

BIOGRAPHICAL SKETCH

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NAME Carol A. Otey	POSITION TITLE Professor		
eRA COMMONS USER NAME Carol_Otey			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Trinity University, San Antonio, TX	B.S.	1976-1980	Cell biology
University of California, Los Angeles, CA	Ph.D.	1980-1987	Cell biology
University of North Carolina, Chapel Hill	Post-doc	1987-1993	Cell adhesion

A. Personal Statement

The goal of my research is to investigate the molecular pathways that regulate cell migration during wound-healing and cancer metastasis. We are also studying the mechanisms that control the acquisition of the myofibroblast phenotype, which plays a key role in tissue remodeling after injury and in the pathological condition of fibrosis. Toward this end, my lab collaborates with multiple basic scientists and clinician scientists at UNC, including Dr. H.J. Kim (Surgical Oncology), Dr. Ramon Bataller (Hepatology) and Dr. Ron Falk (Kidney Center). We are studying pathways that regulate the activity of Rho-family GTPases in metastatic cancer cells, in collaboration with Drs. Rafael Garcia-Mata and Silvia Goicoechea at the University of Toledo, and we are investigating the role of actin-binding proteins in regulating the assembly of sub-cellular structures that mediate cell adhesion and cell migration, in collaboration with Dr. Sharon Campbell (UNC Biochemistry and Biophysics), Dr. Moriah Beck (Wichita State University), and Dr. Arpita Upadhyaya (University of Maryland).

B. Positions and Honors

NIH Predoctoral Trainee, University of California at Los Angeles, Dept. of Biology
1985-1987 Graduate Research Assistant, Laboratory of Dr. J.C. Bulinski, U.C.L.A., Dept. of Biology
1987-1992 NIH Postdoctoral Trainee, Lineberger Cancer Research Center, U.N.C. at Chapel Hill, lab of Dr. Keith Burridge
1993-1998 Assistant Professor, Department of Cell Biology, University of Virginia, Charlottesville, VA
1997 Dean's Award for Excellence in Medical Education
1998-2004 Assistant Professor, Department of Cell and Molecular Physiology, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.
2004-2010 Associate Professor, Department of Cell and Molecular Physiology, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.
2010-2012 Professor and Interim Co-Chair, Department of Cell Biology and Physiology (formerly Cell and Molecular Physiology), University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

C. Peer-Reviewed Publications (selected from 62 total)

1. Parast, M.M. and C.A. Otey (2000) Characterization of palladin, a novel protein localized to stress fibers and cell adhesions. *J. Cell Biol.* 150: 643-656. PMID: 10931874
2. Dixon RD, Arneman DK, Rachlin AS, Sundaresan NR, Costello MJ, Campbell SL, Otey CA. 2008. Palladin is an actin cross-linking protein that uses immunoglobulin-like domains to bind filamentous actin. *J Biol Chem.* 283(10):6222-31. PMID: 18180288
3. Rönty, M., Leivonen, S.K., Rachlin, A., Otey, C. and Carpen, O. (2006). Isoform-specific regulation of the actin-organizing protein palladin during TGF- β 1-induced myofibroblast differentiation. *J. Investigative Dermatology* 126:2387-96. PMID: 16794588
4. Goicoechea SM, Bednarski B, Stack C, Cowan DW, Volmar K, Thorne L, Cukierman E, Rustgi AK, Brentnall T, Hwang RF, McCulloch CAG, Yeh JJ, Bentrem DJ, Hochwald SN, Hingorani SR, Kim HJ, Otey CA. 2010. Isoform-specific upregulation of palladin in human and murine pancreas tumors. *PLoS One* 5(4):e10347. PMID: 20436683

5. Shin SS, Armao DM, Burke LM, Kim HJ, Skrzynia C, Otey CA, Semelka RC. 2011. Comparison of the incidence of pancreatic abnormalities between high risk and control patients: prospective pilot study with 3 Tesla MR imaging. *J Magn Reson Imaging* 33(5):1080-5. PMID: 21509864

Additional recent publications of importance to the field:

