

Claudia Jakubzick, PhD
National Jewish Health
Department of Pediatric
Integrated Department of Immunology
1400 Jackson Street
5th Floor Smith Bldg. #A555
Denver, CO 80206

Office phone: 303-398-1069 Fax: 303-398-1381
Email: jakubzickc@njhealth.org

Education and Training

University of Florida	B.S.	1995-1998	Microbiology
University of Michigan	Ph.D.	1999-2003	Immunology (Drs. S. Kunkel and C. Hogaboam)
Mount Sinai School Med	Postdoc	2004-2008	Gene and Cell Med (Dr.Gwendalyn Randolph)
Mount Sinai School Med	Instructor	2008-2009	Gene and Cell Med (Dr.Gwendalyn Randolph)
National Jewish Health	Assist Prof	2010-	Pediatrics and Immunology

Positions and Employment

1997	Biochemistry and Molecular Biology Research Internship, PSU, State College, PA.
1998	Biomedical Graduate Studies Internship, University of Pennsylvania, PA
1998-1999	Research Assistant, University of Pennsylvania, PA
1999-2003	Graduate Student, University of Michigan, MI
2002	Teaching Assistant, Microbiology and Immunology, University of Michigan, MI
2004-2008	Postdoctoral Researcher, Mount Sinai School of Medicine, NY
2009	Instructor, Mount Sinai School of Medicine, NY
2010-2013	Assistant Professor Track II, NJ Health and Univ. of Colorado
2014-	Assistant Professor Track I, NJ Health and Univ. of Colorado

Funding and Honors

1997	NSF Undergraduate Research Training Grant, PSU, State College, PA
1998	NIH Undergraduate Research Grant, University of Pennsylvania, Philadelphia, PA
2001-2002	NIAID Training Grant "Research Training Experimental Immunology" Ann Arbor, MI
2004-2007	NRSA, Ruth L. Kirschstein, Mount Sinai School of Medicine, New York, NY
2007-2009	NIAID, Primary Caregiver Technical Assistance Supplement, New York, NY
2009	ATS Minority Trainee Travel Award recipient
2010-2012	NHLBI, Investigator Research Supplement, Denver, CO
2011	Gordon Research Conf. Apoptotic Cell Recognition & Clearance-Invited Speaker
2011	Twenty-first Lung Conference, Cape Town, South Africa-Invited Speaker
2012	Zucker Award Recipient, National Jewish Health, Denver, CO
2012	Bioscience Discovery Evaluation Grant Program, Denver, CO
2012-2013	NHLBI, Investigator Research Supplement, Denver, CO
2012	Colorado Clinical Translational Sciences Institute, Pilot Award, Denver, CO
2013-	NIH, R01 PI Jan 2013-Dec 2017
2013-	NIH, R01 Co-investigator 10% effort, Peter Henson PI

Patent

2005	Patent: Chimeric molecule to treat Th2-like cytokine mediated disorder
------	------------------------------------------------------------------------

Professional Memberships and experiences

1998	American Society for Microbiology Member
1999-	American Thoracic Society (ATS) Member
2000-	American Association of Immunologists (AAI) Member
2002	FASEB, Exp. Biology Conference, Podium and Poster Presentation, LA
2003	Keystone Symposium, Chemokines and Receptors, Conference Assistant, CO

2003 FASEB, Experimental Biology Conference, Poster Presentation, CA
 2003 Conference Assistant, Travel Funds, Keystone Symposium Chemokines, CO
 2003 American Thoracic Society Intern. Conference, Podium Presentation, WA
 2004 American Thoracic Society Intern. Conference, Podium Presentation, FL
 2005 AA of Immunologists, Advanced Course in Immunology, Stanford, CA
 2006 Dendritic Cell Conference, Poster Presentation, Edinburgh, Scotland
 2009 Conference Assistant, Travel Funds, Keystone Symposium DC, Banff, Canada
 2009 Dendritic Cell Keystone Conference, Poster Presentation, Banff, Canada
 2009 American Thoracic Society Intern. Conference, Poster Presentation, CA
 2010 NIH Inflammation Conference, Speaker, Hamilton, MT
 2011 Keystone Symposium, Dendritic Cell, Poster Presentation, Santa Fe, NM
 2012 Colorado Immunology Conference, Speaker, Vail, CO
 2013 Keystone Symposium, Dendritic Cell, Poster Presentation, Keystone, CO
 2013 Keystone Symposium, Myeloid, Poster Presentation, Keystone, CO
 2014 Dendritic Cell Conference, Poster Presentation, Tours, France
 2014 Keystone Symposium, Vaccine Adjuvants, Speaker, Seattle, WA
 2014 Univ of Colorado, Dept Immunology and Microbiology, Invited Speaker, CO
 2015 Univ of Colorado, Clinical and Translational Medicine, Invited Speaker, CO
 2015 Univ of Colorado, Cancer Center Symposium, Invited Speaker, CO

