

Curriculum Vitae

**Douglas A. Steeber**

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**Education**

Postdoctoral Research Associate (Advisor-Professor and Chair, Thomas F. Tedder), National Institutes of Health Postdoctoral Trainee, Department of Immunology, Duke University Medical Center, Durham, NC

Ph.D. in Animal Health and Biomedical Sciences, Specialty in Immunology, Advisor-Professor Ralph M. Albrecht, University of Wisconsin, Madison, WI  
Thesis title: "The Response of the Murine Lymph Node Blood Vascular System to Antigen"

M.S. in Veterinary Science, Specialty in Immunology, Advisor-Professor Ralph M. Albrecht, University of Wisconsin, Madison, WI

B.S. in Bacteriology, University of Wisconsin, Madison, WI

**Academic Appointments**

2010-2012 Associate Chair, Department of Biological Sciences, University of Wisconsin-Milwaukee  
2006-present Associate Professor, Department of Biological Sciences, University of Wisconsin-Milwaukee  
2004-present Director, Flow Cytometry Facility, Department of Biological Sciences, University of Wisconsin-Milwaukee  
2003-2006 Assistant Professor, Department of Biological Sciences, University of Wisconsin-Milwaukee  
1997-2003 Assistant Research Professor, Department of Immunology, Duke University Medical Center

**Special Honors and Awards**

2012 Mentor, American Association of Immunologists (AAI) High School Teachers Summer Research Program Fellowship  
2008 Fellow of the Japanese Association for the Promotion of Science  
2005 Mentor, John H. Wallace Fellowship from AAI  
2005 UWM Chancellor's Scientist Award  
2005 UWM Research Committee Award  
1993 1<sup>st</sup> Place, Student Research Presentation, Great Lakes Electron Microscopy

1985 Affiliates annual conference, Indianapolis, IN  
 Graduated with Distinction, University of Wisconsin-Madison

### Publications

#### Peer reviewed journal articles (reverse chronological order)

95. Grailer, JJ, **Steeber, DA**. The vascular endothelial growth factor receptor inhibitor SU5416 suppresses lymphocyte generation and immune responses in mice through increased plasma corticosterone. *PLoS ONE* 2013; (under revision).
94. Mao, S, Yu, K, Chang, J, **Steeber, DA**, Ocola, LE, Chen, J. Direct growth of vertically-oriented graphene for field-effect transistor biosensor. *Scientific Reports* 2013; 3:1696 (pgs. 1-6). DOI: 10.1038/srep01696
93. Chang, J, Mao, S, Zhang, Y, Cui, S, **Steeber, DA**, Chen, J. Single-walled carbon nanotube field-effect transistors with graphene oxide passivation for fast, sensitive, and selective protein detection. *Biosensors & Bioelectronics* 2013; 42:186-192.
92. Krystofiak, ES,\* Matson, VZ,\* **Steeber, DA**, Oliver, JA. Elimination of tumor cells using folate receptor targeting by antibody-conjugated, gold-coated magnetite nanoparticles in a murine breast cancer model. *Journal of Nanomaterials* 2012; 2012: Article ID 431012. Focus issue: "Nanostructures for Medicine and Pharmaceuticals 2012" \* co-first authors doi:10.1155/2012/431012
91. Xiao, Y, Hong, H, Matson, VZ, Javadi, A, Xu, W, Yang, Y, Zhang, Y, Engle, JW, Nickles, RJ, Cai, W, **Steeber, DA**, Gong, S. Gold Nanorods Conjugated with Doxorubicin and cRGD for Combined Anticancer Drug Delivery and PET Imaging. *Theranostics* 2012; 2:757-768.
90. Subramanian, H, Grailer, JJ, Ohlrich, KC, Rymaszewski, AL, Loppnow, JJ, Kodera, M, Conway, RM, **Steeber, DA**. Signaling through L-Selectin mediates enhanced chemotaxis of lymphocyte subsets to secondary lymphoid tissue chemokine. *Journal of Immunology* 2012; 188:3223-3236.
89. Zeng, Q, Laiosa, MD, **Steeber, DA**, Biddle, EM, Peng, Q, Yang, C-H. Cell individuality: the bistable gene expression of the type III secretion system in *Dickeya dadantii* 3937. *Molecular Plant-Microbe Interactions* 2012; 25:37-47.
88. Yang X, Hong H, Grailer JJ, Rowland IJ, Javadi A, Hurley SA, Xiao Y, Yang Y, Zhang Y, Nickles RJ, Cai W, **Steeber DA**, Gong S. cRGD-functionalized, DOX-conjugated, and (64)Cu-labeled superparamagnetic iron oxide nanoparticles for targeted anticancer drug delivery and PET/MR imaging. *Biomaterials* 2011; 32:4151-4160.
87. [Ohmatsu H](#), [Kadono T](#), [Sugaya M](#), [Tomita M](#), [Kai H](#), [Miyagaki T](#), [Saeki H](#), [Tamaki K](#), **Steeber DA**, [Tedder TF](#), [Sato S](#).  $\alpha_4\beta_7$  integrin is essential for contact hypersensitivity by regulating migration of T cells to skin. *Journal of Allergy and Clinical Immunology* 2010; 126:1267-76.
86. Yang, X, Grailer, JJ, Rowland, IJ, Javadi, A, Hurley, SA, **Steeber, DA**, Gong, S. Multifunctional SPIO/DOX-loaded wormlike polymer vesicles for cancer therapy and MR imaging. *Biomaterials* 2010; 34:9065-9073.
85. Yang, X, Grailer, JJ, Rowland, IJ, Javadi, A, Hurley, SA, Matson, VZ, **Steeber, DA**, Gong,

