

Curriculum Vitae

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Elizabeth M. C. Hillman

Professor of Biomedical Engineering and Radiology
Zuckerman Mind Brain Behavior Institute and Kavli Institute for Brain Sciences
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Fields of Specialization:

As a physicist by training, my research program combines the development of novel imaging and microscopy tools with multidimensional data analysis, and the application of these tools to understanding the living brain. My multi-scale biomedical imaging and microscopy techniques include SCAPE microscopy, wide-field optical mapping in awake behaving mice (WFOM) and a range of two-photon and dynamic imaging approaches as well as analysis methods that leverage spatiotemporal and spatio-spectral unmixing. My scientific contributions have focused on elucidating the mechanistic relationship between blood flow and neuronal activity in the living brain (neurovascular coupling), and have more recently extended to studying awake, whole-brain neural activity across species from *Drosophila* and zebrafish to mice and humans.

Academic Training

School	Degree	Date
University College London	Physics, MSci (equivalent to BSc + MSc)	1998
University College London	Medical Physics and Bioengineering, Ph.D.	2002

MS Dissertation: “Application of time-series analysis techniques to physiological data”

Sponsors: Prof Clare Elwell and Prof David Miller

Ph.D. Dissertation: “Experimental and theoretical investigations of near infrared tomographic imaging methods and clinical applications” (published)

Sponsors: Prof Jeremy Hebden and Prof David Delpy FRS

Career History:

Employer	Position	Beginning	Ending
Columbia University	Professor in Biomedical Engineering	06/17	Present
Columbia University	Professor in Radiology	06/17	Present
Columbia University	Tenured Assoc Professor in Biomedical Engineering	02/13	06/17
Columbia University	Tenured Associate Professor in Radiology	02/13	06/17
Columbia University	Associate Professor in Biomedical Engineering	07/11	02/13
Columbia University	Associate Professor in Radiology	07/11	02/13
Columbia University	Assistant Professor in Biomedical Engineering	07/06	06/11
Columbia University	Assistant Professor in Radiology	07/06	06/11

Harvard Medical School	Instructor in Radiology	06/05	06/06
Mass General Hospital	Assistant Physicist, Department of Radiology	06/05	06/06
Mass General Hospital / Harvard Medical School	Post-Doctoral Research Fellow, Martinos Center for Biomedical Imaging	04/03	06/05
Argose Inc. Waltham	Manager of In-vivo Spectroscopy	02/02	01/03

Awards Received:

- 2017 SPIE 2018 Biophotonics Technology Innovator Award.
- 2016 Elected Fellow, American Institute for Medical and Biological Engineering (AIMBE).
- 2016 Elected Fellow, Society of Photonics in Industry and Engineering (SPIE).
- 2015 Elected Fellow, Optical Society of America (OSA).
- 2013 Designated a 'Rising Star' by the Optical Society of America (OSA).
- 2012 National Academy of Engineering (NAE) Frontiers Symposium.
- 2011 Adolph Lomb Medal from the Optical Society of America (OSA) for contributions to Optics before the age of 35.
- 2010 NSF CAREER Award.
- 2008 Rodriguez Junior Faculty Award, Columbia University School of Engineering and Applied Sciences.
- 2007 Human Frontier Science Program (HFSP) Young Investigator Award.
- 2006 Wallace H Coulter Foundation Early Career Award.
- 1998-02 Wellcome Trust Prize Studentship (funding PhD work; stipend and research costs).
- 1998 UCL Prize for top overall undergraduate in Physics and Astronomy, Dean's List, University College London, UK.
- 1997 Top Physics and Astronomy Undergraduate 3rd year, University College London.
- 1996 Top Physics and Astronomy Undergraduate 2nd year, University College London.
- 1995 Top Physics and Astronomy Undergraduate 1st year, University College London.

Travel and early training awards

- 2006 OSA BIOMED Conference Travel Award
- 2005 Brain 2005 ISCBFM Conference Travel Award
- 2004 Brain Blood Flow and Metabolism Gordon Conference Travel Award
- 2001 SPIE Photonics West Travel Award
- 2000 Outstanding Short Paper Award, Rank Prize Fund symposium on applications of fast low-level light detection
- 2000 Best Poster Award, Gordon Research Conference: Lasers in Medicine and Biology
- 2000 Lasers in Medicine and Biology Gordon Conference Travel Award.
- 2000 OSA BIOMED Travel Award

Current Professional Organization Membership:

- 2016- **Fellow**, American Institute for Medical and Biological Engineering (AIMBE)
- 2016- **Fellow**, Society of Photonics in Industry and Engineering (SPIE)
- 2015- **Fellow**, Optical Society of America (OSA)
- 2014- Member, American Heart Association
- 2013- Member, Society for Brain Mapping & Therapeutics (SBMT)
- 2005- Member, International Society for Cerebral Blood Flow and Metabolism (ISCBFM)
- 2005- Member, Society for Neuroscience (SFN)

- 1998- Member, Society of Photonics in Industry and Engineering (SPIE)
1998- Member, Optical Society of America (OSA)
1998-03 Member, American Association of Physicists in Medicine (AAPM)

Publications

Citation Metrics (as of 04/19/2018)

Web of Science: Sum of the Times Cited: 3,765; h-index: 34

Google Scholar: Sum of the Times Cited: 5,915; h-index: 37

(ISI search term: *hillman e* AND boas OR Hillman em* OR Hillman e* AND elwell OR hillman e* AND Moore a*)

Papers in Refereed Journals:

(* indicates mentored student / fellow; **underline bold** indicates Hillman as senior author)

- J1) Elwell CE, Springett R, **Hillman EMC**, Delpy DT. Oscillations in cerebral haemodynamics - Implications for functional activation studies. *Adv Exp Med & Biol.* 1999; 471: 57-65.
- J2) Hebden JC, Schmidt FEW, Fry ME, Schweiger M, **Hillman EMC**, Delpy DT, Arridge SR. Simultaneous reconstruction of absorption and scattering images using multi-channel measurement of purely temporal data. *Opt Lett.* 1999; 24 (8): 534-6.
- J3) Schmidt FEW, Fry ME, **Hillman EMC**, Hebden JC, Delpy DT. A 32-channel time-resolved instrument for medical optical tomography. *Rev Sci Instrum.* 2000; 71 (1): 256-65.
- J4) Arridge SR, Hebden JC, Schweiger M, Schmidt FEW, Fry ME, **Hillman EMC**, Dehghani H. A method for 3D time-resolved optical tomography. *J Imaging Syst Technol.* 2000; 11: 2-11.
- J5) Schmidt FEW, Hebden JC, **Hillman EMC**, Fry ME, Schweiger M, Delpy DT. Multiple slice imaging of a tissue-equivalent phantom using time-resolved optical tomography. *Appl Opt.* 2000; 39 (19): 3380-7.
- J6) **Hillman EMC**, Hebden JC, Schmidt FEW, Arridge SR, Schweiger M, Dehghani H, Delpy DT. Calibration techniques and datatype extraction for time-resolved optical tomography. *Rev Sci Instrum.* 2000; 71 (9): 3415-27.
- J7) **Hillman EMC**, Hebden JC, Schweiger M, Dehghani H, Schmidt FEW, Delpy DT, Arridge SR. Time resolved optical tomography of the human forearm. *Phys Med Biol.* 2001; 46 (4): 1117-30. (*Top 10 most downloaded PMB paper of 2000*)
- J8) Hebden JC, Veenstra H, Dehghani H, **Hillman EMC**, Schweiger M, Arridge SR, Delpy DT. Three dimensional time-resolved optical tomography of a conical breast phantom. *Appl Opt.* 2001; 40 (19): 3278-87.
- J9) Hebden JC, Gibson A, Yusof R, Everdell N, **Hillman EMC**, Delpy DT, Arridge SR, Austin T, Meek JH, Wyatt JS. Three-dimensional optical tomography of the premature infant brain. *Phys Med Biol.* 2002; 47 (23): 4155-66.

- J10) Hebden JC, Gonzalez FM, Gibson A, **Hillman EMC**, Yusof R, Everdell N, Delpy DT, Zaccanti G, Martelli F. Assessment of an in situ temporal calibration method for time-resolved optical tomography. *J Biomed Opt.* 2003; 8: 87-92.
- J11) Corlu A, Durduran T, Choe R, Schweiger M, **Hillman EMC**, Arridge SR, Yodh AG. Uniqueness and wavelength optimization in continuous-wave multispectral diffuse optical tomography. *Opt Lett.* 2003; 28 (23): 2339-41.
- J12) **Hillman EMC**, Boas DA, Dale AM, Dunn AK. Laminar optical tomography: demonstration of millimeter-scale depth-resolved imaging in turbid media. *Opt Lett.* 2004; 19 (14): 1650-2.
- J13) Zhang Q, Brukilacchio TJ, Li A, Stott JJ, Chaves T, **Hillman EMC**, Wu T, Chorlton MA, Rafferty E, Moore RH, Kopans DB, Boas DA. Co-registered Tomographic X-ray and Optical Breast Imaging: Initial Results. *J Biomed Opt.* 2005; 10 (2): 024033.
- J14) Corlu A, Choe R, Durduran T, Lee K, Schweiger M, Arridge SR, **Hillman EMC**, Yodh AG. Diffuse optical tomography with spectral constraints and wavelength optimization. *Appl Opt.* 2005; 44 (11): 2082-2093.
- J15) Li A, Boverman G, Zhang Y, Brooks D, Miller EL, Kilmer ME, Zhang Q, **Hillman EMC**, Boas DA. An optimal linear inverse solution given multiple priors in diffuse optical tomography. *Appl Opt.* 2005; 44 (10): 1948-1956.
- J16) *Custo A, Wells WM, Barnett AH, **Hillman EMC**, Boas DA. Effective Scattering Coefficient of the Cerebral Spinal Fluid in Adult Head Models for Diffuse Optical Imaging, *Appl Opt.* 2006; 45(19): 4747-4755.
- J17) Devor A, Tian P, Nishimura N, Teng IC, **Hillman EMC**, Narayanan SN, Ulbert I, Boas DA, Kleinfeld D, Dale AM. Suppressed neuronal activity and concurrent arteriolar vasoconstriction may explain negative BOLD, *J Neurosci.* 2007; 27(16): 4452-4459.
- J18) **Hillman EMC**, Devor A, *Bouchard M, Dunn AK, Krauss GW, Skoch J, Bacskai J, Dale AM, Boas DA. Depth-resolved Optical Imaging and Microscopy of Vascular Compartment Dynamics During Somatosensory Stimulation, *NeuroImage* 2007, 35(1): 89-104.
- J19) **Hillman EMC**. Optical Brain Imaging In-vivo: Techniques and Applications from Animal to Man, (Invited Review), *J Biomed Opt.* 2007, 12, 051402. (Invited Review) **Also selected to appear in the "Virtual Journal of Biological Physics Research"*
- J20) **Hillman EMC**, Bernus O, *Pease E, *Bouchard MB, Pertsov A. Depth-resolved optical imaging of transmural electrical propagation in perfused heart, *Optics Express*, 15 (26), 2007, 17827-17841. **Also selected to appear in the "Virtual Journal of Biomedical Optics" (cover).*
- J21) **Hillman EMC**, Moore A. All-optical anatomical co-registration for molecular imaging of small animals using dynamic contrast, *Nature Photonics.* 2007, 1(9): 526-530. (Cover article, 'Meet the Author' Interview and 'News and Views' feature. Selected to be free online as a 'Highlight of 2007').
- J22) *Radosevich AJ, *Bouchard MB, *Burgess SA, *Chen BR, **Hillman EMC**. Hyper-spectral in-vivo two-photon microscopy of intrinsic contrast, *Optics Letters*, 2008, 33 (18), 2164-2166. **Also selected to appear in the "Virtual Journal of Biological Physics Research" and the "Virtual Journal of Biomedical Optics" (cover)*

- J23) *Burgess SA, *Bouchard MB, *Yuan B, **Hillman EMC**. "Simultaneous Multi-Wavelength Lamina Optical Tomography, *Optics Letters*, 2008, 33 (22), 2710-2712.
- J24) Devor A, **Hillman E. M. C**, Tian P, Waeber C, Teng I. C, Ruvinskaya S, Shalinsky M, Zhu H, Haslinger R, Narayanan S, Ulbert I, Dunn A. K, Lo E, Rosen B. R, Dale A. M, Kleinfeld D, Boas D. A, Stimulus-induced changes in blood flow and 2-deoxyglucose uptake dissociate in ipsilateral somatosensory cortex, *J. Neurosci*, 2008, 28: 14347-14357.
- J25) **Hillman EMC**, *Burgess SA. Sub-millimeter 3D Optical Imaging of Living Tissue using Lamina Optical Tomography, *Laser & Photonics Reviews*, 2009, 3 (1-2), 159-180. (Invited)
- J26) Karagiannis A, Gallopin T, Dávid C, Battaglia D, Geoffroy H, Rossier J, **Hillman EMC**. Staiger J, Cauli B. Classification of NPY-expressing neocortical interneurons, *J Neurosci*, 2009, 29(11):3642-3659.
- J27) Blaner WS, O'Byrne SM, Wongsiriroj N, Kluwe J, D'Ambrosio D, Jiang H, Schwabe RF, **Hillman EMC**, Piantedosi R, Libien J. Hepatic Stellate Cell Lipid Droplets: A Specialized Lipid Droplet for Retinoid Storage. *Biochimica et Biophysica Acta*, 2009, 1791(6):467-73.
- J28) *†Yuan B, *†Burgess SA, *Iranmahboob AK, *Bouchard MB, *Lehrer N, *Bordier C, **Hillman EMC**, System for rapid, simultaneous, high resolution, depth-resolved fluorescence and absorption optical imaging, *Rev. Sci. Instrum.* 2009, 80, 043706-1. †*Equal contribution first authors.*
- J29) Culver JP, Drexler W, Drezek RA, Georgakoudi I, **Hillman EMC**, Richards-Kortum R, Topics in Biomedical Optics: introduction to the feature issue, *Appl. Opt.*, 2009, 48 (10), pp. TBO1-TBO2. (Invited)
- J30) *†Bouchard MB, *†Chen BR, *Burgess, SA, **Hillman EMC**, "Ultra-fast multispectral optical imaging of cortical oxygenation and blood flow dynamics", *Optics Express*, 2009, 17 (18), 15670-15678. †*Equal contribution first authors.*
- J31) Sirotin YB, †**Hillman EMC**, *Bordier C, Das A. "Spatiotemporal precision and hemodynamic mechanism of optical point-spreads in alert primates", *PNAS*, 2009, 106, 18390-18395. (*Top 30 downloaded papers for PNAS 2009, featured as Nature 'Best of Research Highlights' for 2009*). †co-senior author.
- J32) *Sun R, *Bouchard MB, **Hillman EMC** "SPLASSH: Open source software for camera-based high-speed, multispectral in-vivo optical image acquisition" *Biomed Opt Expr*, 2010, 1 (2), 385-397.
- J33) Tian P, Teng IC, May LD, Kurz R, Lu K, Scadeng M, **Hillman EMC**, De Crespigny AJ, D'Arceuil HE, Mandeville JB, Marota JJA, Rosen BR, Liu TT, Boas DA, Buxton R, Dale AM, Devor A, "Cortical depth-specific microvascular dilation underlies laminar differences in blood oxygenation level-dependent functional MRI signal", *PNAS*, 2010, 107 (34), 15246-15251.
- J34) *Burgess SA, Ratner D, *Chen BR, **Hillman EMC**, "Fiber-Optic and Articulating Arm Implementations of Lamina Optical Tomography for Clinical Applications" *Biomed Opt Expr*, 2010, 1 (3), 780-790.

- J35) Nordstrom RJ, Almutairi A, **Hillman EMC**, “Feature Issue Introduction: Bio-Optics in Clinical Applications, Nanotechnology, and Drug Discovery”, *Biomed Opt Expr*, 2010, 1 (3) 746-747 (Invited)
- J36) Taber KH, **Hillman EMC**, Hurley RA, “Optical Imaging: A New Window to the Adult Brain”, *Neuropsychiatry Clin Neurosci* 2010, 22 (4), 357-360 (Invited) (*cover*)
- J37) Baik AD, Lu XL, Qiu J, Huo B, **Hillman EMC**, Dong C, Guo XE, “Pseudo-3D Cytoskeletal Dynamics of Osteocytes under Fluid Flow”, *Biophys J*, 2010, 99 (9), 2812-2820.
- J38) *Chen BR, *Bouchard MB, *McCaslin AFH, *Burgess SA, **Hillman EMC**, “High-speed vascular dynamics of the hemodynamic response”, *Neuroimage*, 2011, 54 (2), 1021-1030.
- J39) *McCaslin AFH, *Chen BR, *Radosevich AJ, Cauli B, **Hillman EMC** “In-vivo 3D morphology of astrocyte-vasculature interactions in the somatosensory cortex: implications for neurovascular coupling”, *J Cereb Blood Flow Metab*, 2011, 31, 795–806 (*Feature and Cover article*).
- J40) *Grosberg LE, *Radosevich AJ, Asfaha S, Yang X, Wang TJ, **Hillman EMC**, “Spectral characterization and unmixing of intrinsic contrast in intact normal and diseased gastric tissues using hyperspectral two-photon microscopy” *PlosOne* 2011, 6(5): e19925.
- J41) **Hillman EMC**, *Amoozegar CB, *Wang T, *McCaslin AFH, *Bouchard MB, Mansfield JR, Levenson RM, “In-vivo optical imaging and dynamic contrast methods for biomedical research” *Phil. Trans. Royal Soc A*. 2011, 369 (1955), 4620-4643 (Invited)
- J42) Chen L, Chan TH, Choyke PL, **Hillman EMC**, Bhu-jwalla ZM, Chi CY, Wang G, Szabo Z, Wang, Y, “A Signal Deconvolution Tool for In Vivo Dynamic Contrast-enhanced Imaging of Complex Tissues”, *Bioinformatics* 2011, 27(18): 2607-2609 .
- J43) **Hillman EMC**, Elson DS, Bigio IJ, Levenson RM, So PTC. “Feature Issue Introduction: Advances in Optics for Biotechnology, Medicine and Surgery” *Biomed Opt Expr*, 2012, 3(3): 531–532.
- J44) Qiu J, Baik AD, Lu L, **Hillman EMC**, Zhuang Z, Dong C, Guo XE, “Theoretical Analysis of Novel Quasi-3D Microscopy of Cell Deformation”, *Cel. Mol. Bioeng* 2012, 5 (2), 165-172.
- J45) *Muldoon T, *Burgess SA, *Chen BR, Ratner D, **Hillman EMC**, “Analysis of skin lesions using Laminar Optical Tomography”, *Biomed Opt Expr*, 2012. 3(7): p. 1701-1712.
- J46) *Grosberg LE, *Chen BR, **Hillman EMC**, “Simultaneous multi-plane in-vivo non-linear microscopy using spectral encoding”, *Optics Letters*, 2012, 37(14), 2967-2969.
- J47) *Amoozegar CB, *Wang T, *Bouchard MB, *McCaslin AFH, Blaner WS, Levenson RM, **Hillman EMC**, “Dynamic contrast enhanced optical imaging of in-vivo organ function”, *J Biomed Opt*, 2012, 17(9), 096003.
- J48) Baik AD, Qiu J, **Hillman EMC**, Dong C, Guo XE, “Simultaneous Tracking of 3D Actin and Microtubule Strains in Individual MLO-Y4 Osteocytes under Oscillatory Flow”, *Biochem. Biophys. Res. Comms*, 2013, 431(4):718-23.

