brushlet Thresholding. April 2015. International Symposium on Biomedical Engineering. Brooklyn, NY. Poster Presentation
- A39. Lin N, **Hendon CP**, and Olson E. Phase corruption in heterodyne interferometer and spectral domain optical coherence tomography signals. April 2015. International Symposium on Biomedical Engineering. Brooklyn, NY. Poster Presentation
- A40. Singh-Moon R and **Hendon CP**. Towards optical monitoring of radiofrequency ablation extent for atrial fibrillation. April 2015. International Symposium on Biomedical Engineering. Brooklyn, NY. Platform Presentation
- A41. Gan Y, Tsay D, Amir SB, Marboe CC, and **Hendon CP**. Automated myocardial characterization using optical coherence tomography. February 2015. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A42. Yao Xinwen and **Hendon CP**. Towards mapping the human Purkinje fiber network using high-resolution OCT. February 2015. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A43. Gan Y, Yao W, Myers KM, Vink JY, Wapner RJ, and **Hendon CP**. Three-dimensional ultrastructure study of cervical collagen fibers using optical coherence tomography. February 2015. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A44. Singh-Moon RP and **Hendon CP**. Near-infrared spectroscopic device for lesion depth assessment in myocardial tissue. February 2015. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation

- A45. Bin Amir S, Gan Y, Balci FL, Hibshoosh H, Feldman S, and **Hendon CP**. Towards characterization of ductal carcinoma in situ using optical coherence tomography. February 2015. SPIE Photonics West BiOS. San Francisco, CA. Poster Presentation
- A46. Lye T, Iyer V, and **Hendon CP**. Classification of Atrial Fibrillation and Sinus Rhythm with a Gaussian Mixture Model. Biomedical Engineering Society. October 2014. San Antonio, TX. Poster Presentation
- A47. Tsay D, Gan Y, Marboe C, and **Hendon CP**. Feasibility of Endomyocardial Imaging Using Optical Coherence Tomography For the Diagnosis of Myocardial Disease. TCT. September 2014. Washington DC. Poster Presentation
- A48. Gan Y, Yao W, Myers K, and **Hendon CP**. An Automated 3D Registration Method for Optical Coherence Tomography Volumes. IEEE Engineering in Medicine and Biology. Chicago, IL. August 2014. Platform Presentation.
- A49. Myers K, Vink J, Yao F, Gan Y, Hendon C, Yoshida K, Fernandez M, Zork N, and Wapner R. The Constitutive Modeling of Human Cervical Tissue. July 2014. World Congress on Biomechanics. Boston, MA. Invited Platform Presentation
- A50. Singh-Moon RP, Zhao Y, and **Hendon CP**. Cardiac tissue characterization using near-infrared spectroscopy. February 2 2014. SPIE Photonics West BiOS. San Francisco, CA. Poster Presentation
- A51. Gan Y and **Hendon CP**. Three-dimensional quantification of Myofiber orientation and tractography using optical coherence tomography. February 1 2014. SPIE Photonics West BiOS. San Francisco, CA. Platform Presentation
- A52. Gan Y and **Fleming CP**. Quantification of 3D Fiber Orientation for Myocardial Tissues Using Optical Coherence Tomography. Biomedical Engineering Society. September 2013. Seattle, WA. Platform Presentation
- A53. **Fleming CP**, Gardecki JA, Eckert J, Tanaka A, Haskell MW, Wiesz G, Bouma BE, Tearney GJ. Intravascular spectroscopic optical coherence tomography for automated detection of lipid. SPIE Photonics West BiOS. February 2013. San Francisco, CA. Platform Presentation.
- A54. Chu KK, Liu L, Houser G, Dierksen G, Wilsterman E, Fleming CP, Diephuis BJ, Rowe SM, Tearney GJ. High throughput screening of primary airway epithelial cells in culture using  $\mu$ OCT. SPIE Photonics West BiOS. February 2013. San Francisco, CA. Platform Presentation.
- A55. Diephuis BJ, Fleming CP, Liu L, Rowe SM, Tearney GJ. Automated micro-optical coherence tomography image processing for cystic fibrosis. SPIE Photonics West BiOS. February 2013. San Francisco, CA. Platform Presentation.
- A56. **Fleming CP**, Tanaka A, Gardecki JA, Maurovich-Horvat P, Warger II WC, Eckert JE, Hoffmann U, Bouma BE, and Tearney GJ. Automated algorithm for classification of atherosclerotic plaques using depth-resolved spectral analysis of optical frequency-domain imaging datasets. SPIE Photonics West BiOS. January 2012. San Francisco, CA. Platform Presentation
- A57. **Fleming CP**, Tanaka A, Gardecki JA, Maurovich-Horvat P, Warger II WC, Eckert JE, Hoffmann U, Bouma BE, and Tearney GJ. Classification of Atherosclerotic Plaques using Depth Resolved Spectral Analysis of Optical Frequency Domain Imaging Datasets. Transcatheter and Therapeutics (TCT) Conference. November 2011. San Francisco, CA. Poster Presentation