- S. Multifunctional stable and pH-responsive polymer vesicles formed by heterofunctional triblock copolymer for targeted anti-cancer drug delivery and ultrasensitive MR imaging. *ACS Nano*, 2010; 23:6805-6817.
84. Yang, X, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S, Shuai, X. Multifunctional polymeric vesicles for targeted drug delivery and imaging. *Biofabrication* 2010; 2:025004.
83. Yang, X, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S. Tumor-targeting, pH-responsive and stable unimolecular micelles as drug nanocarriers for targeted cancer therapy. *Bioconjugate Chemistry* 2010; 21:496-504.
82. Aryal, S, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S. Doxorubicin conjugated gold nanoparticles as water-soluble and pH-responsive anticancer drug nanocarriers. *Journal of Materials Chemistry* 2009; 19:7879-7884. DOI: 10.1039/B914071A.
81. Grailer, JJ, Koder, M, **Steeber, DA**. L-selectin: Role in regulating homeostasis and cutaneous inflammation. *Journal of Dermatological Science* 2009; 56:141-147. (Invited review paper).
80. Yang, X, Pilla, S, Grailer, JJ, **Steeber, DA**, Gong, S, Chen, Y, Chen, G. Tumor-targeting, superparamagnetic polymeric vesicles as highly efficient MRI contrast probes. *Journal of Materials Chemistry* 2009; 19:5812-5817. DOI: 10.1039/B903845K
79. Prabakaran, M, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S. Gold nanoparticles with a monolayer of doxorubicin-conjugated amphiphilic blockcopolymer for tumor-targeted drug delivery. *Biomaterials* 2009; 30:6065-6075.
78. Prabakaran, M, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S. Amphiphilic multi-arm-block copolymer conjugated with doxorubicin via pH-sensitive hydrazone bond for tumor-targeted drug delivery. *Biomaterials* 2009; 30:5757-5766.
77. Tiwari, A, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S. Biodegradable hydrogels based on novel photopolymerizable guar gum-methacrylate macromonomers for in situ fabrication of tissue engineering scaffolds. *Acta Biomaterials* 2009; 5:3441-3452.
76. Zhang, C, Subramanian, H, Grailer, JJ, Tiwari, A, Pilla, S, **Steeber, DA**, Gong, S. Fabrication of biodegradable poly(trimethylene carbonate) networks for potential tissue engineering scaffold applications. *Polymers For Advanced Technologies* 2009; 20:742-747.
75. Prabakaran, M, Grailer, JJ, **Steeber, DA**, Gong, S. Thermo-sensitive micelles based on folate-conjugated poly(*n*-vinylcaprolactam)-*block*-poly(ethylene glycol) copolymers for tumor-targeted drug delivery. *Macromolecular Bioscience* 2009; 9:744-753.
74. Prabakaran, M, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S. Folate-conjugated amphiphilic hyperbranched block copolymers based on Boltorn H40, poly(L-lactide) and poly(ethylene glycol) for tumor-targeted drug delivery. *Biomaterials* 2009; 30:3009-3019.
73. Prabakaran, M, Grailer, JJ, Pilla, S, **Steeber, DA**, Gong, S. Amphiphilic multi-arm block copolymer based on hyperbranched polyester, poly(L-lactide) and poly(ethylene glycol) as a drug delivery carrier. *Macromolecular Biosciences* 2009; 9:515-524.
72. Saito, Y, Hasegawa, M, Fujimoto, M, Matsushita, T, Horikawa, M, Takenaka, M, Ogawa, F, Sugama, J, **Steeber, DA**, Sato, S, and Takehara, K. The loss of MCP-1 attenuates cutaneous ischemic-reperfusion injury in a mouse model of pressure ulcer. *Journal of Investigative*

