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## BIOGRAPHICAL SKETCH

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NAME de Lanerolle, Primal		POSITION TITLE Professor	
eRA COMMONS USER NAME PdeLanerolle			
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
Whitworth College, Spokane Washington	B.A.	1968	English Literature
California State University, San Francisco	M.A.	1974	English Literature
University of California, San Diego CA	Ph.D.	1979	Physiology &

### A. Positions and Honors.

#### Professional Employment:

- 1971-1972 - Chief Technician, Medical Special Laboratories, Triemli Hospital, Zurich, Switzerland.  
1972-1973 - Research Assoc., Dept. of Cardiovascular Surgery, Veterans Administration Hospital, Palo Alto, CA  
1973-1974 - Research Associate, Heart Research Institute, Pacific Medical Center, San Francisco, CA.  
1979-1984 - Staff Fellow, Laboratory of Molecular Cardiology, NHLBI, NIH, Bethesda, MD.  
1985-1990 - Assistant Professor, Department of Physiology and Biophysics, College of Medicine, University of Illinois, Chicago, Illinois.  
8/87-10/87 Visiting Professor, Heidelberg University, Heidelberg, West Germany  
1990-09/97- Associate Professor, Department of Physiology and Biophysics, College of Medicine, University of Illinois, Chicago, Illinois.  
1990-present Associate Professor of Physiology and Biophysics in Medicine, Department of Medicine, College of Medicine, University of Illinois, Chicago, Illinois  
09/97-present Professor, Department of Physiology and Biophysics, College of Medicine, University of Illinois, Chicago, IL  
09/97-present Professor of Physiology and Biophysics in Medicine, College of Medicine, University of Illinois, Chicago, IL  
02/02-Pres. Director, Vascular Biology Program, Dept. of Physiology and Biophysics, UIC

#### Honors and Awards

- 1969 - Honors Achievement Award, Angiology Research Foundation  
1990-1995 Research Career Development Award, NHLBI, NIH  
1992-1995 Florence and Arthur Brock Established Investigator of the Chicago Lung Association  
2001-2004 University Scholar, University of Illinois

### B. Selected peer-reviewed publications (in chronological order).

#### Selected Publications (from a total of over 90)

1. de Lanerolle, P. and Stull, J.T. Myosin phosphorylation during contraction and relaxation of tracheal smooth muscle. J. Biol. Chem., 255:9993-10000, 1980. PMID: 6776105
  2. de Lanerolle, P., Adelstein, R.S., Feramisco, J.R. and Burridge, K. Characterization of antibodies to smooth muscle myosin kinase and their use in localizing myosin kinase in nonmuscle cells. Proc. Natl. Acad. Sci. USA, 78: 4738-4742, 1981. PMID: 7029526
  3. de Lanerolle, P., Condit, J.R., Tanenbaum, M. and Adelstein, R.S. Myosin phosphorylation, agonist concentration and contraction of tracheal smooth muscle. Nature, 298:871-872, 1982. PMID: 6125891
  4. de Lanerolle, P., Nishikawa, M., Yost, D.A. and Adelstein, R.S. Increased phosphorylation of myosin light chain kinase after an increase in cyclic AMP in intact smooth muscle. Science, 223:1415-1417, 1984. PMID: 6322302
  5. Nishikawa, M., de Lanerolle, P., Lincoln, T.M. and Adelstein, R.S. Phosphorylation of mammalian myosin light chain kinases by the catalytic subunit of cyclic AMP-dependent protein kinase and by cyclic GMP-dependent protein kinase. J. Biol. Chem., 259:8429-8436, 1984. PMID: 6547441
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6. de Lanerolle, P.: Myosin dephosphorylation and isometric relaxation of tracheal smooth muscle. J. Applied Physiol., 64:705-709, 1988. PMID: 2836354
  7. de Lanerolle, P. and Nishikawa, M. Regulation of fetal smooth muscle myosin by protein kinase C, J. Biol. Chem., 263:9071-9074, 1988. PMID: 2967818
  8. Obara, K. and de Lanerolle, P. Effect of isoproterenol on myosin phosphorylation, unloaded shortening velocity and force generation in airway smooth muscle. J. Appl. Physiol., 66:2017-2022, 1989. PMID: 2745270
  9. Obara, K., Takai, A., Ruegg, J.C. and de Lanerolle, P. Okadaic acid, a phosphatase inhibitor, produces a  $Ca^{2+}$  and calmodulin-independent contraction of lamb tracheal smooth muscle. Pflueger's Archiv., 414:134-138, 1989. PMID: 2547193
  10. Wilson, A.K., Takai, A., Ruegg, J.C. and de Lanerolle, P. Okadaic acid, a phosphatase inhibitor, decreases macrophage motility. Am. J. Physiol., Lung Cell. Molec. Physiol., 260:L105-L112, 1991. PMID: 1847593
  11. de Lanerolle, P., Strauss, J.D., Felsen, R. Doerman, G.E. and Paul, R.J. The effects of antibodies to myosin light chain kinase on contractility and myosin phosphorylation in chemically permeabilized smooth muscle. Circulation Res., 68:457-465, 1991. PMID: 1991350
  12. Wilson, A.K., Horowitz, J. and de Lanerolle, P. Evaluation of the electroinjection method for introducing proteins into living cells. Am. J. Physiol: Cell, 260:C355-C363, 1991. PMID: 1996616
  13. Wilson, A.K., Claypool, W.D. and de Lanerolle, P. An increase or a decrease in myosin II phosphorylation inhibits macrophage motility. J. Cell Biol., 114:277-283, 1991. PMID: 2071674
  14. de Lanerolle, P. and Paul, R.J. Myosin phosphorylation/dephosphorylation and the regulation of airway muscle contractility. Am. J. Physiol: Lung Cell Molec. Physiol., 261:L1-L14, 1991. PMID: 1651660
  15. Strauss, J.D., de Lanerolle, P. and Paul, R.J. The effects of myosin kinase inhibiting peptide on contractility and myosin phosphorylation in chemically skinned smooth muscle. Am. J. Physiol., 262:C1437-C1445, 1992. PMID: 1535480
  16. Wilson, A.K., Pollenz, R.S., Chisholm, R.L. and de Lanerolle, P. "The role of myosin I and II in cell motility," in Cancer and Metastasis Reviews, 11:79-91, 1992. PMID: 1511499
  17. de Lanerolle, P., Gorgas, G., Li, X. and Shluns, K. Myosin light chain phosphorylation does not increase during yeast phagocytosis by macrophages. J. Biol. Chem., 16:883-886, 1993. PMID: 8349578
  18. Obara, K., Nikcevic, G., Pestic, L., Nowak, G., Guerriero, V., Paul, R.J., Elson, E.L. and de Lanerolle, P. Fibroblast contractility without an increase in basal myosin light chain phosphorylation in wild type cells and cells expressing the catalytic domain of myosin light chain kinase. J. Biol. Chem., 270:18,734-18,737, 1995. PMID: 7642521
  19. Hecht, G.A., Pestic, L., Koutsouris, A., Tripuraneni, J., Lorimer, D., Nowak, G., Guerriero, V., Elson, E. and de Lanerolle, P. Expression of the catalytic domain of myosin light chain kinase increases paracellular permeability. Am. J. Physiol., 271:C1678-C1684, 1996. PMID: 8944652