- A58. **Fleming CP**, Gardecki JA, Wang H, Bouma BE, Tearney GJ. Near-infrared spectroscopy and optical frequency domain imaging for intravascular tissue characterization. SPIE Photonics West BiOS. January 2011. San Francisco, CA. Platform Presentation
- A59. Wang H, Kang W, **Fleming CP**, MacLennan G, Zhu H, Rollins AM. Multiple-functional endoscopic OCT for bladder and ureter. SPIE Photonics West BiOS. January 2011. San Francisco, CA. Platform Presentation
- A60. Wang H, Gardecki JA, **Fleming CP**, Bouma BE, Tearney GJ. Combination of Raman spectroscopy and optical frequency domain imaging for coronary atherosclerosis SPIE Photonics West BiOS. January 2011. San Francisco, CA. Platform Presentation
- A61. **Fleming CP**, Quan KJ, Wang H, Rosenthal N, Arruda M, and Rollins AM. Optical Coherence Tomography for Image Guided Radiofrequency Ablation. Gordon Conference on Lasers in Medicine and Biology. Holderness, NH. July 2010. Poster Presentation
- A62. **Fleming CP**, Wang H, Quan KJ, and Rollins AM. Optical coherence tomography forward imaging catheter for real-time monitoring of cardiac radiofrequency ablation lesion formation. SPIE Photonics West BiOS. January 2010. San Francisco, CA. Platform Presentation
- A63. **Fleming CP**, Quan KJ, Wang H, Arruda M, and Rollins AM. Monitoring and guidance of cardiac radiofrequency ablation using optical coherence tomography. SPIE Photonics West BiOS. January 2010. San Francisco, CA. Platform Presentation
- A64. Anwer R, **Fleming CP**, Krebs M, Alsberg E, and Rollins AM. Image Analysis Algorithm for Calculation of Scaffold Porosity from 3D Optical Coherence Tomography Images. Biomedical Engineering Society Conference. October 2009. Pittsburgh, PA. Platform Presentation
- A65. **Fleming CP**, Hucker W, Quan KJ, Efimov IR, and Rollins AM Optical Coherence Tomography Imaging Toward Monitoring Complex Radiofrequency Ablation Procedures. European Conferences on Biomedical Optics. Munich, Germany. June 15, 2009. Platform Presentation.
- A66. **Fleming CP**, Hucker W, Quan KJ, Efimov IR, and Rollins AM Optical Coherence Tomography Imaging Toward Monitoring Complex Radiofrequency Ablation Procedures. 4<sup>th</sup> International Graduate Summer School: Biophotonics 09. Ven, Sweden. June 2009. Poster Presentation.
- A67. **Fleming CP**, Wang H, Quan KJ and Rollins AM. In vitro Analysis of Cardiac Radiofrequency Ablation Lesions and Over Treatment Using OCT. Gordon Conference on Cardiac Arrhythmia Mechanisms. Lucca, Italy. February 2009. Poster Presentation
- A68. **Fleming CP**, Barwick LM, Wang H, Pan Y, Hu Z, Quan KJ, and Rollins AM. In vitro Analysis of Cardiac Radiofrequency Ablation Lesions and Over Treatment Using OCT. SPIE Photonics West BiOS. January 2009. San Jose, CA. Platform Presentation.
- A69. **Fleming CP**, Barwick LM, Quan KJ, Rollins AM. In-Vitro Characterization of Ablation Lesions Using OCT. *Circulation*. 2008;118:S\_831-S\_832. Abstract 4113. American Heart Association Scientific Sessions. November 2008. New Orleans, LA. Poster Presentation
- A70. **Fleming CP**, Quan KJ, and Rollins, AM. Optical Coherence Tomography Imaging of Radiofrequency Ablation Lesions. *Circulation*. 2007;116:II\_725. Abstract 3224. American Heart Association Scientific Sessions. November 2007. Orlando, FL. Poster Presentation
- A71. **Fleming CP**, Wang H, and Rollins AM. Quantification of Fiber Orientation Disarray within Optical Coherence Tomography Images. Gordon Conference on Cardiac Arrhythmia Mechanisms. March 2007. Ventura, CA. Poster Presentation

A72. **Fleming CP**, Hu Z, Efimov IR, and Rollins AM. Structural and Functional Imaging of Cardiac Tissue using Integrated Optical Mapping and OCT. Biomedical Engineering Society Annual Meeting. October 2006. Chicago, IL. Platform presentation

Underline denotes supervised students and fellows.

\*\* denotes equal contribution.

*Fleming -- Christine Hendon's Maiden Name*

## **G. GRANTS AND CONTRACTS AWARDED**

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### **Large External Grants**

NIH 1R01HD091153-01. A Computational Framework for the Clinical Evaluation of the Soft Tissue Mechanics in Pregnancy. 9/01/2017 – 8/31/2022 (KM Myers, PI; CP Hendon, S Jambawalkar, J Vink and R Wapner are co-Is). \$1,880,241.00.

NSF CAREER. 1454365. CAREER: Structure-Functional Imaging of the Atrial Myocardium. 3/1/2015 – 2/29/2020 (CP Hendon, PI). \$500,000

NIH Director's New Innovator Award. 1DP2HL127776-01. High Resolution Imaging of the Myocardium. 9/30/2014-7/31/2019 (CP Hendon, PI). \$2,400,000

NSF EEC-1342273 BRIGE: Characterization of the human myocardium by optical coherence tomography. 10/1/2013 – 9/30/2015 (CP Hendon, PI). \$175,000

### **Other Grants**

Irving Institute Collaborative and Multidisciplinary Pilot Research award for Basic Science and Clinical/Translational Investigators (CaMPR-BASIC). Deep Learning for Computer Aided Identification of Breast Cancer Margins within Optical Images. 8/1/2017 – 7/31/2018 (CP Hendon PI, R Ha co-PI). \$40,000

Dr. Susan Love Research Foundation Pilot Grant. The potential of Optical Coherence Tomography on detecting early breast cancer via intraductal route. (S Feldman PI, CP Hendon co-I). \$17,000

Research Initiatives in Science and Engineering (RISE). Optical coherence tomography imaging for the early detection of ductal carcinoma in situ. 7/1/2014 – 6/30/2016 (CP Hendon, S Feldman, co-PIs, H Hibshooh co-I). \$160,000

Feldstein Medical Foundation. Three-dimensional correlated electrical conduction and tissue microstructure. 5/15/2014 – 5/14/2015 (CP Hendon, PI). \$60,000

Provost's Small Grants Program for Junior Faculty who Contribute to the Diversity Goals of the University. Columbia University. 7/1/2013 – 6/30/2014 (CP Fleming, PI). \$25,000

## **H. PATENTS RECEIVED AND PATENTS UNDER REVIEW**

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P1. Michal Lipson; Aseema Mohanty; Mohammad Amin Tadayon; Qian Li; Xingchen Ji; **Christine P. Hendon**; Xinwen Yao. Thermally Tunable Low Loss Broadband Waveguides and Related Systems and Methods. PCT/US2018/0152,65 filed 1/25/2018, claims priority from US 62/451,504 filed 1/27/2017, claims priority from US 62/450,158 filed 1/25/2017

- P2. Michal Lipson; Xingchen Ji; Xinwen Yao; Yu Gan; Alexander Gaeta; **Christine P. Hendon**; Alexander Klenner. Microresonator-Frequency-Comb-Based Platform For Clinical High-Resolution Optical Coherence Tomography. US 62/607,825 filed 12/19/2017. US 62/540,412 filed 8/2/2017
- P3. **Christine P. Hendon**; Yuye Ling. Compressed Sensing Enabled Swept Source Optical Coherence Tomography Apparatus, Computer-Accessible Medium, System And Method For Use Thereof. US 62/553,472 filed 9/1/2017
- P4. Richard Ha; Peter D. Chang; **Christine P. Hendon**. Deep Machine Learning For Computer Aided Identification Of Breast Cancer Margins And Core Biopsy Diagnosis Within Optical Images. File Patent Application 9/25/17
- P1. **Hendon CP** and Singh-Moon R. System, Method And Computer-Accessible Medium For Catheter-Based Optical Determination Of Met-Myoglobin Content For Estimating Radiofrequency Ablated, Chronic Lesion Formation In Tissue. 62/217,518 filed 9/11/2015
- P2. **Hendon CP**, Yao X, and Ling Y. "High Sensitivity Spectral Domain Optical Coherence Tomography." Non-provisional application 62/084,648 filed 11/26/2014. United States Patent Application 20170356734 A1 published 12/14/2017
- P3. **Hendon CP**, Singh-Moon R, Tsay D, and Gan Y. "System, Method and Computer-Accessible Medium for Characterization of Tissue." US Patent PCT/US2014/60261. Filed October 13, 2014
- P4. **Fleming CP**, Gardecki JA, Bouma BE, and Tearney GJ. "Apparatus, systems, methods and computer-accessible medium for spectral analysis of optical coherence tomography images." US Patent 2011/0292400 A1. Filed October 25, 2010, Published December 1, 2011. Patent No: US9795301B2 Issued 10/24/2017; priority date 5/25/2010
- P5. Rollins AM and **Fleming CP**. "Characterizing ablation lesions using optical coherence tomography." US Patent 2011/0028967 A1. Filed July 31, 2009, Published February 3, 2011, Patent No: US 9,089,331 B2 Issued July 28, 2015

## **I. INVITED TALKS**

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1. Frontiers in Optics. OSA Conference. September 17, 2018
2. University of Georgia. UGA College of Engineering Lecture Series. Scheduled August 24, 2018
3. Hendon CP. Advances in Biomedical Optics (ABO) seminar series. Physics and Radiology UPenn. Scheduled May 24, 2018
4. Hendon CP. Bioengineering Seminar UIUC. Scheduled May 1, 2018
5. Hendon CP. Biophotonics Seminar Series. Vanderbilt. Scheduled October, 2018
6. Hendon CP. Biomedical Engineering Seminar Series. Johns Hopkins University. Scheduled March 12, 2018
7. Hendon CP. Bioengineering Seminar Rutgers. November 27, 2017



8. Hendon CP. Spectroscopy of intact and ablated myocardium. Optics in Cardiology Conference. Rotterdam, the Netherlands. April 6, 2017
9. Hendon CP. Monitoring and Guidance of Arrhythmia Therapy with Optics. Optical Society of America (OSA) Frontiers in Optics Conference. October 19, 2016
10. Hendon CP. Guidance of ablation therapy with optical spectroscopy. Lasers in Medicine and Biology: Gordon Conference. July 14, 2016
11. Hendon CP. Commencement Keynote Address. DeWitt Clinton High School. Bronx, NY. June 27, 2016
12. Hendon CP. Translational Optical Imaging. Womensphere Global Leaders Summit. New York Academy of Sciences. March 2, 2016
13. Hendon CP. Translational Optical Imaging. New York University Radiology Department. March 1, 2016
14. Hendon CP. Optical Imaging for Applications in Cardiac Electrophysiology. Radiology Imaging Seminar Series. Yale University December 2015
15. Hendon CP. Optical Imaging for Applications in Cardiac Electrophysiology. Biomedical Engineering Seminar Series. George Washington University November 2015
16. Hendon CP. Optical Imaging for Applications in Cardiac Electrophysiology. Purdue University, Distinguished Lecturer for the Weldon School of Biomedical Engineering Seminar Series. November 4, 2015
17. Hendon CP. Towards Guidance of Surgical Interventions with Optics. CAARMS. Princeton University. June 12, 2014
18. Hendon CP. Optical Imaging for Improved Cardiovascular Disease Diagnosis and Management. UCSD Bioengineering Seminar. February 7, 2014
19. Hendon CP. Cardiovascular disease diagnosis and therapy monitoring with optics. Columbia Engineering TEDx. October 25, 2013
20. Fleming CP. Myocardial Optical Imaging. SPIE Photonics West BIOS. San Francisco, CA. February 2013
21. Fleming CP. Cardiovascular Disease Diagnosis Aided by Optical Coherence Tomography. University of Florida, Biomedical Engineering. Young Investigators Seminar Series. Gainesville, FL. February 6, 2012.
22. Fleming CP, Gardecki JA, Wang H, Bouma BE, Tearney GJ. Near-infrared spectroscopy and optical frequency domain imaging for intravascular tissue characterization. NHLBI 18th Annual Cardiovascular Diversity Research Supplement Awardees' Session, Chicago, IL November 13, 2010.
23. Fleming, C.P. Monitoring and Guidance of Cardiac Radiofrequency Ablation Therapy using Optical Coherence Tomography. 40th Anniversary Case Western Biomedical Engineering. October 22, 2009.
24. Fleming, C.P. Monitoring and Guidance of Cardiac Radiofrequency Ablation Therapy using Optical Coherence Tomography. Washington University in St. Louis' Biomedical Engineering Seminar Series. September 8, 2009.
25. Fleming, C.P. Structure Function Analysis of the Myocardium using Optical Coherence Tomography. Cornell

University's Biomedical Engineering Seminar Series. February 5, 2009. Ithaca, NY.

26. Fleming, C.P. Optical Coherence Tomography Imaging of Arrhythmogenic Substrates and Therapy. University of Wisconsin Madison. Biomedical Engineering Seminar. October 27, 2008. Madison, WI.

27. Fleming, C.P. Optical Coherence Tomography Imaging of Arrhythmogenic Substrates and Therapy. Ohio State's Biomedical Engineering Seminar Series. April 30, 2008. Columbus, OH. Invited Talk.

## **J. CONFERENCES AND WORKSHOPS ORGANIZED**

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### **OSA Biomedical Optics Congress**

Program Chair, Optical Tomography and Spectroscopy Conference.....2018

Conference Committee, Clinical and Translational Biophotonics Conference.....2016

### **SPIE Photonics West**

Conference Committee, Optical Elastography and Tissue Biomechanics V Conference.....2018, 2019

Program Committee, Diagnostic and Therapeutic Applications of Light in Cardiology.....2018

### **SPIE Medical Imaging**

Program Committee, Image Processing.....2018, 2019

### **OSA Frontiers in Optics**

Conference Committee, Laser Science Conference.....2016

## **K. PROFESSIONAL AND ACADEMIC SERVICE**

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### **1. University Service**

#### **Department of Electrical Engineering**

PhD Admissions.....member 2012 – 2015, chair 2015-present

#### **School of Engineering and Applied Science (SEAS)**

##### ***Recruitment and Career Development Activities***

1. Egelston Faculty Mentor.....2013, 2014, 2015, 2017, 2018

2. EngAGE, Columbia University. New York, NY. SEAS recruitment event for rising minority juniors, presenter and laboratory tours.....February 2013, 2016, 2017

3. Engineering Women's Forum. Panelist for undergraduate SEAS recruitment event and Electrical Engineering Departmental presentation.....October 2012, 2013, 2014, 2015, 2016

4. Path to Professorship. Panelist on for SEAS doctoral students and postdoctoral fellows considering academic careers.....October 2016

5. Women in Science and Engineering, Columbia University, Panel member and laboratory tours. Outreach program for undergraduate women in STEM.....October 2012, 2016

6. Faculty Speaker, SEAS Family Weekend.....2013, 2015

### **2. Service to the Discipline**

**Reviewer**

- NIH CMT, Cellular and Molecular Technologies study section, standing committee member.  
Three study section meetings per year..... October 2017 – present
- NIH EBIT, *Enabling Bioanalytical and Imaging Technologies* study section, standing committee member.  
Three study section meetings per year..... July 2016 – September 2017
- MIT Technology Review 35 Innovators under 35, reviewer. ....2015, 2016, 2017, 2018
- The Netherlands Organisation for Scientific Research, NOW .....July 2017
- NSF SBIR/STTR Phase 1: Medical Imaging Technologies, ad hoc..... August 2016
- NIH Medical Imaging Study Section (MEDI), ad hoc..... June 2016
- King’s College London. King’s Health Partners Challenge Fund. Ad hoc reviewer. ....March 2016
- NIH Enabling Bioanalytical and Imaging Technologies (EBIT-R) study section, ad hoc. ....October 2015
- NIH Biomedical Imaging Technology Study Section (BMIT-A), ad hoc. ....June 2014
- NSF SBIR/STTR Medical Imaging Review Panel, ad hoc..... March 2014
- Heart Research UK Grant Review, ad hoc.....September 2013
- NSF Grant Review Panel Biophotonics, ad hoc.....December 2012