- Dermatology* 2008; 128:1838-1851.
71. Prabakaran, M, Grailer, JJ, **Steeber, DA**, Gong, S. Stimuli-responsive chitosan-graft-poly(*N*-vinylcaprolactam) as a promising material for controlled hydrophobic drug delivery. *Macromolecular Bioscience* 2008; 8:843-851.
  70. Garvin, JC, Dunn, PO, Whittingham, LA, **Steeber, DA**, Hasselquist, D. Do male ornaments signal immunity in the common yellowthroat? *Behavioral Ecology* 2008; 19:54-60.
  69. Kodera, M, Grailer, JJ, Karalewitz, APA, Subramanian, H, **Steeber, DA**. T lymphocyte migration to lymph nodes is maintained during homeostatic proliferation. *Microscopy and Microanalysis* 2008; 14:211-224.
  68. Yukami, T, Hasegawa, M, Matsushita, Y, Fujita, T, Matsushita, T, Horikawa, M, Komura, K, Yanaba, K, Hamaguchi, Y, Nagaoka, T, Ogawa, F, Fujimoto, M, **Steeber, DA**, Tedder, TF, Takehara, K, Sato, S. Endothelial selectins regulate skin wound healing in cooperation with L-selectin and ICAM-1. *Journal of Leukocyte Biology* 2007; 82:519-531.
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  65. Venturi, GM, Conway, RM, **Steeber, DA**, Tedder, TF. CD25<sup>+</sup>CD4<sup>+</sup> regulatory T cell migration requires L-selectin expression: L-selectin transcriptional regulation balances constitutive receptor turnover. *Journal of Immunology* 2007; 178: 291-300.
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  61. Fadel, SA, Cowell, L, Cao, S, Ozaki, DA, Kepler, TB, **Steeber, DA**, Sarzotti, M. Neonate-primed CD8<sup>+</sup> memory cells rival adult-primed memory cells in antigen-driven expansion and anti-viral protection. *International Immunology*. 2006; 18: 249-257.
  60. Peng, Q, Yang, S, Charkowski, AO, Yap, M-N, **Steeber, DA**, Keen, NT, Yang, C-H.

