

# Curriculum Vitae

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Cell Biology and Bioimaging Core  
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**ACADEMIC RANK:** Assistant Professor/Research

## EDUCATION:

- 2003 Ph.D. Botany  
University of Georgia  
Athens, Georgia
- 1997 M.S. Biology  
University of Alabama  
Tuscaloosa, Alabama
- 1995 B.S. Biology/Chemistry  
University of Alabama  
Tuscaloosa, Alabama

## PROFESSIONAL EXPERIENCE

- 2015 – Present Adjunct Assistant Professor – Research, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA
- 2012 – Present Assistant Professor – Research, Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge, LA
- 2006 – Present Director of the Cell Biology and Bioimaging Core, Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge, LA
- 2003 – 2006 Research Associate, Socolofsky Microscopy Center, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA
- 1997 – 1998 Teaching Assistant, Introductory Biology Lab for non-majors, University of Georgia, Athens, GA
- 1996 – 1997 Teaching Assistant, Introductory Biology Lab for honors students, University of Alabama, Tuscaloosa AL
- 1995 – 1996 Teaching Assistant, Introductory Biology Lab for majors, University of Alabama, Tuscaloosa, AL

## HONORS AND AWARDS

1997 – 2003 NSAF Training Grant for the Mechanisms of Plant Evolution

## GRANTS AND CONTRACTS SUPPORT

### Active

Gettys, Thomas  
NIH (NIGMS)

2006 - 2016

Mentoring Obesity and Diabetes Research in Louisiana (COBRE)

The specific aims of the COBRE proposal are to: a) expand the critical mass; b) mentor junior faculty displaying great promise; c) implement evaluation criteria for junior investigators; d) foster a collaborative and interactive research environment and; e) strengthen the research infrastructure.

Role: Co-Investigator

### Pending

Ravussin, Eric  
NIH (NIDDK)

2016-2021

Nutrition, Obesity, and Metabolic Health Through the Lifespan (NORC)

The aims of this NORC grant are to promote interactions within the PBRC and foster new research ideas to enhance the translation of basic nutritional research findings into the clinical arena. Within the context of this grant I serve as the Director of the Cell Biology and Bioimaging Core.

Role: Co-Investigator

### Completed

Burk, David

2012 - 2013

LEQSF(2012-13)-ENH-TR-20 017BS-12/1

Louisiana Board of Regents

Enhancement of the confocal imaging capabilities at Pennington Biomedical Research Center  
The BoR grant funds upgrades to the Cell Biology and Bioimaging Core's Leica SP5 confocal through the addition of three HyD detectors.

Role: PI

## PUBLICATIONS

### Refereed Papers

1. **Burk DH**, Liu B, Zhong R, Morrison WH, Ye ZH. A katanin-like protein regulates normal cell wall biosynthesis and cell elongation. *Plant Cell* 2001;13:807-827.
2. Zhong R, **Burk DH**, Ye ZH. Fibers. A model for studying cell differentiation, cell elongation and cell wall biosynthesis. *Plant Physiol* 2001;126:477-479.
3. Ye ZH, Freshour G, Hahn MG, **Burk DH**, Zhong R. Vascular development in arabidopsis. *Int Rev Cytol* 2002;220:225-256.
4. Zhong R, **Burk DH**, Morrison WH, Ye ZH. A kinesin-like protein is essential for oriented deposition of cellulose microfibrils and cell wall strength. *Plant Cell* 2002;14:3101-3117.