- J49) *Kozberg M, *Chen BR, *De Leo SE, *Bouchard MB, **Hillman EMC**, “Resolving the transition from negative to positive BOLD in the developing brain”, PNAS 2013, 110(11):4380-5.
- J50) Baik AD, Qiu J, **Hillman EMC**, Dong C, Guo XE. Simultaneous tracking of 3D actin and microtubule strains in individual MLO-Y4 osteocytes under oscillatory flow. *Biochemical and Biophysical Research Communications*. 2013;431:718-723
- J51) **Hillman EMC**, & *Kozberg M. G. “What secrets can functional MRI reveal about the developing infant brain?” (invited editorial), *Imaging in Medicine* 5, 203-206, (2013).
- J52) *Rayshubskiy A, Wojtasiewicz TJ, Mikell CB, *Bouchard MB, *Timerman D, Youngerman BE, McGovern RA, Otten ML, Canoll, PD, McKhann II GM, **Hillman,EMC**. "Direct, intraoperative observation of ~0.1 Hz hemodynamic oscillations in awake human cortex: Implications for fMRI." *NeuroImage*, 87, 323-331, (2014).
- J53) Qiu J, Baik AD, Lu XL, **Hillman EMC**, Zhuang Z, Dong C, Guo XE. A noninvasive approach to determine viscoelastic properties of an individual adherent cell under fluid flow. *Journal of Biomechanics*, 47 (6), 1537-1541 (2014).
- J54) Cayce JM, *Bouchard MB, Chernov MM, *Chen BR, *Grosberg LE, Jansen ED, **Hillman EMC**, Mahadevan-Jansen A. "Calcium imaging of infrared-stimulated activity in rodent brain", *Cell Calcium*, 55 (4), 183-190 (2014).
- J55) **Hillman, EMC** (2014). Coupling Mechanism and Significance of the BOLD Signal: A Status Report. *Annual Review of Neuroscience*, 37: 161-181 (2014).
- J56) *Chen BR, *Kozberg M, *Bouchard MB , *Shaik MA and **Hillman EMC**, “A critical role for arterial endothelium in neurovascular coupling”, *JAHA*, 3: e000787, (2014).
- J57) **Hillman EMC**, ‘Out for Blood’, *Scientific American MIND*, July/Aug (2014).
- J58) Chen L, Choyke PL, Wang N, Clarke R, Bhujwala ZM, **Hillman EMC**, Wang G, and Wang Y, Unsupervised deconvolution of dynamic imaging reveals intratumor vascular heterogeneity and repopulation dynamics. *PLoS One*, 9(11): p. e112143, (2014).
- J59) *Bouchard MB, Voleti V, Mendes C, Lacefield C, Grueber W, Mann R, Bruno R, **Hillman EMC**, “Swept Confocally Aligned Planar Excitation (SCAPE) microscopy for fast, volumetric microscopy of behaving organisms”, *Nature Photonics*, 9, 113–119 (2015). (Cover article, ‘News and Views’ feature. *Research Highlight in Nature Methods*).
- J60) *Galwaduge PT, *Kim SH, *Grosberg LE, **Hillman EMC**, "Simple wavefront correction framework for two-photon microscopy of in-vivo brain," *Biomed. Opt. Express* 6, 2997-3013 (2015).
- J61) Lacroix A, Toussay X, Anenberg E, Lecrux C, Ferreiros N, Karagiannis A, Plaisier F, Chausson P, Jarlier F, *Burgess SA, **Hillman EMC**, Tegeder I, Murphy TH, Hamel E, and Cauli B, “COX-2-Derived Prostaglandin E2 Produced by Pyramidal Neurons Contributes to Neurovascular Coupling in the Rodent Cerebral Cortex.” *J Neurosci*, **35**(34): p. 11791-810. (2015).
- J62) Pavone FS, **Hillman EMC**, Leblond F, Shoham S, “Introduction to the Optics and the Brain 2015 feature issue”, *Biomedical Optics Express*, 6 (12), pp. 4992-4993 (2015).

- J63) Akassoglou K, Agalliu D, Chang CJ, Davalos D, Grutzendler J, **Hillman EMC**, Khakh BS, Kleinfeld D, McGavern DB, Nelson SJ and Zlokovic BV, “Neurovascular and Immuno-Imaging: From Mechanisms to Therapies. Proceedings of the Inaugural Symposium”, *Front. Neurosci.*, 10, (2016)
- J64) *Chow DS, Horenstein CI, Canoll PD, Lignelli A, **Hillman EMC**, Filippi CG, Grinband J, “Glioblastoma Induces Vascular Dysregulation in Non-Contrast Enhancing Peritumoral Regions in Humans”, *Am J Radiol*, 206(5):1073-81 (2016).
- J65) *Kozberg MG, *Ma Y, *Kim SH, **Hillman EMC**, ‘Rapid postnatal expansion of neural networks occurs in an environment of altered neurovascular and neurometabolic coupling’, *J Neurosci*, 36(25): p. 6704-17 (2016)
- J66) *Ma Y, *Shaik MA, *Kim SH, *Kozberg MG, *Thibodeaux DN, *Zhao HT, *Yu H., and **Hillman EMC**, ‘Wide-field optical mapping of neural activity and brain haemodynamics: considerations and novel approaches’. *Philos Trans R Soc Lond B Biol Sci.* 371 p. 1705 (2016).
- J67) Lunardi C.N., Gomes A.J.,* Palepu S., *Galwaduge P.T., and **Hillman E.M.C**, ‘PLGA nano/microparticles loaded with cresyl violet as a tracer for drug delivery: Characterization and in-situ hyperspectral fluorescence and 2-photon localization’. *Materials Science and Engineering: C*, 70, Part 1: p. 505-511. (2017)
- J68) *Kozberg MG, **Hillman EMC**, "Neurovascular coupling develops alongside neural circuits in the postnatal brain", *Neurogenesis*, 3(1): p. e1244439 (2016).
- J69) *Ma Y, *Kozberg MG, **Hillman EMC**, ‘Resting-state hemodynamics are spatiotemporally coupled to synchronized and symmetric neural activity in excitatory neurons’, *PNAS*, 113 (52) E8463–E8471 (2016).
- J70) Tang M, Gao G, Rueda CB, Awano T, Engelstad KM, Sanchez-Quintero M-J, Yang H, Li F, Li H, Su Q, Shetler KE, Jones L, McConathy J, *Thibodeaux DN, *Yu H, Seo R, **Hillman EMC**, Noebels JL, De Vivo DC, Monani UR, “Brain microvasculature defects and Glut1-deficiency syndrome averted by early repletion of the Glucose Transporter-1 protein”, *Nature Communications*, 8:14152. (2017).
- J71) Marcu L and **Hillman EMC**. In vivo Optical Imaging / Intravital Microscopy. *J Biophotonics*,10(6-7):760-1. doi: 10.1002/jbio.201770066. (2017)
- J72) Miller J, Wang ST, Orukari I, Prior J, Sudlow G, Su X, Liang K, Tang R, **Hillman EMC**, Weilbaeher KN, Culver JP, Berezin MY, Achilefu S. “Perfusion-based fluorescence imaging method delineates diverse organs and identifies multifocal tumors using generic near infrared molecular probes”. *Journal of Biophotonics* (2017).doi: 10.1002/jbio.201700232.
- J73) Nguyen HD, Ullmann JFP, McLachlan GJ, *Voleti V, *Li W, **Hillman EMC**, Reutens DC, Janke AL, “Whole-volume clustering of time series data from zebrafish brain calcium images via mixture modeling”, *The ASA Data Science Journal*. 2018;11(1):5-16.
- J74) *Shaik MA, **Hillman EMC**, “Skip the salt: your brain might thank you”, *Nature Neuroscience* 21 (2), 154 (2018) *News and Views*.

- J75) **Hillman EMC**, *Voleti V, *Patel K, *Li W, *Yu H, *Perez-Campos C, *Benezra SE, Bruno RM, *Galwaduge PT. “High-speed 3D imaging of cellular activity in the brain using axially-extended beams and light sheets”. *Curr Opin Neurobiol.* 50:190-200. (2018)

Refereed Proceedings of Conferences: (List in Chronological Order)

- C1) **Hillman EMC**, Dehghani, H, Hebden JC, Arridge SR, Schweiger M, Delpy DT. „Differential imaging in heterogeneous media: limitations of linearization assumptions”, in *Proc SPIE 4250*, p. 327-338. 2001.
- C2) Dehghani H, **Hillman EMC**, Schweiger M, Arridge SR, Delpy DT. "Optical tomography of a 3D multilayered head model". *Proc SPIE 4250*, p. 45-52. 2001.
- C3) Riley JD, Arridge SR, Chrysanthou Y, Dehghani H, **Hillman EMC**, Schweiger M. “The Radiosity Diffusion Model in 3D”. *Proc SPIE 4431*, p. 153-164. 2001.
- C4) **Hillman EMC**, Devor A, Dale AM, Dunn AK, Boas DA. “The use of depth-resolved optical imaging to separate cortical vascular compartments during functional activation”. *J Cereb Blood Flow & Metab.* 2005; 25: S374.
- C5) **Hillman EMC**, Devor A, Dunn AK, Boas DA. “Laminar optical tomography: high-resolution 3D functional imaging of superficial tissues”. *Proc. SPIE 6143*, 61431M, 2006.
- C6) **Hillman EMC**, Devor A, Boas DA. “High Resolution Functional Optical Imaging of Living Tissues”. *IEEE Proceedings of the International Symposium on Biomedical Imaging (ISBI)*, Arlington VA, April 2006.
- C7) **Hillman EMC**, *Bouchard M, Devor A, De Crespigny A, Boas DA. “Functional optical imaging of brain activation: a multi-scale, multi-modality approach”. *IEEE Proceedings of the Life Science Systems and Application Workshop*, Bethesda MD, July 2006.
- C8) *Burgess SA, *Yuan B, *Radosevich AJ, *Bouchard MB, **Hillman EMC**. “High-resolution 3D optical imaging of tissue”, *IEEE Proceedings LEOS*, 2007.
- C9) Mahadevan-Jansen A, Cayce JM, Friedman R, Roe AW, Konrad PE, **Hillman E**, Jansen E. “Imaging optically induced neural activity in the brain”. *Conf Proc IEEE Eng Med Biol Soc.* 3379-81. (2010)
- C10) Cayce JM, *Bouchard M, *Chen B, Jansen ED, **Hillman EMC**, Mahadevan-Jansen A. “Optical imaging of signals evoked by infrared neural stimulation of the rat brain”. *Proc SPIE paper 7883G-146* (2011)
- C11) Stoyanov D, Rayshubskiy A, **Hillman EMC**, “Robust registration of multispectral images of the cortical surface in neurosurgery”, *IEEE ISBI*, May 2012, Barcelona, Spain.
- C12) **Hillman EMC**, Bouchard MB, Voleti V, Li W, Mendes CS, Lacefield CO, George V, Grueber WB, Mann RS, Bruno RM and Targoff K, “Swept Confocally-Aligned Planar Excitation (SCAPE) Microscopy for High Speed Volumetric Imaging in Behaving Animals”, *Microscopy and Microanalysis*, 21 (S3), August 2015, pp 413 – 414

Books and Chapters in Books: (List in Chronological Order)

- B1) **Hillman EMC**. “Optical tomography”. Chapter in: ‘The Optics Encyclopedia; Basic Foundations and Practical Applications’. Brown ThG, Creath K, Kogelnik H, Kriss MA, Schmit J, Weber MJ, editors. Weinheim: (Wiley-VCH), 2003.
- B2) *Burgess SA and **Hillman EMC**, “Laminar Optical Tomography”, Chapter in ‘Handbook of Biomedical Optics’. Eds: Boas DA, Pitris C, Ramanujam N. (Taylor & Francis), 2011
- B3) *Kozberg MG and **Hillman EMC**, ‘Neurovascular coupling and energy metabolism in the developing brain’, **Book Chapter** in Prog Brain Res, 2016. 225: p. 213-42. New Horizons in Neurovascular Coupling: A Bridge Between Brain Circulation and Neural Plasticity (Elsevier).
- B4) *Voleti V, **Hillman EMC**, ‘Single-Objective light sheet configurations’, Light Sheet Microscopy (Wiley), Eds Raynaud E, Tomancak P (*in press*)

Research Funding History

Current Funding

NIH/NINDS/NIMH, 5U01NS094296-02+S1 (PI: Hillman EMC) 09/01/15-08/31/18

SCAPE microscopy for high-speed in-vivo volumetric microscopy in behaving organisms

BRAIN Initiative grant to develop high-speed 3D SCAPE microscopy technique.

NIH/NINDS, 1R01NS063226-06 (PI: Hillman EMC) 05/15/08-12/30/19

In-vivo optical imaging of neurovascular coupling and cerebral metabolism

Investigating neurovascular coupling and cerebral metabolism in the living rodent brain using novel optical imaging and microscopy tools.

NIH/NIMH, 1 RF1 MH114276-01 (PI: Hillman EMC) 09/01/17-08/31/21

Decoding the neural basis of resting-state functional connectivity mapping

BRAIN Initiative grant to apply wide field optical mapping methods in awake, behaving mice as well as analysis of longitudinal intracortical electrode recordings in humans to explore the origins of spontaneous brain-wide activity underlying resting state fMRI.

Simons Foundation Collaboration on the Global Brain (Co-PI: Hillman EMC) 07/01/2017-06/31/22
(Co-PIs: Abbott L, Axel R, Hillman EMC, Ruta V, Rubin G, Aso Y)

The Representation of Internal State in the Fly Brain

Collaborative project to investigate internal state in the adult fly brain using SCAPE microscopy.

NIH/NINDS 1U19 NS104649-01 (PI: Costa) 09/01/17-08/31/22

Computational and circuit mechanisms underlying motor control

BRAIN Initiative Team Circuits Programs grant to explore the computational and circuit mechanisms underlying classical modes of motor control.

Role: Project Lead of Project 2, Co-I of Project 5, Core co-Lead of Core C

- DoD, MURI W911NF-12-1-0594 (PI: Yuste R) 10/01/12-9/30/18
Imaging how a neuron computes
Large inter-institution collaboration with Kenneth Shepard, Wei Min, Jung-Chi Liao, Dirk Englund, Jonathan Owen, Liam Paninski, Sebastian Seung, Jeff Lichtman and Xiaowei Zhang to develop and apply techniques to understand neuronal networks. Role: Co-Investigator
- NIH/NHLBI, R01HL13143801A1 (PI: Targoff K) 01/01/17-12/31/21
Mechanisms of second heart field development regulated by NKX genes.
Collaboration involving using SCAPE microscopy to image functional development of the zebrafish heart.
Role: Co-Investigator
- Research Opportunities and Approaches to Data Science (ROADS) 08/01/16-07/31/18
RG31 Dissecting Spatiotemporal Brain Dynamics (co-PIs Hillman / Zheng)
Columbia Data Science Institute Ignition grant to apply novel spatiotemporal unmixing algorithm to separate hemodynamic and neural dynamics in wide-field optical mapping data acquired on mouse brain.
- Kavli Institute for Brain Science Pilot Award (co-PIs Hillman / Behnia) 07/01/16-06/30/18
Tracing visual circuits in the fly brain using SCAPE: a novel, fast, whole-brain imaging technique
Developing new approaches to imaging visual circuits in the brains of fruit flies using SCAPE microscopy.
- Columbia-Coulter Translational Research Partnership (PI: Hillman EMC) 08/01/16-07/31/18
SCAPE-Tech Pathfinder
Pilot project to explore clinical applications of SCAPE technology for human histopathology and tissue-typing.
- Columbia University RISE Program (co-PIs Lev / Hillman) 09/01/17-08/31/19
Predicting Volcanic Eruptions Using Real-time 4D+ Microscopy of Bubble Interactions in a Solid-Liquid Mush
Funding from internal Columbia program promoting interdisciplinary collaboration. Applying SCAPE microscopy to image micro-scale fluorescent analogs of volcanic magma to understand the interactions of bubbles flowing in a solid-liquid material.

Completed Funding

- Sponsor: National Institutes of Health, National Institute of Neurological Disorders and Stroke.
Title: “Imaging the neuronal and metabolic basis of resting state connectivity mapping”
Role: Principal Investigator: Hillman EMC (2 mo)
Dates: 08/15/11-07/31/17
Reference: 1 R01 NS076628.
- Sponsor: National Science Foundation
Title: “CAREER: Interventional Microscopy for In-vivo Investigations of Brain Function”
Role: Principal Investigator: Hillman EMC (1 mo)
Dates: 03/1/10-02/28/16
Reference: CAREER: 0954796

Sponsor: NIH, National Institute of Neurological Disorders and Stroke.
Title: “Optics and the Brain” (OSA Conference, Hillman and Pavone Chairs).
Role: Co-Investigator (PI Quarles G, CEO of OSA)
Dates: 04/02/17- 04/05/17
Reference: 1R13NS101936-01 *Conference grant*

Sponsor: National Institutes of Health, National Institute of Arthritis, Musculoskeletal and Skin
Title: “Columbia University Medical Center Skin Diseases Research Center”
Role: PI: Bickers DR, Imaging Core co-Director: Hillman EMC (0.6 mo)
Dates: 08/01/11 -06/30/17
Reference: P30 AR044535-10

Sponsor: National Science Foundation
Title: “IDBR: CMOS cameras for high-frame-rate time-correlated single-photon counting”
Role: Principal Investigator: Shepard K, Co-PIs: Hillman EMC (0 mo) and Yuste R
Dates: 03/1/10-08/31/16
Reference: IDBR: 1063315

Sponsor: National Institutes of Health, National Eye Institute.
Title: “Anticipatory Hemodynamic Signals in Primary Visual Cortex”
Role: Co-Investigator (PI: Das A)
Dates: 05/01/08-09/29/16
Reference: 1R01 EY019500

Sponsor: National Science Foundation.
Title: “Optics and the Brain Topical Meeting”
Role: Principal Investigator: Rogan E, co-PI Hillman EMC
Dates: 04/01/15- 05/01/15
Reference: 1540895 *Conference grant*

Sponsor: National Science Foundation (IGERT)
Title: “Optical Techniques for Actuation, Sensing & Imaging of Biological Systems”
Role: Principal Investigator: Shepard K, Key Personnel: Hillman EMC (0 mo)
Dates: 09/01/08-06/30/15 Amount: \$1,200,000 (total)
Reference: IGERT 0801530

Sponsor: National Institutes of Health, National Institute of Biomed Imaging & Bioengineering
Title: “Tracking Stem Cells in Engineered Tissues and Organs In Vivo and In Real Time”
Role: Principal Investigator: Mao J, Key Personnel: Hillman EMC (0.6 mo)
Dates: 09/15/09-04/31/14
Reference: 1 R01 EB009663-01A2

Sponsor: Columbia Irving Institute Collaborative & Multidisc Pilot Research Award, Phase 2
Title: “Improving imaging biomarkers for brain tumor resection”
Role: Principal Investigator: Hillman EMC, co-PIs, McKhann G, Canoll P
Dates: 07/01/12-06/30/13

