

---

**BIOGRAPHICAL SKETCH**


---

NAME		POSITION TITLE	
Traci R. Lyons		Post-doctoral Trainee	
EDUCATION/TRAINING ( <i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i> )			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Colorado at Boulder	BA	1999	MCDB
University of Colorado Health Sciences Center	PhD	2006	Molecular Biology

**Professional Experience:**

Aug2007-present	Post-Doc Trainee, Division of Medical Oncology, Pepper Schedin lab
Jan2007 – Aug2007	Regular Fellow, Department of Pathology, Steven M. Anderson lab
2001 – 2006	Graduate Fellow Molecular Biology Program, University of Colorado Health Sciences Center (UCHSC), Department of Pathology
2000 – 2001	Graduate Fellow Biomedical Sciences Program, UCHSC
1999 – 2000	Professional Research Assistant, UCHSC, Department of Microbiology (Laboratory of Dr. David Barton)
1996 – 1999	Independent Study with Dr. Mike Klymkowsky, University of Colorado at Boulder

**Honors:**

2004	Mammary Gland Gordon Conference Best Poster Award
2001-2002	Avon Breast Cancer Scholar
1999	Bachelor of Science cum laude from University of Colorado at Boulder
1998 & 1999	Nominated for the National Dean's List
1997-1999	Undergraduate Research Opportunities Program grant
1996-1997	Undergraduate Research Apprenticeship Program (URAP) grant

**Publications:**

Nelson AC, **Lyons TR**, Whitson RJ, Young CD, Anderson SM, and Holt JT. 2007 "AKT Regulates BRCA1 Stability in Response to Hormone Signaling." Mol Cell Endocrinol. 2010 Jan 16. (in press)

**Traci Lyons**\*, Jenean O'Brien\*, Jenifer Monks, M. Scott Lucia, R. Storey Wilson, Lisa Hines, Yan-gao Man, Virginia Borges, and Pepper Schedin. "Alternatively activated macrophages and collagen remodeling characterize the post-partum involuting mammary gland across species." (in press), *American Journal of Pathology*. \*these authors contributed equally

**Traci R Lyons**, Pepper J Schedin, Virginia F Borges. "Pregnancy and Breast Cancer: When They Collide" *Journal of mammary gland biology and neoplasia*, Vol. 14, No. 2. (June 2009), pp. 87-98.

Rhonda Hattar\*, Ori Maller, Shauntae McDaniel, Kirk C. Hansen, Karla J. Hedman, **Traci Lyons**, Scott Lucia, Storey Wilson, and Pepper Schedin. "Tamoxifen induces pleiotrophic changes in mammary stroma resulting in extracellular matrix that suppresses transformed phenotypes" *Breast Cancer Research* Vol 11 (1) 2009.

**Traci R. Lyons**, Jackie Thorburn, Philip W. Ryan, Andrew Thorburn, Steven M. Anderson, and C. Kenneth Kassenbrock. "Regulation of the Pro-apoptotic Scaffolding Protein POSH by Akt." *J Biol Chem.* 2007 Jul 27;282(30):21987-97.

**Lyons, TR** and Anderson, SM. 2007. "Pro-survival Kinase Akt localizes to the Mitochondria upon Activation." In preparation.

**Traci Renae Lyons.** "ANALYSIS OF POTENTIAL SUBSTRATES FOR THE PRO-SURVIVAL KINASE AKT." Doctoral Thesis. Accepted November 7, 2006.

**Lyons, TR** and Barton, DJ. 2001 "Poliovirus 5'-terminal cloverleaf RNA is required in-cis for VPg uridylylation and the initiation of negative strand RNA synthesis." *Journal of Virology*, 75 (22) 10696-10708.

### **Posters and Abstracts:**

"Involution is an inflammatory, tumor promoting event which increases the risk for invasion and metastasis of pregnancy associated breast cancer" Traci R Lyons, PhD<sup>1</sup>, Virginia Borges, MD<sup>1</sup>, and Pepper J Schedin, PhD<sup>1</sup>. <sup>1</sup>Division of Medical Oncology, University of Colorado Denver, Aurora, CO, United States, 80010. AACR Advances in Breast Cancer Research. Oct 13-16, 2009. San Diego, CA

"The human involuting breast is characterized by a wound healing signature, implications for pregnancy-associated breast cancer." Virginia F Borges, MD, Traci R Lyons, PhD, and Pepper J Schedin, PhD. AACR Annual Meeting April 18-22<sup>nd</sup>, 2009. Denver, CO.

"An MCF10-DCIS xenograft model for pregnancy associated breast cancer." Traci R. Lyons, Virginia Borges, Pepper Schedin. AACR Annual Meeting April 18-22<sup>nd</sup>, 2009. Denver, CO.

"Common wound healing signature in murine and human involuting breast, implications for pregnancy-associated breast cancer" Traci R Lyons, PhD, Jenean H O'Brien, BA, Virginia Borges, MD and Pepper J Schedin, PhD. Dec 2008. San Antonio Breast Cancer Research Symposium poster presentation.

"Common Wound Healing Signature in Murine and Human Involuting Breast, Implications for Pregnancy-associated Breast Cancer (PABC)" Pepper Schedin, Jenean O'Brien, Traci Lyons, Storey Wilson, Ken Shroyer, Scott Lucia, and Virginia Borges. September 2008. A Celebration of Research in Women's Health at UCD poster presentation.