- Population behavior analysis of *dspE* and *pelD* regulation in *Erwinia chrysanthemi* 3937. *Molecular Plant-Microbe Interaction*. 2006, 19: 451-457.
59. Haas, KM, Poe, JC, **Steeber, DA**, Tedder, TF. B-1a and B-1b cells exhibit distinct developmental requirements and have unique functional roles in innate and adaptive immunity to *S. pneumoniae*. *Immunity* 2005; 23: 7-18.
  58. **Steeber, DA**, Venturi, GM, Tedder, TF. A new twist to the leukocyte adhesion cascade: Intimate cooperation is key. *Trends in Immunology* 2005; 26: 9-12. (Invited focus paper).
  57. Uchida, J, Lee, Y, Hasegawa, M, Liang, Y, Bradney, A, Oliver, JA, Bowen, K, **Steeber, DA**, Haas, KM, Poe, JC, Tedder, TF. Mouse CD20 expression and function. *International Immunology* 2004; 16:119-129.
  56. Venturi, GM, Tu, L., Kadono, T, Khan, AI, Fujimoto, Y, Oshel, P, Bock, CB, Miller, AS, Albrecht, RM, Kubes, P, **Steeber, DA**, Tedder, TF. Leukocyte migration is regulated by L-selectin endoproteolytic release. *Immunity* 2003; 19: 713-724.
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  54. Yanaba, K, Kaburagi, Y, Takehara, K, **Steeber, DA**, Tedder, TF, Sato, S. Relative contributions of selectins and intercellular adhesion molecule-1 to tissue injury induced by immune complex deposition. *American Journal of Pathology* 2003; 162: 1463-1473.
  53. Shimada, Y, Hasegawa, M, Kaburagi, Y, Hamaguchi, Y, Komura, K, Saito, E, Takehara, K, **Steeber, DA**, Tedder, TF, Sato, S. L-selectin or ICAM-1 deficiency reduces an immediate-type hypersensitivity response by preventing mast cell recruitment in repeated elicitation of contact hypersensitivity. *Journal of Immunology* 2003; 170:4325-4334.
  52. Haas, KM, Hasegawa, M, **Steeber, DA**, Poe, JC, Zabel, MD, Bock, CB, Karp, DR, Briles, DE, Weis, JH, Tedder, TF. Complement receptors CD21/35 link innate and protective immunity during *Streptococcus pneumoniae* infection by regulating IgG3 antibody responses. *Immunity* 2002; 17: 713-723.
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  50. Kadono, T, Venturi, GM, **Steeber, DA**, Tedder, TF. Leukocyte rolling velocities and migration are optimized by cooperative L-selectin and intercellular adhesion molecule-1 functions. *Journal of Immunology* 2002; 169: 4542-4550.
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  48. Fujimoto, Y, Tu, L, Miller, AS, Bock, C, Fujimoto, M, Doyle, C, **Steeber, DA**, Tedder, TF. CD83 expression influences CD4<sup>+</sup> T cell development in the thymus. *Cell* 2002; 108: 755-767.