- Sponsor: Kavli Foundation pilot project grant
Title: “Fast 3D imaging of neuronal networks in vivo using laser-scanning intersecting plane tomography (L-SIPT)”
Role: PI: Hillman EMC
Dates: 12/21/12-12/20/13
- Sponsor: Human Frontier Science Program.
Title: “In-vivo and In-vitro: cellular and neuro-chemical mechanisms of somatosensory neurovascular coupling”
Role: Principal Investigator: Hillman EMC, co-PI Cauli B (Paris)
Dates: 12/01/07-11/31/11
Reference: RGY0070/2007-C
- Sponsor: Coulter Foundation (Early Career Award)
Title: “Development of depth-resolved optical imaging for melanoma margin mapping and invasion depth determination”
Role: Principal Investigator: Hillman EMC
Dates: 09/01/06-08/31/09
Reference: -
- Sponsor: National Institutes of Health, National Institute of Neurological Disorders and Stroke.
Title: “3D Neurovascular Coupling: A Depth-resolved Voltage Sensitive Dye Imaging System”
Role: Principal Investigator: Hillman EMC
Dates: 12/01/05-11/30/08
Reference: 1R21NS053684-01
- Sponsor: NIH, National Institute of Neurological Disorders and Stroke, National Institute of Biomedical Imaging & Bioengineering, National Cancer Institute.
Title: “Advances in optics for biotechnology, medicine and surgery conference XII”
Role: Principal Investigator: Hillman EMC, co-PIs: Elson D, Thompson R
Dates: 04/01/11- 03/31/12
Reference: 1 R13 EB012903-01 *Conference grant*
- Sponsor: National Science Foundation.
Title: “Advances in optics for biotechnology, medicine and surgery conference XII”
Role: Principal Investigator: Hillman EMC, co-PIs: Elson D, Thompson R
Dates: 04/01/11- 03/31/12
Reference: 1105324 *Conference grant*
- Sponsor: National Institutes of Health, National Institute of Biomed Imaging & Bioengineering
Title: “In-vivo optical molecular imaging with Dynamic Contrast Enhancement (DyCE)”
Role: Principal Investigator: Levenson R, Subcontract: Hillman EMC
Dates: 07/01/08-06/31/09
Reference: 1 R43 EB008627
Phase I SBIR Industry Collaboration with Cambridge Research & Instrumentation (CRi)

Sponsor: National Science Foundation
Title: “Directed Evolution of Specific Cell Penetrating Peptides”
Role: Principal Investigator: Banta S, Co-PIs: Morrison B, Hillman EMC (0 mo)
Dates: 07/01/09-06/30/12
Reference: 0853946

Sponsor: National Institutes of Health, National Institute of Arthritis, Musculoskeletal and Skin
Title: “Pseudo-3D Cytoskeletal Dynamics and Signal Activation in Osteocytes under Flow”
Role: Principal Investigator: Guo XE, Key Personnel: Hillman EMC (0.6 mo)
Dates: 07/01/10-06/30/12
Reference: 1 R21 AR059917

Sponsor: Defense Advanced Research Projects Agency (DARPA)
Title: “Development of a closed-loop brain cooling system”
Role: Principal Investigator: Bien F, Consultant: Hillman EMC
Dates: 06/15/10 – 12/15/10
Reference: SBIR
Phase I SBIR Industry Collaboration with Spectral Sciences Inc (SSI)

Sponsor: National Institutes of Health, National Cancer Institute
Title: “The Role of Inflammation and Stroma in Digestive Cancer”
Role: Principal Investigator: Wang T, Imaging Core co-Director: Hillman EMC (1 mo)
Dates: 09/31/06-8/31/11
Reference: 5 U54 CA126513

Sponsor: Columbia Irving Institute Collaborative & Multidisc Pilot Research Award, Phase 1
Title: “Uncovering the Hemodynamic Signature of Glioma with Ultra-fast Multispectral Optical Imaging”
Role: Principal Investigator: Hillman EMC, co-PIs, McKhann G, Canoll P
Dates: 11/15/11-03/31/12

Sponsor: Columbia Irving Institute Collaborative & Multidisc Pilot Research Award, Phase 1
Title: “Planning for a Stem Cell Transplantation Rare Genetic Disease Consortium”
Role: Principal Investigator: Cairo M, Co-Investigator: Hillman EMC
Dates: 11/05/08-02/04/09

Sponsor: Columbia Faculty Development Research Fellowship
Title: “Construction of a custom in-vivo two-photon microscopy system”
Role: Principal Investigator: Hillman EMC
Dates: 04/01/07-03/31/08

Sponsor: Columbia University SEAS (Rodriguez Family)
Title: “Rodriguez Family Junior Faculty Award”
Role: Principal Investigator: Hillman EMC
Dates: 05/19/08- 05/18/09

Sponsor: National Institutes of Health, National Cancer Institute
Title: “3D Imaging of electrical activity in myocardial tissue”
Role: Principal Investigator: Pertsov A, Subcontract PI: Hillman EMC
Dates: 07/01/06-04/30/08
Reference: 5 R01 HL071635 *BRP collaboration with SUNY Syracuse*

Sponsor: National Institutes of Health, National Institute of Neurological Disorders and Stroke.
Title: “Neurovascular coupling in the cerebrum and cerebellum”
Role: Principal Investigator: Devor A, Key Personnel: Hillman EMC (4 mo, 5/05-7/06)
Dates: 05/01/05-04/30/10
Reference: 1 R01 NS05118-01 *While at Massachusetts General Hospital*

Sponsor: National Institutes of Health, National Institute of Biomed Imaging & Bioengineering
Title: “Spatiotemporal Brain Imaging: Microscopic and Systems Level”
Role: Principal Investigator: Dale A, Key Personnel: Hillman EMC (6-8 mo, 5/05-7/06)
Dates: 09/05/02-08/31/07
Reference: 2 R01 EB00790-01A2 *While at Massachusetts General Hospital*

Sponsor: Wellcome Trust (UK)
Title: “Wellcome Trust Prize Studentship”
Role: Principal Investigator: Hebden J, Awarded to: Hillman EMC (12 mo)
Dates: 09/98-01/02
Reference: 055273 *While at University College London*

Invited Lectures

1. **Hillman EMC**, *Special Lecture*, 'Initial clinical testing of the UCL 32 channel time-resolved instrument for optical tomography', MGH-NMR Center, Department of Radiology, Massachusetts General Hospital, Charlestown, MA (July 2000)
2. **Hillman EMC**, *Special Lecture*, 'Time-resolved optical tomography: development of a 32 channel near-infrared imaging system for cotside monitoring of the neonatal brain', Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA (Feb 2001)
3. **Hillman EMC**, *Special Lecture*, 'Time-resolved optical tomography: development of a 32 channel near-infrared system for neonatal brain imaging', G.R. Harrison Spectroscopy Laboratory, Massachusetts Institute of Technology, Cambridge, MA (May 2001)
4. **Hillman EMC** et al, *Symposium*, 'Biomedical applications of lasers: time resolved optical tomography', Rank Prize Fund Mini-symposium on Applications of Free Electron Lasers, Sept 2001, Grasmere, UK (*Oral presentation, Invited student*)
5. **Hillman EMC**, *Special Lecture*, 'Optical Tomography: from centimeters to microns', Beckman Laser Institute, University of California, Irvine, CA (June 2003)
6. **Hillman EMC**, *Seminar series*: 'Laminar optical tomography: Non-contact, depth-resolved imaging of rat cortical activation through thinned-skull', Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA (Aug 2004) (*invited*)
7. **Hillman EMC**, *Special Lecture*, 'Laminar Optical Tomography: Non-contact, depth-resolved imaging of rat cortical activation through thinned-skull', Department of Psychology, University of Sheffield, UK (Nov 2004)
8. **Hillman EMC**, *Special Lecture*, 'In-vivo Optical Imaging: from Microns to Centimeters, from Ultraviolet to Near Infra-Red, Department of Biomedical Engineering', Texas A&M University, TX (Feb 2005)
9. **Hillman EMC**, *'Brainmap' Seminar Series*: 'Spatio-temporal separation of vascular compartments using 3D optical imaging of exposed rat cortex during functional activation', Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA (Feb 2005) (*invited*)
10. **Hillman EMC**, *Special Lecture*, '3D optical imaging of exposed rat cortex during functional activation: Spatio-temporal separation of vascular compartment', Neurophysics Group, Physics Department, University of California at San Diego (UCSD), CA (April 2005)
11. **Hillman EMC**, *Special Lecture*, 'Invasive and non-invasive functional optical imaging' Department of Biomedical Engineering, Columbia University, New York, NY (April 2005)
12. **Hillman EMC** et al, *Conference*, '3D high-resolution optical imaging of cortical activation: Vascular compartment separation using spatio-temporal constraints and priors' OSA European Conference on Biomedical Optics, June 7-13; Munich Germany. (*Oral presentation, contributed, but selected for 30 minute Invited talk*)
13. **Hillman EMC**, *Special Lecture*, 'Laminar Optical Tomography: High resolution, depth-resolved functional optical imaging', Department of Pharmacology, SUNY Upstate University, Syracuse, NY (July 2005)
14. **Hillman EMC**, *Special Lecture*, 'High-resolution 3D imaging of brain function using Laminar Optical Tomography, Two-Photon Microscopy and Functional Magnetic

- Resonance Imaging', University College London, Department of Medical Physics and Bioengineering, London, UK (March 2006)
15. **Hillman EMC**, *Symposium*, 'Multi-scale in-vivo imaging of functional activation in the somatosensory cortex', Laboratoire de Neurobiologie, Ecole Supérieure de Physique et de Chimie Industrielles, Paris, France (March 2006) (*invited*)
 16. **Hillman EMC** et al, *Conference*, 'High-resolution functional optical imaging: sub-millimeter physiology of living tissue'. OSA Biomedical Topical Meeting, March 19-23; Fort Lauderdale FL. (*Oral presentation, contributed, but selected for 30 minute Invited talk*)
 17. **Hillman EMC** et al. *Conference*, 'High Resolution Functional Optical Imaging of Living Tissues'. IEEE Proceedings of the International Symposium on Biomedical Imaging (ISBI) 2006, April, Arlington VA (*Invited*)
 18. **Hillman EMC**, *Conference*, 'Diffuse Optical Tomography', In: OSA Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies (CLEO/QELS/PhAST), 2006, June 10; Long Beach CA. (*Invited*)
 19. **Hillman EMC**, *Gordon Conference*, 'High resolution functional optical imaging of exposed cortex in-vivo', Gordon Research Conference: Lasers in Medicine and Biology, Holderness, NH, July 2006. (*Invited*)
 20. **Hillman EMC**. *Symposium*, 'Functional optical imaging of brain activation: a multi-scale, multi-modality approach', IEEE/NLM Life Science Systems and Application Workshop, NIH Bethesda, MD, July 2006. (*Invited*)
 21. **Hillman EMC** et al. *Symposium*, 'High resolution functional optical imaging of rodent cortex: investigating mechanisms of functional activation', at 'Optical Diagnostic Imaging from Bench to Bedside' Technical Workshop at the National Institutes of Health 2006, September, NIH Bethesda, MD (*Invited*).
 22. **Hillman EMC**, *Seminar Series*, Imaging Neurovascular Coupling in-vivo: from single neurons to BOLD. Mallinckrodt Institute of Radiology, Washington University, St Louis, MI (Feb 2007) (*invited*)
 23. **Hillman EMC**, *Seminar Series*: 'In-vivo optical imaging of hemodynamics and electrical activity'. Department of Electrical Engineering, Columbia University, New York, NY (April 2007) (*invited*)
 24. **Hillman EMC**, *Symposium*, 'Imaging neurovascular coupling in-vivo: from single neurons to BOLD', at McGovern Institute Symposium: 'Plumbing the Mind: Brain Activation and the Regulation of Cerebral Blood Flow' Symposium, MIT Boston, MA (May 2007) (*Invited*).
 25. **Hillman EMC**, *Short Course*, 'Neurovascular Coupling in-vivo: From Single Neurons to BOLD'. Part of the Multi-Modality Brain Imaging Short Course, Massachusetts General Hospital / Harvard Medical School, Athinoula A. Martinos Center for Biomedical Imaging (June 2007) (*invited*)
 26. *Burgess SA .. **Hillman EMC**. *Conference*, 'High-resolution 3D optical imaging of tissue', IEEE Proceedings LEOS, Orlando FL, October 2007. (*Invited*)

27. **Hillman EMC et al.** *Conference*, ‘Multidimensional functional optical imaging of the brain’. OSA Biomedical Topical Meeting 2008. March 16-19; St Petersburg FL. (*Invited*)
28. **Hillman EMC**, *Seminar Series*, In-vivo optical imaging of neurovascular coupling (and a few other things), Department of Biomedical Engineering, Vanderbilt University. Nashville, TN (May 2008) (*invited*)
29. **Hillman EMC**, *Company Special Lecture*, ‘Functional optical imaging’, Cambridge Research and Instrumentation, Woburn MA (May 2008) (*invited*)
30. **Hillman EMC**, *Gordon Conference*, ‘Vascular compartment dynamics during neuronal activation’, Gordon Research Conference on Brain Energy Metabolism and Blood Flow, August 2008, Andover, NH. (*Invited*)
31. **Hillman EMC et al**, *Conference*, ‘Optical Imaging of transmural cardiac propagation’, BMES Annual Meeting, October 2nd 2008, St Louis MO. (*Invited*)
32. **Hillman EMC**. *Conference*, ‘Mouse Organ Imaging’, OSA Frontiers in Optics (FiO) October 19, 2008, Rochester, NY. (*invited*)
33. **Hillman EMC et al.** *Conference*, ‘Multidimensional functional optical imaging of the brain’. OSA Frontiers in Optics (FiO) Oct 19, 2008, Rochester, NY. (*Invited* ‘Best of the Topicals’ session)
34. ***Hillman EMC**, *Symposium*, Photons for functional imaging: Microscopy and optical imaging technologies for in-vivo applications. Proceedings of the Dodd-Walls Center for Quantum Science and Technology Symposium, December 8th, 2008, Queenstown, New Zealand. (*Keynote*)
35. **Hillman EMC**, *Special Lecture*, ‘Photons for functional imaging: Microscopy and optical imaging technologies for in-vivo applications’, Department of Physics, University of Auckland, New Zealand (Dec 2008) (*invited*)
36. **Hillman EMC**, *Seminar Series*, ‘In-vivo optical imaging of neurovascular coupling’, Columbia University MD/PhD Program Research Seminar Series (Dec 2008) (*invited*)
37. **Hillman EMC**, *Symposium*, ‘In-vivo optical imaging of skin’, New York ‘Skin Day’, hosted by the Columbia University Department of Dermatology (Dec 2008) (*invited*)
38. **Hillman EMC**, *Departmental Seminar*, ‘In-vivo optical imaging of neurovascular coupling’, Columbia University Department of Neuroscience (Jan 2009) (*invited*)
39. **Hillman EMC**, *Seminar Series*, ‘Imaging Neurovascular Coupling In-vivo: from Single Neurons to BOLD’, University College London Centre for Neuroimaging Techniques, London, UK (Feb 2009) (*invited*)
40. **Hillman EMC**, *Seminar Series*, ‘In-vivo optical imaging of neurovascular coupling’, Neurolunch Seminar Series, Columbia University Department of Biological Sciences (Feb 2009) (*invited*)
41. **Hillman EMC**, *Seminar Series*, ‘In-vivo optical imaging of neurovascular coupling’, University Paris Descartes, Paris (Feb 2009) (*invited*)

42. **Hillman EMC**, *Symposium*, ‘Imaging of Proteins in Skin In Vivo’, Symposium on Genetics, Stem Cell Biology and Stem Cell Transplantation in Epidermolysis Bullosa, Columbia Medical Center (Feb 2009) (*invited*)
43. **Hillman EMC**, *Seminar Series*, ‘Exploring the vascular mechanisms of cortical hemodynamics using high-speed in-vivo optical imaging’, Translational and Molecular Imaging Institute, Mount Sinai School of Medicine, New York, NY (Feb 2009) (*invited*)
44. **Hillman EMC**, *Seminar Series*, ‘Photons for functional imaging: Microscopy and optical imaging technologies for in-vivo applications’, Department of Biomedical Engineering, Rutgers University, New Brunswick, NJ (March 2009) (*invited*)
45. **Hillman EMC**, *Seminar Series*, ‘Applications of Laminar Optical in Neuroscience and Dermatology’, Department of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA (May 2009) (*invited*)
46. **Hillman EMC**, *Conference*, ‘In vivo optical imaging of animal disease models: From micro to macro’. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Invited*)
47. **Hillman EMC**, ‘In-vivo imaging of liver function, and Hyperspectral microscopy of fresh, healthy and diseased intestine and colon’, Herbert Irvine Cancer Center, Columbia University (Nov 2009) (*invited*)
48. **Hillman EMC**, *Seminar Series*, ‘In-vivo optical imaging of brain and organ function’, Columbia University Children’s Hospital, Department of Pediatrics, New York, NY (Dec 2009) (*invited*)
49. **Hillman EMC**, *Seminar Series*, ‘Laminar Optical Tomography and in-vivo optical imaging. Department of Electrical Engineering’, Ecole Polytechnique Montréal. Montreal, Canada (April 2010) (*invited*)
50. **Hillman EMC**, *Gordon Conference*, ‘Optical neuroimaging’, 2010 Gordon Research Conference on Lasers in Medicine and Biology, July 25–30, Holderness, NH. (*Invited*)
51. **Hillman EMC**, *Annual meeting*, ‘Imaging everything: Harnessing endogenous and exogenous contrast in- vivo’, Society of General Physiologists, New Optical Methods in Cell Physiology, September 2010, MBL Woods Hole, MA. (*Invited*)
52. **Hillman EMC** et al, *Conference*, ‘Opportunities for Biophotonics-based approaches in Drug Discovery & Development’, International Congress on Biophotonics 25-27 Sept 2010, Quebec City, Canada (*Invited*)
53. **Hillman EMC**, *Seminar Series*, ‘Optical imaging and microscopy of the living brain’. Department of Biomedical Engineering, Northwestern University, IL (Sept 2010) (*invited*)
54. **Hillman EMC** and *L’Heureux B, *Conference*, ‘Redox Imaging and metabolism’, International IFR83 annual meeting “Oxidative Metabolism in Health and Diseases”, Sept 27-28, 2010, Paris, France (*Invited* - Post-doctoral fellow Barbara L’Heureux attended on my behalf) (*invited*)
55. **Hillman EMC**, *Conference*, ‘New Visions for Optical Imaging’. Royal Society Conference: Making light work: Illuminating the future of biomedical optics. Nov 8-9 2010. Kavli Royal Society Centre, Buckinghamshire, UK. (*Invited*)

