

Lucy Erin O'Brien

Contact Information	Department of Molecular and Cellular Physiology Stanford University School of Medicine Stanford, California USA 94305-5345	www.stemdynamics.org lucye@stanford.edu
Research Interest	Adaptive dynamics of stem cells and tissues, with emphasis on heterogeneity and tissue-level control of stem cell populations	
Academic History	Stanford University School of Medicine, Stanford, California <i>Assistant Professor, Department of Molecular and Cellular Physiology</i>	Feb 2013 -
	University of California, Berkeley, California <i>Stem cells as agents of adaptive intestinal growth in the adult Drosophila midgut</i>	
	<ul style="list-style-type: none">Mentor: Associate Professor David Bilder <i>Assistant Researcher -- K01 award grantee</i> <i>Postdoctoral Fellow</i>	2010 - Jan 2013 2005 - 2009
	University of California, San Francisco, California <i>Matrix regulation of polarization during epithelial morphogenesis in 3D culture</i>	
	<ul style="list-style-type: none">Mentor: Professor Keith Mostov <i>Postdoctoral Fellow</i> <i>Ph.D. in Biomedical Sciences</i>	2002 1993 - 2001
	Harvard University, Cambridge, Massachusetts <i>B.A. in Biochemistry, magna cum laude with high honors</i>	1988 - 1992
Grants & Fellowships	NIH NIDDK Mentored Research Scientist Development Award (K01) Life Sciences Research Foundation, Genentech Foundation Fellow American Heart Association Postdoctoral Fellowship American Heart Association Predoctoral Fellowship Department of Defense Science and Engineering Predoctoral Fellowship	2010 - 2015 2007 - 2009 2006 1998 - 2001 1993 - 1996
Invited Talks & Seminars	University of California, San Francisco Cardiovascular Research Institute Oregon Health Sciences University Center for Spatial Systems Biomedicine Stanford University Department of Molecular and Cellular Physiology and Department of Developmental Biology	Apr 2012 Apr 2012 Mar 2012

	University of California, Berkeley	Department of Molecular and Cellular Biology	Mar 2012
	University of Colorado, Denver	Department of Pediatrics	Feb 2012
	University of California, Berkeley	Department of Nutritional Science	Feb 2012
	University of California, San Diego	Dept of Cell and Developmental Biology	Feb 2012
	Princeton University	Department of Molecular Biology	Jan 2012
	University of California, Santa Barbara	Dept of Molecular, Cellular, and Developmental Biology	Jan 2012
	University of Michigan	Department of Cell and Developmental Biology	Jan 2012
	American Society for Cell Biology Annual Meeting		Dec 2010
	• <i>selected from abstracts</i>		
	Life Sciences Research Foundation Annual Meeting		Oct 2010
	Santa Cruz Developmental Biology Meeting		Jul 2010
	• <i>selected from abstracts</i>		
	Cold Spring Harbor Meeting on Stem Cell Biology		Sep 2009
	• <i>selected from abstracts</i>		
	American Society for Cell Biology Annual Meeting		Dec 2002
	• <i>selected from abstracts</i>		
Honors & Awards	Gabilan Junior Faculty Fellow, Stanford University		2013
	Distinguished Poster Award, FASEB Gastrointestinal XIV Research Conference		2011
	Best Poster Award, International Society for Stem Cell Research Annual Meeting		2010
	Worthington Travel Award, American Society for Cell Biology Annual Meeting		1999
	Detur Prize, Harvard College		1989
	• <i>one of 100 highest freshman GPAs</i>		
	First Place Category Award, International Science and Engineering Fair		1988
	Westinghouse (<i>now Intel</i>) National Science Talent Search Scholarship		1988
	• <i>one of 40 national winners</i>		
Other Professional Experience	Telemark Ski Mountaineering - California Sierra Nevada	Winters, 2003 - 2005	
	Organized and led teams for single and multi-day mountain expeditions		
	Instructed novice skiers in telemark, snow camping, and avalanche awareness		
	Ocean Kayaking - California, Baja California, Alaska	non-Winters, 2003 - 2005	
	Organized and led teams for single and multi-day coastal expeditions		
	Coached kayakers in beach launching and landing skills		
	Achieved national ranking in kayak surfing, Women's High Performance Division		
	Wildlife Field Research - U.S. Fish and Wildlife Service, Moiese Montana		1992 -1993
	Surveyed breeding songbirds and migratory waterfowl		

Teaching Experience	Mentor to undergraduates Anhpha Nguyen, Hong Joo Kim - U.C. Berkeley	2012
	Supervisor to laboratory technician Amy Chen - U.C. Berkeley	2011 - 2012
	Mentor to undergraduate Sarah Soliman - U.C. Berkeley	2008 - 2011
	Supervisor to laboratory technician Kitty Tang - U.C. San Francisco	2002
	Mentor to undergraduate Ellen Kats - U.C. San Francisco	1998 - 2000
	Teaching Assistant, Physiology - U.C. San Francisco	1996

Society Memberships	American Society for Cell Biology
	<ul style="list-style-type: none"> • ASCB Membership Committee, 2006 - present
	International Society for Stem Cell Research
	Genetics Society of America

University Service	Qualifying exam committee, Phillip Miller	<i>Molecular and Cellular Physiology, Jan 23 2013</i>
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Publications *In Preparation*