47. Dwir, O, **Steeber, DA**, Schwarz US, Camphausen, RT, Kansas, GS, Tedder, TF, Alon, R. L-selectin dimerization enhances tether formation to properly spaced ligand. *Journal of Biological Chemistry* 2002; 277: 21130-21139.
46. Kaburagi, Y, Hasegawa, M, Nagaoka, T, Shimada, Y, Hamaguchi, Y, Komura, K, Saito, E, Yanaba, K, Takehara, K, Kadono, T, **Steeber, DA**, Tedder, TF, Sato, S. The cutaneous reverse arthus reaction requires intercellular adhesion molecule-1 and L-selectin expression. *Journal of Immunology* 2002; 168: 2970-2978.
45. Friedline, RH, Wong, CP, **Steeber, DA**, Tedder, TF, Tisch, R. L-selectin is not required for T cell-mediated autoimmune diabetes. *Journal of Immunology* 2002; 168: 2659-2666.
44. Hasegawa, M, Fujimoto, M, Poe, JC, **Steeber, DA**, Tedder, TF. CD19 can regulate B lymphocyte signal transduction independent of complement activation. *Journal of Immunology* 2001; 167: 3190-3200.
43. Hasegawa, M, Fujimoto, M, Poe, JC, **Steeber, DA**, Lowell, CA, Tedder, TF. A CD19-dependent signaling pathway regulates autoimmunity in Lyn-deficient mice. *Journal of Immunology* 2001; 167: 2469-2478.
42. Fiscus, LC, Van Herpen, J, **Steeber, DA**, Tedder, TF, Tang, MLK. L-selectin is required for the development of airway hyperresponsiveness but not airway inflammation in a murine model of asthma. *Journal of Allergy and Clinical Immunology* 2001; 107: 1019-1024.
41. Li, X, Tu, L, Murphy, PG, Kadono, T, **Steeber, DA**, Tedder, TF. CHST1 and CHST2 sulfotransferase expression by vascular endothelial cells regulates shear-resistant leukocyte rolling via L-selectin. *Journal of Leukocyte Biology* 2001; 69: 565-574.
40. Keramidaris, E, Merson, T, **Steeber, DA**, Tedder, TF, Tang, MLK. L-selectin and ICAM-1 mediate lymphocyte migration to the inflamed airway/lung during an allergic inflammatory response in an animal model of asthma. *Journal of Allergy and Clinical Immunology* 2001; 107: 734-738.
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37. Inaoki, M, Sato, S, Shimada, Y, Kawara, S, **Steeber, DA**, Tedder, TF, Takehara, K. Decreased expression levels of L-selectin on subsets of leukocytes and increased serum L-selectin in severe psoriasis. *Clinical and Experimental Immunology* 2000; 122: 484-492.
36. Haribabu, B, Verghese, MW, **Steeber, DA**, Sellars, DD, Bock, CB, Snyderman, R. Targeted disruption of the leukotriene B<sub>4</sub> receptor in mice reveals its role in inflammation and platelet-activating factor-induced anaphylaxis. *Journal of Experimental Medicine* 2000; 192: 433-438.
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31. **Steeber, DA\***, Tang, MLK\*, Green, NE, Zhang, X-Q, Sloane, JE, Tedder, TF. Leukocyte entry into sites of inflammation requires overlapping interactions between the L-selectin and Intercellular adhesion molecule-1 pathways. *Journal of Immunology* 1999; 163: 2176-2186. \* co-first authors
30. Yadav, SS, Howell, DN, **Steeber, DA**, Harland, RC, Tedder, TF, Clavien, P-A. P-selectin mediates reperfusion injury through neutrophil and platelet sequestration in the warm ischemic mouse liver. *Hepatology* 1999; 29: 1494-1502.
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24. Wagner, N, Löhler, J, Tedder, TF, Rajewsky, K, Müller, W, **Steeber, DA**. L-selectin and  $\beta_7$  integrin synergistically mediate lymphocyte migration to mesenteric lymph nodes. *European Journal of Immunology* 1998; 28: 3832-3839.
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  19. Tang, MLK<sup>†</sup>, **Steeber, DA**<sup>†</sup>, Zhang X-Q, Tedder, TF. Intrinsic differences in L-selectin expression levels affect T and B lymphocyte subset-specific recirculation pathways. *Journal of Immunology* 1998; 160: 5113-5121. <sup>†</sup>Both authors contributed equally
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  3. **Steeber, DA**, Butzow, J, Lutz, L, Albrecht, RM. Immunotoxicity of organophosphates: Inhibition of cell surface antigen expression and cell differentiation. *Midwest Microscopy* 1991;21:27-29.
  2. Hodde, KC, **Steeber, DA**, Albrecht, RM. Advances in corrosion casting methods. *Scanning Microscopy* 1990; 4: 693-704.
  1. **Steeber, DA**, Erickson, CM, Hodde, KC, Albrecht, RM. Vascular changes in popliteal lymph nodes due to antigen challenge in normal and lethally irradiated mice. *Scanning Microscopy* 1987; 1: 831-839.

#### Conference proceedings and abstracts (reverse chronological order)

69. Loppnow, JJ, Kadono, T, Sato, S, Tedder, TF, **Steeber, DA**.  $\alpha_4\beta_7$  integrin-mediated lymphocyte adhesion to VCAM-1 under physiologic shear requires L-selectin function. *Journal of Immunology*, 2013; 190, 58.12; abstract # P5116.
68. Matson, VZ, Loppnow, JJ, **Steeber, DA**. Differential migration of myeloid-derived suppressor cell subsets to tumor-draining lymph nodes in a murine model of breast cancer. *Journal of Immunology*, 2013; 190, 214.8; abstract # P2014
67. Loppnow, JJ, Kadono, T, Sato, S, Tedder, TF, **Steeber, DA**.  $\alpha_4\beta_7$  integrin binding to VCAM-1 under physiologic shear requires L-selectin. Autumn Immunology Conference, Nov. 16-19, 2012, Chicago, IL.
66. Rowland, I, Heintz, J, **Steeber, D**, Albrecht, R. Visualization of vascular casts using 3D MR imaging. The International Society for Magnetic Resonance in Medicine (ISMRM) Annual Meeting, #1046, May 1-7, 2010, Stockholm, Sweden.
65. Grailer, JJ, Conway, RM, **Steeber, DA**. Lymphocyte subset recruitment during an immune response differs between peripheral and mucosal lymphoid tissues. *Journal of Immunology*, 2009; 182:95.7.
64. Li, F, Klemer, DP, Kimani, JK, Mao, S, Chen, J, **Steeber, DA**. Fabrication and

