**Erik Lee Snapp, Ph.D.**

Forchheimer 640

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**EDUCATION**

1993-1999 **Ph.D., laboratory of Dr. Scott Landfear**

Dept. of Molecular Microbiology and Immunology

Oregon Health Sciences University Portland, OR 97201

Thesis: Differential Targeting of Glucose Transporter Isoforms in *Leishmania enriettii.*

1985-1989 **B.A. (Biology)**

Harvard University, Cambridge, MA

**EMPLOYMENT**

2016-present **Director of Graduate Student and Postdoctoral Programs**, Janelia Farm, HHMI, Ashburn, VA.

2012-2016 **Associate Professor**, Dept. of Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx NY.

2004-2012 **Assistant Professor**, Dept. of Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx NY.

1999-2004 **Postdoctoral Fellow, laboratory of Dr. Jennifer Lippincott-Schwartz** Cell Biology and Metabolism Branch, NICHD, NIH, Bethesda, MD

*Research interests:* 1) Dynamics, organization, and maintenance of the endoplasmic reticulum, (ER) 2) Retention of misfolded proteins in the ER,

3) Protein translocation, 4) Fluorescence microscopy methods

**HONORS AND AWARDS**

* LaDonne H. Schulman Award for Excellence in Teaching at Albert Einstein 2010
* Selected to attend MCell computer simulation workshop June 2006
* Einstein Marion Bessin Liver Center pilot award June 2006-May 2008
* Einstein CFAR pilot award Jan. 2006-Dec. 2006
* Resnick Center Award Gerontology Pilot funds June 2005-June 2006
* Ellison Medical Foundation New Scholar in Aging 2005-2009
* NICHD Annual Report Cover 2003
* FARE Travel Awards 2001-2002 and 2002-2003
* NIH IRTA Fellow (2002-2004)
* PRAT Fellowship (Pharmacology Research Associate Training)(1999-2002)
* Henry Sears Fellowship 1996
* NRSA Training Grant (Interactions at the Microbe/Host Interface)(1995-1998)
* Tartar Fellowship 1995

**TEACHING**

* On Becoming a Scientist. Intensive one week course for incoming Einstein graduate students, organizer and five lectures. 2014. Seven lectures in 2015.
* Lecturer for YU Dean's Scholars Academic Enrichment Program 2012-2013
* MSTP Informal Journal Club April 2010.
* Lecturer for Einstein Biology of Aging Course, Fall 2009, 2011, 2013.
* Lecturer for Einstein Ethics Course (Image Manipulation) Spring 2008-2013. Developed this as a new ethics topic for the course.
* Lecturer: Virology Fall 2007
* Course Organizer and Lecturer: Quantitative Imaging of Cells at Einstein, Fall 2007, 2008, 2009, 2011, 2013, 2015. 8+ lectures and multiple labs.
* Lecturer for Critical Readings graduate course at AECOM 2006.
* Discussion leader for Einstein Ethics Course 2005-2008.
* Lecturer for Biophysical Chemistry of Macromolecules graduate course at Einstein 2005-2006.
* Lecturer for Molecular Cell Biology graduate course at Einstein 2005-present. Four lectures per course annually.
* Faculty and lecturer for Stowers Institute Molecules in Motion imaging workshop at the Stowers Institute, Kansas City, MO. Sept. 2006.
* Faculty and lecturer for Photobleaching and Protein Dynamics Workshop at Lombardi Cancer Center at Georgetown University, June 18, 2004.
* Faculty at LSM 510 Advanced Imaging Microscopy Workshop at the National Institutes of Health, April 15-16, 2004.
* Faculty at Advanced Techniques in Confocal, Live Cell & Molecular Imaging Workshop at Duke University Medical Center, January 20-22, 2004.
* Faculty at Practical Course in GFP and Advanced Microscopy at the Max Planck Institute for Biophysical Chemistry at Gottingen, Germany, Sept. 18-27, 2000.
* Teaching Assistant for Medical Microbiology laboratory for medical students, Spring 1995, 1996, and 1997 at Oregon Health Sciences University.

**Other Professional Activities**

* Grant Reviewer Special Emphasis Panel NIH October 2015, Feb. 2016.
* Ad hoc reviewer NIH MBPP Study Section June 2015.
* Editorial Board BBA Molecular Cell Research (March 2015)
* Grant Reviewer EBIT Study Section for NIH Nov 2014.
* Editorial Advisory Board Endoplasmic Reticulum Stress in Diseases (2013-present)
* Grant reviewer for W.M. Keck Foundation 2013
* Grant Reviewer Special Study Sections National Institutes of Health 2013, 2014
* Grant reviewer for Research Foundation- Flanders 2012
* Committee on Appointments and Promotions to Associate Professor 2012-2014
* Einstein Senate Alternate Senator for Department of Anatomy and Structural Biology 2012-present
* Study Section member for American Heart Association Grants 2011-present. twice yearly.
* Co-organizer “From Unfolded Proteins in the Endoplasmic Reticulum to Disease” FASEB Summer meeting. June 2011 and 2013.
* Committee for selection of the Director of Light Microscopy in the AIF. 2010-2011.
* Director of Hepatic Imaging and Cell Structure Core of the Marion Bessin Liver Center (June 2010-present)
* Chair of the Anatomy and Structural Biology Graduate Committee (Fall 2009-present)
* Einstein Graduate Executive Committee (Fall 2009-present)
* Einstein Chemical Safety Committee (2010-present)
* Reviewer for American Federation of Aging Research grants (2010-present).
* Advisory Committee for the Cellular, Molecular Biology and Genetics Training Grant (2008-present).
* Reviewer for Israel Science Foundation grants 2008-present.
* Co-organizer Anatomy and Structural Biology Departmental Retreat 2009-present.
* Co-director of AECOM Fluorescent Protein Resource Center
* Organizer and Session Chair for Advanced Light Microscopy Applications for Biological Questions Symposium at Microscopy & Microanalysis Meeting 2007.
* Study section reviewer for Department of Energy 2007
* NIGMS PRAT program applicant reviewer 2007
* AECOM Postdoctoral Fellow Committee (2006-present)
* AECOM Analytical Imaging Facility Advisory Committee (2006-present)
* Reviewer for Burroughs Wellcome grants (2006)
* AECOM Dept. of Anatomy&Structural Biology Faculty Search Committee (2005-2009)
* AECOM Graduate Admissions Committee (2005-2009)
* AECOM Non-Human Use Radiation Safety Committee (2005-present)
* Member of the Marion Bessin Liver Center at AECOM (2005-present)
* Member of the Gruss-Lipper Biophotonics Center at AECOM (2004-present)
* American Society of Cell Biology member (1999-present) and Ambassador (2010-2011)
* Regular reviewer for J. Cell Sci. (2000-present), Mol. Biol. Cell (2000-present), Am. J. Physiol. Gastrointest Liver Physiol. (2005-present), EMBO J. (2006-present), PNAS (2006-present), Nature Methods (2006-present), J. Cell Biology (2007-present), Biochemistry (2007-present), FEBS Journal (2007-present), Nature (2007-present), Human Molecular Genetics (2008-present), Neuroscience Letters (2009-present), EMBO Reports (2009-present), Journal of General Physiology (2009-present), Experimental Cell Research (2009-present), Biophysical Journal (2009-present), The Plant Journal (2010-present), Journal of Proteome Research (2010-present), Cell Biology and Toxicology (2012-present), PLoS ONE (2011-present), Aging Cell (2012-present), Autophagy (2012-present), Analytical Biochemistry (2012-present), Computational and Structural Biotechnology Journal (2012-present), Molecular and Cellular Biology (2012-present), BMC Biotechnology (2013-present), Biochemical Journal (2013-present), Human Mutation (2013-present), BBA Molecular Cell Research (2013-present), Frontiers in Genomic Endocrinology (2013-present), Oncogene (2013-present), RNA Journal (2014-present).
* OHSU Graduate Student Council (Sept. 1994 to Sept. 1996)
* OHSU Graduate Student Research Forum Co-chair (1995-1996)