Not yet completed:

2015 *American Thoracic Society Intern. Conference, Invited speaker, CO*
 2015 *American Thoracic Society Intern. Conference, Graduate Lecturer, CO*
 2015 *American Association of Immunologists, Conference, Invited Speaker, CO*
 2015 *Lung Institute at Cedar, Invited Speaker, CA*
 2015 *Lankenau Institute for Medical Research, Invited Speaker, PA*
 2015 *Rhode Island Hospital's 13th Annual Inflammation Symposium, Invited Speaker, RI*
 2015 *International SFB-Symposium, Invited Speaker, Munich Germany*

Students and Fellows

2011-2014 Trained graduate student A.Nicole Desch; 2014 postdoc at Harvard with Dr. Ramnik Xavier
 2014- Training graduate student Sandy Larson
 2014- Training postdoctoral fellow Rajni Goyal
 2014- Training postdoctoral fellow Shaikh Atif
 2014- Training postdoctoral fellow Miglena Prabagar

Peer-reviewed Publications (In chronological order)

1. Smith K, Jakubzick C, Whittam T, Ferry JG. Carbonic anhydrase is an ancient enzyme widespread in prokaryotes. **Proc Natl Acad Sci U S A.**, 96: 1999.
2. Blease K., Jakubzick C., Westwick J., Lukacs N, Kunkel SL, Hogaboam CM. Therapeutic effect of IL-13 immunoneutralization during chronic experimental fungal asthma. **J. Immunol.**,166: 2001.
3. Blease K, Jakubzick C, Schuh J, Joshi BH, Puri RK, Hogaboam CM. IL-13 fusion cytotoxin ameliorates chronic fungal-induced allergic airway disease in mice. **J. Immunol.**,167: 2001.
4. Blease K, Schuh J, Jakubzick C, Lukacs NW, Kunkel SL., Joshi BH, Puri RK, Kaplan M, Hogaboam CM. Stat6-deficient mice develop airway hyperresponsiveness and peribronchial fibrosis during chronic fungal asthma. **Am. J. Pathol.**,160: 2002.
5. Jakubzick C, Kunkel SL, Lukacs NW, Joshi BH, Puri RK, Hogaboam CM. Interleukin-13 fusion cytotoxin arrests *Schistosoma mansoni* egg-induced pulmonary granuloma formation in mice. **Am. J. Pathol.**,161: 2002.
6. Jakubzick C, Choi ES., Kunkel SL., Joshi BH., Puri RK., Hogaboam CM. Impact of interleukin-13 responsiveness on the synthetic and proliferative properties of Th1- and Th2- type pulmonary granuloma fibroblasts. **Am. J. Pathol.**, 162: 2003.
7. Jakubzick C, Choi ES., Joshi BH., Keane MP., Kunkel SL., Puri RK., Hogaboam CM. Therapeutic attenuation of PF via targeting of IL-4 and IL-13 responsive cells. **J. Immunol.**, 171: 2003.