- characterization of microwave immunosensors based on organic semiconductors with nanogold-labeled antibody. *Conference Proceedings of the IEEE Engineering in Medicine and Biology Society*, 2008; 2008:2381-2384.
63. Subramanian, H, Kodera, M, Grailer, JJ, Conway, RM, **Steeber, DA**. Signaling via L-selectin ligation mediates enhanced chemotaxis of specific lymphocyte subsets to the HEV-restricted secondary lymphoid tissue chemokine. UW Madison Immunology Research Symposium 2008; #62, May 29.
  62. Conway, RM, Karalewitz, AP-A, Subramanian, H, Strenk, SM, Richardson, NC, **Steeber, DA**. Normal development but altered composition of mucosal lymphoid tissues in L-selectin- and  $\beta_7$  integrin-deficient mice. UW Madison Immunology Research Symposium 2008; #67, May 29.
  61. Kimani, JK, Li, F, Klemer, DP, Mao, S, Chen, J, **Steeber, DA**. Microwave modeling of interdigitated polymer semiconductor biosensors. 32<sup>nd</sup> Annual Great Lakes Biomedical Conference (GLBC), Racine, WI, 2008; April 18..
  60. Omari, EA, Klemer, DP, **Steeber, DA**, Gaetner, WF. Organic semiconducting polymer films as a biosensing platform: validation via a model antigen-substrate system. 31<sup>st</sup> Annual Great Lakes Biomedical Conference (GLBC) 2007; April 20.
  59. Conway, RM, Karalewitz, AP-A, Subramanian, H, Strenk, SM, **Steeber, DA**. L-selectin and  $\beta_7$  integrin synergistically regulate generation of mucosal immune responses. *Microcirculation* 2007; 14: 474.
  58. Grailer, JJ, Kodera, M, Karalewitz, AP-A, Subramanian, H, **Steeber, DA**. Effects of lymphopenia-induced homeostatic proliferation on T cell recirculation. *Microcirculation* 2007; 14: 465.
  57. Storey, TJ, Karalewitz, AP-A, **Steeber, DA**. L-selectin plays a critical role in development and progression of disease in a murine model of lupus. *Microcirculation* 2007; 14: 473.
  56. Subramanian, H, Kodera, M, Conway, RM, Kopecky, DA, **Steeber, DA**. Signaling through L-selectin enhances lymphocyte chemotaxis to homeostatic chemokines via a PKC-dependent pathway. *Microcirculation* 2007; 14: 473.
  55. Zhang, C, Subramanian, H, Gong, S, **Steeber, DA**. Synthesis of photopolymerizable poly(trimethylene carbonate) macromers and their application in tissue engineering. *Microcirculation* 2007; 14: 463.
  54. Omari, EA, Klemer, DP, **Steeber, DA**, Gaetner, WF. Polymer semiconductors as a biosensing platform: peroxidase activity of enzyme bound to organic semiconducting films. *Conference Proceedings of the IEEE Engineering in Medicine and Biology Society*. 2007; 1:107-110.
  53. Muehlenbein, M, Jordan, J, Bonner, J, Swartz, A, **Steeber, D**. Male physiological ecology: adaptive variation in hormones and metabolic rate in response to immune activation. Human Biology Association, 2007.
  52. Kodera, M, Subramanian, H, Conway, RM, Grailer, JJ, Karalewitz, AP-A, **Steeber, DA**. Tracking the immune response using correlative microscopic, flow cytometric and chemotaxis assays. *Microscopy and Microanalysis* 2006; 12: 30-31.