**PUBLICATIONS**

***Journal Articles and Reviews***

**1. Snapp EL** and Landfear SM. 1997. Cytoskeletal association is important for differential targeting of glucose transporter isoforms in *Leishmania enriettii*. *J Cell Biol.* 139:1775-1783. PMCID: PMC2132635

**2. Snapp EL** and Landfear SM. 1999. Characterization of a targeting motif for a flagellar membrane protein in *Leishmania enriettii*. *J Biol Chem.* 274: 29543-29548. no PMCID.

**3.** Nehls S, **Snapp EL**, Cole NB, Zaal KJM, Kenworthy AK, Roberts TH, Ellenberg J, Presley JF, Siggia E, and Lippincott-Schwartz J. 2000.Dynamics and retention of misfolded proteins in native ER membranes. *Nat Cell Biol.* 2:288-295. no PMCID.

**4.** Lippincott-Schwartz J, **Snapp E**, and Kenworthy A. 2001. Studying protein dynamics in living cells. *Nat Rev Mol Cell Biol.* 2:444-456. no PMCID.

**5.** Brandizzi F, **Snapp EL,** Roberts A, Lippincott-Schwartz J, and Hawes C. 2002. Membrane protein transport between the endoplasmic reticulum and the Golgi in tobacco leaves is energy dependent but cytoskeleton independent: evidence from selective photobleaching. *Plant Cell*. 14:1293-1309. PMCID: PMC150781.

**6.** Nikonov A, **Snapp E**, Lippincott-Schwartz J, and Kreibich G. 2002. Active translocon complexes labeled with GFP-Dad1 diffuse slowly as large polysome arrays in the endoplasmic reticulum. *J Cell Biol.* 158:497-506. PMCID: PMC2173836.

**7. Snapp EL**, Hegde R, Francolini M, Lombardo F, Colombo S, Pedrazzini E, Borgese N, and Lippincott-Schwartz J. 2003. Formation of stacked cisternae by low affinity protein interactions. *J Cell Biol.* 163:257-269. PMCID: PMC2173526. **Journal Cover.**

8. Snapp EL, Reinhart G, Bogert B, Lippincott-Schwartz J, and Hegde R. 2004. The organization of engaged and quiescent translocons in the endoplasmic reticulum of mammalian cells. *J Cell Biol.* 164:997-1007. PMCID: PMC2172055.

**9.** daSilva LLP, **Snapp EL**, Denecke J, Lippincott-Schwartz J, Hawes C, and Brandizzi F. 2004. ER exit sites and Golgi bodies in plant cells form mobile, secretory units. *Plant Cell*. 16:1753-1771. PMCID: PMC514159.

**10.** **Snapp EL,** Iida, T., Frescas, D., Lippincott-Schwartz, J., and Lilly, M. 2004. The fusome mediates intercellular ER connectivity in *Drosophila* ovarian cysts. *Mol Biol Cell.* 15:4512-4521. PMCID: PMC519145.

**11.** Shen J, **Snapp E**, Lippincott-Schwartz J, and Prywes R. 2005. ER stress causes specific dissociation of a stable ATF-6-BIP complex. *Mol Cell Biol.* 25:921-932. PMCID: PMC543992.

**12.** Fontanini A, Chies R, **Snapp EL**, Ferrarini M, Fabrizi G, and Brancolini C. 2005. Glycan-independent role of calnexin in the intracellular retention of Charcot-Marie-Tooth 1A Gas3/PMP22 mutants.*J Biol Chem.* 280:2378-2387. no PMCID.

**13.** Shaffer KL, Sharma A, **Snapp EL**, Hegde RS. 2005. Regulation of protein compartmentalization expands the diversity of protein function. *Dev Cell*. 9:545-554. no PMCID.

**14. Snapp EL.** 2005. Membrane proteins modulate ER Organization. *Proceedings of the 14th International Conference on Cytochromes P450: Biochemistry, Biophysics, and Bioinformatics.* no PMCID.

**15.** Altan-Bonnet N, Sougrat R, Liu W, **Snapp EL,** Ward T, and Lippincott-Schwartz J. 2006. Golgi inheritance in mammalian cells is mediated through ER export activities. *Mol Biol Cell*. 17:990-1005. PMCID: PMC1356606.

**16. Snapp EL,** Sharma A,Lippincott-Schwartz J, and Hegde RS. 2006. Monitoring chaperone engagement of substrates in the endoplasmic reticulum of live cells. *Proc Natl Acad Sci USA.* 103:6536-6541*.* PMC1458919.