8. Jakubzick C, Choi ES., Kunkel SL., Evanoff H., Martinez FJ., Puri RK., Flaherty KR., Toews GB., Colby TV., Kazerooni EA., Gross BH., Travis WD., Hogaboam CM. Augmented pulmonary IL-4 and IL-13 receptor subunit expression in idiopathic interstitial pneumonia. **J Clin Pathol.** 2004 May;57.
9. Jakubzick C., Choi ES., Kunkel SL., Evanoff H., Martinez FJ., Puri RK., Flaherty KR., Toews GB., Colby TV., Kazerooni EA., Gross BH., Travis WD., Hogaboam CM. Human pulmonary fibroblasts exhibit altered IL-4 and IL-13 receptor subunit expression in idiopathic interstitial pneumonia. **Am J Pathol.** 2004 Jun;164.
10. Choi ES., Jakubzick C., Carpenter KJ., Kunkel SL., Evanoff H., Martinez FJ., Flaherty KR., Toews GB., Colby TV., Kazerooni EA., Gross BH., Travis WD., Hogaboam CM. Enhanced CCL7 and CCL22 expression in usual interstitial pneumonia. **Am J Respir Crit Care Med.** 2004 Sep 1;170.
11. Kolodsick JE, Toews GB, Jakubzick C, Hogaboam C, Moore TA, McKenzie A, Wilke CA, Chrisman CJ, and Moore BB. Protection from FITC-Induced fibrosis in IL-13 deficient, but not IL-4 mice results from impaired collagen synthesis by fibroblasts. **J Immunol.** 2004 Apr 1;172.
12. Jakubzick C, Wen H, Matsukawa A, Keller M, Kunkel SL, Hogaboam CM. Role of CCR4 Ligands, CCL17 and CCL22, during Schistosoma mansoni Egg-Induced Pulmonary Granuloma Formation in Mice. **Am J Pathol.** 2004 Oct;165.
13. Jakubzick C, Kunkel SL, Puri RK, Hogaboam CM. Therapeutic Targeting of Il-4 and IL-13- Responsive Cells in Pulmonary Fibrosis. **Immunologic Research** 2004;30.
14. Choi ES, Pierce EM, Jakubzick C, Carpenter KJ, Kunkel SL, Evanoff H, Martinez FJ, Flaherty KR, Moore BB, Toews GB, Colby TV, Kazerooni EA, Gross BH, Travis WD, Hogaboam CM. Focal Interstitial CC Chemokine Receptor-7 (CCR7) Expression in Idiopathic Interstitial Pneumonia. **J Clin Pathol.** 2006 Jan;59.
15. Tacke F, Ginhoux F, Jakubzick C, van Rooijen N, Merad M, and Randolph GJ. Monocytes acquire antigens from other cells in the bone marrow and present them to T cells after maturing in the periphery. **J Exp Med.** 2006 Mar 20.
16. Jakubzick C, Tacke F, Llodra J, and Randolph GJ. Modulation of DC trafficking to and from the airways. **J Immunol.** 2006 Mar 15.
17. Pierce EM, Carpenter K, Jakubzick C, Kunkel SL, Flaherty KR, Martinez FJ, Hogaboam CM. Therapeutic targeting of CCL21 or CCR7 abrogates pulmonary fibrosis induced by the adoptive transfer of human pulmonary fibroblasts into immunodeficient mice. **Am. J. Pathol.** Apr;170.
18. Pierce EM, Carpenter K, Jakubzick C, Kunkel SL, Evanoff H, Flaherty KR, Martinez FJ, Toews GB, and Hogaboam CM. Idiopathic pulmonary fibrosis fibroblasts migrate and proliferate to CCL21. **Eur Respir J.** 2007 Mar 1.
19. Tacke F, Alvarez D, Kaplan TJ, Jakubzick C, Spanbroek R, Llodra J, Garin A, Liu J, Mack M, van Rooijen N, Lira SA, Habenicht AJ, and Randolph GJ. Monocyte subsets differentially employ CCR2, CCR5, and CX3CR1 to accumulate within atherosclerotic plaque. **J Clin Invest.** 2007 Jan;117.
20. Randolph GJ, Jakubzick C, and Qu C. Antigen Presentation by Monocytes and Monocyte-derived Cells. **Current Opinion of Immunology**, Dec 2007.
21. Jakubzick C, Tacke F, Ginhoux F, Wagers A, Mack M, Merad M, and Randolph GJ. Blood monocyte subsets differentially give rise to CD103+ and CD103- pulmonary dendritic cell populations. **J. Immunol.** 2008 Mar 1;180.
22. Jakubzick C, Helft J, Kaplan TJ, and Randolph GJ. Optimization of methods to study pulmonary dendritic cell migration reveals distinct capacities of pulmonary dendritic cell subsets to acquire soluble versus particulate antigen. **J Immunol Methods.** 2008 Sep 15.
23. Jakubzick C, Bogunovic M, Bonito AJ, Kuan EL, Merad M, and Randolph GJ. Lymph-migrating, tissue-derived dendritic cells are minor constituents within steady-state lymph nodes. **J Exp Med.** 2008 Nov 24;205.
24. Zhang N, Schröppel B, Lal G, Jakubzick C, Mao X, Chen D, Yin N, Jessberger R, Ochando JC, Ding Y, and Bromberg JS. Regulatory T cells sequentially migrate from the site of tissue inflammation to the draining LN to suppress allograft rejection. **Immunity.** 2009 Mar 20;30.
25. Bogunovic M, Ginhoux F, Helft J, Shang L, Hashimoto D, Greter M, Liu K, Jakubzick C, Ingersoll MA, Leboeuf M, Stanley ER, Nussenzweig M, Lira SA, Randolph GJ, and Merad M. Origin of the lamina propria dendritic cell network. **Immunity.** 2009 Sep 18.
26. Gautier EL, Jakubzick C, and Randolph GJ. Regulation of the migration and survival of monocyte subsets by chemokine receptors and its relevance to atherosclerosis. **ATVB.** 2009 Oct;29.

27. Janssen WJ, Barthel L, Muldrow A, Oberley-Deegan RE, Kearns MT, [Jakubzick C](#), and Henson PM. Fas Determines Differential Fates of Resident and Recruited Macrophages During Resolution of Acute Lung Injury. **Am. J. Respir. Crit. Care Med.** 2011 Mar.
28. Desch AN, Randolph GJ, Murphy K, Gautier EL, Kedl RM, Lahoud MH, Caminschi I, Shortman K, Henson PM, and [Jakubzick C](#). CD103+ pulmonary dendritic cells preferentially acquire and present apoptotic cell-associated antigen. **J Exp Med.** 2011 Aug 23. (Selected and evaluated by Faculty of 1000: 2011. F1000.com/13272037 and Cancer Research Sept 15 2011 71)
29. Gautier EL, Chow A, Spanbroek R, Marcelin G, Greter M, [Jakubzick C](#), Bogunovic M, Leboeuf M, van Rooijen N, Habenicht AJ, Merad M, and Randolph GJ. Systemic analysis of PPAR γ in mouse macrophage populations reveals marked diversity in expression with critical roles in resolution of inflammation and airway immunity. **J Immunol.** 2012 Sep 1.
30. Desch AN, Henson PM, [Jakubzick C](#). Pulmonary dendritic cell development and antigen acquisition. **Immunol Res.** 2012 Sep 12.
31. Gautier EL, Shay T, Miller J, Greter M, [Jakubzick C](#), Ivanov S, Helft J, Chow A, Elpek K, Gordonov S, Mazloom A, Ma'ayan A, Chua W, Hansen TH, Turley SJ, Merad M, and Randolph G.J.; The Immunological Genome Project Consortium. Gene expression profiles and transcriptional regulatory pathways underlying mouse tissue macrophage identity and diversity. **Nature Immunology**, 2012 Nov;13.
32. Huang Y, Aydintug MK, Loomis J, Macleod MK, McKee AS, Kirchenbaum G, [Jakubzick C](#), Kedl RM, Sun D, Jacobelli J, O'Brien RL, Born WK. Antigen-Specific Regulation of IgE Antibodies by Non-Antigen-Specific $\gamma\delta$ T Cells. **J Immunol.** 2013 Feb 1.
33. [Jakubzick C](#), Gautier E, Gibbings SL, Sojka DK, Schlitzer A, Johnson TE, Ivanov S, Duan Q, Bala S, Condon T, van Rooijen N, Grainger JR, Belkaid Y, Ma'ayan A, Riches DW, Yokoyama WM, Ginhoux F, Henson PM, and Randolph GJ. Minimal differentiation of classical monocytes as they survey steady state tissues and transport antigen to lymph nodes. **Immunity** 2013, 2013 Sep 19.
34. Guilliams M, Ginhoux F, [Jakubzick C](#), Naik SH, Onai N, Schraml BU, Segura E, Tussiwand R and Yona S All authors contributed equally to this work. Dendritic cells, monocytes and macrophages: a unified nomenclature based on ontogeny, **Nature Rev Immunol.** 2014 Aug
35. Desch AN, Gibbings SL, Clambey ET, Janssen WJ, Slansky JE, Kedl RM, Henson PM, [Jakubzick C](#). Dendritic cell subsets require cis-activation for cytotoxic CD8 T-cell induction, **Nature Commun.** 2014 Aug 19
36. Kedl RM, Wysocki LJ, Janssen WJ, Born WK, Rosenbaum MD, Granowski J, Kench JA, Fong DL, Switzer LA, Cruse M, Huang H, [Jakubzick CV](#), Kosmider B, Takeda K, Stranova TJ, Klumm RC, Delgado C, Tummala S, De Langhe S, Cambier J, Haskins K, Lenz LL, Curran-Everett D. General parity between trio and pairwise breeding of laboratory mice in static caging. **J Immunol.** 2014 Nov 15
37. Fernandez-Boyanapalli RF, Frasca SC, Thomas SM, Malcolm KC, Nicks M, Harbeck RJ, [Jakubzick CV](#), Nemenoff R, Henson PM, Holland SM, Bratton DL. Pioglitazone restores phagocyte mitochondrial oxidants and bactericidal capacity in chronic granulomatous disease. **J Allergy Clin Immunol.** 2014 Dec 9

