

BIOGRAPHICAL SKETCH

NAME ESPENSHADE, PETER JOHN		POSITION TITLE Associate Professor of Cell Biology	
eRA COMMONS USER NAME (credential, e.g., agency login) pespens2			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Princeton University	BA	1986-1990	Molecular Biology
Massachusetts Institute of Technology	PhD	1991-1998	Biology
UT-Southwestern Medical Center, Dallas, TX	Postdoc	1998-2002	Molecular Cell Biology

A. Positions and Honors**Positions and Employment**

1990 – 1991 Research assistant, Princeton University, Department of Molecular Biology
 1991 – 1997 Graduate student, Lab of Chris Kaiser, Massachusetts Institute of Technology
 1997 – 2002 Postdoctoral fellow, Lab of Brown and Goldstein, UT-Southwestern Medical Center at Dallas
 2002 – 2008 Assistant professor, Johns Hopkins University School of Medicine, Department of Cell Biology
 2008 – date Associate professor, Johns Hopkins University School of Medicine, Department of Cell Biology

Other Experience and Professional Memberships

2008 INMP NIH Study Section, Ad hoc member for two meetings
 2009 – date INMP NIH Study Section, Permanent Member
 2000 – date American Society for Cell Biology
 2003 – date American Association for the Advancement of Science
 2003 – date American Heart Association
 2005 – date American Society for Biochemistry and Molecular Biology
 2006 – date American Society for Microbiology

Honors

1990 Summa cum laude, Department of Molecular Biology, Princeton University
 1990 Elected member of Phi Beta Kappa Honor Society
 1992 National Science Foundation Pre-Doctoral Fellowship
 1998 National Research Service Award postdoctoral fellowship, NIH
 2001 Career Award in the Biomedical Sciences, Burroughs Wellcome Fund
 2006 Investigator in Pathogenesis of Infectious Disease Award, Burroughs Wellcome Fund
 2007 Dean's Fund Award, Johns Hopkins University School of Medicine
 2008 Established Investigator Award, American Heart Association
 2012 ASBMB Avanti Young Investigator Award in Lipid Research

B. Peer-reviewed Publications

1. Lee CSY, Yeh TL, Hughes BT, Espenshade PJ. 2011. Regulation of the Sre1 hypoxic transcription factor by oxygen-dependent control of DNA binding. *Mol. Cell* In press.
2. Burg JS, Espenshade PJ. 2011. Regulation of HMG-CoA reductase in mammals and yeast. *Prog. Lipid Res.* In press.
3. Burg JS, Espenshade PJ. 2011. Glucose controls phosphoregulation of HMG-COA reductase through the PP2A-related phosphatase Ppe1 and Insig in fission yeast. *J. Biol. Chem.* 286:27139-46.

B. Peer-reviewed Publications (continued)

4. Yeh TL, Lee CSY, Amzel LM, Espenshade PJ, and Bianchet MB. 2011. The hypoxic regulator of sterol synthesis Nro1 is a nuclear import adaptor. *Structure* 19:503-14. PMID: PMC3086001
5. Stewart EV, Nwosu CC, Tong Z, Roguev A, Cummins TD, Kim DU, Hayles J, Park HO, Hoe KL, Powell DW, Krogan NJ, Espenshade PJ. 2011. Yeast SREBP cleavage activation requires the Golgi Dsc E3 ligase complex. *Mol. Cell* 42:160-171. PMID: PMC3083633
6. Porter JR, Burg JS, Espenshade PJ, Iglesias PA. 2010. Ergosterol regulates SREBP cleavage in fission yeast. *J. Biol. Chem.* 285:41051-61. PMID: PMC3003404
7. Bien CM and Espenshade PJ. 2010. SREBP in fungi - Hypoxic transcription factors linked to pathogenesis. *Eukaryotic Cell.* 9:352-9. PMID: PMC2837984
8. Radhakrishnan A, Sun LP, Espenshade PJ, Goldstein JL, Brown MS. 2009. "Chapter 298: The SREBP Pathway: Gene Regulation through Sterol Sensing and Gated Protein Trafficking". In Handbook of Cell Signaling, 2nd edition (R. Bradshaw and E. Dennis, eds.). Academic Press, San Diego.
9. Kwiterovich PO and Espenshade PJ. 2009. "Chapter 8: Disorders of LDL Metabolism", pp. 88-104. In The Johns Hopkins University Textbook of Dyslipidemia (P.O. Kwiterovich, ed.) Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia, PA.
10. Osborne TO and Espenshade PJ. 2009. Evolutionary conservation and adaptation in the mechanism that regulates SREBP action: what a long strange tRIP it's been. *Genes and Dev.* 23: 2578-2591. PMID: PMC2779761
11. Bien CM, Chang YC, Nes WD, Kwon-Chung KJ, and Espenshade PJ. 2009. *C. neoformans* Site-2 protease is required for virulence and survival in the presence of azole drugs. *Mol. Microbiol.* 74:672-690. PMID: PMC2917040
12. Chang YC, Ingavale SS, Bien CM, Espenshade PJ, and Kwon-Chung KJ. 2009. Conservation of the SREBP pathway and its pathobiological importance in *Cryptococcus neoformans*. *Eukaryot Cell.* 8:1770-1779. PMID: PMC2772393
13. Hughes BT, Nwosu CC, and Espenshade PJ. 2009. Degradation of SREBP precursor requires the ERAD components UBC7 and HRD1 in fission yeast. *J. Biol. Chem.* 284:20512-20521. PMID: PMC2742815
14. Lee CY, Stewart EV, Hughes BT and Espenshade PJ. 2009. Oxygen-dependent binding of Nro1 to the prolyl hydroxylase Ofd1 regulates SREBP degradation in yeast. *EMBO J.* 28:135-43. PMID: PMC2634736
15. Burg JS, Powell DW, Chai R, Hughes AL, Link AJ and Espenshade PJ. 2008. Insig regulates HMG-CoA reductase by controlling enzyme phosphorylation in fission yeast. *Cell Metabolism* 8:522-31. PMID: PMC2646361
16. Hughes AL, Stewart EV and Espenshade PJ. 2008. Identification of 23 mutations in fission yeast Scap that constitutively activate SREBP. *J. Lipid Research* 49:2001-2012. PMID: PMC2515523
17. Hughes BT and Espenshade PJ. 2008. Oxygen-regulated degradation of fission yeast SREBP by Ofd1, a prolyl hydroxylase family member. *EMBO J.* 27:1491-1501. PMID: PMC2396400
18. Sehgal A, Hughes BT, Espenshade PJ. 2008. Oxygen-dependent, alternative promoter controls translation of *tco1⁺* in fission yeast. *Nucleic Acids Research* 36:2024-2031. PMID: PMC2330238B.