**17.** Borgese N, Francolini M, and **Snapp E.** 2006. Endoplasmic Reticulum Architecture: Structures in Flux. *Curr Op Cell Biol.* 18:358-364. PMC4264046

**18.** Lippincott-Schwartz J and **Snapp EL.** 2006. Imaging of organelle membrane systems and membrane traffic in living cells. CSH Protoc.

**19.** Lippincott-Schwartz J and **Snapp EL.** 2006. Membrane trafficking and organelle reagents. CSH Protoc.

**20.** Kadereit B, Kumar P, Wang WJ, Miranda D, **Snapp EL**, Severina N, Torregroza I, Evans T, and Silver DL. 2007. An Evolutionarily conserved gene family is important for fat storage. *Proc Natl Acad Sci USA*. 105:94-99. PMC2224239.

**21.** VanderHeyden AB, Naismith TV, **Snapp EL**, Hodzic D, Hanson PI, 2009. LULL1 retargets TorA to the nuclear envelope revealing an activity that is impaired by the *DYT1* dystonia mutation. *Mol Biol Cell*. 20:2661-2672. PMC2688546. **Journal Cover.**

**22.** Ostrovsky O, Makarewich CA, **Snapp EL**, Argon Y. 2009. An essential role for ATP binding and hydrolysis in the chaperone activity of GRP94 in cells. *Proc Natl Acad Sci* *USA*. 106:11600-11605. PMCID: PMC2710619.

**23.** **Snapp, EL.** 2009. Fluorescent Proteins: A Cell Biologist's User Guide. *Trends Cell Biol.* 19:649-55. PMC2784028.

**24.** Muller L, Diaz de Ecuariaza M, Lajoie P, Theis M, Jung M, Muller A, Burgard C, Greiner M, **Snapp EL**, Dudek J, and Zimmerman R. 2010. Evolutionary gain of function for the ER membrane protein Sec62 from yeast to humans. *Mol Biol Cell*. 21:691-703 PMCID: PMC2828957.

**25.** Lai CW, Aronson D, and **Snapp EL**. 2010. BiP Availability Distinguishes States of Homeostasis and Stress in the Endoplasmic Reticulum of Living Cells. *Mol Biol Cell*. 21:1909-1921. PMC2883936.

**26.** Gross DA, **Snapp EL**, and Silver D. 2010. Structural Insights into Triglyceride Storage Mediated by Fat-Storage-Inducing Transmembrane (FIT) Protein 2. *PLoS ONE*. 5(5): e10796. PMCID: PMC2875400

**27.** Benedix J, Lajoie P, Jaiswal H, Burgard C, Greiner M, Zimmerman R, Rospert S, **Snapp EL**, and Dudek J. 2010. BiP Modulates the Affinity of its Co-chaperone ERj1 to Ribosomes. *J Biol Chem*. 285:36427-36433. PMC2978572.

**28.** Lajoie P and **Snapp EL**. 2010. Formation and toxicity of soluble Huntingtin oligomers in living cells. *PLoS ONE*. 5:e15245. PMCID: PMC3011017.

**29.** Matsuda S, Matsuda Y, **Snapp EL**, D'Adamio L. 2011. Maturation of BRI2 generates a specific inhibitor that reduces APP processing at the plasma membrane and in endocytic vesicles. *Neurobiol Aging.* 32:1400-1408. PMCID: PMC2932834.

**30.** Aronson DE, Costantini LM, and **Snapp EL**. 2011. Superfolder GFP is Fluorescent in Oxidizing Environments when Targeted via the Sec Translocon. *Traffic*. 12:543-548. PMCID: PMC3079558.

**31.** Howarth D, Vacaru A, Tsedensodnom O, Mormone E, Nieto N, Costantini L, **Snapp EL,** Sadler K. 2011. Alcohol disrupts endoplasmic reticulum function and protein secretion in hepatocytes. *Alcoholism: Clin Exp Res.* PMCID: PMC3204333.

**32.** Lajoie P and **Snapp EL**. 2011. Changes in BiP availability reveal hypersensitivity to acute endoplasmic reticulum stress in cells expressing mutant Huntingtin. *J Cell Sci*. 124:3332-3343. PMCID: PMC3178454.

**33.** Vander Heyden AB, Naismith TV, **Snapp EL**, and Hanson PI. 2011. Monotopic membrane association mediates protein retention inside the endoplasmic reticulum. *EMBO*. 30:3217-3231. PMCID: PMC3160655.

**34.** Windsor M, Hawes P, Monaghan P, **Snapp E**, Salas ML, Rodriguez JM, and Wileman T. 2012. A Viral Structural Membrane Protein Induces Collapse of ER Membrane Cisternae during Assembly and Envelopment of African Swine Fever Virus. *Traffic*. 12:30-42. PMCID: PMC3237792. **Journal Cover.**

**35.** **Snapp EL** and Lajoie P. 2011. Time-Lapse Imaging of Membrane Traffic in Living Cells. *Cold Spring Harb Protoc*. 2011 (11):1362-1365.

**36.** **Snapp EL** and Lajoie P. 2011. Photobleaching Regions of Living Cells to Monitor Membrane Traffic. *Cold Spring Harb Protoc*. 2011 (11): 1366-1367. PMC4266277

**37.** **Snapp EL** and Lajoie P. 2011. Activating Photoactivatable Proteins with Laser Light to Visualize Membrane Systems and Membrane Traffic in Living Cells. *Cold Spring Harb Protoc*. 2011 (11): 1368-1369.

**38.** **Snapp EL** and Lajoie P. 2011. Imaging of Membrane Systems and Membrane Traffic in Living Cells. *Cold Spring Harb Protoc*. 2011 (11): 1295-1304.

**39.** Kung LF, Pagant S, Futai E, D'Arcangelo J, Buchanan R, Dittmar JC, Reid RJD, Rothstein R, Hamamoto S, **Snapp EL**, Schekman R, and Miller EA. 2011. Sec24p and Sec16p cooperate to regulate the GTP cycle of the COPII coat. *EMBO*. 31:1014-1027. PMCID: PMC3280547

**40.** Lajoie P, Moir R, Willis I, and **Snapp EL.** 2012.Kar2p availability defines distinct forms of endoplasmic reticulum stress in living cells*.**Mol Biol Cell.* 23:955-964. PMCID: PMC3290652.