Chapters

38. [Jakubzick C](#). and Randolph G.J. Methods to study pulmonary dendritic cell migration. Chapter: Dendritic Cell Protocols, **Methods Mol Biol.** 2010;595:371-82.

Jakubzick, C. is part of the Immunological Genome Project Consortium

39. Malhotra D, Fletcher AL, Astarita J, Lukacs-Kornek V, Tayalia P, Gonzalez SF, Elpek KG, Chang SK, Knoblich K, Hemler ME, Brenner MB, Carroll MC, Mooney DJ, Turley SJ; The Immunological Genome Project Consortium. Transcriptional profiling of stroma from inflamed and resting lymph nodes defines immunological hallmarks. **Nat Immunol.** 2012 Apr 1.
40. Narayan K, Sylvia KE, Malhotra N, Yin CC, Martens G, Vallerskog T, Kornfeld H, Xiong N, Cohen NR, Brenner MB, Berg LJ, Kang J; The Immunological Genome Project Consortium. Intrathymic programming of effector fates in three molecularly distinct $\gamma\delta$ T cell subtypes. **Nat Immunol.** 2012 Apr 1.
41. Miller JC, Brown BD, Shay T, Gautier EL, Jovic V, Cohain A, Pandey G, Leboeuf M, Elpek KG, Helft J, Hashimoto D, Chow A, Price J, Greter M, Bogunovic M, Bellemare-Pelletier A, Frenette PS, Randolph GJ, Turley SJ, Merad M; The Immunological Genome Consortium. Deciphering the transcriptional network of the dendritic cell lineage. **Nat Immunol.** 2012 Jul 15.
42. Bezman NA, Kim CC, Sun JC, Min-Oo G, Hendricks DW, Kamimura Y, Best JA, Goldrath AW, Lanier LL; The Immunological Genome Project Consortium. Molecular definition of the identity and activation of natural killer cells. **Nat Immunol.** 2012 Aug 19.

43. Benoist C, Lanier L, Merad M, Mathis D; The Immunological Genome Project Consortium. Consortium biology in immunology: the perspective from the Immunological Genome Project. **Nat Rev Immunol**. 2012 Oct;12
44. Cohen NR, Brennan PJ, Shay T, Watts GF, Brigl M, Kang J, Brenner MB; The Immunological Genome Project Consortium. Shared and distinct transcriptional programs underlie the hybrid nature of iNKT cells. **Nat Immunol**. 2013 Jan;14.
45. Best JA, Blair DA, Knell J, Yang E, Mayya V, Doedens A, Dustin ML, Goldrath AW; Immunological Genome Project Consortium. Transcriptional insights into the CD8(+) T cell response to infection and memory T cell formation. **Nat Immunol**. 2013 Apr;14
46. Malhotra N, Narayan K, Cho OH, Sylvia KE, Yin C, Melichar H, Rashighi M, Lefebvre V, Harris JE, Berg LJ, Kang J; Immunological Genome Project Consortium. A network of high-mobility group box transcription factors programs innate interleukin-17 production. **Immunity**. 2013 Apr 18
47. Jojic V, Shay T, Sylvia K, Zuk O, Sun X, Kang J, Regev A, Koller D; Immunological Genome Project Consortium. Identification of transcriptional regulators in the mouse immune system. **Nat Immunol**. 2013 Jun;14
48. Mingueneau M, Kreslavsky T, Gray D, Heng T, Cruse R, Ericson J, Bendall S, Spitzer MH, Nolan GP, Kobayashi K, von Boehmer H, Mathis D, Benoist C; Immunological Genome Project Consortium. The transcriptional landscape of $\alpha\beta$ T cell differentiation. **Nat Immunol**. 2013 Jun;14
49. Ergun A, Doran G, Costello JC, Paik HH, Collins JJ, Mathis D, Benoist C; Immunological Genome Project Consortium. Differential splicing across immune system lineages. **PNAS** 2013 Aug 27
50. Mostafavi S, Ortiz-Lopez A, Bogue MA, Hattori K, Pop C, Koller D, Mathis D, Benoist C; Immunological Genome Consortium. Variation and genetic control of gene expression in primary immunocytes across inbred mouse strains. **J Immunol**. 2014 Nov 1
51. Ericson JA, Duffau P, Yasuda K, Ortiz-Lopez A, Rothamel K, Rifkin IR, Monach PA; Immunological Genome Consortium. Gene expression during the generation and activation of mouse neutrophils: implication of novel functional and regulatory pathways. **PLoS One**. 2014 Oct 3