5. **Burk DH**, Ye ZH. Alteration of oriented deposition of cellulose microfibrils by mutation of a katanin-like microtubule-severing protein. *Plant Cell* 2002;14:2145-2160.
6. Zhong R, **Burk DH**, Morrison WH, Ye ZH. FRAGILE FIBER3, an Arabidopsis gene encoding a Type II inositol polyphosphate 5-phosphatase, is required for secondary wall synthesis and actin organization in fiber cells. *Plant Cell* 2004;16:3242-3259.
7. He D, Song X, Liu L, **Burk DH**, Zhou GW. EGF-stimulation activates the nuclear localization signal of SHP-1. *Journal of Cellular Biochemistry* 2005;94:944-953.
8. Zhong R, **Burk DH**, Nairn CJ, Wood-Jones A, Morrison WH, Ye ZH. Mutation of SAC1, an Arabidopsis SAC domain phosphoinositide phosphatase, causes alterations in cell morphogenesis, cell wall synthesis, and actin organizations. *Plant Cell* 2005;17:1449-1466.
9. **Burk DH**, Zhong R, Morrison WH, Ye ZH. Disruption of cortical microtubules by overexpression of green fluorescent protein-tagged alpha-tubulin 6 causes a marked reduction in cell wall synthesis. *Journal of Integrative Plant Biology* 2006;48:85-98.
10. **Burk DH**, Zhong R, Ye ZH. The katanin microtubule severing protein in plants. *Journal of Integrative Plant Biology* 2007;1174-1182.
11. Staszkiwicz J, Gimble J, Cain C, Dietrich M, **Burk D**, Kirk-Ballard H, Gawronska-Kozak B. Flow cytometric and immunohistochemical detection of in vivo BrdU-labeled cells in mouse fat depots. *Biochem Biophys Res Commun.* 2009 Jan 16; 378(3):539-44. Epub 2008 Dec 3.
12. Pasarica M, Sereda OR, Redman LM, Albarado DC, Hymel DT, Roan LE, Rood JC, **Burk DH**, Smith SR. Reduced adipose tissue oxygenation in human obesity: evidence for rarefaction, macrophage chemotaxis, and inflammation without an angiogenic response. *Diabetes.* 2009 Mar;58(3):718-25. Epub 2008 Dec 15.
13. Kilroy G, **Burk DH**, Floyd ZE. High Efficiency Lipid-Based siRNA Transfection of Adipocytes in Suspension. *PLoS One* 2009;4(9):e6940.
14. Zhang YB, Huypens P, Adamson AW, Chang JS, Henagan TM, Lenard NR, **Burk D**, Klein J, Perwitz N, Shin JH, Fasshauer M, Kralli A, Gettys TW. Alternative mRNA splicing produces a novel biologically active short isoform of PGC-1 alpha. *Journal of Biological Chemistry* 2009;284:32813-32826.
15. Pasarica M, Gowronska-Kozak B, **Burk D**, Remedios I, Hymel D, Gimble J, Ravussin E, Bray GA, Smith SR. Adipose Tissue Collagen VI in Obesity. *J Clin Endocrinol Metab.* 2009;94(12): 5155-5162.
16. Bajpeyi S, Pasarica M, Moro C, Conley K, Jubrias S, Sereda O, **Burk DH**, Zhang Z, Gupta A, Kjems L, Smith SR. Skeletal muscle mitochondrial capacity and insulin resistance in type 2 diabetes. *J Clin Endocrinol Metab.* 2011 Apr;96(4): 1160-8. Epub 2011 Feb 9.
17. Salbaum JM, Kruger C, Zhang X, Delahaye NA, Pavlinkova G, **Burk DH**, Kappen C. Altered gene expression and spongiotrophoblast differentiation in placenta from a mouse model of diabetes in pregnancy. *Diabetologia.* 2011;54(7):1909-1920.