**41.** Costantini LM, Fossati M, Francolini M, **Snapp EL**. 2012 Assessing the tendency of fluorescent proteins to oligomerize under physiologic conditions. Traffic. 13:643-9. PMC3324619.

**42.** Lai C\*, Otero J\*, Hendershot L, and **Snapp EL**. 2012. ERdj4 association with the ER membrane and ERAD machinery. *J Biol Chem* 287:7969-7978*.*PMC3318715**.** \* These two authors contributed equally to this work.

**43. Snapp EL.** 2012. Unfolded Protein Responses With or Without Unfolded Proteins? *Cells*. 1(4):926-960. PMC3901143*.* Review.

**44.** Ordonez A, **Snapp EL**, Tan L, Miranda E, Marciniak SJ, and Lomas DA. 2012. Endoplasmic reticulum polymers impair luminal protein mobility and sensitise to cellular stress in a (1)-antitrypsin deficiency. *Hepatology.* 57:2049-60. PMCID PMC3871212.

**45.** Haataja L, **Snapp E,** Wright J, Liu M, Hardy AB, Wheeler MB, Markwardt ML, Rizzo M, and Arvan P. 2012. Proinsulin intermolecular interactions during secretory trafficking in pancreatic beta cells. *J Biol Chem.*288:1896-1906.PMC3548498.

**46.** Costantini LM, Subach O, Jaureguiberry-bravo M, Verkhusha V, and **Snapp EL.** 2012. Adapting a blue fluorescent protein for the secretory pathway. *BBRC.* 430:1114-1119. PMC3552020*.*

**47.** Guo F and **Snapp EL**. 2013. ERdj3 regulates BiP occupancy in cells. *J Cell Sci.* 126:1429-1439. PMC3644143.

**48.** Costantini LM and **Snapp EL**. 2013. Fluorescent Proteins in Cellular Organelles: Serious Pitfalls and Some Solutions. *DNA Cell Biol.* 32 (11):622-627. PMC3806368. **Journal Cover.**

**49.** Yuan F, **Snapp EL**, Novikoff PM, Suadicani SO, Spray DC, Potvin B, Wolkoff AW, Stanley P. 2014. Human Liver Cell Trafficking Mutants: Characterization and Whole Exome Sequencing. *PLoS ONE*. Jan 23;9(1):e87043. PMC3900707.

**50.** Martinez MG, **Snapp EL**, Perumal GS, Macaluso FP, and Kielian M. 2014. Imaging the Alphavirus Exit Pathway. *J Virol.* 15:6922-6933. PMC4054368. **Journal cover.**

**51.** Lajoie P, Fazio EN, and **Snapp EL.** 2014. Approaches to imaging unfolded secretory protein stress in living cells. *Endoplasmic Reticulum Stress in Diseases*.1:27-39. PMC4238303

**52.** Clay L, Caudron F, Denoth-Lippuner A, Boettcher B, **Snapp E**, and Barral Y. 2014. A sphingolipid-dependent diffusion barrier confines ER stress to the yeast mother cell. *eLife.* 3:e01883. PMC4009826.

**53.** Hettich J, Ryan S, Norberto de Souz O, Saraiva Macedo Timmers L, Tsai S, Atai N, da Hora C, Zhang X, Kothary R, Calakos N, **Snapp E**, Ericsson M, Grundmann K, Breakefield, X, and Nery F. 2014. Biochemical and cellular analysis of human variants of the DYT1 dystonia protein, torsinA. *Hum Mut.* 35:1101-1113. PMC4134760

**54.** Ghosh R, Wang L, Wang ES, Gayani K. Perera B, Aeid I, Morita S, Prado K, Thamsen M, Caswell D, Macias H, Weiberth KF, Gliedt MJ, Alavi MV, Hari SB, Mitra AK, Bhhatarai B, Schurer SC, **Snapp EL**, Gould DB, German MS, Backes BJ, Maly DJ, Oakes SA, and Papa FR. 2014. Allosteric inhibition of the IRE1a RNase preserves cell viability and function during endoplasmic reticulum stress. *Cell.* 158:534-548. PMC4244221

**55.** Costantini LM, Irvin SC, Kennedy SC, Goldstein H, Herold BC, and **Snapp EL**. 2014 Engineering and exploitation of a fluorescent HIV-1 gp120 for live cell CD4 binding assays. *Virology*. 476C:240-248. PMC4323844.

**56.** Costantini LM and **Snapp EL**. Going Viral with Fluorescent Proteins. 2015. Invited review for *J Virol*. 89:9706-9708. PMC4577878.

**57.** Costantini L, Baloban M, Markwardt M, Guo F, Rizzo M, Verkhusha V, and **Snapp EL**. 2015. A palette of fluorescent proteins optimized for diverse cellular environments. *Nat Comm*. 9:7670. PMC4499870. **Highlighted in Nature Methods 12:810 2015.**

**58.** D'Arcangelo J, Crissman J, Pagant S, Copic A, Latham CF, **Snapp E**, and Miller EA. Local concentration of p24 proteins and COPII coat composition mutually influence Sec13p-dependence and membrane scaffolding. *Curr Biol*. 25:1296-1305. PMC4439346.

**59.** Stout RF Jr, **Snapp EL** and Spray DC. 2015. Connexin Type and Fluorescent Protein Fusion Tag Determine Structural Stability of Gap Junction Plaques. J Biol Chem. 290:23497-23514. PMC4583030.

**60.** Gianella P, **Snapp E**, and Levy M. 2016. In vitro compartmentalization based method for the selection of transferases from large libraries. *Biotech and Bioeng*. accepted

**61.** Levy M, Maier KE, Jangra RK, Shieh KR, Cureton DK, Xiao H, **Snapp EL**, Whelan SP, and Chandran K. 2016. A transferrin receptor aptamer inhibits New World hemorrhagic fever mammarenavirus entry. *Mol Thera- Nuc Acids*. accepted April 7, 2016.

***62.*** *Guo F, Lajoie P, and* ***Snapp EL.*** *Luminal Endoplasmic Reticulum GFP Translocation Failure During ER Stress. in preparation.*

***63.*** *Guo F and Snapp EL. Impact of Scj1p and Jem1p on Kar2p occupancy in living cells. in preparation*

***64.*** *Costantini LM and* ***Snapp EL****. A new technology... in preparation.*

***65.******Snapp EL\*****, Cabartova Z, Sanders RW, Quandte M, Lalezarzadeh M, and Braakman I\*. Inefficient cleavage of the HIV envelope transient signal anchor. \* co-corresponding authors. in preparation.*

***66.*** *Aronson D, Lajoie P, Guo F, and* ***Snapp EL****. Visualization of 1-antitrypsin quality control in living cells. In preparation.*

***67.*** *Lai CW and* ***Snapp EL****. Oxidative stress impairs the ability of cells to respond to unfolded secretory protein stress. in preparation.*

***68.*** *Lajoie P, Moir R, Willis I, and* ***Snapp EL.*** *TUDCA and tunicamycin in yeast. in preparation.*

***69.******Snapp EL****. Strategies for Visualizing Proteins in Living Cells. invited review for BBA Mol Cell Res.*

***Book and Methods Chapters***

**1. Snapp EL**, Altan N, and Lippincott-Schwartz J. 2003. Measuring protein mobility by photobleaching GFP-chimeras in living cells. Unit 21.1: Bonifacino, J., Dasso, M., Harford, J., Lippincott-Schwartz, J., Yamada, K. editors. Morgan, K. S. series editor. in Current Protocols in Cell Biology. John Wiley & Sons, Inc. New York. no PMCID.

**2. Snapp EL**. 2004. ER biogenesis: proliferation and differentiation. *The Biogenesis of Cellular Organelles*. Molecular Biology Intelligence Unit. ed. Mullins, C. Landes Bioscience. Georgetown, TX. Kluwer Academic/Plenum Publishers. New York, NY. pp.63-95.

**3.** Lippincott-Schwartz J and **Snapp EL.** 2004. Imaging of membrane systems and membrane traffic in living cells. eds. Goldman, R. and Spector, D. *Live Cell Imaging: A Laboratory Manual.*Cold Spring Harbor Press. Cold Spring Harbor, NY.

**4. Snapp EL.** 2005. Design and Use of Fluorescent Fusion Proteins in Cell Biology. Unit 21.4. Bonifacino, J., Dasso, M., Harford, J., Lippincott-Schwartz, J., Yamada, K. editors. Morgan, K. S. series editor. In Current Protocols in Cell Biology. John Wiley & Sons, Inc. New York. PMCID: PMC2875081

**5. Snapp EL** and Hegde RS. 2006. Rational design and evaluation of FRET experiments to measure protein proximities in cells. Bonifacino, J., Dasso, M., Harford, J., Lippincott-Schwartz, J., Yamada, K. editors. Morgan, K. S. series editor. In Current Protocols in Cell Biology. John Wiley & Sons, Inc. New York. PMCID: PMC2875078

**6. Snapp EL.** 2006. Photobleaching Methods. Encyclopedic Reference of Genomics and Proteomics in Molecular Medicine. ed. Oschkinat, H. and Schieder, P. Springer Verlag. Heidelberg.

**7.** Aronson DE and **Snapp EL**. 2009. Translocon Organization in Cells. Translocon. Zimmerman R. editor. in Protein Transport into the Endoplasmic Reticulum. Landes Bioscience. Georgetown, TX. Kluwer Academic/Plenum Publishers. New York, NY.

**8. Snapp EL.** 2009. Imaging Cellular Proteins and Structures: Smaller, Brighter, and Faster. In The Liver: Biology and Pathobiology. Wolkoff AW, Fausto N, Boyer J, Shafritz D, Arias I, and Cohen DE. editors. Blackwell Publishing, Oxford UK.

**9.** Lajoie P and **Snapp EL.** 2010. Imaging of membrane systems and membrane traffic in living cells. eds. Goldman, R. and Spector, D. *Live Cell Imaging: A Laboratory Manual. Second Edition.*Cold Spring Harbor Press. Cold Spring Harbor, NY.

**10.** Lajoie P and **Snapp EL.** 2013. Detecting Soluble polyQ Oligomers and Investigating Their Impacts on Living Cells Using Split-GFP. eds Hatters DM and Hannan AJ. Tandem Repeats in Genes, Proteins, and Disease: Methods and Protocols (Methods in Molecular Biology). Humana Press. 1017:229-239. PMC4112564

**11.** Costantini LM and **Snapp EL**. Probing Endoplasmic Reticulum Dynamics using Fluorescence Imaging and Photobleaching Techniques. 2013. Bonifacino, J., Dasso, M., Harford, J., Lippincott-Schwartz, J., Yamada, K. editors. Morgan, K. S. series editor. in Current Protocols in Cell Biology. John Wiley & Sons, Inc. New York. 21.7.1-21.7.29. PMC3920296.

**12. Snapp EL.** 2013.Photobleaching Methods to study Golgi Complex Dynamics in Living Cells. *Methods for Analysis of Golgi Complex Function,* edited by Franck Perez and David Stephens. *Methods Cell Biol.*118:195-216. PMC4266370.

***Provisional Patents***

1. Fusion Tags for Protein Expression. application US 62/162,329.

***Other***

1. Francolini M, **Snapp EL**, Borgese N. Organized smooth endoplasmic reticulum. ASCB Image & Video Library. May 2007:CYT-81. (http://cellimages.ascb.org/u?/p4041coll7,124).

2. **Snapp EL.** Back Cover "Einstein Images" for Einstein Magazine. Winter/Spring 2014.

3. Costantini LM and **Snapp EL**. 2015. Avoiding the Dark Side of Fluorescent Protein Fusions. Addgene Blog.

**INVITED TALKS**

Drexel University Graduate Student invited Speaker May 2015.

Quantitating Endoplasmic Reticulum Stress in Live Cells. Molecular Probes/Life Technologies/Thermo Fisher Scientific. Oct. 2014.

"Detecting and Responding to ER Stress: More than Just Misfolded Secretory Proteins." UPR in Cancer Development and Progression. National Cancer Institute sponsored workshop. June 2014.

Visualizing Misfolded Protein Stress in Living Cells and Why You Should Stop Using EGFP. jointly sponsored talk at Academia Sinica Institute of Atomic and Molecular Sciences and National Taiwan University. Feb. 2014.