B. Peer-reviewed Publications (continued)

19. Sehgal A, Lee CY, Espenshade PJ. 2007. SREBP controls oxygen-dependent mobilization of retrotransposons in fission yeast. *PLoS Genet.* 3:1389-1396. PMID: PMC1941750
20. Espenshade PJ, Hughes AL. 2007. Regulation of sterol synthesis in eukaryotes. *Annu. Rev. Genet.* 41:401-427.
21. Lee H, Bien CM, Hughes AL, Espenshade PJ, Kwon-Chung KJ, Chang YC. 2007. Cobalt chloride, a hypoxia-mimicking agent, targets sterol synthesis in the pathogenic fungus *Cryptococcus neoformans*. *Mol. Microbiol.* 65:1018-1033.
22. Hughes AL, Lee CY, Bien CM, Espenshade PJ. 2007. 4-Methyl sterols regulate fission yeast SREBP-Scap under low oxygen and cell stress. *J. Biol. Chem.* 282:24388-96. (*Faculty of 1000 Biology*, "Must read".) PMID: PMC2262954
23. Chang YC, Bien CM, Lee H, Espenshade PJ, Kwon-Chung KJ. 2007. Sre1p, a regulator of oxygen sensing and sterol homeostasis, is required for virulence in *Cryptococcus neoformans*. *Mol. Microbiol.* 64:614-29.
24. Espenshade PJ. Sterols Regulate ER-to-Golgi Transport of SREBP Cleavage Activating Protein (SCAP). ASCB Image & Video Library. June 2007:VID-32.
25. Hughes AL, Powell DW, Bard M, Eckstein J, Barbuch R, Link AJ, Espenshade PJ. 2007. Dap1/PGRMC1 binds and regulates cytochrome P450 enzymes. *Cell Metabolism* 5:143-149. (Commentary: *Cell Metabolism*, DeBose-Boyd, 5:81-83, 2007. *Faculty of 1000 Biology* "Recommended".)
26. Todd BL, Stewart EV, Burg JS, Hughes AL, Espenshade PJ. 2006. SREBP is a principal regulator of anaerobic gene expression in fission yeast. *Mol. Cell. Biol.* 26:2817-2831. PMID: PMC430309
27. Espenshade PJ. SREBPs: sterol-regulated transcription factors. 2006. *J. Cell Sci.* 119:973-976.
28. Hughes AL, Todd BL, Espenshade PJ. 2005. SREBP pathway responds to sterols and functions as an oxygen sensor in fission yeast. *Cell* 120:831-842. (Commentary: *Nature*, Garza and Hampton, 435:37-38, 2005.)
29. Espenshade PJ, Goldstein JL, Brown MS. 2003. "SREBPs: Gene Regulation through Controlled Protein Trafficking". In Handbook of Cell Signaling (R. Bradshaw and E. Dennis, eds.). Academic Press, San Diego.
30. Espenshade PJ, Li WP, Yabe D. 2002. Sterols block binding of COPII proteins to SCAP, thereby controlling SCAP sorting in ER. *PNAS* 99:11694-11699.
31. Yang T, Espenshade PJ, Wright ME, Yabe D, Gong Y, Aebersold R, Goldstein JL, Brown MS. 2002. Crucial step in cholesterol homeostasis: sterols promote binding of SCAP to INSIG-1, a membrane protein that facilitates retention of SREBPs in the ER. *Cell* 110:489-500.
32. Nohturfft A, Yabe D, Goldstein JL, Brown MS, Espenshade PJ. 2000. Regulated step in cholesterol feedback localized to budding of SCAP from ER membranes. *Cell* 102:315-323.
33. DeBose-Boyd RA, Brown MS, Li WP, Nohturfft A, Goldstein JL, Espenshade PJ. 1999. Transport-dependent proteolysis of SREBP: relocation of site-1 protease from Golgi to ER obviates the need for SREBP transport to Golgi. *Cell* 99:703-712.