"Common Wound Healing Signature in Murine and Human Involuting Breast, Implications for Pregnancy-associated Breast Cancer (PABC)." Joint Metastasis Research Society-AACR Conference on Metastasis; August 2008 poster presentation.

"Pro-Inflammatory Role of Tumor Microenvironment in Promoting Metastasis in Pregnancy-Associated Breast Cancer." O'Brien J., Lyons T., Wilson, S., Shroyer, K., Lucia, S., Borges V., and Schedin P. Jan 17-18, 2008. Mammary Gland Program Project Grant Annual Retreat.

Regulation of the Pro-apoptotic Scaffolding Protein POSH by Akt. Mammary Gland Gordon Conference 2006.

Proteomic Analysis reveals Akt Substrates in the Mitochondria; Mammary Gland Gordon Conference and DOD Era of Hope Meeting 2005.

Proteomic Analysis reveals Akt Substrates in the Mitochondria; 19<sup>th</sup> Annual Student Research Forum (2005).  
\*\*Prize Winner.

Proteomic Analysis: Akt Substrates in the Mammary Gland; Mammary Gland Gordon Conference 2004.  
\*\*Winner: Best Poster Award.

### **Talks:**

“Therapeutic Intervention for Pregnancy Associated Breast Cancer: Pre-clinical studies”  
Department of Medical Oncology UC Denver Developmental Therapeutics Retreat June 5, 2009.

“Wound Healing Signature in Human Involuting Breast, Implications and Models for Pregnancy-associated Breast Cancer” UCD Cell Biology, Stem Cells and Development Retreat oral presentation (Oct 3-4 2008)

“Determining the Role of a Wound Healing Signature on Mammary Gland Involution and Tumor Progression.”  
March 2008 Research Talk UC Breast Research Program Seminar.

Proteomic Analysis: Akt Substrates in the Mammary Gland; Talk selected from Abstracts Mammary Gland Gordon Conference 2004.

### **Research Projects Ongoing or Completed During the Last 3 Years:**

My doctoral thesis work consisted of identifying and verifying substrates phosphorylated by Akt. I identified 14 proteins using two-dimensional Western blotting techniques that are possible substrates for Akt phosphorylation. I have successfully shown phosphorylation of one of these proteins, the  $\beta$ -subunit of ATP synthase, in vivo and in vitro and hope to publish these results soon. In addition, these studies led to the identification of the pro-apoptotic scaffolding molecule POSH as another substrate of Akt. We have shown that phosphorylation of POSH by Akt blocks its ability to promote apoptosis by blocking its ability to bind Rac and promoting its degradation. This work was published by the Journal of Biological Chemistry. Finally, we have shown that Akt phosphorylates another protein, BRCA1, that has been shown to be mutated in many human breast cancers. Phosphorylation of BRCA1 by Akt appears to stabilize the levels of this protein within the cell. These results are currently in press for Molecular and Cellular Endocrinology.

In August 2007, I began my post-doctoral training in the lab of Pepper Schedin, where I have begun work on development and characterization of mouse models of pregnancy associated breast cancer (PABC). It is our hypothesis that the process of involution, following pregnancy and lactation, may activate cells in the mammary gland to become tumorigenic, thereby resulting in the increase in breast cancer risk observed following a recent pregnancy. We have published data in rodents to support this hypothesis and identified cases of human PABC from several patient data bases for verification of this data in humans. Using these tissues, we have analyzed the presence inflammatory markers in the micro-environment of the involuting mammary gland and verified specifically increased collagen and M2 macrophages present during involution. These results are in press for The American Journal of Pathology. Further, I have developed a isotopic xenograft model of PABC in SCID mice that shows increased tumor burden, tumor size, tumor invasiveness, circulating tumor cells, metastasis specific to the PABC group animals. The PABC tumors also show increased proliferation, tumor associated collagen, and inflammation induced COX-2. Importantly, the increase in invasiveness observed in vitro and the increased tumor size metastasis observed in vivo can be reduced by treatment of the cells/animal with NSAIDS. Thus, we believe we have identified a possible intervention strategy for reduction of metastasis in patients with PABC. These results are currently being written up for publication.

### **Grants:**

#PF-08-257-01-CSM (Traci R Lyons, P.I.; Pepper Schedin, mentor) 2008-2011  
“Mammary Gland Microenvironment in Breast Cancer Metastasis after Pregnancy”  
American Cancer Society New England Division Postdoctoral Fellowship-SpinOdyssey

5 T32 CA79446-08 (S. Gail Eckhardt, M.D., sponsor ; Traci R Lyons, Fellow) 2007-2008  
Ruth L. Kirschstein National Research Service Award

DAMD17-02-1-0351 (Traci Lyons, P.I.; Steven M. Anderson, mentor) 2002-2005  
“Proteomic Identification of Akt Substrates in the Mammary Gland.”  
Breast Cancer Research Program Pre-Doctoral Award

Avon Breast Cancer Scholar (Kathryn Horowitz, P.I.; Steven M. Anderson, mentor) 2001-2002

**Positions Held:**

UCD Post-doctoral Advisory Committee Member Jan 2009-present

Student representative,

Faculty Membership Committee for the Program in Molecular Biology,

UCHSC 2003-2006

Vice-president, Graduate Student Council, UCHSC 2003-2005

Senator, Student Senate, UCHSC 2002-2005