18. Abuznait AH, Cain C, Ingram D, **Burk D**, Kaddoumi A. Up-regulation of p-glycoprotein reduces intracellular accumulation of beta amyloid: investigation of p-glycoprotein as a novel therapeutic target for Alzheimer's disease. *Journal of Pharmacy and Pharmacology*. 2011;63(8):1111-1118.
19. Youm YH, Adijiang A, Vandanmagsar B, **Burk D**, Ravussin A, Dixit VD. Elimination of the NLRP3-ASC inflammasome protects against chronic obesity-induced pancreatic damage. *Endocrinology*. 2011;152(11):4039-45.
20. Pires de Carvalho, P, Hamel KM, Duarte R, King AG, Haque M, Dietrich MA, Wu X, Shah F, **Burk D**, Reis RL, Rood J, Zhang P, Lopez M, Gimble JM, Dasa V. Comparison of infrapatellar and subcutaneous adipose tissue stromal vascular fraction and stromal/stem cells in osteoarthritic subjects. *J Tissue Eng Regen Med* 2012 Jul 16. Doi: 10.1002/term.1565.
21. Xu F, **Burk D**, Gao Z, Yin J, Zhang X, Weng J, Ye J. Angiogenic deficiency and adipose tissue dysfunction are associated with macrophage malfunction in SIRT1-/- mice. *Endocrinology*. 2012;153(4):1706-16.
22. Silvers WC, Bijeta P, **Burk DH**, Brown ML, McCarley RL. Profluorogenic reductase substrate for rapid, selective, and sensitive visualization and detection of human cancer cells that overexpress NQO1. *Journal of the American Chemical Society* 2013;135(1):309-14.
23. Tchoukalova YD, Krishnapuram R, White UA, **Burk D**, Fang X, Nijland MJ, Nathanielsz PW. Fetal baboon sex specific outcomes in adipocyte differentiation at 0.9 gestation in response to moderate maternal nutrient reduction. *Int J Obes (Lond)*. 2014 Feb;38(2):224-30.
24. Lackey DE, **Burk DH**, Ali MR, Mostaedi R, Smith WH, Park J, Scherer PE, Seay SA, McCain CS, Bonaldo P, and Adams SH. Contributions of adipose tissue architectural and tensile properties toward defining healthy and unhealthy obesity. *Am J Physiol Endocrinol Metab*. 2014 Feb;306(3):E233-46.
25. Tam CS, Covington JD, Bajpeyi S, Tchoukalova Y, **Burk D**, Johannsen DL, Zingaretti CM, Cinti S, and Ravussin E. Weight gain reveals dramatic increases in skeletal muscle extracellular matrix remodeling. *J Clin Endocrinol Metab*. 2014 May; 99(5):1749-57.
26. Covington JD, Bajpeyi S, Moro C, Tchoukalova YD, Ebenezer PJ, **Burk DH**, Ravussin E, Redman LM. Potential effects of aerobic exercise on the expression of perilipin 3 in the adipose tissue of women with polycystic ovary syndrome: a pilot study. *Eur J Endocrinol*. 2015 Jan;172(1):47-58. Doi: 10.1530/EJE-14-0492. Epub 2014 Oct 23.
27. Wanders D, **Burk DH**, Cortez CC, Van NT, Stone KP, Baker M, Mendoza T, Mynatt RL, Gettys TW. UCP1 is an essential mediator of the effects of methionine restriction on energy balance but not insulin sensitivity. *FASEB J*. 2015 Jun;29(6):2603-15. Doi: 10.1096/fj.14-270348. Epub 2015 Mar 5.
28. Burke SJ, Karlstad MD, Regal KM, Sparer TE, Lu D, Elks CM, Grant RW, Stephens JM, **Burk DH**, Collier JJ. CCL20 is elevated during obesity and differentially regulated by NF- $\kappa$ B subunits in pancreatic  $\beta$ -cells. *Biochim Biophys Acta*. 2015 Jun;1849(6):637-52. Doi: 10.1016/j.bbagr.2015.03.007. Epub 2015 Apr 13.

29. Aggarwal S, Shailendra G, Ribnicky DM, **Burk D**, Karki N, Qinxia Wang MS. An extract of *Artemisia dracunculus* L. stimulates insulin secretion from  $\beta$  cells, activates AMPK and suppresses inflammation. *J Ethnopharmacol.* 2015 Jul 21;170:98-105. Doi: 10.1016/j.jep.2015.05.003. Epub 2015 May 14.
30. Kilroy G, Carter LE, Newman S, **Burk DH**, Manuel J, Moller A, Bowtell DD, Mynatt RL, Ghosh S, and Floyd ZE. The ubiquitin ligase Siah2 regulates obesity-induced adipose tissue inflammation. *Obesity (Silver Spring, Md)* 2015; 23(11):2223-32.
31. Patil Y, Dille K, **Burk DH**, Cortez C, and Gettys TW. Cellular and molecular remodeling of inguinal adipose tissue mitochondria by dietary methionine restriction. *J Nutr Biochem.* 2015;26(11):1235-47.
32. Salbaum JM, Kruger C, MacGowan J, Herion NJ, **Burk D**, and Kappen C. Novel mode of defective neural tube closure in the non-obese diabetic (NOD) mouse strain. *Scientific Reports* 2015; 5. Doi: 10.1038/srep16917.
33. Hegde V, Na HN, Dubuisson O, Burke SJ, Collier JJ, **Burk D**, Mendoza T, and Dhurandhar NV. An adenovirus-derived protein: A novel candidate for anti-diabetic drug development. *Biochimie* 2016; 121:140-50.
34. Reiner DJ, Mietlicki-Baase EG, McGrath LE, Zimmer DJ, Bence KK, Sousa GL, Konanur VR, Krawczyk J, **Burk DH**, Kanoski SE, Hermann GE, Rogers RC, and Hayes MR. Astrocytes regulate GLP-1 receptor-mediated effects on energy balance. *J Neurosci* 2016; 36(12):3531-40.