56. **Hillman EMC**, *Symposium*, 'Understanding neurovascular coupling with intravital microscopy and optical imaging', Neurotechniques Symposium at the Italian Academy for Advanced Studies in America at Columbia University, Dec 3rd 2010. New York (*Invited*)
57. **Hillman EMC**, *Conference*, 'In-vivo optical imaging and microscopy of neurovascular coupling'. Advanced Imaging Methods Workshop, Jan 19-21 2011, Berkeley CA (*Invited*)
58. **Hillman EMC**, *Conference*, 'The physiological limits of spatial and temporal resolution in fMRI', Ultra High Field Workshop sponsored by the International Society of Magnetic Resonance in Medicine (ISMRM), Feb. 20-23, 2011, Lake Louise, Canada. (*Invited*)
59. **Hillman EMC**, *Seminar Series*, 'Imaging everything, harnessing endogenous and exogenous contrast for in-vivo imaging', Department of Physiology Imaging Core, McGill University, Montreal Canada (March 2011) (*invited*)
60. **Hillman EMC**, *Site visit*, 'In-vivo optical imaging of the neurovascular network', Kavli Institute at Columbia University, Site Visit Seminar to Board. Columbia University, NY (March 2011) (*invited*)
61. **Hillman EMC**, *Grand Rounds*, 'Understanding neurovascular coupling with intravital microscopy and optical imaging', Department of Neurosurgery, Columbia University, NY (March 2011) (*invited*)
62. **Hillman EMC**, *Seminar Series*, 'In-vivo optical imaging; from animal to man', Irving Institute for Translational Medicine Seminar. Columbia University, NY (March 2011) (*invited*)
63. **Hillman EMC**, *Conference*, 'Imaging the Neurovascular Unit', Teaching session on Neurovascular Unit at Brain 2011, May 24-28, Barcelona, Spain (*Invited*)
64. **Hillman EMC**, *Think tank and speaker*, '(Brain) Imaging'. Kavli, Allen, Gatsby meeting on Nano-Neuro, Sept 10-13, 2011, Royal Society Kavli Center, UK, (*Invited*) – *this is the meeting at which the BRAIN initiative was founded.*
65. **Hillman EMC**, *Conference*, 'Phantoms for quantitative multimodal imaging', at 'Standards for Phantoms for the Performance Evaluation and Validation of Optical Medical Imaging Devices' NIST Conference, Catholic University of America, Nov 7-8th 2011, Washington DC. (*Invited*)
66. **Hillman EMC**, *Symposium*, 'Hyperspectral and Dynamic In-vivo Molecular Imaging and Microscopy', at 'Imaging the Essence; From Medical Diagnosis to Art Restoration' Symposium, Center for Molecular and Biomolecular Imaging, Duke University, (Dec 2011) (*Invited*)
67. **Hillman EMC**, *Grosberg LE et al, *Conference*, 'Multi-plane two photon microscopy for high speed 3D neuroimaging' Paper 8207G-162, SPIE Photonics West, 23 January 2012, San Francisco CA. (*Invited*) **Featured in Nature Photonics News and Views of as a conference highlight.*
68. **Hillman EMC**, *Conference*, 'Hot-Topics: In-vivo Microscopy: a New Window on the Brain', SPIE Photonics West, 23 January 2012, San Francisco CA (*Invited Plenary*)
69. **Hillman EMC**, *Kozberg MG et al, *Conference*, 'Novel in vivo imaging techniques for studying the neurovascular unit Imaging and novel diagnostics', 7th International Symposium on Neuroprotection and Neurorepair Potsdam Neurotrama and Repair, 2nd - 5th of May 2012, Potsdam, Germany (*Invited - MD/PhD student Mariel Kozberg presented in my place.*)

70. **Hillman EMC**, *Seminar*, ‘Neurophotonics: Optical imaging and in-vivo microscopy to understand the living brain’, Brown University, Biomedical Engineering Group (Sept 2012). (*invited*)
71. **Hillman EMC**, *Seminar Series*, ‘Functional Optical Imaging’, Stonybrook University, Department of Biomedical Engineering (Sept 2012). (*invited*)
72. **Hillman EMC**, *Special Event*, ‘Reading the Brain: What can we measure?’, Inauguration of the Grossman Center for the Statistics of the Mind, Columbia University, (Oct 2012) (*invited*)
73. **Hillman EMC**, *Course*, ‘In-vivo optical imaging and microscopy of neurovascular coupling’, at Photonic Imaging in Neuroscience Workshop, Marseille, France, 1-3rd Oct 2012 (*Invited*)
74. **Hillman EMC**, *Conference*, ‘Optical Imaging and Microscopy of the Living Brain’ at OSA Frontiers in Optics, Rochester NY, 14-18 Oct 2012 (*Invited*)
75. **Hillman EMC**, *Seminar Series*, ‘In-vivo dynamic and hyperspectral microscopy’, Rice University, Department of Biomedical Engineering. (Nov 2012). (*invited*)
76. **Hillman EMC**, *Conference*, ‘Optical Neuroimaging’, at OSA ‘Optics in the Life Sciences’ congress, Hawaii, 14-18 April 2013 (*Plenary*)
77. **Hillman EMC**, *Seminar Series*, ‘Imaging with Light (Biophotonics in Brief)’, Columbia University Medical Physics Seminar series. April 2013 (*invited*)
78. **Hillman EMC**, *Conference*, ‘In-vivo dynamic and hyperspectral microscopy’, American Association of Anatomists ‘Experimental Biology 2013’ Meeting, Boston MA, 20-24th April 2013 (*Invited*)
79. **Hillman EMC**, *Company summit*, ‘Small Animal Imaging with Dynamic Contrast (DyCE)’, PerkinElmer Revolutionaries for Global Health Summit (RGHS), 8-9th May 2013 (*Invited* as inventor of licensed technology)
80. **Hillman EMC**, *Conference*, ‘Cellular, vascular and functional development of the brain’, ‘Highlights from the Journal of Cerebral Blood Flow and Metabolism’ special session at Brain 2013, 20-23rd May 2013, Shanghai, China. (*Invited*)
81. **Hillman EMC**, *Conference*, ‘Exposed-cortex optical mapping of brain function: From animal to man’, Society for Brain Mapping and Therapeutics, 12-14th May 2013, Baltimore MD (*Invited*)
82. **Hillman EMC**, *Symposium*, ‘Exploring the neurovascular basis of functional neuro-imaging’, Imaging Sciences Pathway (ISP) retreat, Washington University, St Louis MO. (June 2013). (*Symposium Keynote*).
83. **Hillman EMC**, *Workshop*, ‘Functional imaging contrast in infants and children’, Small Workshop on Building Bridges to Facilitate Understanding and Treating ASD, Sackler Foundation, 18-19th October 2013, New York NY. (*Invited*).
84. **Hillman EMC**, *Conference*, ‘In-vivo dynamic and hyperspectral microscopy’, 7th Annual Workshop on Advanced TCSPC Techniques, 21-22 October 2013, Bethesda MD, (*Invited*).
85. **Hillman EMC**, *Think tank*, ‘Depth and Speed: What are the Limits?’, OSA Spatially Precise Optogenetics at Depth Incubator Meeting, 8-10th December 2013 in Washington, DC. (*Invited*)

86. **Hillman EMC, Conference**, ‘Intraoperative imaging of the human brain and fast 3D whole-field in-vivo microscopy’, 11th Advanced Imaging Methods Workshop, UC Berkeley, 29-31st January 2014, (*Invited*)
87. **Hillman EMC, Conference**, ‘Hyperspectral and Dynamic contrast: What your eyes can’t see’, NextMed, Medicine meets Virtual Reality (MMVR21) meeting, 19-22nd February 2014, Manhattan Beach CA. (*Plenary*)
88. **Hillman EMC, Conference**, ‘Brain Blood Flow and Metabolism; Neurovascular Mechanisms and Postnatal Brain Development’, ISOTT (International Society on Oxygen Transport to Tissue), June 28th, 2014, London (*Keynote*)
89. **Hillman EMC, Course**, ‘Methods for ultra-fast 3D volumetric microscopy in-vivo’ at the ‘Montreal Light Microscopy Course, 14-18th July 2014 (*Plenary*)
90. **Hillman EMC, Conference**, ‘Multi-scale optical imaging and photo-manipulation of the living brain’, ‘Imaging in 2020, Imaging the Immune System: Look into the long term future of Imaging’, September 21 – 25, 2014, Jackson Hole WY (*Invited*)
91. **Hillman EMC, Grand Rounds (Neurology)**, “Neurovascular coupling - why is it important?” Columbia University Medical Center. (Oct 2014)
92. **Hillman EMC, Live Webinar**, “Multiscale optical imaging and microscopy of neurovascular coupling in the living brain”, sponsored by Elsevier and Andor (Jan 2015)
93. **Hillman EMC, Conference**, ‘Dynamic in-vivo optical imaging and microscopy of the living brain’, SPIE Photonics West, San Francisco CA, Feb 2015. (*Invited*)
94. **Hillman EMC, Conference Symposium**, ‘Optics in Neuroscience’, Special OSA-sponsored symposium to celebrate ‘The International Year of Light; at the AAAS annual meeting, San Jose CA, Feb 2015. (*Invited*)
95. **Hillman EMC, Conference**, ‘Methods for ultra-fast 3D volumetric microscopy in-vivo’, Association of Biomolecular Resource Facilities (ABRF) meeting, St Louis (March 2015) (*Invited*)
96. **Hillman EMC, Symposium**, “The role of the vascular endothelium in functional neurovascular coupling” Gladstone Institute Symposium on Neurovascular Imaging, San Francisco CA, (March 2015)
97. **Hillman EMC, Invited Seminar**, ‘New approaches to fast 3D microscopy in awake, behaving organisms’, Stanford University (Deisseroth and Schnitzer labs). (March 2015)
98. **Hillman EMC, Symposium**, “Multi-scale imaging from single cells to patients”, Columbia National Academy of Engineering Regional Meeting, (April 2015)
99. **Hillman EMC, Conference**, ‘Swept confocally-aligned planar excitation’ (SCAPE) microscopy for high speed volumetric imaging in behaving animals’, OSA Optics in the Life Sciences Congress (Optical Molecular Probes, Imaging and Drug Delivery), Vancouver (April 2015) (*Invited*)
100. **Hillman EMC, Course**, “Swept, Confocally-Aligned Planar Excitation (SCAPE) microscopy for fast in-vivo volumetric imaging”, Cold Spring Harbor Course speaker “Quantitative Imaging: From Cells to Molecules”, Cold Spring Harbor (April 2015) (*Invited final lecture*)

101. **Hillman EMC**, *Symposium*, “The role of endothelial propagation in neurovascular coupling”, University Paris-Descartes Symposium: The Brain, beyond neurons. Paris, France (May 2015)
102. **Hillman EMC**, *Seminar Series*, “The role of neurovascular coupling in brain development, disease and interpretation of the fMRI BOLD signal”, Weill Cornell Medical College Progress in Neuroscience (PINS) seminar series, (June 2015)
103. **Hillman EMC**, *Invited Seminar*, “In-vivo brain imaging: Building microscopes and using them”, Duke University Departments of Biomedical Engineering and Neuroscience, (June 2015)
- 104.
105. **Hillman EMC**, *Course*, “Light-sheet microscopy, and whole-brain imaging”, 2015 Cold Spring Harbor Lab course on Imaging Structure & Function in the Nervous System (Aug 2015) (*Expert lecturer*)
106. **Hillman EMC**, *Conference*, “Swept Confocally-Aligned Planar Excitation (SCAPE) Microscopy for High Speed Volumetric Imaging in Behaving Animals”, Microscopy and Microanalysis meeting (M&M2015), Portland, Oregon, (August 2015) (*Keynote*)
107. **Hillman EMC**, *Special Lecture*, “Multi-scale in-vivo optical imaging and microscopy”, Multiscale imaging initiative at the Morgridge Institute, UW-Madison (Aug 2015) (*invited*)
108. **Hillman EMC**, *Course*, “Swept, Confocally-Aligned Planar Excitation (SCAPE) microscopy for fast in-vivo volumetric imaging”, Optical Microscopy and Imaging in the Biomedical Sciences (OMIBS) course at MBL, Wood's Hole, MA (Sept 2015) (*Horizon's Lecture*)
109. **Hillman EMC**, ‘Optical Techniques in Brain Research – Human Neuroimaging, OSA Label-Free Optical Techniques for Biomedical Diagnostics & Imaging Incubator meeting, 16-18 September 2015 in Washington DC (*Invited, declined*)
110. **Hillman EMC**, *Conference*, “High speed 3D imaging of living organisms using SCAPE microscopy”, IEEE Photonics Conference, (Oct 2015) (*Invited*)
111. **Hillman EMC**, *Conference*, ‘TBD’, Janelia Farm conference: ‘Emerging Tools for Acquisition and Interpretation of Whole-Brain Functional Data’, (Nov 2015) (*Invited, declined due to overlap with Brain Prize meeting*)
112. **Hillman EMC**, *Special Symposium*, ‘SCAPE microscopy for high-speed 3D imaging of the living brain’, The Brain Prize meeting (Commemorating the 2015 Brain Prize to Denk, Tank, Svoboda & Konnerth for in-vivo two-photon microscopy), Copenhagen, Denmark (Nov 2015) (*Special Final Lecture*)
113. **Hillman EMC**, *Symposium*, “High speed optical imaging of the awake, behaving brain”, MIT Neurotechnology Symposium , MIT Center for Neurobiological Engineering, (Nov 2015). (*Invited*)
114. **Hillman EMC**, *Special seminar*, “SCAPE microscopy for high-speed 3D imaging of the living brain”, Harvard Department of Cell Biology, (Nov 2015)
115. **Hillman EMC**, *Departmental Seminar Series*, ‘The role of neurovascular coupling in brain development, disease and interpretation of the fMRI BOLD signal’ Department of Neuroscience, Medical University of South Carolina (Nov 2015)

116. **Hillman EMC et al**, “SCAPE microscopy for high-speed in-vivo volumetric microscopy in behaving organisms”, NIH BRAIN Initiative Investigators Meeting, Bethesda MD, (Dec 2015) (*Invited speaker, one of 32 selected from 125 BRAIN grant awardees*)
117. **Hillman EMC**, *Departmental Seminar Series*, “Building and using in-vivo microscopes to understand brain function and physiology”, Pioneers in Biomedical Research Seminar, Virginia Tech, (Dec 2015)
118. **Hillman EMC**, *Grand Rounds*, “In-vivo optical imaging of neurovascular coupling and cellular function”, Department of Ophthalmology, Columbia University Medical Center, (Jan 2016)
119. **Hillman EMC**, *Colloquium*, “Multi-scale optical imaging for capturing dynamic brain function in-vivo”, Department of Physics and Astronomy, Columbia University, (Jan 2016)
120. **Hillman EMC**, *Guest speaker*, “Imaging the developmental trajectory of neurovascular coupling”, Columbia University Research Consortium on Autism Spectrum and Related Neurodevelopmental Disorders, (Jan 2016)
121. **Hillman EMC**, *Conference*, “The role of vascular endothelium on neurovascular coupling and the BOLD signal”, UK Royal Society Theo Murphy Meeting - Interpreting BOLD: A dialogue between cognitive and cellular neuroscience, (Jan 2016) (*Invited*)
122. **Hillman EMC**, *Conference*, “High-speed light sheet imaging of in-vivo brain function with SCAPE microscopy”, AIM 13th Annual Advanced Imaging Methods (AIM) Workshop, Berkley, CA (Feb 2016) (*Invited*)
123. **Hillman EMC**, *Conference*, “High-speed light sheet imaging of in-vivo brain function with SCAPE microscopy”, SPIE Photonics West, part of ‘High-Speed Biomedical Imaging and Spectroscopy: Toward Big Data Instrumentation and Management’ symposium, San Francisco, Feb 2016 (*Invited*)
124. **Hillman EMC**, *Departmental Seminar Series*, “High-speed 3D microscopy of in-vivo brain function and physiology”, Department of Anatomy and Neurobiology at Washington University School of Medicine, (February 2016)
125. **Hillman EMC**, *Seminar Series*, “Novel approaches to high-speed 3D microscopy of in-vivo brain function and physiology”, Champalimaud Foundation, Portugal (March 2016)
126. **Hillman EMC**, *Workshop*, “1.5 Tb per hour: What to do with high-speed 3D microscopy images of the living brain”, Columbia Data Sciences Institute Workshop on Data Visualization (March 2016)
127. **Hillman EMC**, *Course*, Cold Spring Harbor “Quantitative Imaging: From Cells to Molecules”, Cold Spring Harbor (April 2016) (*Invited Course Instructor*)
128. **Hillman EMC**, *Conference*, “Multiscale optical imaging of the living brain”, Special speaker for the Journal of Histochemistry & Cytochemistry session on Neuro-Imaging and Neuro-Oncology, Experimental Biology, San Diego (April 2016) (*Special guest invited speaker*)
129. **Hillman EMC**, *Symposium*, ‘SCAPE microscopy for high-speed 3D imaging of the behaving brain’, Brain Conference: The Brain in focus: New approaches to imaging neurons and neural circuits – Denmark, April 17 - 20, 2016 (*Invited*)

130. **Hillman EMC**, *Departmental Seminar Series*, “High-speed imaging and 3D microscopy of in-vivo brain function and physiology”, Department of Biomedical Engineering, Northwestern University, (May 2016)
131. **Hillman EMC**, *Symposium*, ‘1.5 Tb per hour and 5 dimensions: Fun with high-speed volumetric imaging of the behaving brain’, 3rd Annual Meeting on Quantifying structure in large neural datasets, Grossman Center for the Statistics of the Mind, Columbia University, May 26-27, 2016 (*Invited*)
132. **Hillman EMC**, *Symposium*, ‘SCAPE microscopy for high-speed 3D imaging of the behaving brain’, Neurizons 2016, Gottingen, Germany, May 31st-June 3rd 2016 (*Invited*)
133. **Hillman EMC**, *Conference*, “TBD”, Israel Society for Microscopy Golden Jubilee meeting, Haifa, Israel May 31st-June 3rd 2016. (*Invited*) (declined due to overlap with another meeting),
134. **Hillman EMC**, *Course*, ‘Light-sheet microscopy’ and ‘SCAPE microscopy for high-speed 3D imaging of the awake, behaving brain’, Neurophotonics Course, Laval University, Quebec, June 2016, (*Invited course instructor*)
135. **Hillman EMC**, *Gordon Conference*, “Imaging in-vivo functional dynamics at high spatiotemporal resolution”, Gordon conference on Bioanalytical Sensors, Rhode Island, June 2016 (*invited*)
136. **Hillman EMC**, *Symposium*, “Towards novel, multiscale imaging methods for guiding brain tumor resection”, Department of Neuro-oncology, Columbia University (July 2016)
137. **Hillman EMC**, *Gordon Conference*, “SCAPE Microscopy for high-speed 3D imaging of living things”, Gordon conference on Lasers in Medicine and Biology, July 2016 (*invited*)
138. **Hillman EMC**, *Course*, “SCAPE microscopy for high-speed 3D imaging of the awake, behaving brain”, 2016 Cold Spring Harbor Lab course on Imaging Structure & Function in the Nervous System (Aug 2016) (*Expert lecturer and SCAPE demo system*)
139. **Hillman EMC**, *Course*, “SCAPE microscopy for high-speed light sheet imaging”, EMBO light sheet microscopy course, Dresden, Germany (August 2016) (*Invited*)
140. **Hillman EMC**, *Conference*, “High-speed, in-vivo 3D imaging with SCAPE microscopy”, 3rd International Light Sheet Microscopy Meeting in Sheffield, UK, Aug 31st - Sept 3rd 2016 (*Invited*)
141. **Hillman EMC**, *Course*, BIGSS '16: Biophotonics and Imaging Graduate Summer School September 5-9 2016 , Galway, Ireland. (*Invited course instructor*) – declined
142. **Hillman EMC**, *Symposium*, “Microscopy and Bioengineering”, Symposium for the inauguration of the Technical University of Munich interdisciplinary center for translational cancer research (TranslaTUM), Munich, Germany, 15th Sept 2016 (*Keynote*)
143. **Hillman EMC**, *Special Seminar*, “Multi-scale imaging of brain function”, University of Zurich, Switzerland, (Sept 2016)
144. **Hillman EMC**, *Conference*, “Visualizing the neural basis of resting state hemodynamics”, at the 5th Biennial Resting-State Brain Connectivity Conference, Vienna, Austria, 19th September 2016 (*Invited*)