  20. Gandhi, S., Lorimer, D.D. and de Lanerolle, P. Expression of a mutant myosin light chain that cannot be phosphorylated increases paracellular permeability. Am. J. Physiol., 272:F214-F221, 1997. PMID: 9124398
  21. Nowak, G., Pestic-Dragovich, L., Hozak, P., Philimonenko, A., Simerly, C., Schatten, G. and de Lanerolle, P. Evidence for the presence of myosin I in the nucleus. J. Biol. Chem., 272:17,176-17,181, 1997. PMID: 9202039
  22. Klemke, R.L., Cai, S., Giannini, A.L., Gallagher, P., de Lanerolle, P. and Cheresch, D.A. Regulation of cell motility by mitogen activated protein kinase. J. Cell Biol., 137:481-492, 1997. PMID: 9128257
  23. Cai, S., Pestic-Dragovich, L., O'Donnell, M.E., Wang, N., Ingber, D., Elson, E.E. and de Lanerolle, P. Regulation of cytoskeletal dynamics and cell growth by myosin light chain phosphorylation. J. Cell Biol., 272:17,176-17,181, 1997. PMID: 9814984
  24. Simerly, C., Nowak, G., de Lanerolle, P. and Schatten, G. Differential expression and functions of cortical myosin IIA and IIB isoforms during meiotic maturation, fertilization and mitosis in mouse oocytes and embryos. Mol. Biol. Cell, 9:2509-2525, 1998. PMID: 9725909
  25. Majumder, M., Seaholtz, T.M., Goldstein, D., de Lanerolle, P. and Brown, J.H. Thrombin-induced cell rounding is mediated through Rho and requires myosin light chain phosphorylation. J. Biol. Chem., 273:10,099-10,106, 1998. PMID: 9553056
  26. Sanders, L., Matsumura, F., Bokoch, G.M. and de Lanerolle, P. Inhibition of myosin light chain kinase activity by PAK (p21 activated kinase), Science, 283:2083-2085, 1999. PMID: 10092231
  27. Pestic-Dragovich, L., Stojiljkovic, L., Philimonenko, A., Nowak, G., Ke, Y., Settlege, B., Shabanowitz, J., Hunt, D.F., Hozak, P. and de Lanerolle, P. A myosin I isoform in the nucleus. Science, 290:337-341, 2000. PMID: 11030652
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28. Obara, K., Nobe, K., Nobe, H., Kolodney, M.S., de Lanerolle, P. and Paul, R.J. Non-muscle motility: Differential effects of microfilament disruption on force, velocity, stiffness and  $[Ca^{2+}]_i$  in a reconstituted fibroblast fiber. Am. J. Physiol., 279:C785-C790, 2000. PMID: 10942729
  29. Rathman, M., de Lanerolle, P. and Sansonetti, P. Myosin light chain kinase plays an essential role in *S. flexneri* dissemination. J. Cell Science, 113:3375-3386, 2000. PMID: 10984429
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  44. Chuang, C-H., Carpenter, A.E., Fuchsova, B., Johnson, T., de Lanerolle, P. and Belmont, A.S. Long-range directional movement of an interphase chromosome site. Current Biology 16: 825-831, 2006. PMID: 16631592
  45. Hofmann, W.A. and de Lanerolle, P. "Actin, Actin-Related Proteins and Actin-Binding Proteins in Transcriptional Control" in Gene Expression and Regulation (ed. J. Ma), a Current Scientific Frontiers Book, Higher Education Press (Beijing), 2006.
  46. Gu, L., Hu, W-Y., Antic, N., Mehta, R., Turner, J.R. and de Lanerolle, P. Inhibiting Myosin Light Chain Kinase Retards the Growth of Mammary and Prostate Cancer Cells, *In Vitro* and *In Vivo*. European Journal of Cancer 42: 948-957, 2006. Epub Mar 30, 2006. PMID: 16574402
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48. Hofmann, W.A., Johnson, T., Fan, J-L, Klapczynski, M. and de Lanerolle, P. From transcription to transport: Emerging roles for nuclear myosin I. Biochemistry and Cell Biology, 84: 418-426, 2006. PMID: 16936815
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  50. Han, Y-J., Hu, W-Y., Piano, M. and de Lanerolle, P. Regulation of myosin light chain kinase expression by angiotensin II during vascular remodeling, Am. J. Hyperten., in press. PMID: 18511912
  51. Hofmann, W.A., Richards, T.A. and de Lanerolle, P. Ancient animal ancestry for nuclear myosin, Journal of Cell Science, 122: 636-643, 2009. PMCID: PMC2720919
  52. Hofmann, W.A., Nicol, S.M., Camacho, C.J., Lessard, J.L., Fuller-Pace, F.V. and de Lanerolle, P. SUMOylation is critical for the nuclear localization of actin, J. Cell Biol. 186: 193-200, 2009. PMCID: PMC2717643
  53. Ilnatovych, I., Litvak, M., de Lanerolle, P. and Strakova, Z. Manipulation of actin dynamics impacts human uterine fibroblast decidualization, Biol. of Reproduction 81: 222-230, 2009.