51. Kodera, M, Subramanian, H, Conway, RM, Venturi, GM, **Steeber, DA**. L-selectin- and  $\beta_7$  integrin-mediated T lymphocyte recirculation is required for homeostatic proliferation. *Journal of Immunology* 2006; 176: S295.
50. Subramanian, H, Kodera, M, Conway, RM, **Steeber, DA**. Signaling through L-selectin enhances T lymphocyte chemotaxis to SLC. *Journal of Immunology* 2006; 176: S37.
49. Conway, RM, Subramanian, H, Kodera, M, Kodono, T, **Steeber, DA**. Role of lymphocyte recirculation in the development of functional Peyer's patches. *Journal of Immunology* 2006; 176: S45.
48. Zdrojewski, E, Conway, RM, Subramanian, H, Kodera, M, **Steeber, DA**. Bringing immune cell migration into the high school classroom. *Journal of Immunology* 2006; 176: S1.
47. Horikawa, M, Hasegawa, M, Takehara, K, **Steeber, DA**, Sato, S. E-selectin and P-selectin synergistically inhibit bleomycin-induced fibrosis. *FASEB Journal* 2005; 19: A1422.
46. Kuehl, AA, Pawlowski, NN, Loddenkemper, C, Grollich, K, Tedder, TF, **Steeber, DA**, Zeitz, M, Hoffmann, JC. Role of neutrophils for the initiation and perpetuation of chemical induced colitis. *Gastroenterology* 2004; 126: A157.
45. Kadono, T, Staats, HF, **Steeber, DA**, Tedder, TF, Tamaki, K. Cutaneous and nasal immunity is L-selectin-dependent, whereas cooperation between L-selectin and beta 7 integrin is critical for intestinal immunity. *Journal of Investigative Dermatology* 2004; 122: A117.
44. Uchida, J, Oliver, JA, Poe, JC, Haas, KM, **Steeber, DA**, Tedder, TF. Mouse CD20 as a model target for immunotherapy requires Fc receptor-dependent cell-mediated effector functions that are independent of complement-mediated cytotoxicity. *FASEB Journal* 2003; 17: C331.
43. Sato, S, Yanaba, K, **Steeber, DA**, Tedder, TF. Relative contributions of selectins and ICAM-1 to tissue injury induced by immune complex deposition. *FASEB Journal* 2003; 17: C286.
42. Venturi, GM, Tu, L, Kadono, T, Khan, AI, Fujimoto, Y, Bock, CB, Miller, AS, Kubes, P, **Steeber, DA**, Tedder, TF. L-selectin endoproteolytic release controls leukocyte interactions with vascular endothelial cells by regulating cell surface receptor density. *FASEB Journal* 2003; 17: C285.
41. **Steeber, DA**, Kadono, T, Staats, HF, Venturi, GM, Andrews, MC, Wagner, N, Tedder, TF. Differential requirement for L-selectin- and  $\beta_7$  integrin-dependent lymphocyte migration in generation of gut- and nasal-associated mucosal immune responses. *FASEB Journal* 2003; 17: C230.
40. Haas, KM, Poe, JC, **Steeber, DA**, Tedder, TF. CD19 expression promotes natural antibody generation, but not pneumococcal polysaccharide-specific antibody responses, required for protection against *Streptococcus pneumoniae* infection. *FASEB Journal* 2003; 17: C173.
39. Fujimoto, Y, Poe, JC, **Steeber, DA**, Tedder, TF. CD19 expression on B lymphocytes regulates autoimmunity in MRL/lpr and B6/lpr mice. *FASEB Journal* 2002; 16: A1215.
38. Hamaguchi, Y, Takehara, K, **Steeber, DA**, Tedder, TF, Sato, S. Intercellular adhesion molecule-1 and L-selectin regulate bleomycin-induced lung fibrosis and neutrophil immigration. *FASEB Journal* 2002; 16: A1053A1054.
37. Sato, S, Kaburagi, Y, Hasegawa, M, Nagaoka, T, Hamaguchi, Y, Kadono, T, **Steeber, DA**, Tedder, TF, Takehara, K. Cutaneous reverse arthus reaction requires expression of

- intercellular adhesion molecule-1 or L-selectin. *FASEB Journal* 2002; 16: A1051-A1052.
36. Kadono, T, Venturi, G, Tu, L, **Steeber, DA**, Tedder, TF. L-selectin endoproteolytic release: dogma, data, and reality. Keystone Symposia “Molecular Mechanisms of Leukocyte Trafficking”, Steamboat Springs, CO, April 9-14, 2002, page 83.
  35. Kaburagi, Y, Sato, S, **Steeber, DA**, Tedder, TF, Takehara, K. Development of cutaneous vasculitis induced by immune complex deposition requires expression of ICAM-1 and L-selectin. *Arthritis and Rheumatism* 2001; 44: S391.
  34. Fujimoto, Y, Tu, L, