

BIOGRAPHICAL SKETCH

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NAME Matthew Frederick Krummel	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME (credential, e.g., agency login) Krummel			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Illinois at Champaign-Urbana	B.S.+B.S.	1985-1989	Biology and Chemistry
University of California at Berkeley	Ph.D.	1989-1995	Immunology
Walter and Eliza Hall Institute, Melbourne Aus.		1996-1997	Immunology
Stanford University.		1997-2001	Immunology

A. POSITIONS AND HONORS.

Positions and Employment:

Summer 1987 Summer Undergraduate Research Fellow. UTHSCD.
Summer 1988 Stagiare (Technician) Institut Pasteur, Paris, Unite de Genie Micro-Biologique.
Aug. 1989-May 1996 Graduate Student and Postdoctoral Fellow, University of California at Berkeley, Department of Molecular and Cell Biology.
Aug. 1996-Sept. 1997 Postdoctoral Fellow, Walter and Eliza Hall Institute, Melbourne Australia.
Nov. 1997-Aug. 2001 Postdoctoral Fellow, Beckman Institute, Stanford University, Stanford, CA.
August 2001-2006 Assistant Professor, Department of Pathology, UCSF
July 2006-Present Associate Professor, Department of Pathology, UCSF
2006-Present Faculty Director, Biological Imaging Development Center, UCSF

Honors:

2005-2010 Leukemia and Lymphoma Foundation, Career Award.
2004-2007 Investigator Award, Cancer Research Institute.
1997-2000 NRSA Postdoctoral Fellowship, National Institutes of Health.
1996-1997 Postdoctoral Fellowship, Juvenile Diabetes Foundation International.
1998 PATENT: J.P.Allison, D.R.Leach, and M.F. Krummel. *Blockade of T Lymphocyte Down-Regulation Associated with CTLA-4 Signaling*. US Patent 5,811,097.
1987 Summer Undergraduate Research Fellowship, Howard Hughes Medical Institute.

B. Selected publications (in chronological order).

1. **Krummel, M.F.** and Allison, J.P. 1995. CD28 and CTLA-4 deliver opposing signals which regulate the response of T cells to stimulation. *J. Exp Med.* **182**, 459-465.
2. **Krummel, M.F.**, Sullivan, T.J. and Allison, J.P. 1995. Superantigen responses and costimulation: CD28 and CTLA-4 have opposing effects on T cell expansion *In Vitro* and *In Vivo*. *Int.Immunol.* **8**, 101-105.
3. Allison, J.P. and **Krummel, M.F.** 1995. The yin and yang of T cell costimulation. *Science.* **270**,932-933.
4. **Krummel, M.F.** and Allison, J.P. 1996. CTLA-4 Engagement Inhibits IL-2 Accumulation and Cell Cycle Progression Upon Activation of Resting T cells. *J Exp Med* **183**, 2533-2540.
5. Leach, D.R., **Krummel, M.F.** and Allison, J.P. 1996. Enhancement of antitumor immunity by CTLA-4 blockade. *Science.* **271**, 1734-1736.