### **C. Research Support.**

#### **CURRENT RESEARCH SUPPORT:**

- NIH R01GM080587, 09/01/08-08/31/11, "Functional Characterization of Nuclear Myosin I in Transcription," Primal de Lanerolle, PI, 30% effort. This grant studies the role of NMI in transcription elongation. There is no overlap with the current proposal.
- NIH RO1 CA113975, 12/01/08-11/30/12, "Role of Surface Roughness in Regulating Tumor Cell Behavior," Sarah Glover, PI, Primal de Lanerolle, Co-Investigator, 10% effort. No overlap with the current proposal.
- NIH RO1 HD044713, 09/01/09-8/31/11, "Cell Differentiation During Decidualization," Zuzana Strakova, PI, Primal de Lanerolle, Co-Investigator, 5% effort. No overlap with the current proposal.
- NIH T32 HL 076922, 07/05-07/10, "Training in Cellular Signaling in the Cardiovascular System," R. John Solaro, PI, Primal de Lanerolle, Trainer. There is no overlap with this proposal..
- NIH T32 DK07739, 07/02-06/07, "Signal Transduction and Cellular Endocrinology," S. Ackerman, PI, Primal de Lanerolle, Trainer. There is no overlap with this proposal.
- NIH T32 HL 072742, 07/03-06/08, "Training in the Cellular Mechanisms of Cardiovascular Disease," S. Dudley, PI, Primal de Lanerolle, Trainer. There is no overlap with this proposal.

#### **PRIOR RESEARCH SUPPORT:**

- NIH RO1 HD044713, 12/01/04-11/30/08, "Cell Differentiation During Decidualization," Zuzana Strakova, PI, Primal de Lanerolle, Co-Investigator, 5% effort
- AHA, Scientist Development Grant, 01/01/08-12/31/08, YooJeong Han, PI, "Analysis of the Myosin Light Chain Kinase Promoter in Human Essential Hypertension," Primal de Lanerolle, Sponsor, 5% effort. \$180,000 total direct costs.
- NSF 0517468, 07/01/05-08/15/08, "Nuclear Actin in Transcription," Primal de Lanerolle, PI, 25% effort. \$165,000 total costs in current year.
- LAM Foundation, 07/15/07-07/14/10, "Involvement of myosin light chain phosphorylation in lymphangiomyomatosis." Primal de Lanerolle, PI, 10% effort. \$150,000 total costs.
- AHA, Post-Doc Fellowship, 07/01/04-06/30/06, Wen-Yang Hu, PI, "Role of The Myosin Light Chain Phosphorylation Pathway in The Development and Treatment of Hypertension," Primal de Lanerolle, Sponsor.
- AHA, Post-Doc Fellowship, 07/01/05-06/30/07, YooJeong Han, PI, "The Regulation of Myosin Light Chain Kinase Gene Expression in Spontaneously Hypertensive Rats," Primal de Lanerolle, Sponsor, 5% effort. \$104,000 total for 2 years costs.
- NIH RO1 GM 56489, 08/00-07/05, "Nuclear Myosin I," Primal de Lanerolle, PI.
- NSF INT 0079298, 07/00-06/05, "US-Czech Research on Nuclear Myosin I," Primal de Lanerolle, PI.
- NIH RO1 HL 64702, 07/01-06/05, "GTPase Regulation of Smooth Muscle Contraction," Primal de Lanerolle, PI.
- NIH RO1 HL 59618, 07/98-06/04, "Myosin Light Chain Kinase in Smooth Muscle Proliferation," Primal de Lanerolle, PI.
- LAM Foundation Pilot Award, 07/15/06-07/14/07, "Involvement of myosin light chain phosphorylation in lymphangiomyomatosis." Primal de Lanerolle, PI, 10% effort. \$25,000 total costs.
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