American Journal of Physiology: Heart and Circulatory Physiology

Biomedical Optics Express

Biophysical Journal

Computers in Biology and Medicine

Current Medical Imaging Reviews

IEEE Transactions on Biomedical Engineering

IEEE, IET Image Processing

International Journal of Biomedical Imaging

Journal of Biomedical Optics

Journal of Biophotonics

Lasers in Surgery and Medicine

Light: Science and Applications

Nature

Nature Scientific Reports

Optica

Optics Express

Optics Letters

**Session Chair**

SPIE Photonics West BioS

    Diagnostics and Therapeutics in Cardiology / Myocardium.....January 2018

    Diagnostics and Therapeutics in Cardiology / Myocardium.....January 2017

    Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems / New Technologies

    .....January 2017

    Diagnostics and Therapeutics in Cardiology / Spectroscopy..... February 2013

Gordon Conference on Lasers in Medicine and Biology

    Fetal/Maternal Medicine.....July 2018

OSA Frontiers in Optics

    Optical Tomography.....October 2016

OSA BIOMED

Optical Biomarkers.....	March 2016
IEEE Engineering in Medicine and Biology (EMBC)	
Optical Coherence Tomography.....	August 2014
Biomedical Engineering Society (BMES)	
Biomedical Imaging and Optics / Optical Coherence Tomography.....	September 2013

### 3. Public Outreach

1. Hk Maker Lab, Columbia University. New York, NY. Program on engineering design to NYC high school students underrepresented in STEM fields Guest speaker, host/mentor for high school summer researcher. .... August 2014, August 2015, August 2016, August 2017
2. Booker T Washington Middle School 54, Columbia University Engineering and Applied Science Laboratory Tours. New York, NY. Organizer for yearly event. Organized laboratory tours, demonstrations, selection of speakers and demonstrations, campus tour, and student panel discussion for 6<sup>th</sup> to 8<sup>th</sup> grader. 20 students participated in the program each year.....May 2015, May 2016
3. Advisory Board Member – Math Minds, Nonprofit. ....September 2015 – August 2016
4. Meet the Professionals –Organizer of career development event for graduate students and postdoctoral fellows to meet with faculty and industry representative during the OSA BIOMED Congress.. March 2016
5. Johns Hopkins Center for Talented Youth, Columbia University presents Engineering and Applied Science. New York, NY. Co-organizer for event. Organized laboratory tours and hands on demonstrations for 7<sup>th</sup> to 10<sup>th</sup> graders on the topic of optics and biomedical optics. 75 students participated in the program.....September 2014
6. The New York Academy of Sciences and Minority Graduate Student Network. New York, NY. Panel member. Supporting Dynamic STEM Careers for Underrepresented Minorities.....May 2014
7. The Franklin Institute. 3<sup>rd</sup> Annual The Color of Science, Philadelphia PA. Interviewee and panelist during 300-person community science evening and conducted demonstrations in optics for 300 area minority middle school students.....March 2014
8. Womensphere, Annual Emerging Leaders Global Summit. Speaker to encourage 350 undergraduate and graduate women toward research in STEM and laboratory tours and laboratory demonstration for 40 undergraduate and graduate women.....January 2014
9. The National GEM Consortium – GEM Grad Lab, Columbia University. Panel moderator. Outreach program for undergraduate minorities in STEM.....October 2013
10. Louisiana State University LA-STEM Research Scholars Program Visit. Panel member. Outreach program for undergraduate students in STEM.....August 2013
11. Mentor for Minority Business Students Association, Massachusetts Institute of Technology. Mentor for two undergraduate students, hosted monthly meetings with mentees.....2010-2011
12. Creating a Life For Yourself After Graduation, Massachusetts Institute of Technology. Panel member. Outreach program for undergraduate minority students..... April 2010
13. Women in Leadership, Case Western Reserve University. Panel member. Outreach program for undergraduate women.....September 2009
14. National Society of Black Engineers (NSBE) – Pre-college initiative Cleveland Chapter. Laboratory demonstrations on biomedical imaging. ....April 2008, February 2009