
CURRICULUM VITAE

NAME Peter J. Espenshade	POSITION TITLE Professor of Cell Biology
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EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR	SCIENTIFIC DISCIPLINE and MENTOR
UT-Southwestern Medical Center, Dallas, TX	Postdoc	1998-2002	Molecular Cell Biology, Joseph L. Goldstein and Michael S. Brown
Massachusetts Institute of Technology	PhD	1991-1998	Cell Biology / Genetics, Chris A. Kaiser
Princeton University	AB	1986-1990	Molecular Biology, Michael D. Cole

Professional Positions

- 2013 - date Professor, Department of Cell Biology, Johns Hopkins University School of Medicine
- 2013 - date Director, Center for Innovation in Graduate Biomedical Education (CIGBE)
- 2008 - 2013 Associate Professor, Department of Cell Biology, Johns Hopkins University School of Medicine
- 2006 - date Member, Center for Metabolism and Obesity Research, Institute for Basic Biomedical Science, Johns Hopkins University School of Medicine
- 2002 - 2008 Assistant Professor, Department of Cell Biology, Johns Hopkins University School of Medicine

Significant Professional Activities

- 2012 Avanti Young Investigator Award in Lipid Research - American Society for Biochemistry and Molecular Biology
- 2012 Session Chair, 2012 Annual Meeting, American Society for Biochemistry and Molecular Biology
- 2009-2012 NIH Integrative Nutrition and Metabolic Processes (INMP) Study Section, Permanent Member
- 2009 NIH INMP Study Section, Temporary Member, June 2009
- 2008 NIH INMP Study Section, Temporary Member, October 2008
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- 2008 Established Investigator Award, American Heart Association
- 2006 Investigator in Pathogenesis of Infectious Disease, Burroughs Wellcome Fund
- 2006 Dean's Discretionary Fund Award, JHU-SOM
- 2001 Career Award in the Biomedical Sciences, Burroughs Wellcome Fund
- 1998 National Research Service Award, National Institutes of Health – NHLBI
- 1992 Predoctoral fellowship, National Science Foundation
- 1990 Phi Beta Kappa Honor Society, Princeton University
- 1990 Summa cum laude, Department of Molecular Biology, Princeton University

Peer-Reviewed Publications

Original Research

1. Brookheart RT, Lee CSY, Espenshade PJ. 2013. Casein kinase 1 regulates sterol regulatory element-binding protein (SREBP) to control sterol homeostasis. *J. Biol. Chem.* In press.
 2. Lloyd SJ, Raychaudhuri S, Espenshade PJ. 2013. Subunit architecture of the Golgi Dsc E3 ligase required for Sterol Regulatory Element-Binding Protein (SREBP) cleavage in fission yeast. *J. Biol. Chem.* 288:21043-21054.
 3. Cheung R, Espenshade PJ. 2013. Structural requirements for Sterol Regulatory Element-Binding Protein (SREBP) cleavage in fission yeast. *J. Biol. Chem.* 288:20351-60.
 4. Porter JR, Lee CSY, Espenshade PJ*, Iglesias PA*. 2012. Regulation of SREBP during hypoxia requires Ofd1-mediated control of both DNA binding and degradation. *Mol. Biol. Cell* 23:3764-3774.
*Corresponding authors.
 5. Ryan CJ, Roguev A, Patrick K, Xu J, Jahari H, Tong Z, Beltrao P, Shales M, Qu H, Collins SR, Kliegman, JI, Jiang L, Kuo D, Tosti E, Kim H, Edelmann W, Keogh M, Greene D, Tang C, Cunningham P, Shokat KM, Cagney G, Svensson JP, Guthrie C, Espenshade PJ, Ideker T, Krogan NJ. 2012. Hierarchical modularity and the evolution of genetic interactomes across species. *Mol. Cell.* 46:691-704.
 6. Porter JR, Burg JS, Espenshade PJ, Iglesias PA. 2012. Identifying a static nonlinear structure in a biological system using noisy, sparse data. *J. Theoretical Biol.* 300:232-241.
 7. Stewart EV, Lloyd SJ, Burg JS, Nwosu CC, Lintner RE, Daza R, Russ C, Ponchner K, Nusbaum C, Espenshade PJ. 2011. Yeast SREBP cleavage requires Cdc48 and Dsc5, a ubiquitin regulatory X domain-containing subunit of the Golgi Dsc E3 ligase. *J. Biol. Chem.* 287:672-681.
 8. 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* 44:225-234.
 9. 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.* 286:27139-27146.
 10. 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* 19:503-514. *Corresponding authors.
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11. 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.
 12. Porter JR, Burg JS, Espenshade PJ*, Iglesias PA*. 2010. Ergosterol regulates SREBP cleavage in fission yeast. *J. Biol. Chem.* 285:41051-41061. *Corresponding authors.
 13. 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.
 14. 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.
 15. 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.
 16. 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.* 28:135-143.
 17. 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* 8:522-531.
 18. 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.
 19. 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.
 20. Sehgal A, Hughes BT, Espenshade PJ. 2008. Oxygen-dependent, alternative promoter controls translation of *tco1⁺* in fission yeast. *Nucleic Acids Research* 36:2024-2031.
 21. Sehgal A, Lee CY, Espenshade PJ. 2007. SREBP controls oxygen-dependent mobilization of retrotransposons in fission yeast. *PLoS Genet.* 3:1389-1396.
 22. 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.
 23. 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.* 282:24388-24396.
 24. 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.* 64:614-629. *Corresponding authors.
 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.
 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.
 27. 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.
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28. 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.
29. 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.
30. 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.
31. 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.
32. 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.
33. 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.
34. 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.
35. 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.
36. 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.
37. 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.
38. 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.
39. 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.
40. 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.