1. Rajfur, Z., P. Roy, C. Otey, L. Romer and K. Jacobson (2002) The connection between stress fibers and focal adhesions: Dissecting the link employing chromophore assisted laser inactivation (CALI) with EGFP-fusion proteins. *Nature Cell Biology* 4: 286-293. PMID: 11912490
2. Boukhelifa, M., S.-J. Hwang, J.G. Valtchanoff, R. Meeker, A. Rustioni and C. Otey (2003) A critical role for palladin in astrocyte morphology and response to injury. *Molec. Cell. Neurosci.* 23: 661-668. PMID: 12932445
3. Boukhelifa, M., M. M. Parast, J. Bear, F. Gertler and C. A. Otey. (2004) Palladin is a novel binding partner for Ena/VASP proteins. *Cell Motil. Cytoskel.* 58: 17-29. PMID: 14983521
4. Ronty, M., A. Taivainen, M. Moza, C.A. Otey and O. Carpen. (2004) Molecular analysis of the interaction between palladin and α -actinin. *FEBS Lett.* 566: 30-34. PMID: 15147863
5. Rachlin, A and Otey, C. (2006) Identification of Palladin Isoforms and Characterization of an Isoform-specific Interaction between Lasp-1 and Palladin. *J. Cell Sci.* 119: 995-1004. PMID: 16492705
6. Pogue-Geile, K., Chen, R., Bronner, M.P., Crnogorac-Jurcevic, T., Moyes, K.W., Downen, S., Otey, C.A., Crispin, D.A., George, R.D., Whitcomb, D.C., and Brentnall, T.A. (2006). *Palladin* mutation causes familial pancreatic cancer and suggests a new cancer mechanism. *PloS Medicine* 3: 2216-2227. PMID: 17194196
7. Goicoechea S, Arneman D, Disanza A, Garcia-Mata R, Scita G, Otey CA. (2006). Palladin binds to Eps8 and enhances the formation of dorsal ruffles and podosomes in vascular smooth muscle cells. *J. Cell Sci.* 119:3316-24. PMID: 16868024
8. Jin, L, M.J. Kern, C.A. Otey, and A.V. Somlyo. (2007). Angiotensin II, focal adhesion kinase, and PRX1 enhance smooth muscle expression of lipoma preferred partner and its newly identified binding partner palladin to promote cell migration. *Circ. Research* 100(6):817-25. PMID: 17322171
9. Dixon, R.D.S., Arneman, D.K., Rachlin, A.S., Sundaresan, N.R., Costello, J., Campbell, S.L., Otey, C.A. (2008) Palladin is an Actin Crosslinking Protein that Uses Immunoglobulin-like Domains to Bind Filamentous Actin. *J. Biol. Chem.* 283: 6222-31. PMID: 18180288
10. Jin L, Gan Q, Zieba BJ, Goicoechea SM, Owens GK, Otey CA, Somlyo AV. 2010. The actin associated protein palladin is important for the early smooth muscle cell differentiation. *PLoS One* 5(9):e12823. PMID: 20877641

D. Research Support:

On-going:

NSF MCB-1121365

07/01/2011-06/30/2014

"Collaborative Research: Regulation of Cellular Mechanics by Crosslinked Actin Networks - Role of Palladin and Alpha-actinin"

Major goals: to characterize the morphology and mechanical properties of composite actin networks cross-linked by palladin and alpha-actinin; to test the hypothesis that organization of actin networks by palladin and alpha-actinin regulates the cell's ability to sense mechanical stiffness.

Role: P.I.

Recently Completed:

NIH RO1-GM081505-01A1

9/01/2009-8/31/2011

"Molecular function of palladin's Ig domains in cell adhesion and motility"

Major goals: to investigate the role of palladin's five conserved immunoglobulin domains in the assembly of

actin-based structures involved in adhesion and motility (stress fibers, podosomes, membrane ruffles, focal adhesions), in cultured epithelial and mesenchymal cells.

Role: PI

Elsa U. Pardee Foundation

9/01/2008-8/31/2010

"The protein palladin as a biomarker for detection of pancreatic cancer"

Major goals: to test the hypothesis that elevated palladin levels are associated with a diagnosis of pancreatic adenocarcinoma, in biological samples obtained by fine-needle aspiration.

Role: P.I.

North Carolina Biotechnology Center

8/01/2007-7/31/2009

Type: Multi-Disciplinary Research Grant

"The Role of Palladin in the Mechanobiology of Human Mesenchymal Stem Cells"

Major goals: to test the hypotheses that palladin expression is regulated by mechanical load in human mesenchymal stem cells, that increased levels of palladin expression confer increased contractility on the cells, and that contractility results from direct interactions between palladin and actin.

Role: co-investigator. PI: Elizabeth Lobo

NIH RO1 NS43253

9/30/2002 - 7/31/2008

"Role of Palladin in Regulating Astrocytes"

Major goals: to determine if palladin expression directly controls shape change and actin assembly during astrocyte activation in response to injury, both in vitro and in vivo; to identify palladin's binding partners in astrocytes.

Role: P.I.