Submitted or submitting

*Rajni Goyal, Sophie L. Gibbings, A. Nicole Desch, Sonia M. Leach, Miglena Prabagar, Shaikh Atif, Donna L. Bratton, William Janssen, and Claudia V. Jakubzick. Transcriptome analysis highlights the conserved difference between embryonic versus adult-derived alveolar macrophages. *Under Revision, Blood* 2015*

*Nicole Desch, Sophie L. Gibbings, Rajni Goyal, Joe Bednarek, Tullia Bruno, Jill E. Slansky, Jordan Jacobelli, Robert Mason, Yoko Ito, Elise Messier, Gwendalyn J. Randolph, Miglena Prabagar, Shaikh Atif, Elodie Segura, Donna L. Bratton, William Janssen, Peter M. Henson, and Claudia Jakubzick. Comprehensive analysis of the extravascular mononuclear phagocytes in non-diseased human lung and lung-draining lymph nodes. *Under Review, Immunity* 2015*

*Shaikh Atif, Michelle Nelsen, Sophie L. Gibbings, Ross Kedl, Ron Gill, Philippa Marrack, Peter M. Henson, and Claudia Jakubzick. Roles for Batf3-dependent antigen-presenting cells in the rejection of minor histocompatibility antigen-mismatched grafts, *Under Review, Cutting-Edge JI* 2015*

Research Support

Ongoing Research Support

NIH/NHLBI R01 HL115334 Jakubzick PI

Title: Induction of cytotoxic T cells by pulmonary dendritic cells

Award Dates: 01/2013-12/2017

Direct Cost / year: \$253,734

NIH/NHLBI R01 HL114381 Henson PI

Title: Macrophage endocytosis in resolving lung inflammation

Award Dates: 11/01/13 – 10/31/18

Annual Direct Costs: \$412,552

Co-investigator Jakubzick- 10% effort and some material costs

Completed Research Support

Research supplement to Dr. Peter Henson (PI) parent grant - R01 HL081151

NIH/NHLBI

Title: Research Supplements to Promote Diversity in Health-Related Research

Parent Grant title: Regulation of Pulmonary Inflammation

Award Dates: 01/2012-05/2013

Direct Cost / year: \$64,000

2012 BDEGP Jakubzick PI

Title: Apoptotic cell-like liposome nanoparticles for cell mediated immunity

Award Dates: 03/01/12 – 03/31/13

Total Direct Costs: \$72,609

Calendar Months: 1.8

2012 Zucker Award Jakubzick PI

Title: The anti-tumor role of cross-presenting pulmonary dendritic cells

Award Dates: 2012

Total Direct Costs: \$15,000

2012 CCTSI Jakubzick PI

Title: The anti-tumor role of cross-presenting pulmonary dendritic cells

Award Dates: 2012

Total Direct Costs: \$30,000

Primary caregiver technical assistance supplement to Dr. Gwendalyn Randolph (PI)

parent grant - R01

NIH/NIAID

Title: Primary Caregiver Technical Assistance Supplements

Award Dates: 03/2007-02/2009

Direct Cost / year: \$37,000

The supplement addressed the role of mediators involved in migration and differentiation of pulmonary dendritic cells.

Ruth L. Kirschstein National Research Service Award T32 Dr. Lloyd Mayer (PI)- AI07605-04

Award Dates: 07/2004-07/2007

Direct Cost / year: \$35,000

Institutionally awarded training grant: To support my postdoctoral training in Dr. Gwendalyn Randolph's laboratory studying pulmonary dendritic cell migration and development.

NIAID Training Grant

Title: Research Training Experimental Immunology

Award Dates: 2001-2002

Institutionally awarded training grant: To support my graduate training in Dr. Steve Kunkel's laboratory studying pulmonary fibrosis.