

CURRICULUM VITAE

Name: Richard L. Klemke, PhD

Office Address: Department of Pathology and Moores Cancer Center
University of California San Diego
Basic Science Building, Room 1040
9500 Gilman Drive MC 0612
La Jolla, CA 92093

Telephone: 858-822-5610
Fax: 858-822-4566
E-mail: rklemke@ucsd.edu
Website: <http://klemkelab.ucsd.edu/>

Date of Birth: October 5, 1962
Place of Birth: Agana Heights, Guam
Citizenship: USA

Positions Held:

2006-Present	Professor of Pathology
2003-2006	Associate Professor, Immunology The Scripps Research Institute
1998-2003	Assistant Professor, Immunology The Scripps Research Institute
1997-1998	Senior Research Associate, Department of Immunology The Scripps Research Institute
1993-1997	Postdoctoral Research Associate, Department of Immunology The Scripps Research Institute

Education:

1993	Ph.D. Degree, Cell and Developmental Biology, "Comparison of the Ontogeny of Expression of a Cell Surface Determinant on Normal and Delayed Implanting Mouse Embryos." Texas Tech University Health Science Center
1990	M.S. Degree, Cell and Molecular Biology, "The Effects of THC on Macromolecular Synthesis in Preimplantation Mouse Embryos." University of Tulsa, Tulsa, Oklahoma
1986	B.S. Degree, Biology, Hardin-Simmons University, Abilene, Texas

Patents

Models of Atherosclerosis, Hyperlipidemia, Lipoprotein Oxidation and Blood Vessel Inflammation and Methods for Making and Using Them (# SD2007-014). University of California, San Diego.

Patents Pending

New application for ST 571 (Gleevec) in neuritogenesis (#2002-053). Licensed by Novartis.

Purification of the leading front of migratory cells (#2002-94). Licensed by Chemicon International/Serologicals Inc.

Novel Model of Human Tumor Formation and Angiogenesis in Zebrafish (#2005-043). Non-Exclusively Licensed by Novartis.

Hypothetical Protein KIAA2002 Regulates Cancer Cell Spreading, Migration, and Proliferation (#2005-031). Non-Exclusively Licensed by Novartis.

New Software for Mining Common and Differential Protein Phosphorylation Signatures. (#SD2007-280). University of California, San Diego.

Professional Societies:

American Association for the Advancement of Science

American Society for Cell Biology

American Association for Cancer Research

American Society for Biochemistry & Molecular Biology

Society for Neuroscience

Metastasis Research Society

American Society of MASS Spectrometry

Grant Review Boards:

Department of Health & Human Services, National Institutes of Health, CDF4 Study Section (Oct. 2003, 2004)

NCI Signal Transduction Panel (Ad-hoc committee, June 2004)

Department of Defense, BCRP Peer Review Board, Immunological Sciences

National Institute of Dental and Craniofacial Research, National Institutes of Health

American Cancer Society, Cell Structure and Metastasis Peer Review Committee

Pacific Northwest National Laboratories (PNNL) Member 2007-2008.

Invited Speaker:

- Therapeutics Training Class, San Diego, Moore's Cancer Center, January 2007
 - "High Resolution Imaging of Human Tumor Formation and Oncogenesis using a Novel Zebrafish Model"
- Novocell, San Diego, February 2007.
 - "Understanding Cancer Progression"
- Gordon Conference, Ventura, CA, Gradient Sensing, February 2007.
 - "Profiling Cytoskeletal Signaling in Chemotaxing Cells"
- CHI, Cambridge Healthcare Conference. Boston, MA. Kinase Targets, June 2007.
 - "Kinase Targets Involved in Cancer Progression"
- 5th European Zebrafish, Genetics and Development Meeting, Amsterdam, July 2007.
 - "Modeling Human Cancer Progression in Zebrafish"
- Model Systems for Infectious Disease and Cancer in Zebrafish, Leiden, Netherlands, July 2007.
 - "Modeling Human Cancer Progression in Zebrafish"
- ActivX, San Diego, CA, July 2007.
 - "Phosphosignaling Networks Controlling Cell Morphology"
- Mechanisms and Models of Cancer, Salk Institute. August 2007.
 - "Modeling Human Cancer Progression in Zebrafish"
- FASEB Summer Research Conference, Tucson, AZ, Growth Factor Receptor Tyrosine Kinases in Mitogenesis, Morphogenesis and Tumorigenesis, August 2007.
 - "Modeling Human Cancer Progression in Zebrafish"
- CMC Annual Meeting in Washington D.C. Spatial Proteomics of Cellular Protrusions. September 29, 2007.
 - "Spatial Proteomes of Cellular Protrusions"
- Fourth Annual In Vivo Molecular Imaging, San Diego, CA, November 2007.
 - "Imaging Cancer Progression in Zebrafish"
- Pacific Northwest Laboratories, Richland, WA. November 2007.
 - "Deciphering Cell Migration and Neuritogenesis Through Spatial Proteomics"
- Sidney Kimmel Cancer Center, San Diego, CA. January 2008.
 - "Mechanisms Guiding Cell Migration and Tumor Metastasis"
- International Metastasis- Conference, Berlin, Germany. March 2008
 - "Signaling Mechanisms of Cancer Cell Metastasis"
- Cardiovascular Sciences Conference, San Diego, CA. May 2008
 - "Visualizing Vascular Dynamics During Cancer Cell Invasion"
- 3rd Protein Kinases in Drug Discovery Conference, San Diego, CA. May 2008.
 - "Moving On: Identification of Novel Kinase Targets Involved in Cancer Progression"
- Millipore Corporation, Temecula, CA May 2008.
 - "UCSD's Pathology Research Center: Pioneering Biomarker Discovery and Diagnostic Development"
- 20th Meeting of the European Association for Cancer Research (EACR), Lyon, France. July 2008.
 - "Mechanisms of Cell Metastasis"
- Institute of Biochemistry and Genetics, University of Basel, Switzerland. July 2008.
 - "Visualizing Tumor Cell Metastasis at the Tumor Cell-Vascular Interface"

- Universität Karlsruhe, University and Research Center, Karlsruhe, Germany. July 2008.
 - “Visualizing Tumor Cell Metastasis at the Tumor Cell-Vascular Interface”
- National Institute of General Medical Sciences and the Cell Migration Consortium Conference entitled
- “Frontiers in Cell Migration: from Mechanism to Disease.” Bethesda, Maryland. September 2008.
 - “Mapping the Pseudopodial Proteome”
- Cell Migration Consortium (CMC) Annual Meeting. Washington, DC. September 2008. “Spatial Proteomics of Cellular Protrusions.”
- Lecture on Cell Migration for Department of Cellular and Molecular Medicine, UCSD. October 2008.
 - “Mechanisms of Cell Migration”
- Lecture at Oregon State University. February 11, 2009.
 - “Fishing for Metastatic Clues using Zebrafish”
- The 2nd International Kloster Seeone Meeting, Germany. September 19, 2009.
 - “Real time imaging of tumor cell extravasation at the vascular interface reveals a highly dynamic process regulated by metastatic programming.”
- Lecture at Pfizer Pharmaceuticals. October 1, 2009.
 - “Profiling the Pseudopodial Phosphotyrosine Proteome Reveals PEAK 1 as Modulator of Cancer Progression”.
- Ramic Meeting, Madrid, Spain. October 22, 2009.
 - “Understanding Spatial Signaling Networks Mediating Polarized Cell Movement and Growth Cone Migration”.

Journal Responsibilities:

Reviewer:

J. Cell Biol., J. Biol. Chem., Nat. Cell Biol., Oncogene, Blood, J. Clin. Invest, J. Cell Sci., J. Prot. Res, Dev. Cell

Publications:

Submitted:

1. Parthasarathy Sampathkumar, Wang Y, Ozyurt A.S., Wassermann S, Miller S, Bain K, Rutter M, Gheyi T, Atwell S, Thompson D, Emtage S, Sauder JM, Klemke R.L. and Burley, S.K.
Structures of PHR domains from Mus musculus Phr-1 (Mycbp2) explain the loss of function mutation of C. elegans ortholog RPM-1. Submitted.
2. Eric A Murphy, Wolfgang Wrasidlo, Konstantin Stoletov, Elena Dneprovskaia, Michel McElroy, Jeff Lindquist, Adrian Sasaldanha, Richard Soll, George E. Davis, Michael Bouvet, Richard **Klemke**, and David A. Cheresh. *Allosteric RAF Kinase Inhibitor Disrupts Angiogenesis by Preventing Endothelial Lumen Formation.* JCI. Submitted.
3. Jill M. Ricono, Milan. Makale, Yingchun Wang, L. Barnes, David Schlaepfer, Richard **Klemke**, David Cheresh. *EGFR Regulates Metastasis through an Integrin $\alpha\beta 5$ /src Signaling Axis.* Submitted.

Published:

4. Green CE, Liu T, Montel V, Hsiao G, Lester RD, Subramaniam S, Gonias SL, **Klemke** RL.

Chemoattractant signaling between tumor cells and macrophages regulates cancer cell migration, metastasis and neovascularization. P_{LoS} One. 2009 Aug 21;4(8):e6713.

5. Stoletov K, Fang L, Choi SH, Hartvigsen K, Hansen LF, Hall C, Pattison J, Juliano J, Miller ER, Almazan F, Crosier P, Witztum JL, **Klemke** RL, Miller YI. *Vascular Lipid Accumulation, Lipoprotein Oxidation, and Macrophage Lipid Uptake in Hypercholesterolemic Zebrafish.* *Circ Res.* 2009 April 14;104(8):952-60. PMID: 19265037.
6. Ding, Shi-Jian; Wang, Yingchun; Jacobs, Jon; Qian, Wei-Jun; Yang, Feng; Tolmachev, Aleksey; Du, Xiuxia; Wang, Wei; Moore, Ronald; Monroe, Matthew; Purvine, Samuel; Waters, Katrina; Heibeck, Tyler; Adkins, Joshua; Camp, David; **Klemke**, Richard; Smith, Richard. *Quantitative Phosphoproteome Analysis of Lysophosphatidic Acid Induced Chemotaxis applying Dual-step 18O Labeling Coupled with Immobilized Metal-ion Affinity Chromatography.* *Journal of Proteome Research.* 2008 October; 7(10):4215-24.
7. Stoletov, Konstantin, Richard **Klemke**, *Catch of the day, zebrafish as a human cancer model.* *Oncogene.* 2008 July 31;27(33):4509-20.
8. Dwayne G. Stupack, Ainhoa Mielgo, Vicente Torres, Simone Barbero, Konstantin Stoletov, Richard **Klemke**, William Gerwick, Dennis Carson & Wolf Wrasidlo. *The marine lipopeptide Somocystinamide A triggers apoptosis via caspase 8.* *PNAS.* 2008 Feb 19;105(7):2313-8.
9. Olivier Pertz, , Yingchun Wang, Feng Yang , Wei Wang, Laurie J. Gay, Marina A. Gristenko, Therese R. Clauss, David J. Anderson, Tao Liu, Kenneth J. Auberry, David G. Camp II, Richard D. Smith, Richard L. **Klemke**. *Spatial Mapping of the Neurite and Soma Proteomes Reveals A Functional Cdc42/Rac Regulatory Network.* *PNAS.* 2008. 12:105(6):1931-6. Faculty 1000 Score 6.0.
10. Konstantin Stoletov, Valerie Montal, Robin Lester, Steven Gonias, Richard **Klemke***. *High Resolution Imaging of the Dynamic tumor Cell-Vascular Interface in Transparent Zebrafish.* *PNAS.* 2007. 104(44):17406-11. Faculty 1000 Score 6.0
11. Yingchun Wang, Richard L. **Klemke***. *PhosphoBlast: A Computational Tool for comparing Phosphoprotein Signatures among Large Datasets.* *Molecular & Cellular Proteomics.* 7:145-162, 2007.
12. Yingchun Wang, Shi-Jian ding, Wei Wang, Feng, Yang, Jon M. Jacobs, David Camp II, Richard D. Smith, and Richard **Klemke**. *Methods for Pseudopodia Purification and Proteomic Analysis.* *Sci. STKE* 2007 (400), p14.
13. Yingchun Wang, Shi-Jian Ding, Wei Wang, Jon M. Jacobs, Wei-Jun Qian, Ronald J. Moore, Feng Yang, David G. Camp II, Richard D. Smith, and Richard L. **Klemke**. *Profiling signaling polarity in chemotactic cells.* *PNAS* 2007. 104(20):8328-33. (Cell Biology). Faculty 1000 Score 6.0
14. Yingchun Wang and Richard L. **Klemke** (2007). *Biochemical Purification of Pseudopodia from Migratory Cells, Methods in Molecular biology.* A.S. Coutts, ed. (Totowa, NJ: Humana Press Inc.), pp. 55-66.
15. Wang, Y., Hanley, R. **Klemke**, R.L. *Computational Methods for Comparison of Large Genomic and Proteomic Datasets Reveals Protein Markers of Metastatic Cancer.* *J Proteome Res.* 5(4):907-15. 2006