- 1 **O'Brien, L.E.** & Bilder, D. (2013) Beyond the Niche: Tissue-level coordination of stem cell dynamics. *Annu. Rev. Cell Dev. Biol.* **29**:

Major Refereed Publications

- 2 **O'Brien, L.E.**, Soliman, S., Li, X., & Bilder, D. (2011) Altered modes of stem cell division drive adaptive intestinal growth. *Cell* **147**:603-614.
 - *Highlighted in:* Sarkar, A. & Hochedlinger, K. (2011) A gutsy way to grow: Intestinal stem cells as nutrient sensors. *Cell* **147**:487-489. | Baumann, K. (2011) Stem cells: Having the guts to grow. *Nat. Rev. Mol. Cell Biol.*, **12**:768-769. | Faculty of 1000, 03 Nov 2011. F1000.com/13357359.
- 3 **O'Brien, L.E.**, Tang, K., Kats, E.S., Schutz-Geschwender, A., Lipschutz, J.H., & Mostov, K.E. (2004) ERK and MMPs sequentially regulate distinct stages of epithelial tubule development. *Dev. Cell* **7**:21-32.
 - *Highlighted in:* Rosario, M. & Birchmeier, W. (2004) Making tubes: Step by step. *Dev. Cell* **7**:3-5.
- 4 **O'Brien, L.E.**, Zegers, M.M.P., & Mostov, K.E. (2002) Opinion: Building epithelial architecture: Insights from three-dimensional culture models. *Nat. Rev. Mol. Cell Biol.* **3**:531-537.
- 5 **O'Brien, L.E.**, Jou, T.S., Hansen, S.H., Pollack, A.L., Zhang, Q., Yurchenco, P.D. & Mostov, K.E. (2001) Rac1 orients epithelial apical polarity through effects on basolateral laminin assembly. *Nature Cell Biol.* **3**:831-838.
 - *Featured in:* Alberts, B. *et al.* (2007) Chapter 19: Cell-cell junctions and the basal lamina govern apico-basal polarity in epithelia. *Molecular Biology of the Cell, 5th ed.*, p. 1155

Additional Refereed Publications

- 6 Kim, M., **O'Brien, L.E.**, Kwon, S.H., & Mostov, K.E. (2010) STAT1 is required for redifferentiation during Madin-Darby canine kidney tubulogenesis. *Mol. Biol. Cell* **21**:3926-3933.
- 7 Yu, W., Datta, A., Leroy, P., **O'Brien, L.E.**, Mak, G., Jou, T.S., Matlin, K., Mostov, K.E., & Zegers, M.M.P. (2005) β 1-integrin orients epithelial polarity via Rac1 and laminin. *Mol. Biol. Cell* **16**:433-445.
- 8 Zegers, M.M.P., **O'Brien, L.E.**, Yu, W., Datta, A., & Mostov, K.E. (2003) Epithelial polarity and tubulogenesis in vitro. *Trends Cell Biol.* **13**:169-176.
- 9 Yu, W., **O'Brien, L.E.**, Wang, F., Bourne, H., Mostov, K.E., & Zegers, M.M.P. (2003) Hepatocyte growth factor switches orientation of polarity and mode of movement during morphogenesis of multicellular epithelial structures. *Mol. Biol. Cell* **14**:748-763.
- 10 Lipschutz, J.H., Guo, W., **O'Brien, L.E.**, Nguyen, Y.H., Novick, P. & Mostov, K. E. (2000) Exocyst is involved in cystogenesis and tubulogenesis and acts by modulating synthesis and delivery of basolateral plasma membrane and secretory proteins. *Mol. Biol. Cell* **11**:4259-4275.

Non-refereed Publications

- 11 **O'Brien, L.E.** & Mostov, K.E. (2006) Using three-dimensional cell culture to examine Rho-protein function during epithelial morphogenesis. *Meth. Enzymol.* **406**:676-691.
- 12 Mostov, K.E., Brakeman, P., Datta, A., Gassama, A., Katz, L., Kim, M., Leroy, P., Levin, M., Liu, K., Martin, F., **O'Brien, L.E.**, Verges, M., Su, T., Tang, K., Tanimizu, N., Yamaji, T., & Yu, W. (2005) Formation of multicellular epithelial structures. *Novartis Found. Symp.* **269**:193-200.
- 13 Lipschutz J.H., **O'Brien L.E.**, Altschuler Y., Avrahami D., Nguyen Y., Tang K., & Mostov K.E. (2001) Analysis of membrane traffic in polarized epithelial cells. *Curr. Protoc. Cell Biol.* **15**:Unit 15.5.
- 14 **O'Brien, L.E.** & Mostov, K.E. (2001) Getting from here to there. *Nature Cell Biol.* **3**:E116.

News Media

Sanders, R. "Intestinal stem cells respond to food by supersizing the gut." *UC Berkeley News Center*. October 27, 2011. <http://newscenter.berkeley.edu/2011/10/27/intestinal-stem-cells-respond-to-food-by-supersizing-the-gut/>

Hershon, B. "How to grow a gut." *AAAS Science Update Podcast*. November 17, 2011. <http://www.scienceupdate.com/2011/11/gut>

Balintfy, J. "Intestinal stem cells respond to food by supersizing the gut." *NIH Radio Interview*. November 29, 2011 <http://www.nih.gov/news/radio/nov2011/20111201NIGMSintestine.htm>