

Rusty Lansford

Senior Scientist & Instructor
California Institute of Technology
Beckman Institute, 139-74
Pasadena, CA 91125
Office (626) 395-2004
rusty@gg.caltech.edu

Home address:
522 East Miramar Avenue
Claremont, CA 91711
Cell (909) 753-9020

EDUCATION

1996 Columbia University, College of Physicians and Surgeons, New York, NY.
Ph.D. in Immunology
1990 Columbia University, College of Physicians and Surgeons, New York, NY.
M.S. in Immunology
1989 Columbia University, College of Physicians and Surgeons, New York, NY.
M.A. in Immunology
1986 University of California, Berkeley, Berkeley, CA.
A.B. in Microbiology & Immunology

APPOINTMENTS

Senior Scientist and Instructor, Division of Biology and Bioengineering, California Institute of Technology (2002-present).
Affiliated Professor in Neurobiology and Cell Biology, Montana State University (11/01-present).
Senior Research Fellow, Division of Biology and Biological Imaging Center, California Institute of Technology (1999-2002).
Postdoctoral fellow in Dr. Scott Fraser's lab, Division of Biology and Biological Imaging Center, California Institute of Technology (1996-1999).
Graduate student in Dr. Fred Alt's lab in the Department of Microbiology and Immunology at Columbia University (1989-1991) and in the Department of Genetics at Harvard University (1991-1995).
Undergraduate honor's thesis and research assistant in Dr. Marian Koshland's lab in the Department of Immunology at University of California, Berkeley (1985-1989).

HONORS AND AWARDS

2003 NASA Space Act Award for Two-photon Microscope Imaging Spectrometer for Multiple Fluorescent Probes (along with Greg Bearman and Scott Fraser).
2002 R&D 100 Award winner for development of META multispectral imager (along with Greg Bearman, Scott Fraser, and Carl Zeiss Jena GmbH).
Visiting Scholar of Thermal Biology at Montana State University, Bozeman, MT (2001)
Nominated as Columbia University trainee in "Program in training for careers in Molecular Ophthalmology," National Eye Institute (1990-1992)
Bachelor's Degree in Immunology with Honors

PUBLICATIONS

Peer-reviewed Publications

- LaRue, A.C., Lansford, R., and Drake, C.J. (2003) Blood island-derived stem cells contribute to intraembryonic vasculogenesis. *Dev Bio.* 262(1),162-72.
- Carleton, A., Petreanu, L.T., Lansford, R., Alvarez-Buylla, A., and Lledo, P.M. (2003) Becoming a new neuron in the adult olfactory bulb. *Nat Neurosci.* 6, 507-18.
- Lansford, R., Bearman, G., and Fraser, S.E. (2001) "Resolution of multiple GFP color variants and dyes using two-photon microscopy and imaging spectroscopy." *J Biomed Optics* 6, 311-18.
- Thakur, A., Lansford, R., Thakur, V., Narone, J.N., Atkinson, J.B., Buchmiller-Crair, T., and Fraser, S.E. (2001) "Gene transfer to the embryo: strategies for the delivery and expression of proteins at 48 to 56 hours post-fertilization." *J Pediatr Surg* 36, 1304-7.
- Okada, A., Lansford, R., Weimann, J.M., Fraser, S.E., and McConnell, S.K. (1999) "Imaging cells in the Developing Nervous System with retrovirus Expressing Modified Green Fluorescent Protein." *Exp. Neurol.* 156, 394-406.
- Cunningham, K., Ackerly, H., Claflin, L., Collins, J., Wu, P., Ford, C., Lansford, R., Alt, F., and Dunnick, W.A. (1998) "Germline transcription and recombination of a murine VDJ-mu delta gamma1 transgene." *Int. Immunol.* 10, 1027-1037.
- Lansford, R., Manis, J., Sonada, E., Rajewsky, K., and Alt, F.W. (1998) "B18λ complementation of mutant mice: Model system for characterizing factors essential for immunoglobulin class switch recombination." *Int. Immunol.* 10, 325-332.
- Manis, J.P., Gu, Y., Lansford, R., Ferrini, R., Davidson, L., Rajewsky, K., Alt, F.W. (1998) "Ku70 is required for late B cell development and immunoglobulin heavy chain class switching," *J. Exp. Med.* 187, 1-9.
- Krull, C. E.*, Lansford, R.*, Gale, N.W., Collazo, A., Marcelle, C., Yancopoulos, G.D., Fraser, S.E., and Bronner-Fraser, M. (1997) Interactions of eph-related receptors and ligands confer rostrocaudal pattern to trunk neural crest migration *Curr Biol* 7, 571-580 (*Contributed equally to the paper).
- Cogne, M.*, Lansford, R.*, Bottaro, A., Zhang, J., Gorman, J., Young, F., Cheng, H.L., and Alt, F.W. (1994) "A master class switch control region at the 3' end of the IgH locus," *Cell*, 77, 737-747 (*Contributed equally to the paper).
- Young, F., Ardman, B., Shinkai, Y., Lansford, R., Blackwell, T.K., Mendelson, M., Rolink, A., Melchers, F., and Alt, F.W. (1994) "Influence of immunoglobulin heavy and light chain expression on B cell differentiation, *Genes Dev*, 8: 1043-1057.
- Bottaro, A., Lansford, R., Xu, L., Zhang, J., Rothman, P., and Alt, F.W. (1994) "S region transcription *per se* promotes basal IgE class switch recombination but additional factors regulate the efficiency of the process," *EMBO J*, 13, 665-674.
- Chen, J., Lansford, R., Stewart, V., Young, F., and Alt, F. (1993) "RAG-2 deficient blastocyst complementation: An assay of gene function in lymphocyte development," *PNAS USA* 90: 4528-4532.
- Lansford, R.D., McFadden, H., Sui, S.T., Cox, J.S., Cann, G., and Koshland, M.E. (1992) "A promoter element that exerts positive and negative control of the interleukin 2-responsive J-chain gene," *PNAS USA* 89: 5966-5970.