Visualizing misfolded protein stress in the secretory pathway: complications, solutions, and complexities or Why you should stop using EGFP. Einstein Internal Faculty Seminar. Dec. 2013.

Visualizing Misfolded Protein Stress in Living Cells. Mount Sinai School of Medicine. March 2012.

Tripping the Light Fantastic: Microscopy of Cells and the Molecules Inside. From the Basics to SuperResolution. NYSEM/NYMS at Weill Cornell Medical College. February 2012.

Tripping the Light Fantastic: Microscopy of Cells and the Molecules Inside. From the Basics to SuperResolution. The Mayo Clinic. January 2012.

Visualizing Misfolded Protein Stress at Molecular and Organelle Resolutions. The Mayo Clinic. January 2012.

Visualizing Misfolded Protein Stress at Molecular and Organelle Resolutions. NYU Medical School. November 2011.

Visualizing Misfolded Protein Stress at Molecular and Organelle Resolutions. Uniformed Health Services Medical College. Feb. 2011.

Visualizing Misfolded Protein Stress at Molecular and Organelle Resolutions. Rutgers University Newark. Feb. 2011.

Fluorescence Microscopy. Tulane University School of Medicine. Cancer Center Series. Sept. 2010

Visualizing Misfolded Protein Stress in Living Cells. U. Iowa Carver School of Medicine. Sept. 2010.

Visualizing Misfolded Protein Stress in Living Cells. Penn State. August 2010.

Visualizing Misfolded Protein Stress in Living Cells with Advanced Fluorescence Microscopy Techniques. Pasteur Institute, Paris, France. July 2010.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. MRC-LMB Cambridge, UK. 4th Annual Graduate Student Symposium. June 2010.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. Syndexa Pharmaceutical. May 2010.

Advanced Light Microscopy Reagents and Techniques for Liver Biology. Marion Bessin Liver Center. Albert Einstein. March 2010.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. Boston Biomedical Research Institute. April 2009.

Tripping the Light Fantastic: Microscopy of Cells and the Molecules Inside. From the Basics to SuperResolution. Division of Hepatology. Montefiore-Einstein Liver Center Conference. April 2009.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. U. Connecticut Health Center. April 2009.

A Brief Overview of Modern Light Microscopy. AECOM Dept. of Cell Biology. March 2009.

Quantitative Fluorescence Imaging Techniques and Advances. Weill Medical College of Cornell University. November 2008.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. Washington University, October 2008.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. UC San Diego, August 2008.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. Mt. Sinai. March 2008.

Photomanipulation: Quantitating Protein Dynamics in Living Cells. 2nd Annual Yale Microscopy Workshop. June 2007.

Signal sequences and secretory protein fate. Rutgers University Newark, NJ. March 2007

Endoplasmic Reticulum Organization and Differentiation. California Institute of Technology. December 2006.

High Speed Photomanipulation. Zeiss Vendor Showcase at ASCB 2006.

Photobleaching and Photoactivation methods and applications. Stowers Institute Imaging Workshop, Kansas City, MO. Sept. 2006. Invited workshop lecture.

Applying for a tenure-track faculty position. Postdoctoral Fellows Workshop. National Institutes of Health, Bethesda, MD. Sept. 2006.

Applying for a tenure-track faculty position and surviving your first year as a faculty member. PRAT Fellows speaker series. National Institutes of Health, Bethesda, MD. March 2006.

Monitoring chaperone engagement of substrate in living cells. Vanderbilt Medical School. Feb. 2006.

Photobleaching Methods. AECOM Biophotonics Center. Nov. 2005.

Nonredundant chaperone systems modulate the organization of the endoplasmic reticulum lumen. Zain Memorial Lecture. University of Maryland, College Park, MD. Oct. 2005.

Photobleaching Methods. Modern Imaging Methods in Development and Signal Transduction workshop. Creighton Medical School. Omaha, NE. Sept. 2005.

The endoplasmic reticulum: a regulator of tumor formation? Albert Einstein Cancer Center. May 2005.

Monitoring substrate engagement by chaperones in living cells. Columbia University. Dec. 2004.

Photobleaching Methods and Applications. Advanced Microscopy Symposium. Harvard Medical School. Nov. 2004.

Probing the organization of membrane protein complexes with FRET. Oregon Health Sciences University. June 2004.

Photobleaching methods: FRAP, FLIP, and other four letter F-words. LSM 510 Advanced Imaging Microscopy Workshop, NIH. April 2004.

Photobleaching, Photoactivation, and new Fluorescent Proteins. Advanced Techniques in Confocal, Live Cell & Molecular Imaging. Duke University. Jan. 2004

Probing Membrane Protein Organization with Acceptor Photobleaching FRET. Leica Live Cell Imaging Workshop. NIH. Dec. 2003.

Studying Protein and Organelle Dynamics with Photobleaching Technology. Society of Developmental Biology Annual Meeting. Aug. 2003.

Using FRET to probe organization of the translocon in cells. LIMB, NIH. May 2003.

Remodeling and Differentiation of the Endoplasmic Reticulum in Living Cells. Laboratory of Cell Biology Seminar Series. NHLBI, NIH. March 2003.

Remodeling and Differentiation of the Endoplasmic Reticulum in living cells. Tufts Medical School, Dept. of Physiology Feb. 2003.

**RECENT ABSTRACTS AND MEETING PRESENTATIONS**

"RESETing the ER" Invited talk and session chair for 2015 FASEB meeting: From Unfolded Proteins in the Endoplasmic Reticulum to Disease. June 2015 Saxtons River, VT.

"A new role for Hsp40 co-chaperones in the Endoplasmic Reticulum." Invited talk and Session Chair for Protein Folding in the Cell FASEB meeting. July 2014

ER chaperones and regulation of homeostasis and stress in single cells. National Cancer Institute workshop: Unfolded Protein Response in Cancer Development and Progression. June 2014. Invited talk.

STABs: A novel tool for visualizing secretory proteins in living cells and tissues. Annual Single Cell Analysis Investigators Meeting. National Institutes of Health. April 2014. Talk.

"Organization of the naive and stress-adapted endoplasmic reticulum folding environments." Protein Folding in the Cell FASEB meeting. July 2012. Invited Talk.

Imaging techniques to study protein processing and quality control in living cells. Proprotein Processing, Trafficking & Secretion Gordon Research Conference. July 2012. Invited Talk.