6. Allison, J., Stephens, L., Kay, T.W., Kurts, C., Heath, W.R., Miller, J.F. and **Krummel, M.F.** The threshold for autoimmune T cell killing is influenced by B7.1. *European Journal of Immunology*. 28,949-960.
7. **Krummel, M.F.**, Heath, W.R. and Allison, J. 1999. Differential coupling of second signals for cytotoxicity and proliferation in CD8+ T cell effectors: Amplification of the lytic potential by B7. *J.Immunol.*163, 2999-3006.
8. **Krummel, M.F.**, Sjaastad, M.D., Wülfing, C., and Davis, M.M. 2000. Differential clustering of CD4 and CD3 ζ during T cell recognition. *Science*. 289, 1349-1352.
9. Richie, L.I., P.J.R. Ebert, Wu, L.C., **Krummel, M.F.**, Owen, J.J.T., and Davis, M.M. 2002 Imaging synapse formation during thymocyte selection: inability of CD3 ζ to form a stable central accumulation during negative selection. *Immunity*. **16**:595-606.
10. Moss, W.C., Irvine, D.C, Davis, M.M., and **Krummel, M.F.** 2002. Quantifying Signaling-Induced Reorientation of Cell Membrane and TCRs During Immunological Synapse Formation. *PNAS*. **99** 15024-15029.
11. Richie Ehrlich, L.I., Ebert, P.J.R. **Krummel, M.F.**, Weiss, A. and Davis, M.M. 2002. Dynamics of p56lck translocation to the T cell immunological synapse following agonist and antagonist stimulation. *Immunity*. **17** 809-822.
12. Andres, P.G., Howland, K.C., Dresnek, D. Edmondson, S., Abbas, A.K., and **Krummel, M.F.** 2004. CD28 signals in the immature immunological synapse. *J Immunol* **172**, 5880-6
13. Jacobelli, J. Chmura, S.A., Buxton, D.B., Davis, M.M. and **Krummel, M. F.** 2004. A single class II myosin modulates T cell motility and stopping, but not synapse assembly. *Nature Immunology* **5**, 531 - 538
14. Jacobelli, J., Andres, P.G., Boisvert, J., and **Krummel, M.F.** 2004. New Views of the Immunological Synapse: Variations in Assembly and Function. *Curr Opin Immunol* **16**, 345-52
15. Boisvert, J., Edmondson, S. and **Krummel, M.F.** 2004. Immunological Synapse Formation Licenses CD40-CD40L Accumulations at T-APC Contact Sites. *J. Immunol.* **173**, 3647-3652.
16. Tooley, A.J., Jacobelli, J., Moldovan, M-C., Douglas, A., and **Krummel, M.F.** 2005. T cell Synapse Assembly: Proteins, Motors and the Underlying Cell Biology. *Seminars in Immunology*, **17**, 65-75.
17. Okada, T. Miller, M.J., Parker, I., **Krummel, M.F.**, O'Garra, A. Cahalan, M.D., Cyster, J.G. 2005. Antigen-engaged B cells undergo directional migration to the T cell zone and form motile conjugates with helper T cells. *PLOS Biology* **3** 1-13.
18. Tang, Q., Adams, J.Y., Tooley, A.J., Bi, M., Serra, P., Santamaria, P., **Krummel, M.F.*** and Bluestone, J.A.* (*co-last authors) 2006. Visualizing regulatory T cell control of autoimmune response in NOD diabetic mice. *Nature Immunology*, **7**, 83-92
19. Moldovan M-C, Sabbagh L, Breton G, Sekaly R.P.* and **Krummel M.F.***. (*co-last authors) 2006. Triggering of T cell activation via CD4 dimers. *J Immunol.* **176(9)**:5438-45.
20. Friedman, R.S. Jacobelli, J, and **Krummel, M.F.** 2006. Surface-bound Chemokines Capture and Prime T cells For Synapse Formation. *Nature Immunology* **7**, 1101-8.
21. **Krummel, M.F.** and Macara I. 2006. Maintenance and modulation of T cell polarity *Nature Immunology*. **7**, 1143-49.
22. **Krummel, M.F.** 2007. Immunological Synapses: breaking up may be good to do. *Cell*. **129**, 653-655.
23. **Krummel, M.F.** 2007. Testing the Organization of the Immunological Synapse. *Curr Opin Immunol.* **19(4)**:460-2.
24. Engelhardt J.J., **Krummel M.F.**, 2008. The importance of prolonged binding to antigen-presenting cells for T cell fate decisions. *Immunity*. **28(2)**:143-5.
25. Beemiller P and **Krummel MF.** 2008. Distinct functions for a single protein in interpreting chemosensory versus adhesive signaling. *Nature Immunology* **9**: 833-4.

26. Sabatos, C.A., Doh, J. Chakravarti, S. Friedman, R.S., Pandurangi, P.G., Tooley, A.J. **Krummel, M.F.** 2008. A Synaptic Basis for Paracrine Interleukin-2 Signaling in Activating T cells. *Immunity*. **29(3)**: 238-248.
27. Gardner, J.M., DeVoss, J.J., Friedman, R.S., Wong, D.J., Tan, Y.X., Johannes, K.P., Su, M.A. Chang, H.Y., **Krummel, M.F.**, Anderson, M.S. 2008. Deletional Tolerance Mediated by Extrathymic Aire-Expressing Cells. *Science*. **321(5890)**: 843-7.
28. Mamchak, A.A., Sullivan, B.M., Hou, B., Lee, L.M., Gilden, J.K., **Krummel, M.F.** Locksley, R.M, DeFranco, A.L.. 2008. Normal development and activation but altered cytokine production of Fyn-deficient CD4⁺ T cells. *Journal of Immunology*. **181**: 5374-85.
29. Egeblad, M.* , Ewald, A. J.* , Askautrud, H. A., Truitt, M. L., Welm, B. E., Bainbridge, E., Peeters, G., **Krummel, M. F.**, Werb, Z. 2008. Visualizing stromal cell dynamics in different tumor microenvironments by spinning disk confocal microscopy. *Dis. Model. Mech.*, 1 155-167.
30. Tooley, A.J., Gilden, J., Jacobelli, J., Trimble, W, Kinoshita, M. and **Krummel, M.F.** 2008. The Septin Cytoskeleton is Essential for Cortical Integrity and Persistent Motility in Amoeboid T lymphocytes. *Nature Cell Biology*. Nov 30. [Epub ahead of print]
31. Jacobelli, J., Bennett, F.C., Pandurangi, P. and **Krummel, M.F.** 2009. Myosin-IIA and ICAM-1 Regulate the Interchange between Two Distinct Modes of T cell Migration *J. Immunol.* **82**: 2041-50
32. Melli, K., Friedman, R.S., Finger, E.B., Miao, G. Szot, G.L. **Krummel, M.F.** and Tang Q. 2009. Amplification of autoimmune response through induction of dendritic cell maturation in inflamed tissues. *J. Immunol.* **182**: 2590-600.
33. Bullen, A., Friedman, R.S., **Krummel, M.F.** 2009. Two-photon imaging of the immune system: A custom technology platform for high-speed, multi-color tissue imaging of immune responses. *Current Topics in Microbiology and Immunology*. In Press.