Yancopoulos, G. Oltz, E. Rathbun, G. Berman, J. Smith, R. Lansford, R., Rothman, P., Okada, A. Lee, G. Morrow, M. Kaplan, K. Prockop, S. and Alt, F. (1990) "Isolation of coordinately regulated genes that are expressed in discrete stages of B-cell development," *PNAS USA* 87: 5759-5763.

Invited Reviews

Lansford, R. (2004) "Viral vectors for introduction of GFP," in *Live Cell Imaging: A Laboratory Manual*,. Ed. by R. Goldman and D. Spector, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY.

Lansford, R. and Ruffins, S. (manuscript submitted 2002) "Dynamic, multimodal imaging of embryogenesis," Landes Biosciences.

Dickinson, M.E., Bearman, G., Tille, S., Lansford, R. and Fraser, S.E. (2001) "Multi-spectral Imaging and Linear Unmixing Adds a Whole New Dimension to Laser Scanning Fluorescence Microscopy" *Biotechniques* 31, 1272-1279.

Lansford, R., Krull, C. E., Bronner-Fraser, M., and Fraser, S.E. (1999) "Role of Eph receptors in patterning trunk neural crest migration," in *Frontiers in Neural Development*, Springer-Verlag, Tokyo.

Lansford, R., Okada, A. Rathbun, G., Chen, J., Oltz, G., Alt, F.W. (1996) "Mechanism and control of immunoglobulin gene rearrangement" in *Molecular Immunology*, Molecular Biology series, ed. B. D. Hames, IRL Press, p 1-100.

PATENTS

Bearman, G.H., Fraser, S.E., and Lansford, R. (2000) System and method for monitoring cellular activity. Patent issued (US #6,403,332).

Work in laser microscopy and imaging spectrometry led to the development of a multispectral imager that allows the emission spectrum to be acquired from a single scan of the specimen. A multispectral detector based on our invention has been built and is being sold by Zeiss as the LSM 510 META.

CALTECH INVOLVEMENT

Designed BSL-3 Virus facility at Caltech

Member of Caltech Biosafety Committee (Provost Appointed)

Review committee member of Caltech Women's Center (Provost Appointed)

Review committee member of Caltech Racial Equality

TEACHING

Bioengineering 201 at Caltech

Science Boot Camp for managers

Editor for Pearson Education science textbooks

ADVISORS

POSTDOCTORAL ADVISOR: Scott E. Fraser, California Institute of Technology.

GRADUATE ADVISOR: Frederick W. Alt, HHMI and Harvard Medical School.

UNDERGRADUATE ADVISOR: Marian E. Koshland, University of California, Berkeley.

CURRENT RESEARCH INTERESTS

Biology

Dynamic analysis of forebrain and midbrain development
Interplay between genetics and hemodynamics in heart formation

Technology Development

Transgenic Avians
Bio-detection using Nanodevices
Advanced Optical Microscopy

PERSONAL INFORMATION

Born: March 02, 1964

Happily married with four kids.

Volunteer for AYSO soccer (coach, referee, and Board member) and Special Olympics.

Likes to surf, play soccer, water polo, golf, and tennis.

REFERNCES

Dr. Scott E. Fraser, California Institute of Technology

Dr. Charles Little, University of Kansas Medical School

Dr. Michael Roukes, California Institute of Technology