16. Pertz, O., Hodgson, L., **Klemke**, R.L. and Hahn, K.M. *Spatio-temporal dynamics of RhoA activity in migrating cells*. Nature. 440(7087):1069-72. 2006. Faculty 1000 Score 3.3
17. Holcomb, M., Rufini, A., Barilà, D., and **Klemke**, R.L. *Deregulation of Proteasome Function Induces Abl-mediated Cell Death by Uncoupling p130CAS and c-CrkII*. J. Biol. Chem. 281(5):2430-40. 2006.
18. Wozniak M.A., Kwong L., Chodniewicz, D., **Klemke**, R.L. & Keely, P.J. *R-Ras controls membrane protrusion and cell migration through the spatial regulation of Rho and Rac*. Mol. Biol. Cell. 16(1):84-96. 2005. Faculty 1000 Score 3.0
19. Chodniewicz, D. & **Klemke**, R.L. *Guiding cell migration through directed extension and stabilization of pseudopodia*. Exp. Cell Res. 301:31-37. 2004.
20. Chodniewicz, D. & **Klemke**, R.L. *Regulation of Integrin-mediated Cellular Responses through Assembly of a CAS/Crk Scaffold*. Biochim Biophys Acta. 2004 Jul 5;1692(2-3):63-76.
21. Lin, Y., Park, Z., Lin, D., Brahmabhatt, A., Rio, M. & **Klemke**, R.L. *Regulation of Cell Migration and Survival by Focal Adhesion Targeting of Lasp-1*. J. Cell Biol. 165(3):421-432. 2004. Faculty 1000 Score 3.0
22. Emami, S. & **Klemke**, R.L. (2005) *Regulation of Cell Motility by Abl Family Kinases*. In T. Koleske (Ed.), Abl Family Kinases in Development and Disease. Landes Bioscience.
<http://www.eurekah.com/abstract.php?chapid=2426&bookid=185&catid=56>.
23. Smith, M. Leng, J. & **Klemke**, R.L. *Novel design for quantification and purification of neurite outgrowth*. BioTechniques. 35:254-256. 2003.
24. Kain, K., Gooch, S., & **Klemke**, R.L. *Cytoplasmic c-Abl provides a molecular rheostat controlling carcinoma cell survival and invasion*. Oncogene. 22(38):6071-6080. 2003.
25. Brahmabhatt, A. & **Klemke**, R.L. *ERK and RhoA differentially regulate pseudopodia growth and retraction during chemotaxis*. J. Biol. Chem. 278:13016-13025. 2003. Faculty 1000 Score 3.0
26. Smit M, Leng J, **Klemke** RL. *Assay for neurite outgrowth quantification*. Innovative Cell Systems LLC, Temecula, CA, USA. Biotechniques. 2003 Aug;35(2):254-6. PMID: 12951763
27. Cho, S.Y. & **Klemke**, R.L. *Purification of pseudopodia from polarized cells reveals redistribution and activation of Rac through assembly of a CAS/Crk scaffold*. J. Cell. Biol. 156(4):725-736. 2002. Faculty 1000 Score 3.2
28. Ting, A.Y., Kain, K.H., **Klemke**, R.L. & Tsien, R.Y. *Genetically encoded fluorescent reporters of protein tyrosine kinase activities in living cells*. Proc Natl Acad Sci 98(26):15003-15008. 2001. Faculty 1000 Score 6.6
29. Kain, K. & **Klemke**, R.L. *Inhibition of cell migration by Abl family tyrosine kinases through uncoupling of Crk-Cas complexes*. J. Biol. Chem. 276(19):16185-16192. 2001.
30. Li, E., Stupack, D.G., Brown, S.L., **Klemke**, R.L., Schlaepfer, D.D. & Nemerow, G.R. *Association of p130CAS with phosphatidylinositol-3-OH kinase mediates adenovirus cell entry*. J. Biol. Chem. 275(10):14729-14735. 2000.

31. Stupack, D.G., Cho, S.Y. & **Klemke**, R.L. *Molecular signaling mechanisms of migration and invasion*. Imm. Res. 121:83-88. 2000.
32. Cho, S.Y. & **Klemke**, R.L. *Extracellular-regulated kinase activation and CAS/Crk coupling regulate cell migration and suppress apoptosis during invasion of the extracellular matrix*. J. Cell. Biol. 149(1):223-236. 2000.
33. Spencer, K., Graus-Porta, D., Leng, J., Hynes, N. & **Klemke**, R.L. *ErbB-2 is necessary for induction of carcinoma cell invasion by erbB family receptor tyrosine kinases*. J. Cell. Biol. 148(4):385-397. 2000.
34. Leng, J., **Klemke**, R.L., Reddy, A.C. & Cheresch, D.A. *Potentialiation of cell migration by adhesion-dependent cooperative signals from the GTPase Rac and Raf kinase*. J. Biol. Chem. 274:37855-37861. 1999.
35. Cheresch, D.A., Leng, J. & **Klemke**, R.L. *Regulation of contraction and membrane ruffling by distinct signals in migratory cells*. J. Cell. Biol. 146:1107-1116. 1999
36. Voice, J.K., **Klemke**, R.L., Le, A. & Jackson, J.H. *Four human Ras homologs differ in their abilities to activate Raf-1, induce transformation and stimulate cell motility*. J. Biol. Chem. 274:17164-17170. 1999.
37. Eliceiri, B.P., **Klemke**, R.L., Stromblad, S. & Cheresch, D.A. *Integrin requirement for sustained MAP kinase activity during angiogenesis*. J. Cell. Biol. 140(5):1255-1263. 1998.
38. **Klemke**, R.L., Leng, J., Molander, R., Brooks, P.C., Vuori, K. & Cheresch, D.A. *CAS/Crk coupling serves as a "molecular switch" for induction of cell migration*. J. Cell. Biol. 140(4):961-972. 1998
39. Li, E., Stupack, D., **Klemke**, R.L., Cheresch, D.A. & Nemerow, G.R. *Adenovirus endocytosis and cell motility require distinct signaling pathways mediated by av integrins*. J. Virology 7:2055-2061. 1998.
40. Brooks, P.C., **Klemke**, R.L., Schon, S., Lewis, J.M., Schwartz, M.A. & Cheresch, D.A. *Insulin-like growth factor receptor cooperates with integrin av β 5 to promote tumor cell dissemination in vivo*. J. Cell. Invest. 99(6):1390-1398. 1997
41. **Klemke**, R.L., Cai, S., Giannini, A.L., Gallagher, P.J., de Lanerolle, P. & Cheresch, D.A. *Regulation of cell motility by mitogen-activated protein kinase*. J. Cell. Biol. 137(2):481-492. 1997.
42. Brooks, P.C., Stromblad, S., **Klemke**, R.L., Visscher, D., Sarkar, F.H. & Cheresch, D.A. *Anti-integrin av β 3 blocks human breast cancer growth and angiogenesis in human skin*. J. Clin. Invest. 96:1815-1822. 1995.
43. **Klemke**, R.L., Yebra, M., Bayna, E.M. & Cheresch, D.A. *Receptor tyrosine kinase signaling required for integrin av β 5-directed cell motility but not adhesion on vitronectin*. J. Cell. Biol. 127(3):850-866. 1994.
44. **Klemke**, R.L. & Weitlauf, H.M. *Comparison of the ontogeny of specific cell surface determinants on normal and delayed implanting mouse embryos*. J. Repro. Fert. 99:167-172. 1992.
45. **Klemke**, R.L. & Rogers, S.H. *The effects of THC on macromolecule synthesis in preimplantation mouse embryos*. Res. Comm. in Subs. of Abuse. 11(4):207-210. 1990.