145. **Hillman EMC**, *Symposium*, ‘Capturing high-speed activity in awake, behaving brain’, 17th Annual UNC Neuroscience Symposium, University of North Carolina at Chapel Hill, Oct 19th 2016. (*symposium speaker*)
146. **Hillman EMC**, *Departmental Seminar Series*, “SCAPE microscopy for high-speed 3D imaging of living things”, Department of Biomedical Engineering, Rice University, (October 2016).
147. **Hillman EMC**, *Departmental Seminar Series*, “SCAPE microscopy for high-speed 3D imaging of living things”, Department of Biomedical Engineering, Tufts University (November 2016).
148. **Hillman EMC et al**, “SCAPE microscopy for high-speed 3D imaging of Fantastic Beasts”, NIH BRAIN Initiative Investigators Meeting, Bethesda MD, (Dec 2016) (*Invited Highlight speaker*)
149. **Hillman EMC** (Galwaduge P. T.), *Conference*, ‘Single objective light sheet microscopy’, Adaptive Optics and Wavefront Control for Biological Systems III meeting at SPIE Photonics West, San Francisco CA, Jan 28th - Feb 2nd 2017 (*Invited* – to be given by grad student owing to planned lab move)
150. **Hillman EMC**, *Conference*, ‘SCAPE microscopy for high-speed 3D imaging of fantastic beasts’, Light Microscopy Australia, 1-3rd February 2017 (*Plenary*)
151. **Hillman EMC**, *Panel*, ‘BRAIN Initiative Innovation Panel’, AAAS symposium organized by the Allen Institute, Boston MA, 17-20th February 2017. (*Invited Panel Speaker*)
152. **Hillman EMC**, *Gordon Conference*, ‘The role of the vascular endothelium in neurovascular coupling – a unifying model?’, Glial Biology: Functional Interactions and Glia & Neurons Gordon Research Conference, Ventura CA, March 5-10th 2017. (*invited*)
153. **Hillman EMC**, *Conference*, ‘A second-generation SCAPE microscopy system for high-speed 3D imaging of living things’, OSA Bio-Optics: Design and Application, Optics in the Life Sciences Congress, San Diego, April 2017. (*Invited*)
154. **Hillman EMC**, *Symposium*, ‘SCAPE microscopy for high-speed 3D imaging of the awake, behaving brain’, Harvard Medical School's Neuroscience Symposium, May 2017 (*invited*)
155. **Hillman EMC**, *Think Tank*, ‘New high resolution imaging modalities for the CNS’, Twenty-fourth Annual Glaucoma Foundation Optic Nerve Rescue and Restoration Think Tank, New York, June 9-10, 2017 (*invited*).
156. **Hillman EMC**, *Symposium*, ‘TBD’, Sculpted Light in the Brain Conference, UC Berkeley, June 9th 2017. (*Invited, declined due to meeting overlap*)
157. **Hillman EMC**, *Seminar Series*, ‘Visualizing the neural underpinnings of resting state fMRI’, National Institute on Drug Abuse (NIDA), Intramural Research Program (IRP) Seminar Series, June 13, 2017 (*Invited*)
158. **Hillman EMC**, *Workshop*, ‘High-speed optical imaging and microscopy’, Chan Zuckerberg Science workshop on Meso and macro scale imaging, San Francisco, 20-21 June 2017 (*invited*).
159. **Hillman EMC**, *Course*, “SCAPE microscopy for high-speed 3D imaging of the awake, behaving brain”, 2017 Cold Spring Harbor Lab course on Imaging Structure & Function in the Nervous System (Aug 2017) (*Expert lecturer*)

160. **Hillman EMC**, *Conference*, ‘Seeing is Believing – Pushing the limits of high speed in-vivo microscopy’, The Scientist Magazine Expo, Chicago, Sept 11–13, 2017. (*Invited*)
161. **Hillman EMC**, *Annual Meeting*, ‘New developments in SCAPE microscopy for high-speed 3D neuroimaging’, Society for General Physiologists Annual Meeting, theme: “The Optical Revolution in Physiology: From Membrane to Brain”, Woods Hole, Sept. 6-10, 2017 (*Invited*)
162. **Hillman EMC**, *Annual Meeting*, ‘Fast 3D microscopy of the entire awake behaving fly brain using SCAPE microscopy’, Simons Foundation Collaboration on Global Brain Annual Meeting, Sept. 10-12, 2017 (*Invited*)
163. **Hillman EMC**, *Dinner Speaker*, ‘New methods for high-speed neurovascular imaging’, Ophthalmic Laser Surgical Society Meeting Dinner, Guest Speaker, New York, Sept 21st 2018. (*invited*)
164. **Hillman EMC**, *Symposium*, ‘TBD’, 11th Biennial Minnesota Workshop of the Center for Magnetic Resonance Research, “Cells to Networks”. University of Minnesota, MN, Oct 5 - 7, 2017 (*invited, declined*).
165. **Hillman EMC**, *Symposium*, ‘High-speed, brain-wide imaging of neural activity with SCAPE and WFOM’, 5th International Symposium on Frontiers in Neurophotonics, Bordeaux, France, Oct 2017, (*Invited*)
166. **Hillman EMC**, *Symposium*, ‘High-speed imaging of whole-brain activity’, Optogenetic Research Society Japan, Sendai, Japan, Oct 21 - 22, 2017 (*invited*).
167. **Hillman EMC**, *Invited Seminar*, “High-speed imaging of whole-brain activity”, University of Electro-Communications (UEC), Tokyo, Japan, (October 2017).
168. **Hillman EMC**, *Symposium*, ‘SCAPE microscopy for whole-brain functional imaging’, ‘Emerging Tools for Acquisition and Interpretation of Whole-Brain Functional Data’, Janelia Farm HHMI Campus, Ashburn VA, 5-8 Nov 2017, (*Invited*)
169. **Hillman EMC**, *Symposium*, ‘SCAPE Microscopy for High-speed 3D Imaging of Living Things’, NIH Frontiers in Light Microscopy Symposium, NIH Campus, Bethesda, 17 Nov 2017 (*Invited*)
170. **Hillman EMC**, *Symposium*, ‘Real-time imaging of whole-brain activity’, 21st Annual Photonics Center Symposium on the topic of Neurophotonics, Boston University, Boston MA, Nov 30, 2017 (*invited*).
171. **Hillman EMC**, *Symposium*, ‘Real-time imaging of whole-brain activity’, Max Planck Florida Institute for Neuroscience, Jan, 2018 (*invited*)
172. **Hillman EMC**, *Plenary*, ‘High-speed optical imaging of brain-wide activity’, SPIE Photonics West, Neurophotonics Plenary Hot Topics, San Francisco CA, Jan 28, 2018 (*invited*)
173. **Hillman EMC**, *Conference*, ‘SCAPE microscopy for high-speed 3D imaging of living tissues’, SPIE Photonics West BiOS, San Francisco CA, Jan 27-Feb 1, 2018 (*invited*)
174. **Hillman EMC**, *Invited Seminar*, ‘High-speed imaging of whole-brain activity’, MIT Modern Optics Seminar Series, Boston MA, Feb 2018. (*invited*)
175. **Hillman EMC**, *Conference*, ‘High-speed imaging of whole-brain activity’, OSA Optics and the Brain, Fort Lauderdale FL, April 2018 (*invited*)

176. **Hillman EMC**, *Seminar Series*, 'High-speed imaging of whole-brain activity', Department of Bioengineering, Lehigh University, March 2018. (*invited*)
177. **Hillman EMC**, *Symposium*, 'Prismatic light-sheet microscope', *Hey, What's the Big Idea?* Cell Center Conference (Erik Jorgensen), Department of Biology, University of Utah, May 2018 (*invited*).
178. **Hillman EMC**, *Symposium*, 'SCAPE microscopy for high-speed volumetric imaging of neural activity', NSF Neural Imaging Symposium, University of Utah, May 2018 (*invited*).
179. **Hillman EMC**, *Course Invited Instructor*, 'Light Sheet Microscopy / SCAPE demo', Analytical and Quantitative Light Microscopy course at MBL Woods Hole, May 2018. (*invited*)
180. **Hillman EMC**, *Workshop*, 'TBD', Janelia Workshop on 3D Holography and Volumetric Imaging in Neural Circuits, HHMI Janelia Farm, May 2018 (*invited*)
181. **Hillman EMC**, *Symposium*, 'TBD', Dodd-Walls Symposium, University of Auckland, June 2018 (*invited, declined*)
182. **Hillman EMC**, *Technical Workshop*, 'High-speed in-vivo mapping of neural activity in awake, behaving animals', Investigating neural substrates of perception and cognition with large-scale data, Federation of European Neuroscience Societies (FENS) Forum 2018, Berlin, Germany, July 7-11 2018 (*invited*).
183. **Hillman EMC**, *Gordon Conference* 'Crossing Temporal Scales: Imaging the Neural Correlates of Brain Hemodynamics', In Vivo Magnetic Resonance Gordon Research Conference, Andover NH, July 2018 (*invited*)
184. **Hillman EMC**, *Minisymposium*, 'Next-generation SCAPE microscopes for high-speed neuroimaging', Engineering in Medicine and Biology Conference, Hawaii, July 2018 (*invited*)
185. **Hillman EMC**, *Course*, 'SCAPE Microscopy' (Lectures and demo system), EMBO practical course on light sheet microscopy, Dresden, Germany, August 2018 (*invited*)
186. **Hillman EMC**, *Conference*, 'SCAPE Microscopy', 10th Anniversary Light sheet fluorescence microscopy conference (LSFM2018), Dresden, Germany, August 2018 (*invited*)
187. **Hillman EMC**, *Course*, 'High-speed optical imaging and microscopy of in-vivo brain function', BIGSS '18: Biophotonics and Imaging Graduate Summer School, Galway, Ireland. Aug 28-Sept 1 2018, (*invited*)
188. **Hillman EMC**, *Conference*, 'High-speed optical imaging and microscopy of in-vivo brain function', Photonics Ireland, Galway, Ireland. Sept 2018, (*invited*)
189. **Hillman EMC**, *Course*, 'TBD', Kavli Institute for Theoretical Physics Neurophysics workshop on "Recording, analyzing, manipulating, interpreting, and modeling whole brain activity", UC Santa Barbara, Sept 2018 (*invited Experimental Neuroscientist*).
190. **Hillman EMC**, *Seminar Series*, 'TBD', In-vivo Cellular Molecular Imaging Center seminar series, Johns Hopkins University, 17th Oct 2018 (*invited*).
191. **Hillman EMC**, *Symposium*, 'TBD', Picower Fall Symposium, Picower Institute for Learning and Memory, MIT, 23rd Oct 2018 (*invited*).
192. **Hillman EMC**, *Seminar Series*, 'TBD', Department of Neuroscience, Baylor College of Medicine, Houston TX, Nov 2018 (*invited*).

193. **Hillman EMC**, *Conference: short-course*, ‘TBD’, “Functional, structural, and molecular imaging, and big data analysis”, Society for Neuroscience annual meeting, San Diego, Nov 2018. (*invited*).
194. **Hillman EMC**, *Conference: mini-symposium*, ‘TBD’, “The Dynamic Brain: signatures of fast functional reconfiguration, their interpretability and clinical value”, Society for Neuroscience annual meeting, San Diego, Nov 2018. (*invited*).
195. **Hillman EMC**, *Symposium*, ‘TBD’, Austin Conference on Learning and Memory, Austin TX, April 2019 (*invited*).
196. **Hillman EMC**, *Conference*, ‘TBD’, Sculpted Light in the Brain, Royal Society London, June 20-21 2019 (*invited*).

Participation in Discussion Panels and Workshops

- 1) NIBIB Discussion Panel member: “Accelerating Clinical Translation of Biomedical Imaging” at the IEEE International Symposium on Biomedical Imaging, Washington DC, April 2006
- 2) Discussion Panel Organizer and Moderator: “Optics in Neuroscience” at the Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside, National Institutes of Health, Bethesda MD, Sept 2006
- 3) Discussion Panel Member: “Optical Cancer Imaging” at the Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside, National Institutes of Health, Bethesda MD, Sept 2006
- 4) Discussion Panel Organizer and Moderator: “Clinical Molecular Imaging” at OSA Biomed Topical Meeting, St Petersburg FL, March 2008
- 5) Discussion Panel Member: “Cost effectiveness” at the Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside, National Institutes of Health, Bethesda MD, Sept 2009
- 6) Discussion Panel Member, “Global Immersion snapshot panel” at the NCIIA / BMEIdea Alliance Meeting, BMES, Hartford CT, Oct 2011
- 7) Discussion Panel Member, “University Forum on Interdisciplinary Neuroscience”, Columbia Event to announce \$200 M gift from Mortimer B. Zuckerman. Panel with Richard Axel, Eric Kandel, Geraldine Downey, Kenneth Forde and David Strauss, Chaired by Tom Jessell. December 2012.
- 8) Discussion Panel Leader, “New Methodologies”, Columbia Zuckerman Mind Brain Behavior Institute cross-department retreat, New York Academy of Sciences, January 2013.
- 9) Invited participant: ‘The Human Placenta Project Workshop’, NIH (National Institute for Child Health and Development) , Potomac, MD, May 27-28, 2014.
- 10) Invited participant: NIH Director’s Opioid Meeting “Development of Safe, Effective, Non-Addictive Pain Treatments”, NIH Campus, Bethesda MD, June 16th, 2017

Conference abstracts and other presentations

(presentation type is noted when presenter is Hillman or a Hillman trainee)

CA1) Hebden JC, Schmidt FEW, Fry ME, **Hillman EMC**, Schweiger M, Delpy DT, Imaging of tissue-equivalent phantoms using the UCL multi-channel time-resolved instrument, In: OSA European Conference on Biomedical Optics (ECBO), OSA Technical Digest, *Optical Society of America, Washington DC; 2000*, 1999, June 14; Munich, Germany.

CA2) **Hillman EMC**, Hebden JC, Schmidt, FEW, Arridge SR, Fry ME, Schweiger M, Delpy DT. Initial clinical testing of the UCL 32 channel time-resolved instrument for optical tomography. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC; 2000*, April 2-5; Miami FL. (Oral presentation, contributed)

CA3) **Hillman EMC et al**, *The MONSTIR 32 channel near-infrared time-resolved optical tomography system for medical imaging, Rank Prize Fund Mini-symposium on Applications of Fast Low-level Light Detection, Sept 2000, Grasmere, UK (Oral presentation, Invited student: won outstanding short paper award)*

CA4) Hebden JC, Schmidt, FEW, **Hillman EMC**, Arridge SR, Schweiger M, Delpy DT. Optical tomography of the human forearm. In: Gandjbakhche AH, editor, Proceedings of the Inter-Institute Workshop on In Vivo Optical Imaging at the NIH, OSA, Washington DC, 2000; Sept 16-17 1999; Bethesda MD.

CA5) Dehghani H, **Hillman EMC**, Schweiger M, Arridge SR, Delpy DT. Optical tomography of a 3D multilayered head model. In: Chance B, Alfano RR, Tromberg BJ, Tamura M, Sevick-Muraca EM, editors. Proc SPIE **4250**, p. 45-52, Optical Tomography and Spectroscopy of Tissue IV; 2001 Jan 19-25; San Jose, CA.

CA6) **Hillman EMC**, Dehghani, H, Hebden JC, Arridge SR, Schweiger M, Delpy DT. Differential imaging in heterogeneous media: limitations of linearization assumptions. In: Chance B, Alfano RR, Tromberg BJ, Tamura M, Sevick-Muraca EM, editors. Proc SPIE **4250**, p. 327-338. SPIE Photonics West 2001 Jan 19-25; San Jose, CA (Oral presentation, contributed)

CA7) Riley JD, Arridge SR, Chrysanthou Y, Dehghani H, **Hillman EMC**, Schweiger M. The Radiosity Diffusion Model in 3D. In: Andersson-Engels S, Kaschke MF, editors. ECBO2001, Proc SPIE 4431, p. 153-164, Photon Migration, Optical Coherence Tomography, and Microscopy; 2001, June 18-21; Munich, Germany.

CA8) **Hillman EMC et al**, *Biomedical applications of lasers: time resolved optical tomography, Rank Prize Fund Mini-symposium on Applications of Free Electron Lasers, Sept 2001, Grasmere, UK (Oral presentation, Invited student)*

CA9) Gibson A, Dehghani H, Yusof RMd, **Hillman EMC**, Hebden JC, Schweiger M, Arridge SR, Delpy DT. Optical tomography of a realistic head-shaped phantom. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2002*, April 6-10; Miami FL.

CA10) Hebden JC, Bland T, **Hillman EMC**, Gibson A, Everdell N, Delpy DT, Arridge SR. Optical tomography of the breast using a 32-channel time-resolved imager. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2002*, April 6-10; Miami FL.

- CA11) *Hebden JC, Hillman EMC, Gibson A, Everdell N, Yusof RMd, Delpy DT, Arridge SR, Austin T, Meek JH.* Time resolved optical imaging of the newborn infant brain: Initial clinical results. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2002, April 6-10; Miami FL.*
- CA12) **Hillman EMC, Arridge SR, Hebden JC, Delpy DT.** Oxygen saturation and blood-volume derivation from multi-wavelength time-resolved optical tomography data. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2002, April 6-10; Miami FL. (Oral presentation, contributed)*
- CA13) Corlu A, Durduran T, Choe R, Lee K, Schweiger M, **Hillman EMC**, Arridge SR, Yodh AG. Optimum wavelengths in continuous-wave multi-spectral diffuse optical tomography. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2004, April 14-17; Miami FL.*
- CA14) **Hillman EMC, Dunn AK, Boas DA,** Laminar optical tomography of rat cortical activation: resolving depth-dependent hemodynamics from 0 to 2mm. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2004, April 14-17; Miami FL (Oral Presentation, contributed)*
- CA15) **Hillman EMC, Devor A, Dale AM, Dunn AK, Boas DA.** The use of depth-resolved optical imaging to separate cortical vascular compartments during functional activation. In: *Brain '05 proceedings, 2005, June 7-11; Amsterdam, Netherlands. (Poster)*
- CA16) **Hillman EMC, Devor A, Dunn AK, Boas DA,** 3D high-resolution optical imaging of cortical activation: Vascular compartment separation using spatio-temporal constraints and priors In: *OSA European Conference on Biomedical Optics Technical Digest, Optical Society of America, Washington DC, 2005, June 7-13; Munich Germany. (Oral presentation, contributed, but selected for 30 minute **Invited** talk)*
- CA17) **Hillman EMC, Devor A, Dunn AK, Skoch J, Bacsikai BJ, Dale AM, Boas DA.** Resolving the roles of vascular compartments during functional activation: A high-resolution 3D optical imaging study. In: *Society for Neuroscience Conference proceedings, 2005, November 12-16; Washington DC. (Poster)*
- CA18) **Hillman EMC, Devor A, Dunn AK, Boas DA.** Laminar optical tomography: high-resolution 3D functional imaging of superficial tissues. Proc. SPIE 6143, 61431M, SPIE Medical Imaging, San Diego, CA 2006, February (*Oral Presentation, **Invited** – presented by AH Hielscher due to plane cancellation*)
- CA19) Devor A, **Hillman EMC**, Nishimura N, Ulbert I, Narayanan SN, Teng I, Dunn AK, Boas DA, Kleinfeld D, Dale AM, Applying Optical Imaging to Study Neurovascular Coupling in Cerebral Cortex: From Populational Scale to Single-Cell Single-Vessel Measurements," In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2006, March 19-23; Fort Lauderdale FL.*
- CA20) **Hillman EMC, *Bouchard M, Devor A, De Crespigny A, Boas DA,** High-resolution functional optical imaging: sub-millimeter physiology of living tissue. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2006, March 19-23; Fort Lauderdale FL. (Oral presentation, contributed, but selected for 30 minute **Invited** talk)*

CA21) *Bouchard M, Ruvinskaya S, Boas DA and **Hillman EMC**. Video-rate two-photon microscopy of cortical hemodynamics in-vivo, *In: OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2006, March 19-23; Ft Lauderdale FL. (Oral presentation, contributed)*

Since Columbia University Hire:

CA22) **Hillman EMC**, Devor A, Boas DA. High Resolution Functional Optical Imaging of Living Tissues. IEEE Proceedings of the International Symposium on Biomedical Imaging (ISBI) 2006, April, Arlington VA (*Oral Presentation, Invited*)

CA23) **Hillman EMC**, Diffuse Optical Tomography, In: OSA Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies (CLEO/QELS/PhAST), 2006, June 10; Long Beach CA. (*Oral presentation, Invited*)

CA24) **Hillman EMC**, High resolution functional optical imaging of exposed cortex in-vivo, Gordon Research Conference: Lasers in Medicine and Biology, Holderness, NH, July 2006. (*Oral presentation, Invited*)

CA25) **Hillman EMC**. Functional optical imaging of brain activation: a multi-scale, multi-modality approach, IEEE/NLM Life Science Systems and Application Workshop, NIH Bethesda, MD, July 2006. (*Oral presentation, Invited*)

CA26) **Hillman EMC** et al. High resolution functional optical imaging of rodent cortex: investigating mechanisms of functional activation, at 'Optical Diagnostic Imaging from Bench to Bedside' Technical Workshop at the National Institutes of Health 2006, September, NIH Bethesda, MD (*Oral Presentation, Invited*).

CA27) **Hillman EMC** and Cauli B, In-vivo and in-vitro: cellular and neurochemical mechanisms of somatosensory neurovascular coupling , HFSP meeting. July 2007, Brisbane, Australia (*Poster*)

CA28) **Hillman EMC**, Levenson RM. All-Optical Small Animal Anatomical Co-registration using Dynamic Contrast Enhancement (DyCE), AMI/SMI Joint Molecular Imaging Conference, 2007, September 7-11; Providence RI. (*Oral presentation, contributed - paper highlighted as top 25 out of >900 abstracts after blind review*)

CA29) *Burgess SA, *Yuan B, *Radosevich AJ, *Bouchard MB, **Hillman EMC**. "High-resolution 3D optical imaging of tissue", IEEE Proceedings LEOS, Orlando FL, October 2007. (*Oral presentation, Invited*)

CA30) **Hillman EMC**, *Yuan B, *Burgess SA, *Iranmahboob AK, *Bouchard MB. Depth-resolved optical imaging of calcium sensitive dyes in somatosensory cortex in-vivo, Society for Neuroscience 2007. November 3-7; San Diego CA. (*Poster*)

CA31) Shah B, Moioli E, **Hillman EMC**, Mao JJ. In Vivo Tracking of Human Mesenchymal Stem Cells Labeled with Bioconjugated Quantum Dots, 54th Annual Meeting of the Orthopaedic Research Society 2008. March 2-5; San Francisco CA.

CA32) **Hillman EMC**, *Chen B, *Burgess SA, *Radosevich AJ, *Bouchard MB, *Iranmahboob AK, Das A, Cauli B. Multidimensional functional optical imaging of the brain. In:

*OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2008. March 16-19; St Petersburg FL. (Oral presentation, **Invited**)*

CA33) **Hillman EMC**, *Bouchard MB, *Burgess SA, Gossage K, Mansfield JR, Levenson RM, Dynamic Molecular Imaging: Anatomical Co-registration and Dynamic Contrast Enhancement. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2008. March 16-19; St Petersburg FL. (Oral presentation, contributed)*

CA34) *Bouchard MB, *Burgess SA, *Moussazadeh P, *Radosevich AJ, Wuskell JP, Loew LM, Pertsov A, **Hillman EMC**. Electrical and metabolic imaging of cardiac ischemia In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2008. March 16-19; St Petersburg FL. (Poster)*

CA35) *Yuan B, **Hillman EMC**. Feasibility of 3-D Frequency-Domain Fluorescence Lifetime Imaging based on Laminar Optical Tomography. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2008. March 16-19; St Petersburg FL. (Oral presentation, contributed)*

CA36) *Radosevich AJ, *Bouchard MB, *Burgess SA, *Stolper R, *Chen B, **Hillman EMC**. Hyperspectral in-vivo two-photon microscopy of intrinsic fluorophores. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2008. March 16-19; St Petersburg FL. (Oral presentation, contributed)*

CA37) *Burgess SA, *Yuan B, *Bouchard MB, Ratner D, **Hillman EMC**. Simultaneous Multi-Wavelength Laminar Optical Tomography Imaging of Skin Cancer. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2008. March 16-19; St Petersburg FL. (Oral presentation, contributed)*

CA38) *Iranmahboob AK, **Hillman EMC**. Diffusion vs. Monte Carlo for Image Reconstruction in Mesoscopic Volumes. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington DC, 2008. March 16-19; St Petersburg FL. (Poster)*

CA39) **Hillman EMC**, Cauli B. In-vitro & in-vivo: Mechanisms of cortical neuro-vascular-metabolic coupling HFSP meeting. July 2008, Berlin, Germany. *(Poster)*

CA40) *Chen BR, *Burgess SA, *Radosevich AJ, *Bouchard MB, Cauli B, **Hillman EMC**, Multi-Scale In-Vivo Imaging of Neurovascular Coupling, Cerebral blood flow and metabolism, 2008 Gordon Research Conference on Brain Energy Metabolism and Blood Flow, August 2008, Andover, NH *(Poster, won student travel stipend)*.

CA41) **Hillman EMC**, Vascular compartment dynamics during neuronal activation, 2008 Gordon Research Conference on Brain Energy Metabolism and Blood Flow, August 2008, Andover, NH . *(Oral presentation, **Invited**)*

CA42) **Hillman EMC**, Levenson RM, *Amoozegar CB, *Chen BR, *Burgess SA, *Bouchard MB, Dynamic molecular imaging of organ function, Proceedings of the World Molecular Imaging Congress, September 10, 2008, Nice France. *(Poster)*

CA43) **Hillman EMC** et al, Optical Imaging of transmural cardiac propagation, BMES Annual Meeting, October 2nd 2008, St Louis MO. *(Oral Presentation, **Invited: Cardiac Imaging session**)*

CA44) **Hillman EMC**. Mouse Organ Imaging, In: Proceedings of OSA Frontiers in Optics (FiO) October 19, 2008, Rochester, NY. (*Oral presentation, **Invited** 'Imaging of Mice and Men' session*)

CA45) **Hillman EMC**, *Chen B, *Burgess SA, *Radosevich AJ, *Bouchard MB, Iranmahboob AK, Das A, Cauli B. Multidimensional functional optical imaging of the brain. In: Proceedings of OSA Frontiers in Optics (FiO) Oct 19, 2008, Rochester, NY. (*Oral presentation, **Invited** 'Best of the Topicals' session*)

CA46) Karagiannis A, Gallopin T, Dávid C, Battaglia D, Geoffroy H, Rossier J, **Hillman EMC**, Staiger J, Cauli B. Classification of NPY-expressing neocortical interneurons. Ladislav Tauc Conference 2008. December 2008, Gif sur Yvette, France.

CA47) **Hillman EMC**, Photons for functional imaging: Microscopy and optical imaging technologies for in-vivo applications. Proceedings of the Dodd-Walls Center for Quantum Science and Technology Symposium, December 8th, 2008, Queenstown, New Zealand. (*Oral presentation, **Invited** Keynote*)

CA48) Karagiannis A, Gallopin T, Dávid C, Battaglia D, Geoffroy H, Rossier J, **Hillman EMC**, Staiger J, Cauli B. Identification and characterization of putative neurovascular regulators in the rat barrel cortex, EMBO workshop, "Cortical interneurons in health and disease". June 2009. Mallorca, Spain.

CA49) *Bouchard MB, *Chen BR, *Burgess SA, **Hillman EMC**, Ultra-fast multiwavelength CCD-based optical imaging. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Poster*)

CA50) *Chen BR, *McCaslin AFH, *Bouchard MB, *Radosevich AJ, *Burgess SA, Cauli B, **Hillman EMC**, High speed two-photon microscopy of reactive cortical cells in vivo. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Poster*)

CA51) *Bordier, C, *Iranmahboob A, *Burgess SA, **Hillman EMC**, Monte Carlo Modeling for 3D Optical Imaging of Mesoscopic Volumes. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Poster*)

CA52) *Amoozegar CB, *McCaslin AFH, *Bouchard MB, Blaner WS, **Hillman EMC**, Non-invasive Evaluation of Organ Function Using Dynamic Contrast Enhanced Molecular Imaging. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Poster*)

CA53) *Grosberg LE, *Radosevich AJ, *Bouchard MB, *Chen BR, **Hillman EMC**, Hyperspectral Two-Photon Microscopy for 3D Instant Histology. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Poster*)

CA54) *Burgess SA, *Bouchard MB, *Bordier C, *Chen BR, **Hillman EMC**, Fluorescence Lamina Optical Tomography for Imaging Skin. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Poster*)

- CA55) **Hillman EMC**, In vivo optical imaging of animal disease models: From micro to macro. Engineering Conferences International meeting: Advances in Optics for Biotechnology, Medicine and Surgery XI. June 2009, Burlington VT. (*Oral presentation, Invited*)
- CA56) Mansfield J, Aronow LA, Curtis A, **Hillman EMC**, Krucker T, Levenson RM, In Vivo Fluorescence Kinetic Imaging for Improved Contrast and Studies of Temporal Biodistribution. Proceedings of the World Molecular Imaging Congress, September 25, 2009, Montreal, CA.
- CA57) *Chen BR, *Bouchard MB, *McCaslin AFH, **Hillman EMC**, Characterization of cortical vascular compartment-specific hemodynamics during somatosensory stimulation. Society for Neuroscience Annual Meeting, October 2009, Chicago IL. (*Poster*)
- CA58) *McCaslin AFH, *Chen BR, *Radosevich AJ, **Hillman EMC**, In-vivo 3D morphology of astrocyte-vasculature interactions in the somatosensory cortex. Society for Neuroscience Annual Meeting, October 2009, Chicago IL. (*Poster*)
- CA59) Christiano AM, McGrath JA, **Hillman E**, Philipone E, Ventura K, Ishida-Yamamoto, Reduced intensity conditioning and allogeneic stem cell transplantation in Recessive Dystrophic Epidermolysis Bullosa. 69th Annual Meeting of the Society-of-Investigative-Dermatology, MAY 06-09, 2009, Journal of Investigative Dermatology 129: S56-S56 336 Suppl. 1 April 2009
- CA60) Baik AD, Lu XL, **Hillman EMC**, Dong C, Guo XE, Dynamic Pseudo-3D Whole-Cell and Actin/Microtubule Network Deformation of Osteocytes Under Fluid Shear Flow. Orthopaedic Research Society Annual meeting, March 6-9, 2010, New Orleans LA.
- CA61) *Grosberg LE, *Radosevich AJ, Asfaha S, Yang X, Wang TJ, **Hillman EMC**, 3D visualization of intrinsic contrast in neoplastic colon tissue using hyperspectral two-photon microscopy. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, April 11-14 2010; Miami FL (Poster. - Winner of Best Student Poster Prize)*
- CA62) *Sun R, *Bouchard MB, *Burgess SA, *Radosevich AJ, **Hillman EMC** A Low-cost, Portable System for High-Speed Multispectral Optical Imaging. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, April 11-14 2010; Miami FL. (Poster)*
- CA63) *Burgess SA, Ratner D, *Chen BR, **Hillman EMC**, Fiber-Optic and Articulating Arm Implementations of Lamellar Optical Tomography for Clinical Applications. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, April 11-14 2010; Miami FL. (Oral presentation, Contributed)*
- CA64) *Bouchard MB, Grosberg LE, Burgess SA, **Hillman EMC**, Laser-Scanning Intersecting Plane Tomography (L-SIPT) for high speed 3D optical imaging and microscopy. In: *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, April 11-14 2010; Miami FL. (Oral presentation, Contributed)*
- CA65) **Hillman EMC**, Optical neuroimaging, 2010 Gordon Research Conference on Lasers in Medicine and Biology, July 25–30, Holderness, NH. (*Oral presentation, Invited*)
- CA66) Plaisier F, Karagiannis A, *Burgess SA, Chausson P, Hamel E, **Hillman EMC**, Cauli B, Identification of putative vasoconstricting neurons in the cerebral cortex. Federation of European Neuroscience Societies (FENS), July 2010, Amsterdam.

- CA67) Karagiannis A, Plaisier F, Gallopin T, David C, Geoffroy H, **Hillman EMC**, Staiger JF, Cauli B. Lactate excites cortical neurons via ATP sensitive K⁺ channels closure. Federation of European Neuroscience Societies meeting, July 2010, Amsterdam, The Netherlands.
- CA68) Baik AD, Lu XL, **Hillman EMC**, Dong C, Guo XE, Pseudo-3D Real-Time Tracking of Osteocyte Whole-Cell and Actin/Microtubule Network Deformations under Fluid Shear Flow. 6th World Congress on Biomechanics, August 2010, Singapore.
- CA69) *L'Heureux B, *McCaslin AFH, *Bouchard MB, *Chen BR, Cauli B, **Hillman EMC**, Studying Metabolism and the Lactate Shuttle In-Vivo Using Optical Imaging and Microscopy, Gordon Research Conference on Brain Energy Metabolism and Blood Flow August 2010. Andover, NH. (*Poster*)
- CA70) *Chen BR, *Bouchard MB, *McCaslin AFH, *Burgess SA, Cauli B, **Hillman EMC**, Characterization of cortical vascular compartment-specific hemodynamics during somatosensory stimulation, Gordon Research Conference on Brain Energy Metabolism and Blood Flow August 2010. Andover, NH. (*Poster*)
- CA71) Karagiannis A, Plaisier F, Gallopin T, David C, Geoffroy H, **Hillman EMC**, Staiger JF, Cauli B. Lactate excites cortical neurons via ATP sensitive K⁺ channels closure. Gordon Research Conference on Brain Energy Metabolism and Blood Flow August 2010. Andover, NH.
- CA72) *Bouchard MB, **Hillman EMC**, Laser-Scanning Intersecting Plane Tomography for High Speed, translationless 3D Microscopy, Society of General Physiologists, New Optical Methods in Cell Physiology, September 2010, MBL Woods Hole, MA. (*Poster - won \$500 travel stipend*)
- CA73) *Grosberg LE, *Radosevich AJ, *Bouchard MB, **Hillman EMC**, Characterization of intrinsic contrast in intact tissues using hyperspectral two-photon microscopy, Society of General Physiologists, New Optical Methods in Cell Physiology, September 2010, MBL Woods Hole, MA. (*Poster*)
- CA74) *Chen BC, *McCaslin AFH, *L'Heureux B, *Bouchard MB, **Hillman EMC**, Two-Photon Microscopy of Neurovascular Dynamics, Society of General Physiologists, New Optical Methods in Cell Physiology, September 2010, MBL Woods Hole, MA. (*Poster - won \$500 travel stipend*)
- CA75) **Hillman EMC**, Imaging everything: Harnessing endogenous and exogenous contrast in- vivo, Society of General Physiologists, New Optical Methods in Cell Physiology, September 2010, MBL Woods Hole, MA. (*Oral presentation, Invited*)
- CA76) **Hillman EMC** et al, Opportunities for Biophotonics-based approaches in Drug Discovery & Development, International Congress on Biophotonics 25-27 Sept 2010, Quebec City, Canada (*Oral Presentation, Invited*)
- CA77) **Hillman EMC** and *L'Heureux B, Redox Imaging and metabolism, International IFR83 annual meeting "Oxidative Metabolism in Health and Diseases", Sept 27-28, 2010, Paris, France (*Oral presentation, Invited - Post-doctoral fellow Barbara L'Heureux attended on my behalf*)
- CA78) Karagiannis A, Plaisier F, Gallopin T, David C, Geoffroy H, Staiger JF, Roeper J, **Hillman EMC**, Cauli B. Lactate excites cortical neurons via ATP sensitive K⁺ channels closure,

International IFR83 annual meeting “Oxidative Metabolism in Health and Diseases”, September 2010, Paris, France.

CA79) Plaisier F, Karagiannis A, *Burgess S, Chausson P, Hamel E, **Hillman EMC**, Cauli B. Identification of putative vasoconstricting neurons in the cerebral cortex. International IFR83 annual meeting “Oxidative Metabolism in Health and Diseases”, September 2010, Paris, France.

CA80) **Hillman EMC**, Cauli B. A push-pull model of neurovascular coupling derived using combined in-vivo and in-vitro approaches. HFSP meeting, October-November 2010, Thiruvananthapuram, India. (*Poster*)

CA81) Karagiannis A, Plaisier F, Gallopin T, David C, Geoffroy H, Staiger JF, **Hillman EMC**; Roeper J, Cauli B. Lactate excites cortical neurons via ATP sensitive K⁺ channels closure. Society for Neuroscience meeting, November 2010, San Diego, CA.

CA82) **Hillman EMC**, New Visions for Optical Imaging. Royal Society Conference: Making light work: Illuminating the future of biomedical optics. Nov 8-9 2010. Kavli Royal Society Centre, Buckinghamshire, UK. (*Oral presentation, Invited*)

CA83) **Hillman EMC**, Understanding neurovascular coupling with intravital microscopy and optical imaging, Neurotechniques Symposium at the Italian Academy for Advanced Studies in America at Columbia University, Dec 3rd 2010. New York (*Oral presentation, Invited*)

CA84) Plaisier F, Karagiannis A, *Burgess S, Chausson P, Hamel E, **Hillman EMC**, Cauli B. Identification of putative vasoconstricting neurons in the cerebral cortex. Annual Meeting of the French Club of Glial Cells, December 2010, Paris, France.

CA85) Karagiannis A, Plaisier F, Gallopin T, David C, Geoffroy H, Staiger JF, Roeper J, **Hillman EMC**, Cauli B. Lactate excites cortical neurons via ATP-sensitive K⁺ channels closure [selected talk], Meeting of French Society for Cerebral Blood Flow and Metabolism, January 2011, Caen, France .

CA86) **Hillman EMC**, In-vivo optical imaging and microscopy of neurovascular coupling. Advanced Imaging Methods Workshop, Jan 19-21 2011, Berkeley CA (*Oral presentation, Invited*)

CA87) Cayce JM, *Bouchard M, *Chen B, Jansen ED, **Hillman EMC**, Mahadevan-Jansen A. Optical imaging of signals evoked by infrared neural stimulation of the rat brain. Proc SPIE paper 7883G-146, SPIE Photonics West, Jan 2011, San Francisco CA.

CA88) **Hillman EMC**, The physiological limits of spatial and temporal resolution in fMRI, Ultra High Field Workshop sponsored by the International Society of Magnetic Resonance in Medicine (ISMRM), Feb. 20-23, 2011, Lake Louise, Canada. (*Oral presentation, Invited*)

CA89) *De Leo SE, *Chen BR, *Kozberg M, Gil O, Canoll P, **Hillman EMC**, ‘In-vivo optical imaging of glioma pathogenesis’ Brain 2011, May 24-28, Barcelona, Spain (*Oral presentation, contributed – worn student registration waiver and travel stipend*)

CA90) *Kozberg M, *DeLeo SE, *Bouchard MB, **Hillman EMC**, ‘Optical imaging of neurovascular coupling during neonatal development’, Brain 2011, May 24-28, Barcelona, Spain (*Poster*)

CA91) **Hillman EMC**, Imaging the Neurovascular Unit, Teaching session on Neurovascular Unit at Brain 2011, May 24-28, Barcelona, Spain (*Oral presentation, Invited*)

- CA92) Plaisier F, Karagiannis A, Chausson P, Jarlier F, McCaslin AFH, Toussay X, Hamel E, **Hillman EMC**, Cauli B. Identification and characterization of parenchymal prostaglandinergic cells in the rat cerebral cortex, *Brain* 2011, May 24-28, Barcelona, Spain (*Poster*)
- CA93) Karagiannis A, Plaisier F, Gallopin T, Geoffroy H, David C, Jarlier F, Nomura S, Guiot E, *L'Heureux B, *Burgess S, Lambolez B, Staiger JF, Seino S, **Hillman EMC**, Roeper J, Cauli B. Cortical neurons like glucose but they love eating lactate, *Brain* 2011, May 24-28, Barcelona, Spain (*Oral presentation, contributed*)
- CA94) *Grosberg L, **Hillman EMC**, Dual-beam two-photon microscopy for simultaneous fast acquisition of two focal planes, SPIE / OSA European Conference on Biomedical Optics, 2011, 22-26 May, Munich, Germany. (*Oral presentation, contributed, but selected for 30 minute Invited talk*)
- CA95) *Bouchard MB, **Hillman EMC**, 3D Laser-Scanning Intersecting Plane Tomography (L-SIPT) for High Speed, Translationless Volumetric Microscopy, SPIE / OSA European Conference on Biomedical Optics, 2011, 22-26 May, Munich, Germany (*Oral presentation, contributed*)
- CA96) Baik AD, Qiu J, **Hillman EMC**, Dong C, Guo XE, Quasi-3D Dynamics of Actin and Microtubule Networks in Individual MLO-Y4 Osteocytes under Steady and Oscillatory Flow, American Society for Bone and Mineral Research 2011.
- CA97) *Muldoon TJ, *Burgess SA, Ratner D, *Chen BR, **Hillman EMC**. Analysis of skin lesions with Lamellar Optical Tomography, ECI Advances in Optics for Biotechnology, Medicine and Surgery XII. June 2011, Naples FL. (*Poster*)
- CA98) *Rayshubskiy S, *Bouchard MB, Mikell C, Youngerman B, Otten M, **Hillman EMC**. Ultrafast multispectral optical imaging of the human cortex during neurosurgery, ECI Advances in Optics for Biotechnology, Medicine and Surgery XII. June 2011, Naples FL. (*Poster*)
- CA99) **Hillman EMC**, (Brain) Imaging (Presentation and Think Tank participation). Kavli, Allen, Gatsby meeting on Nano-Neuro, Sept 10-13, 2011, Royal Society Kavli Center, UK, (*Oral presentation, Invited*)
- CA100) Lacroix A, Plaisier F, Karagiannis A, Chausson P, Jarlier F, *McCaslin AFH, Toussay X, Hamel E, **Hillman EMC**, Cauli B. Identification and characterization of parenchymal prostaglandinergic cells in the rat cerebral cortex. Meeting of the French Society for the Study of Blood Brain Interfaces, October 2011, Paris, France.
- CA101) Karagiannis A, Plaisier F, Gallopin T, Geoffroy H, David C, Jarlier F, Nomura S, Guiot E, *L'Heureux B, *Burgess S, Lambolez B, Staiger JF, Seino S, **Hillman EMC**, Roeper J, Cauli B. Cortical neurons like glucose but they love eating lactate, Meeting of the French Society for the Study of Blood Brain Interfaces, October 2011, Paris, France.
- CA102) **Hillman EMC** and Kyle A, Biomedical Engineering Senior Design at Columbia University, 'Global Immersion snapshot panel' at the NCIIA / BMEIdea Alliance Meeting, BMES, October 2011, Hartford CT. (*Oral Presentation, contributed*)
- CA103) **Hillman EMC**, Phantoms for quantitative multimodal imaging, at 'Standards for Phantoms for the Performance Evaluation and Validation of Optical Medical Imaging Devices' NIST Conference, Catholic University of America, Nov 7-8th 2011, Washington DC. (*Oral Presentation, Invited*)

CA104) *Rayshubskiy A, *Bouchard MB, Mikell C, Youngerman B, *Timerman D, Otten D, **Hillman EMC**, Multispectral optical imaging of resting state fluctuations in the human cortex during neurosurgery, Society for Neuroscience Annual Meeting, November 2011, Washington DC. (*Poster*)

CA105) *Timerman D, *Chen BR, *Rayshubskiy A, Kozberg M, **Hillman EMC**, Optical imaging of resting state neurovascular coupling, Society for Neuroscience Annual Meeting, November 2011, Washington DC. (*Poster*)

CA106) *Chen BR, *L'Heureux, *Bouchard MB, Castelli M, **Hillman EMC**, A multi-phase model of neurovascular coupling, Society for Neuroscience Annual Meeting, November 2011, Washington DC. (*Poster*)

CA107) *Kozberg M, *Chen BR, *De Leo S, **Hillman EMC**, In-vivo 3D morphology of cerebral vasculature during neonatal development, Society for Neuroscience Annual Meeting, November 2011, Washington DC. (*Poster*)

CA108) *Amoozegar C, Persigehl T, *Bouchard MB, Schwartz LH, **Hillman EMC**, "Comparison of Optical and MRI dynamic contrast imaging in liver pathologies", RSNA, December 2011 (*Oral presentation, contributed*)

CA109) Lacroix A, Plaisier F, Karagiannis A, Chausson P, Jarlier F, *McCaslin AFH, Toussay X, Hamel E, **Hillman EMC**, Cauli B. Identification and characterization of parenchymal prostaglandinergic cells in the rat cerebral cortex, Meeting of French Society for Cerebral Blood Flow and Metabolism, January 2012, Paris, France. (*Oral presentation, contributed*)

CA110) Karagiannis A, Plaisier F, Gallopin T, Geoffroy H, David C, Jarlier F, Nomura S, Guiot E, *L'Heureux B, *Burgess S, Lambolez B, Staiger JF, Seino S, **Hillman EMC**, Roeper J, Cauli B. Cortical neurons like glucose but they love eating lactate, Meeting of French Society for Cerebral Blood Flow and Metabolism, January 2012. Paris, France. (*Oral presentation, contributed*)

CA111) Cayce J, *Bouchard MB, Jansen DE, **Hillman EMC**, Mahadevan-Jansen A, "Parametric evaluation of calcium waves evoked by infrared neural stimulation", Paper 8207G-157 of Conference 8207G, 23 January 2012, SPIE Photonics West. (*Oral presentation, contributed*)

CA112) **Hillman EMC**, *Grosberg LE, *Chen BC, *Klibaite U, *Galwaduge PT, 'Multi-plane two photon microscopy for high speed 3D neuroimaging' Paper 8207G-162, SPIE Photonics West, 23 January 2012, San Francisco CA. (*Oral presentation, Invited*) *Featured in *Nature Photonics News and Views* as a conference highlight.

CA113) **Hillman EMC**, 'Hot-Topics: In-vivo Microscopy: a New Window on the Brain', SPIE Photonics West, 23 January 2012, San Francisco CA (*Oral presentation, Invited*)

CA114) Stoyanov D, *Rayshubskiy A, **Hillman EMC**, "Robust registration of multispectral images of the cortical surface in neurosurgery", IEEE ISBI, May 2012, Barcelona, Spain. (*Poster*)

CA115) **Hillman EMC**, *Kozberg MG et al, Novel in vivo imaging techniques for studying the neurovascular unit Imaging and novel diagnostics, 7th International Symposium on Neuroprotection and Neurorepair Potsdam Neurotrama and Repair, 2nd - 5th of May 2012,

Potsdam, Germany (*Oral Presentation, **Invited** - MD/PhD student Mariel Kozberg presented in my place.*)

CA116) *Rayshubskiy A, *Liu A, *Shaik M, *Chen BR, **Hillman EMC**, In-vivo cellular resolution of flavoprotein and NADH autofluorescence dynamics in the rat somatosensory cortex. Gordon Research Conference on Brain Energy Metabolism & Blood Flow, August 2012, Waterville ME. (*Poster*)

CA117) *Kozberg MG, *Chen BR, *Bouchard MB, **Hillman EMC**, The development of neurovascular coupling in the neonatal brain. Gordon Research Conference on Brain Energy Metabolism & Blood Flow, August 2012, Waterville ME. (*Poster*) [*Awarded full travel fellowship*]

CA118) *Chen BR, *Kozberg MG, *Bouchard MB, **Hillman EMC**. The role of the vascular endothelium in neurovascular coupling. Society for Neuroscience Annual Meeting, October 2012, New Orleans LA. (*Poster*)

CA119) *Rayshubskiy A, *Liu A, *Shaik M, *Chen BR, **Hillman EMC**, In-vivo cellular resolution of flavoprotein and NADH autofluorescence dynamics in the rat somatosensory cortex. Society for Neuroscience Annual Meeting, October 2012, New Orleans, LA. (*Poster*)

CA120) *Kozberg MG, *Chen BR, **Hillman EMC**, Blood pressure confounds in the study of neonatal brain function. Society for Neuroscience Annual Meeting, October 2012, New Orleans, LA (*Poster*)

CA121) **Hillman EMC**, In-vivo optical imaging and microscopy of neurovascular coupling, at Photonic Imaging in Neuroscience Workshop, Marseille, France, 1-3rd Oct 2012 (*Oral Presentation, **Invited***)

CA122) **Hillman EMC**, 'Optical Imaging and Microscopy of the Living Brain' at Optical Imaging and Microscopy of the Living Brain, OSA Frontiers in Optics, Rochester NY, 14-18 Oct 2012 (*Oral Presentation, **Invited***)

CA123) **Hillman EMC**, *Plenary*: 'Optical Neuroimaging', at OSA 'Optics in the Life Sciences' congress, Hawaii, 14-18 April 2013.

CA124) **Hillman EMC**, 'In-vivo dynamic and hyperspectral microscopy', American Association of Anatomists 'Experimental Biology 2013' Meeting, Boston MA, 20-24th April 2013 (*Oral Presentation, **Invited***)

CA125) **Hillman EMC**, 'Small Animal Imaging with Dynamic Contrast (DyCE)', PerkinElmer Revolutionaries for Global Health Summit (RGHS), 8-9th May 2013 (*Oral Presentation, Invited as inventor of licensed technology*)

CA126) *Kozberg MG, *Grosberg LE, **Hillman EMC**, 'Postnatal development of neurovascular coupling at a cellular and microvascular level', Brain 2013, 20-23rd May 2013, Shanghai, China. (*Poster*).

CA127) **Hillman EMC**, 'Cellular, vascular and functional development of the brain', 'Highlights from the Journal of Cerebral Blood Flow and Metabolism' special session at Brain 2013, 20-23rd May 2013, Shanghai, China. (*Oral Presentation, **Invited***)

- CA128) **Hillman EMC**, ‘Exposed-cortex optical mapping of brain function: From animal to man’, Society for Brain Mapping and Therapeutics, 12-14th May 2013, Baltimore MD (*Oral Presentation, Invited*)
- CA129) *Chow D, *Kozberg MG, Filippi C, **Hillman EMC**, ‘Visualization of a Stroke in Progress: A new in-vivo optical imaging technique for studying acute middle cerebral artery territory infarction’, Radiological Society of North America (RSNA), December 2013.
- CA130) *Voleti V, *Bouchard MB, Lacefield C, Bruno RM, **Hillman EMC**, ‘High-speed 3D in-vivo imaging of neuronal populations using laser scanning intersecting plane tomography’, Society for Neuroscience Annual Meeting, October 2013, San Diego, LA (Poster)
- CA131) **Hillman EMC**, *Chen BR, *Kozberg MG, *Bouchard MB, ‘A novel mechanism for fast neurovascular coupling’, Society for Neuroscience Annual Meeting, October 2013, San Diego, LA (Digital Poster).
- CA132) *Kozberg MG, *Rayshubskiy A, *Chen BR, *Bouchard MB, **Hillman EMC**, ‘Imaging the co-development of hemodynamic and neuronal receptive fields in the neonatal brain’, Society for Neuroscience Annual Meeting, October 2013, San Diego, LA (oral presentation)
- CA133) *Ma Y, *Rayshubskiy A, *Kim SH, *Timerman D, Kozberg MG, **Hillman EMC**, ‘Are resting state and stimulus-evoked neurovascular coupling different?’, Society for Neuroscience Annual Meeting, October 2013, San Diego, LA (poster)
- CA134) *Kim S, *Voleti V, *Ma Y, *Ramirez E, *Kozberg MG, *Bouchard MB, *Chen BR, *Rayshubskiy A, **Hillman EMC**, ‘Longitudinal assessment of resting state functional connectivity variance in the rat brain’, Society for Neuroscience Annual Meeting, October 2013, San Diego, LA (poster).
- CA135) **Hillman EMC**, ‘Functional imaging contrast in infants and children’, Small Workshop on Building Bridges to Facilitate Understanding and Treating ASD, Sackler Foundation, 18-19th October 2013, New York NY. (*Oral Presentation, Invited*).
- CA136) **Hillman EMC**, ‘In-vivo dynamic and hyperspectral microscopy’, 7th Annual Workshop on Advanced TCSPC Techniques, 21-22 October 2013, Bethesda MD, (Oral Presentation, Invited).
- CA137) *Chow D, *Kozberg MG, Filippi C, **Hillman EMC**, ‘Visualization of a Stroke in Progress: A new in-vivo optical imaging technique for studying acute middle cerebral artery territory infarction’, Radiological Society of North America (RSNA), December 2013. (poster)
- CA138) **Hillman EMC**, ‘Depth and Speed: What are the Limits?’, OSA Spatially Precise Optogenetics at Depth Incubator Meeting, 8-10th December 2013 in Washington, DC. (*Oral Presentation, Invited*)
- CA139) Lunardi CN, *Gomes, AJ, *Palepu S, *Galwaduge T, **Hillman EMC**, ‘Synthesis and in-vivo characterization of fluorescent polymeric nano/microparticles incorporating cresyl violet. Materials Research Society Fall meeting, Nov 30-Dec5th, 2013, Boston MA (poster).
- CA140) **Hillman EMC**, ‘Intraoperative imaging of the human brain and fast 3D whole-field in-vivo microscopy’, 11th Advanced Imaging Methods Workshop, UC Berkeley, 29-31st January 2014, (*Oral Presentation, Invited*)

- CA141) **Hillman EMC**, 'Hyperspectral and Dynamic contrast: What your eyes can't see', NextMed, Medicine meets Virtual Reality (MMVR21) meeting, 19-22nd February 2014, Manhattan Beach CA. (*Oral Presentation, Invited Plenary*)
- CA142) *Galwaduge PT, *Grosberg LE, *Kim SH, *Shaik MA and **Hillman EMC**, 'Signal-Based Adaptive Optics Optimization for in-vivo Two-Photon Microscopy of the Brain', OSA Biomed, April 2014, Miami, FL (poster)
- CA143) *Voleti V, *Bouchard MB, **Hillman EMC**, 'Design of a second generation Laser Scanning Intersecting Plane Tomography (L-SIPT) system', OSA Biomed, April 2014, Miami, FL (oral presentation)
- CA144) **Hillman EMC**, 'Brain Blood Flow and Metabolism; Neurovascular Mechanisms and Postnatal Brain Development', ISOTT (International Society on Oxygen Transport to Tissue), June 28th, 2014, London (*Keynote*)
- CA145) **Hillman EMC**, 'Methods for ultra-fast 3D volumetric microscopy in-vivo' at the 'Montreal Light Microscopy Course, 14-18th July 2014 (*plenary*)
- CA146) **Hillman EMC**, 'Multi-scale optical imaging and photo-manipulation of the living brain', 'Imaging in 2020, Imaging the Immune System: Look into the long term future of Imaging', September 21 – 25, 2014, Jackson Hole WY (*invited*)
- CA147) *Kim SH, *Ma Y, *Shaik MA, *Kozberg MG, *Voleti V, *Yang K, **Hillman EMC**, 'Comparison of neuronal and hemodynamic resting state functional connectivity mapping in awake mouse brain', Society for Neuroscience Annual Meeting, November 2014, Washington, DC. (poster)
- CA148) *Ma Y, *Kozberg MG, *Kim SK, **Hillman EMC**, 'Assessing cortical neurovascular coupling in the presence and absence of stimulation', Society for Neuroscience Annual Meeting, November 2014, Washington, DC. (poster)
- CA149) *Kozberg MG, *Ma Y, *Shaik MA, *Lunardi CA, *Gomes AJ, Tfouni E, **Hillman EMC**, 'Mechanisms of neurovascular maturation in the developing brain', Society for Neuroscience Annual Meeting, November 2014, Washington, DC. (poster)
- CA150) *Voleti V, *Bouchard MB, Mendes CS, Lacefield C, Grueber WB, Mann RS, Bruno RM, **Hillman EMC**, 'High-speed, volumetric imaging of behaving organisms using swept oblique light sheet (SOLiS) microscopy', Society for Neuroscience Annual Meeting, November 2014, Washington, DC. (poster)
- CA151) *Portes JP, *Amoozegar CB, *Chen BR, *Kozberg MG, *Shaik MS, **Hillman EMC**, 'A new non-linear model of the fMRI BOLD response', Society for Neuroscience Annual Meeting, November 2014, Washington, DC. (poster)
- CA152) *Galwaduge P, *Kim SH, *Grosberg LE, **Hillman EMC**, 'Signal-based adaptive optics two-photon microscopy of in-vivo mouse brain', Society for Neuroscience Annual Meeting, November 2014, Washington DC. (poster)
- CA153) *Shaik MA, *Chung DY, *Kozberg MG, **Hillman EMC**, 'Assessing the contribution of endothelial mechanisms in functional neurovascular coupling', Society for Neuroscience Annual Meeting, November 2014, Washington, DC. (poster)

- CA154) *Chung DY, *Shaik M, *Kim SH, *Kozberg MG, and **Hillman EMC**, 'Assessment of cortical vascular responsivity to calcium channel blockers in the context of vasospasm after subarachnoid hemorrhage', Society for Neuroscience Annual Meeting, November 2014, Washington, DC. (poster)
- CA155) **Hillman EMC**, 'Optics in Neuroscience', Special OSA-sponsored symposium to celebrate 'The International Year of Light; at the AAAS annual meeting, San Jose CA, Feb 2015. (*invited*)
- CA156) **Hillman EMC**, 'Dynamic in-vivo optical imaging and microscopy of the living brain', SPIE Photonics West, San Francisco CA, Feb 2015. (*invited*)
- CA157) *Voleti V, *Bouchard MB, Lacefield C. Bruno RM, **Hillman EMC**, 'Fast, Volumetric Imaging of In Vivo Brains with Swept Confocally Aligned Planar Excitation (SCAPE) Microscopy', OSA Optics and the Brain, Vancouver, April 2015, (oral presentation).
- CA158) *Shaik MA, *Kim SH, *Zhao HT, **Hillman EMC**, 'Simultaneous Multi-Region Imaging Of Neuronal Activity, Hemodynamics And Speckle Flow In Awake Mice.', OSA Optics and the Brain, Vancouver, April 2015, (oral presentation).
- CA159) *Patel K, *Galwaduge PT, Chen K, Dowd M, Bates G, Patel VA, Taub R, **Hillman EMC**, 'High Resolution Fluorescence Imaging of Human Hand Pharmacokinetics using a Low-Cost Flatbed Scanner', OSA Optical Molecular Probes, Imaging and Drug Delivery, Vancouver, April 2015, (oral presentation).
- CA160) *Galwaduge PT, *Kim SH, *Grosberg LE, **Hillman EMC**, 'Simple Signal-Based Wavefront Correction for In-Vivo Two-Photon Microscopy in Mouse Brain', OSA Optics and the Brain, Vancouver, April 2015, (oral presentation).
- CA161) **Hillman EMC**, *Bouchard MB, *Voleti V, 'Swept Confocally-aligned Planar Excitation' (SCAPE) Microscopy for High Speed Volumetric Imaging in Behaving Animals', Optical Molecular Probes, Imaging and Drug Delivery, Vancouver, April 2015, (*invited*)
- CA162) *Ma Y, *Kozberg MG, *Kim SH, **Hillman EMC**, 'Comparing stimulus-evoked and resting-state neurovascular coupling with simultaneous electrophysiology, wide-field neuronal GCaMP and hemodynamic imaging', ISCBFM Brain 2015, Vancouver, June 2015, (poster).
- CA163) *Zhao HT, *Chow D, *Kozberg MG, *Shaik MA, *Kim SH, **Hillman EMC**, 'Optical imaging of neural activity, oxygenation and blood flow dynamics during the progression of acute stroke', ISCBFM Brain 2015, Vancouver, June 2015, (poster).
- CA164) *Kim SH, *Shaik MA, *Ma, Y, *Zhao HT, *Kozberg MG, *Voleti V, **Hillman EMC**, 'Hemodynamic and neuronal resting state functional connectivity mapping in the awake mouse brain', ISCBFM Brain 2015, Vancouver, June 2015, (poster).
- CA165) *Shaik MA, *Kim SH, *Zhao HT, **Hillman EMC**, 'The influence of endothelial dysfunction on neurovascular coupling', ISCBFM Brain 2015, Vancouver, June 2015, (poster).
- CA166) *Shaik MA, *Kim SH, *Ma Y, *Zhao HT, **Hillman EMC**, 'The effects of endothelial dysfunction on neural activity, hemodynamics and neurovascular coupling' SFN annual meeting, Chicago, 2015 (poster).