Changes in ER chaperone availability between naive and stress adapted cells. ASCB Meeting. Dec. 2010. Selected for minisymposium presentation.

Visualizing ER Stress in Living Cells. Protein Folding FASEB Meeting. July 2010. Selected for short talk.

Visualizing Misfolded Protein Stress in Living Cells. From Unfolded Proteins in the Endoplasmic Reticulum to Disease. FASEB conference. June 2009. Invited Talk.

Visualizing Misfolded Protein Stress in the Endoplasmic Reticulum of Living Cells. NIDDK Protein Misfolding and Misprocessing in Disease meeting. National Institutes of Health. January 2009. Invited talk.

TorsinA processing in living cells. Cellular Functions of Dystonia Proteins meeting. St. Louis, October 2008. Invited talk.

Visualizing ER Stress in Living Cells. Protein Folding FASEB meeting. August 2008. Poster.

Visualizing ER Stress in Living Cells. Molecular Cell Biology Gordon Research Conference. June 2008. Poster.

Visualizing ER Stress in Living Cells. Protein Misfolding and Misprocessing in Disease meeting. National Institutes of Health. Hot topics talk. January 2008.

The HIV-1 envelope glycoprotein signal sequence acts as a transient signal anchor. Retroviruses Meeting. ASCB, December 2007. Poster.

Ask an Expert: Live Cell Imaging. Panel Member. Microscopy and Microanalysis Meeting. August 2007.

High speed photomanipulation microscopy. Microscopy and Microanalysis Meeting. August 2007. Invited talk.

The organization and dynamics of the secretory protein biosynthetic machinery. FASEB "Unfolded Proteins in the Endoplasmic Reticulum to Disease" July 2007. Invited talk.

The HIV-1 envelope glycoprotein signal sequence acts as a transient signal anchor. Retroviruses Meeting. Cold Spring Harbor, May 2007. Poster.

Overcoming the KDEL sequence and escaping the ER: A lumenal Golgi complex protein. ASCB meeting. December 2006. Poster.

Organization and dynamics of oxidoreductase chaperones in living cells. Protein Folding FASEB meeting. poster. July 2006.

Consequences of aging and oxidative stress on endoplasmic reticulum protein quality control machinery. ASCB meeting. Poster. Dec. 2005.

Membrane proteins modulate ER organization. Cytochrome P450 Meeting. Dallas, TX. June 2005. Invited talk.

A requirement for the TRAP complex in mammalian cells. Gordon Research Conference: Protein Translocation. poster, June 2005.

Monitoring substrate engagement by chaperones in living cells. ASCB meeting. Minisymposium Talk. Dec. 2004.

Monitoring substrate engagement by chaperones in living cells. Protein Folding FASEB meeting. Selected for short talk and poster. July 2004.

Self-organization of stacked cisternae from branching endoplasmic reticulum in living cells. Cellular Dynamics Keystone Meeting. Selected for talk and poster. Feb. 2003.

Self-organization of stacked cisternae from branching endoplasmic reticulum in living cells. ASCB Meeting. Poster. Dec. 2002.

Ribosomes organize and maintain fully assembled translocons at the mammalian endoplasmic reticulum. ASCB Meeting. Poster. Dec. 2002.

The *Drosophila* fusome contains highly interconnected endoplasmic reticulum. Germ Cells meeting Cold Spring Harbor. Poster. Oct. 2002.

Quality control of misfolded proteins in the ER of living cells. Protein Folding FASEB meeting at Saxtons River, VT. Talk. July 2000.

**LAB MEMBERS**

**Rotating Graduate Students**

Walter Lai 1st year MSTP Summer 2005

Mariam Kabir 2nd year MSTP Summer 2005

Leora Nusblat 1st year grad student Winter 2005-2006

Deborah Russel 1st year grad student Summer 2006

Subhajit Mukherjee 1st year grad student Spring 2006

Michael Szmyga 1st year grad student Fall 2007

Sami Hocine 1st year grad student Fall 2007

Dawn Schranz 1st year grad student Winter 2007

Lindsey Costantini 1st year grad student Winter 2009

Jonathan Chung 1st year grad student Fall 2009

Christopher De Jesus 1st year grad student Winter 2010

Paul Gianella 1st year grad student Spring 2010

Kevin Celestrin 1st year grad student Spring 2011

Mattias Jaureguiberry 1st year grad student Fall 2012

Nicholas Morano 1st year grad student Winter/Spring 2015-2016

**Current Graduate Students**

**Postdocs**

Zuzana Cabartova, Ph.D. (now Res. Asst.

in Czech Republic) Nov. 2004- Feb. 2008

Patrick Lajoie, Ph.D. (now Asst. Prof. U. Western

Ontario, Canada) Feb. 2008-Jan. 2013

Feng Guo, Ph.D. Oct. 2009-May 2015

**High school students**

Monika Lalezarzedeh Summers 2005-7

Alexander Lin 2012

**College students**

Alyssa Perry (Syracuse University) Summer 2006

Nelson Gil (Queens College) Summer 2011

**Graduates**

Deborah Aronson (Russel), Ph.D (now MedEdNow, LLC, NY)

August 2006- August 2011

Walter C. Lai, Ph.D. (MSTP) now a resident Albert Einstein

Medical Center, PA)

May 2007-November 2011

Lindsey Costantini, Ph.D. May 2009-Aug 2014

(now a postdoctoral SPIRE fellow

at UNC with Drs. Jack Griffith and Blossom Damania)

**GRADUATE COMMITTEES**

**Thesis Defense Committees**

Victoria Paroder (Nancy Carrasco, PI) June 2005

Liu Liu (Laurie Ozelius, PI) July 2006

Xiaoyan Song (John Condeelis, PI) November 2006

Nuppur Kittur (Thomas U. Meier, PI) December 2006

Corina Sarmiento (John Condeelis, PI) March 2007

Mia Reed (Nancy Carrasco, PI) April 2007

Aparna Mukhopadhyay (Duncan Wilson, PI) May 2007

Souvik Sarakar (Allan Wolkoff, PI) May 2007

Sangeeta Nath (Allan Wolkoff, PI) June 2007

Yingfeng Deng (Robert Singer, PI) September 2007

Zhao Wang (Philipp Scherer, PI) September 2007

Erin Powrie (Robert Singer, PI) November 2007

Saumil Gandhi (Robert Singer, PI) November 2009

Poh Choo How (Chi-Wing Chow, PI) June 2010

Suranjana Mukherjee (Dave Sharp, PI) October 2010

Rory Flinn (chair) (Jon Backer, PI) December 2010

Tatjana Treck (Robert Singer, PI) December 2010

Jakub Sroubek (Thomas MacDonald, PI) December 2010

Suzan Ngyuen (Susan Horowitz, PI) March 2011

Jo Choi (Allan Wolkoff, PI) April 2011

Carla Puertolano (Nancy Carasco, PI) June 2011

Glicella Salazar (Nancy Carrasco, PI) October 2011

Yamini Krishnan (Tom McDonald, PI) December 2011

David Gross (David Silver, PI) December 2011

Sunandini Sridhar (Ana Maria Cuervo, PI) October 2012

Michael Szmyga (Thomas U. Meier, PI) November 2012

Sami Hocine (Robert Singer, PI) February 2013

Zachary Katz (Robert Singer, PI) February 2013

Yan Zhang (Margaret Kielian, PI) March 2013

Wendy McKimpson (chair) (Rick Kitsis, PI) April 2013

Matthew Nicholas (Arne Gennerich, PI) May 2013

Yaw Shin Ooi (Margaret Kielian, PI) March 2014

Adina Buxbaum (chair) (Robert Singer, PI) April 2014

Roman Denisken (Myles Akabas, PI) June 2014

Manuel Sanchez (David Silver and Ian Willis, PIs)(MSTP) Nov 2014

Jun Wang (chair)(Allan Wolkoff, PI) Dec 2015

**Thesis Defense Committees Outside Examiner**

Roy Buchanan (Liz Miller, PI) Columbia University July 2008

Sarah Gallagher (Virginia Cornish, PI) Columbia University July 2009

Chaoran Jing (Virginia Cornish, PI) Columbia University June 2013

**Qualifier Examination Committees**

Cong “Judy” Zhang (Ana Maria Cuervo PI) Spring 2005

Dmitry Khedrin (Jeff Segall PI) Spring 2006

Tatiana Smirnova (Jeff Segall PI) Spring 2006

Subhajit Mukherjee (Allan Wolkoff, PI) Spring 2007

Brian Wengerter (Steven Almo, PI) Spring 2007

Dhivya Ramalingam (Vinkaya Prasad, PI) Spring 2007

Cristin Davidson (Steven Walkley, PI) Spring 2008

Dan Ishihara (Dianne Cox, PI) Spring 2008

Suranjana Mukherjee (David Sharp, PI) Spring 2008

Jun Wang (Allan Wolkoff, PI) Spring 2009

Matthew Nicholas (Ben Ovryn, PI) Spring 2009

Linsley Kelly (Matthew Levy, PI) Spring 2010

Paul Gianella (Matthew Levy, PI) Spring 2011

Samantha Wilner (Matthew Levy, PI) Spring 2012

Edison Leung (John Condeelis, PI)(chair) Spring 2013

Deepti Mathews (Susan Horowitz, PI) Spring 2013

Judy Wan (Margaret Kielian, PI) Winter 2014

**Thesis Advisory Committees**

Reniqua Houseman (Anne Bresnick PI) Fall 2005-2011

Cristina Aguire-Chen (David Hall PI) Spring 2006

Suranjana Mukherjee (David Sharp, PI) Summer 2006- 2010

Jenny Nachbar (Anne Muesch, PI) Winter 2006-2013

Zhao Wang (Philipp Scherer, PI) Winter 2006-Fall 2007

Glicella Salazar (Nancy Carrasco, PI) Winter 2006-2011

Suzie Ngyuen (Susan Horowitz, PI) Winter 2007-March 2011

Dhivya Ramalingam (Vinkaya Prasad, PI) 2007

Subhajit Mukherjee (Allan Wolkoff, PI) 2007

Sunandini Sridhar (Ana Maria Cuervo, PI) Summer 2007-2012

Rory Flinn (Jon Backer, PI) Fall 2007-Dec. 2010

Dan Ishihara (Dianne Cox, PI)(MSTP) Spring 2008-2009

Cristin Davidson (Steven Walkley, PI) Summer 2008-2013

Jakub Sroubek (Thomas Macdonald, PI)(MSTP) Summer 2008-Dec. 2010

Samuel Hocine (Robert Singer, PI) Fall 2008-2013

Adina Buxbaum (Robert Singer, PI) Fall 2008-2014

Michael Szmyga (U. Tom Meier, PI) Fall 2008-Nov. 2012

David Gross (David Silver, PI)(MSTP) Spring 2009-2011

Matthew Atreed (Hannes Buelow, PI) Summer 2009-2013

Wendy McKimpson (Rick Kitsis, PI) Fall 2009-2013

Jun Wang (Allan Wolkoff, PI) Fall 2009-Winter 2013

Paul Gianella (Matthew Levy, PI) Summer 2011-2016

TianQing Zheng (Peng Wu, PI) Summer 2010

Manuel Sanchez (David Silver and Ian Willis, PIs)(MSTP) Summer 2010-2014

Yan Zheng (Margaret Kielian, PI) Summer 2010-2013

Jo Choi (Allan Wolkoff, PI)(MSTP) Summer 2010-2011

Roman Deniskin (Myles Akabas, PI)(MSTP) Summer 2011-2013

Whitney Fields (Margaret Kielian, PI) Spring 2011-2014

Paromita Mukherjee (Sridhar Mani, PI) Fall 2012

Arthur Ruiz (Vinyaka Prasad, PI) Fall 2012-present

Anna Wec (Kartik Chandran, PI) Summer 2013-present

Rohan Biswas (Kartik Chandran, PI)(MSTP) Summer 2013-present

Lara Kleinfelter (Kartik Chandran, PI) Summer 2014-present

Mike Veenstra (Joan Berman, PI) Summer 2014-present

Judy Wan (Margaret Kielian, PI) Summer 2015-present

Nachiket Kamatkar (Matthew Levy, PI) Summer 2015-present

Samantha Heitz (Bresnick and Backer, co-PIs) Summer 2015-present

Jeetayu Biswas (Robert Singer, PI) Winter 2016-present