### Abstracts

1. Xu F, **Burk D**, Gao ZG, Yin J, Weng JP, Ye JP. SIRT1 knockout leads to angiogenesis deficiency in adipose tissue through macrophage dysfunction. 69<sup>th</sup> Annual Meeting of the American Diabetes Association; New Orleans, LA; June 2009.
2. Kilroy G, **Burk D**, Floyd E. Identification of Ubiquitin Ligases that Regulate PPARgamma Protein Levels in Adipocytes. The Obesity Society 27<sup>th</sup> Annual Scientific Meeting; Washington, DC; October 2009.
3. **Burk DH**, Gettys T, Cain C, Ingram D. The Cell Biology and Bioimaging Core at the Pennington Biomedical Research Center. Louisiana NCRR/IDeA 2010 Biomedical Research Symposium; Baton Rouge, LA; January 2010.
4. **Burk DH**. The PBRC Cell Biology and Bioimaging Core. SE Regional IDeA Meeting; New Orleans, LA; September 2011.
5. Lackey D, **Burk D**, Ali M, Smith W, Mostaedi R, Scherer P, and Adams S. Novel methods for characterization of adipose tissue extracellular matrix. Keystone Symposia on Molecular and Cellular Biology; Santa Fe, NM; January 2012
6. Aggarwal S, Wang Q, Shailendra G, Ribnicky DM, **Burk D**, and Cefalu WT. An extract of *Artemisia Drancunculus* L. stimulates insulin from beta cells, activates AMPK and suppresses inflammation. *Pancreatology.* 2013;13(2):e12.

7. Bajpeyi S, Covington JD, Coen PM, Anguiano-Zarate SS, Rodriguez RM, **Burk DH**, Tam CS, Johannsen DL, Goodpaster BH, and Ravussin E. Decrease in smaller lipid droplet density is protective against overfeeding-induced increase in fat cell size and weight gain. The Obesity Society Annual Meeting; Atlanta, GA; November 2013
8. Covington JD, Coen PM, **Burk D**, Obanda D, Ebenezer P, Tam C, Johannsen DL, Goodpaster BH, Ravussin E, and Bajpeyi S. Intramyocellular lipid droplet size rather than total lipid content is related to insulin sensitivity after 8 weeks of overfeeding. Diabetes 2015;64:A11-A11.

## **SERVICE**

### **Ad Hoc Manuscript Reviews**

2014	PLoS ONE
2011	PLoS ONE
2011	Journal of Neuroscience Research
2012	Microscopy and Microanalysis
2014	PLoS ONE

### **Ad Hoc Grant Reviews**

2007	North Carolina Biotechnology Center
2008	American Association for the Advancement of Science
2012	North Carolina Biotechnology Center
2013	PBRC NORC Pilot and Feasibility Grant
2015	PBRC NORC Pilot and Feasibility Grant

## **TEACHING AND MENTORING**

2011	Training and mentoring of D'Andreas Williams, Research Associate, on the core's equipment and imaging platforms.
2010	Mentoring of 2 <sup>nd</sup> year graduate student, Mr. Alaa Abuznait, from the University of Louisiana at Monroe as part of the LBRN summer research program.
2009	Training and mentoring of Drury Ingram, Research Associate, on the core's equipment and imaging software.
2007	Training and mentoring of Courtney Cain, Research Associate, on the core's equipment and imaging software.
2007	Training and mentoring of Aidos Baumuratov, Postdoctoral Researcher, on the core's equipment and imaging software.
2006	Training and mentoring of Laura Roan, Research Associate, on analytical and imaging platforms as part of her role in the facility.
1995 – 1997	Teaching Assistant for Introductory Biology labs at the University of Alabama, Tuscaloosa, AL
1997 – 1998	Teaching Assistant for Introductory Biology labs at the University of Georgia, Athens, GA