- CA167) *Zhao H, *Chow D, *Kozberg MG, *Shaik MA, *Kim SH, **Hillman EMC**, 'Capturing the dynamics of neuronal activity, brain oxygenation and brain blood flow during acute cortical stroke', SFN annual meeting, Chicago, 2015 (poster).
- CA168) **Hillman EMC**, *Voleti V, Lacefield CO, *Bouchard MB, *Li W, Bruno RM, 'SCAPE microscopy of the awake, behaving mouse brain', SFN annual meeting, Chicago, 2015 (poster).
- CA169) *Li W, *Voleti V, Schaffer ES, Mendes C, Mishra N, Mann RS, **Hillman EMC**, 'Swept confocally aligned planar excitation (scape) microscopy for large-scale brain imaging in adult Drosophila melanogaster', SFN annual meeting, Chicago, 2015 (poster).
- CA170) *Ma Y, *Kim SH, *Shaik MA, **Hillman EMC**, 'The neural basis of resting state functional connectivity mapping resolved using simultaneous hemodynamic and wide-field GCaMP imaging', SFN annual meeting, Chicago, 2015 (Dynamic poster).
- CA171) *Voleti V, *Li W, Greaney M, Lacefield CO, Schoppik D, Bruno R, **Hillman EMC**, "SCAPE microscopy for high-speed volumetric functional imaging of the awake, behaving brain", Optics and the Brain, OSA Biomed Congress, Fort Lauderdale FL, April 24-28th 2016 (Oral presentation).
- CA172) *Li W, *Voleti V, Schaffer E, Vaadia R, Grueber RB, Mann RS, **Hillman EMC**, "SCAPE Microscopy for High Speed, 3D Whole-Brain Imaging in Drosophila Melanogaster", Optics and the Brain, OSA Biomed Congress, Fort Lauderdale FL, April 24-28th 2016 (Oral presentation).
- CA173) *Tsao A, *Galwaduge PT, *Kim SH, *Shaik MA, **Hillman EMC**, "Measuring the thermodynamic effects of neurovascular coupling in the awake, behaving mouse brain", Optics and the Brain, OSA Biomed Congress, Fort Lauderdale FL, April 24-28th 2016 (Poster presentation).
- CA174) *Galwaduge PT, *Yu H, *Patel KB, *Voleti V, *Shaik MA, **Hillman EMC**, "Towards Two-Photon Swept Confocally Aligned Planar Excitation Microscopy (2P-SCAPE)", Optics and the Brain, OSA Biomed Congress, Fort Lauderdale FL, April 24-28th 2016 (Oral presentation).
- CA175) *Patel KB, *Voleti V, **Hillman EMC**, "High-speed, 3D SCAPE Microscopy of Fresh Tissues for in situ Histopathology", Translational Biophotonics, OSA Biomed Congress, Fort Lauderdale FL, April 24-28th 2016 (Oral presentation).
- CA176) *Li W, *Voleti V, Schaffer ES, Mishra N, **Hillman EMC**, "Swept confocally aligned planar excitation (SCAPE) microscopy for the identification of neural circuits in adult Drosophila", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (poster).
- CA177) *Yu H, *Galwaduge PT, *Li W, *Voleti V, *Patel KP, **Hillman EMC**, "Towards two-photon SCAPE microscopy for extended depth, fast volumetric imaging of brain function", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (poster).
- CA178) *Yang K, *Li W, Mann RS and **Hillman EMC**, "Super-Fly-gym: An open-source, closed-loop stimulation and behavior tracking system for whole brain imaging in adult Drosophila melanogaster", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (poster).
- CA179) Xu L, *Li W, *Voleti V, **Hillman EMC**, Firestein SJ, "Native olfactory sensory neuron imaging with swept confocally-aligned planar excitation (SCAPE) microscopy", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (poster).

CA180) *Ma Y, *Kim SH, *Shaik MA, *Zhao TH and **Hillman EMC**, "Widefield optical mapping of neural activity and cortical hemodynamics imaging during locomotion", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (poster).

CA181) *Zhao HT, *Chow D, *Kozberg MG, *Kim SH, *Shaik MA, *Saxena A, Dovas A and **Hillman EMC**, "Wide-field optical mapping (WFOM) of neural activity and hemodynamics in models of acute and longitudinal brain disease", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (dynamic poster).

CA182) *Kim S, *Ma Y, *Shaik MA, *Voleti V, **Hillman EMC**, "Comparison of wide-field optical mapping (WFOM) of neural activity and hemodynamics in awake mouse brain to resting state fMRI", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (poster).

CA183) Shaik MA, Kim SH, Thibodeaux DN, **Hillman EMC**, "Endothelial dysfunction diminishes conducted vasodilation leading to abnormal functional hyperemia in the awake mouse cortex", Society for Neuroscience Annual Meeting, San Diego CA, Nov 2016 (dynamic poster)

CA184) Galwaduge PT, Yu H, Voleti V, Patel K, Li W, **Hillman EMC** "Single and two-photon swept confocally aligned planar excitation (SCAPE) microscopy for high-speed 3D imaging of neural activity", SPIE Photonics West, 28th Jan 2017 (Oral presentation).

CA185) Shaik MA, Kim SH, Ma Y, **Hillman EMC**, "Investigating the effect of nonselective COX-inhibition on neuronal and vascular dynamics in the awake mouse cortex", Glial Biology: Functional Interactions Among Glia & Neurons: Gordon Research Conference, Ventura CA, March 2017 (Poster)

CA186) Ma Y, Thibodeaux DN, Shaik MA, Kim SH, **Hillman EMC** "Wide-field optical mapping of neural activity in awake mice and the importance of hemodynamic correction", OSA Optics and the Brain, Optics in the Life Sciences Congress, San Diego, April 2017 (Oral presentation).

CA187) Voleti V, Li W, Shaik MA, Wu M, Campos CP, Wyart C, **Hillman EMC**, "Imaging the nervous system at different spatiotemporal scales with SCAPE microscopy", OSA Optics and the Brain, Optics in the Life Sciences Congress, San Diego, April 2017 (Oral presentation).

CA188) Yu H, Galwaduge PT, Voleti V, Patel K, Li W, Shaik MA, **Hillman EMC**, "Two-photon Swept Confocally Aligned Planar Excitation Microscopy (2P-SCAPE)" OSA Optics and the Brain, Optics in the Life Sciences Congress, San Diego, April 2017 (upgraded to invited oral presentation)

CA189) **Hillman EMC** "A Second-generation SCAPE Microscopy System for High-speed 3D Imaging of Living Things", Biomedical Optics Design and Applications, Optics in the Life Sciences Congress, San Diego, April 2017 (Invited presentation).

CA190) Patel K, Voleti V, Zhao HT, Campos CP, **Hillman EMC** "Developing SCAPE Microscopy for Real-time, 3D Cellular Imaging at the Point-of-Care" Biomedical Optics Design and Applications, Optics in the Life Sciences Congress, San Diego, April 2017 (invited presentation).

CA191) Voleti V, Li W, Patel KB, Shaik MA, Perez-Campos C, **Hillman EMC**, "A Second-Generation SCAPE System for Fast, 3D Imaging of Neural Activity". Society for General Physiologists annual meeting 'The Optical Revolution in Physiology', Woods Hole, Sept 2017.

CA192) Shaik MA, Thibodeaux SN, Kim SH, **Hillman EMC**, “Wide-field optical mapping (WFOM) of large-scale neural activity and hemodynamics in the awake mouse cortex”. Society for General Physiologists annual meeting ‘The Optical Revolution in Physiology’, Woods Hole, Sept 2017. (Selected for ‘Poster-Blitz’ talk).

CA193) Yu H, Galwaduge PT, Voleti V, **Hillman EMC**, “Optimizing the two-photon excitation for Swept Confocally Aligned Planar Excitation (SCAPE) Microscopy”, Society for General Physiologists annual meeting ‘The Optical Revolution in Physiology’, Woods Hole, Sept 2017.

CA194) Li, W., Mishra, N., Schaffer, E., Voleti, V. and **Hillman, EMC**, “Swept Confocally Aligned Planar Excitation (SCAPE) Imaging for Whole Brain Circuit Identification in Adult *Drosophila*”, HHMI Janelia Conference ‘Emerging Tools for Acquisition and Interpretation of Whole-Brain Functional Data’, Nov 2017. (Selected as poster highlight talk)

CA195) Kim SH, Shaik MA, Ma Y, Zhao HT, Thibodeaux DN, Khabbazian M, Zheng T, **Hillman EMC**, “Spatiotemporal modeling of resting state neuronal activity in the awake mouse brain”, Society for Neuroscience Annual Meeting, Washington DC, Nov 2017 (poster).

CA196) Mishra N, Li W, Schaffer ES, Voleti V, **Hillman EMC**, Axel R, “Spatiotemporal modeling of resting state neuronal activity in the awake mouse brain”, Society for Neuroscience Annual Meeting, Washington DC, Nov 2017 (dynamic poster).

CA197) Xu L, Li W, Voleti W, Peterlin Z, Zhang C, **Hillman EMC**, Firestein S, “SCAPE microscopy reveals extensive antagonism in olfactory response to odor blends”, Society for Neuroscience Annual Meeting, Washington DC, Nov 2017 (poster).

CA198) Yu H, Benezra SE, Galwaduge PT, Voleti V, Patel KB, Li W, Shaik MA, Zhao TH, Bruno RM, **Hillman EMC**, ‘Combining Near-infrared Excitation with Swept Confocally-aligned Planar Excitation (SCAPE) Microscopy for Fast, Volumetric Imaging in Mouse Brain’, Optics and the Brain, OSA Biophotonics Congress, Fort Lauderdale, April 2018.

CA199) **Hillman EMC**, Schevon C, Costa R, Bandettini P, Zheng T, Jacobs J, Handwerker D, Smith E, Gonzalez-Castillo J, Kim SH, Ma Y, Shaik MA, Zhao HT, Thibodeaux D, Yu H, Khabbazian M, Kim C, ‘Decoding the neural basis of resting-state functional connectivity mapping’, Annual BRAIN Investigator’s meeting, Bethesda MD, April 2018. (poster).

CA200) Li W, Voleti V, Vaadia R, Mishra N, Xu L, Schaffer ES, Grueber W, Firestein S, Schoppik D, **Hillman EMC**, ‘Implementing and refining SCAPE for imaging small brains and neural populations’, Annual BRAIN Investigator’s meeting, Bethesda MD, April 2018. (student poster with travel stipend).

CA201) **Hillman EMC**, Yu H, Voleti V, Li W, Patel KB, Perez-Campos C, Lee GS, Benezra SE, Lacefeld C, Bruno RM, Boyden E, Cosio D, Hosseini E, Celiker O, ‘SCAPE Microscopy - Technological Advances, New Applications and Dissemination’, Annual BRAIN Investigator’s meeting, Bethesda MD, April 2018. (poster).

Professional Services:

Scientific Advisory Boards

- 2016- Scientific Advisory Board. TranslaTUM, Technical University of Munich.
- 2016- Founding Advisory Board, Current Opinion in Biomedical Engineering (Elsevier)
- 2018- NIH BRAIN Working Group of the Advisory Committee to the NIH Director

Editorial Positions

- 2008 Special Issue Editor, OSA Applied Optics: “Topics in Biomedical Optics”.
- 2008-10 Associate Editor IEEE EMBS Conference Editorial Board, ‘Biomedical Imaging and Image Processing’.
- 2008- Review Editor, Frontiers in Neuroenergetics Journal.
- 2009-10 Topical Editor, OSA Applied Optics: “Biomedical Optics” (In vivo microscopy, spectroscopy, and neuro-Imaging).
- 2010 Feature Issue Editor, OSA Biomedical Optics Express: “Topics in Biomedical Optics”.
- 2010-13 Associate Editor, OSA Biomedical Optics Express.
- 2011 Feature Issue Lead Editor, OSA Biomedical Optics Express: “ECI Advances in Optics”.
- 2011 Invited Guest Editor for SPIE Journal of Biomedical Optics.
- 2012- Editorial Board Member, Journal of Biophotonics (Wiley).
- 2012- Editorial Board Member, Biomedical Spectroscopy and Imaging Journal (IOS Press)
- 2014-17 Associate Editor, Optica, OSA’s new high-impact pan-optics journal.
- 2014- Associate Editor, Neurophotonics, SPIE’s new journal on optics in the brain.
- 2016- Founding Advisory Board Member, Current Opinion in Biomedical Engineering (Elsevier)

Service to Professional Societies

- 2008-12 Chair of the OSA Tissue Imaging and Spectroscopy Technical Group
- 2011 Optical Society of America (OSA) Biophotonics Award Steering Committee
- 2012-13 Member of inaugural OSA Michael S. Feld Biophotonics Award Selection Committee
- 2013 Chair, OSA Michael S. Feld Biophotonics Award Selection Committee
- 2013- OSA ‘Rising star’: assisting with publicity campaign to raise awareness of optics in neuroscience.

Conference Organization

- 2005-6 Program Committee Member for SPIE Optics East 2005 Optical Methods in Drug Discovery and Development conference
- 2006 Session Chair and Organizer for “Imaging Brain Function and Disease” at the Lasers in Medicine and Biology Gordon Research Conference 2006.
- 2006 Session Track Co-Chair, IEEE Engineering in Medicine and Biology Conference: “Diagnostic Instrumentation & Physiological Measurements”
- 2006 Session Chair and Organizing Committee Member for “Optics in Neuroscience” session at the. National Institute of Health Fifth Inter-Institute Workshop on Optical Diagnostic Imaging from Bench to Bedside conference.
- 2008 Program Chair for Optical Society of America BIOMED 2008 conference: “Methods for Diffuse Optical Imaging and Tomography”

- 2008 Associate Editor for IEEE Engineering in Medicine and Biology Conference 2008: “Biomedical Imaging and Image Processing”.
- 2008 Program Committee, 2008 IEEE Lasers and Electro-Optics Society (LEOS)
- 2008 Co-chair: "Advances in Optical Instrumentation", World Molecular Imaging Congress (WMIC) 2008.
- 2008 Program Committee, 2009 SPIE/OSA European Conference on Biomedical Optics.
- 2009 Program Committee, ‘Neurons and Photons’ conference at the SPIE’s International Symposium on Biomedical Optics 2009.
- 2009 Session Track Co-Chair, IEEE Engineering in Medicine and Biology Conference: “Neural Engineering”
- 2009 Session Chair, "In vivo optical imaging of animal disease models", Engineering Conferences International 2009.
- 2009 Session Chair (Brain) and Program Committee, 2009 ‘NIH Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside’
- 2010 Program Chair for Optical Society of America BIOMED 2010 conference: “Biological and Drug Discovery Imaging”
- 2010 Session Track Co-Chair, IEEE Engineering in Medicine and Biology Conference: "Brain Functional Imaging" and mini-symposium organizer “Optical techniques for imaging and perturbing neural activity in vivo”.
- 2010 Track Co-Chair, IEEE Engineering in Medicine and Biology Conference: “Brain Functional Imaging” within Neural Engineering, Neuromuscular Systems, and Rehabilitation Engineering.
- 2010 Associate Editor for IEEE Engineering in Medicine and Biology Conference 2010: “Biomedical Imaging and Image Processing”.
- 2010 **Co-Chair**, UK Royal Society Conference “Making light work: Illuminating the future of biomedical optics”
- 2011 Session Chair and organizer, BMES Conference Biomedical Optics Track (Novel Biomedical Imaging and Microscopy) and Neural Engineering Track (Neuroimaging).
- 2011 Session Chair and organizer, World Molecular Imaging Congress “Optical Methods”
- 2011 **Organizing Chair** for Engineering Conferences International “Advances in Optics for Biotechnology, Medicine and Surgery XI” conference (with 2 co-chairs).
- 2011 Session Chair (Brain) and Program Committee, 2011 ‘NIH Inter-Institute Workshop on Optical Diagnostic and Biophotonic Methods from Bench to Bedside’
- 2012 Program Committee, SPIE 2013 “Optogenetics and hybrid-optical control of cells”
- 2012 Co-Chair Neurophotonics sub-conference at the OSA/SPIE European Conference on Biomedical Optics (ECBO 2013).
- 2014 Program Chair, “Biophysics, Biology and Biophotonics: The Crossroads” at OSA BIOMED 2014
- 2015 Co-Chair, “Neurophotonics” ECI “Advances in Optics for Biotechnology, Medicine and Surgery XII” conference
- 2015 Co-Chair, “Neurophotonics” conference at SPIE / OSA ECBO meeting 2015
- 2015 **Chair (founding)**, ‘Optics and the Brain’ conference at the OSA Optics in the Life Science congress, Vancouver.
- 2016 **Chair**, ‘Optics and the Brain’ conference at the OSA Biomed congress, Ft Lauderdale.
- 2016 Subcommittee Chair for ‘Optics in Biology and Medicine’ at the Centennial OSA Frontiers in Optics (FIO) annual meeting, Rochester NY

- 2017 **Chair**, 'Optics and the Brain' conference at the OSA Biomed congress, San Diego.
- 2018 **General Chair**, OSA Biomed Congress 2018, (vice-chair 2016).
- 2018- **Program Track Co-Chair**, SPIE BiOS annual meeting Neurophotonics

Manuscript Reviewer

Annals of Biomedical Engineering
Applied Optics
Biological Psychiatry
Biomedical Optics Express
Cell
Cellular and Molecular Bioengineering
Frontiers in Neuroenergetics
IEEE Transactions on Medical Imaging
Journal of Alzheimer's Disease
Journal of Anatomy
Journal of Biomedical Optics
Journal of Cerebral Blood Flow and Metabolism
Journal of Hepatology
Journal of Neuroscience
Journal of Nuclear Medicine
Journal of Optics A
Journal of the Optical Society of America A
Journal of Physics D
Medical Physics
Nature Biotechnology
Nature Medicine
Nature Photonics
Nature Methods
Nature Neuroscience
Nature Communications
Nature Protocols
Nanotechnology
National Academy of Science / ILAR Journal
NeuroImage
Neuron
Neuropsychiatric Disease and Treatment
Optics Communications
Optics Express
Optics Letters
Physics in Medicine and Biology
Physical Review Letters
PLoS One
Proceedings of the National Academy of Sciences (PNAS)
Review of Scientific Instruments
Science Translational Medicine
Science Advances
Waves in Random and Complex Media