B. Peer-reviewed Publications (continued)

34. Espenshade PJ, Cheng D, Goldstein JL, Brown MS. 1999. Autocatalytic processing of Site-1 protease removes propeptide and permits cleavage of sterol regulatory element-binding proteins. *J. Biol. Chem.* 274:22795-22804.
35. Cheng D, Espenshade PJ, Slaughter CA, Brown MS, Goldstein JL. 1999. Secreted Site-1 protease cleaves peptides corresponding to luminal loop of sterol regulatory-element binding proteins. *J. Biol. Chem.* 274:22805-22812.
36. Roberg KJ, Crotwell M, Espenshade P, Gimeno R, Kaiser CA. 1999. *LST1* is a *SEC24* homolog used for selective export of the plasma membrane ATPase from the ER. *J. Cell Biol.* 145:659-672.
37. Sakai J, Rawson RB, Espenshade P, Cheng D, Seegmiller AC, Goldstein JL, Brown MS. 1998. Molecular identification of the sterol-regulated luminal protease that cleaves SREBPs and controls lipid composition of animal cells. *Mol. Cell.* 2:505-514.
38. Shaywitz DA, Espenshade P, Gimeno RE, Kaiser CA. 1997. COPII subunit interactions in the assembly of the vesicle coat. *J. Biol. Chem.* 272:25413-25416.
39. *Gimeno RE, *Espenshade P, Kaiser CA. 1996. COPII coat subunit interactions: Sec24p and Sec23p bind to adjacent regions of Sec16p. *Mol. Biol. Cell* 7:1815-1823. *These authors contributed equally to the experiments in this paper.
40. Espenshade P, Gimeno RE, Holzmacher E, Teung P, Kaiser CA. 1995. Yeast *SEC16* gene encodes a multidomain vesicle coat protein that interacts with Sec23p. *J. Cell Biol.* 131:311-324.
41. Gimeno RE, Espenshade P, Kaiser CA. 1995. *SED4* encodes a yeast endoplasmic reticulum protein that binds Sec16p and participates in vesicle formation. *J. Cell Biol.* 131:325-338.
42. Berberich S, Hyde-DeRuyscher N, Espenshade P, Cole M. 1992. *max* encodes a sequence-specific DNA-binding protein and is not regulated by serum growth factors. *Oncogene* 7:775-779.

C. Research Support

Ongoing Research Support

<u>R01 HL77588 National Heart, Lung, Blood Institute – National Institutes of Health</u> Espenshade - PI Title: Regulation of Cellular Cholesterol Homeostasis	07/01/04 – 04/30/14
<u>0840100N American Heart Association Established Investigator Award</u> Espenshade - PI Title: Regulation of Cellular Sterol Homeostasis in Eukaryotes	01/01/08 – 12/31/13
<u>Burroughs Wellcome Fund Investigator in Pathogenesis of Infectious Disease</u> Espenshade - PI Title: Oxygen-sensing and adaptation to host tissue hypoxia in the human fungal pathogen <i>Cryptococcus neoformans</i>	07/01/06 – 06/30/12

Completed Research Support

R21 HL094774 National Heart, Lung, Blood Institute – NIH 08/01/09 - 07/31/11
Espenshade - PI

Title: Functional studies of PGRMC1 in cholesterol homeostasis

R01 HL077588 Supplement National Heart, Lung, Blood Institute – NIH 07/15/09 – 06/30/11
Espenshade - PI

Title: Stimulus Supplement - Regulation of Cellular Cholesterol Homeostasis

R21 AI072186 National Institute of Allergy and Infectious Diseases – NIH 06/15/07 – 05/31/09
Espenshade - PI

Title: Oxygen-sensing and adaptation to host tissue hypoxia in *C. neoformans*