Review Articles

1. Shao W, Espenshade PJ. 2012. Expanding roles for SREBP in metabolism. *Cell Met.* 16:414-419.
 2. Raychaudhuri S, Young BP, Espenshade PJ*, Loewen CJR*. 2012. Regulation of lipid metabolism: a tale of two yeasts. *Curr. Opin. Cell Bio.* 24:502-508. *Corresponding authors.
 3. Burg JS, Espenshade PJ. 2011. Regulation of HMG-CoA reductase in mammals and yeast. *Prog. Lipid Res.* 50:403-410.
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4. Bien CM, Espenshade PJ. 2010. SREBP in fungi - Hypoxic transcription factors linked to pathogenesis. *Eukaryotic Cell*. 9:352-359.
5. Osborne TO, 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.
6. Espenshade PJ, Hughes AL. Regulation of sterol synthesis in eukaryotes. 2007. *Annu. Rev. Genet.* 41:401-427.
7. Espenshade PJ. SREBPs: Sterol-regulated transcription factors. 2006. *J. Cell Sci.* 119:973-976.

Book Chapters

1. Espenshade PJ. Cholesterol Synthesis and Regulation. In: W.J. Lennarz and M.D. Lane (eds.) *The Encyclopedia of Biological Chemistry*, Elsevier Inc., Oxford. In press.
2. Kwiterovich PO, Espenshade PJ. 2009. "Chapter 8: Disorders of LDL Metabolism", pp. 88-104. In *The Johns Hopkins University Textbook of Dyslipidemia* (Kwiterovich PO, ed.) Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia, PA.
3. 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* (Bradshaw R and Dennis E, eds). Academic Press, San Diego.
4. Espenshade PJ, Goldstein JL, and Brown MS. SREBPs: Gene regulation through controlled protein trafficking. 2003. In *Handbook of Cellular Signaling* (Bradshaw R and Dennis E, eds). Academic Press, San Diego, CA.

Conference Papers

1. Porter JR, Iglesias PA, Burg JS, Espenshade PJ. 2011. Overcoming Data Limitations to Identify a Static Nonlinearity in a Biological Signaling Cascade. 45th Annual Conference on Information Sciences and Systems, Baltimore, MD. March 23-25, 2011.

Other Media

1. Espenshade PJ. Sterols Regulate ER-to-Golgi Transport of SREBP Cleavage Activating Protein (SCAP). ASCB Image & Video Library. June 2007:VID-32.

Active Grants

R01 HL77588 National Heart, Lung, Blood Institute – National Institutes of Health 07/01/04 – 04/30/14
Espenshade - PI

Title: Regulation of Cellular Cholesterol Homeostasis

The primary objective of this project is to use fission yeast as a genetic model for mammalian sterol homeostasis. Specifically, we will 1) identify genes required for yeast SREBP (Sre1) cleavage, 2) define the machinery for Sre1 cleavage, and 3) define the mechanism of sterol-regulated Sre1 cleavage.

12-60-25-ESPE – Pancreatic Cancer Action Network – AACR Innovative Grant 07/01/12-06/30/14
Espenshade - PI

Title: SREBP Pathway as a Target for Pancreatic Cancer Therapy

The objective of this proposal is to determine whether chemical and genetic inhibition of the Site-1 protease and the Scap transport protein prevents pancreatic cancer in mouse models of pancreatic adenocarcinoma.

American Heart Association – Grant in Aid

07/01/13 - 06/30/15

Espenshade - PI

Title: Function of the Prolyl Hydroxylase Ofd1 in Translation

The goal of this proposal is to test whether the prolyl hydroxylase Ofd1 modifies a small ribosomal subunit in the eukaryotic ribosome and whether this modification is required for translation fidelity.

R21 AI103857-01A1 National Institute of Allergy and Infectious Disease - NIH

07/01/13 - 06/30/15

Espenshade – PI

Title: Mechanisms of Host Adaptation for *Candida albicans*

The goal of this proposal is to determine the function of the SREBP transcription factor Cph2 in host intestinal colonization using a mouse model of colonization.
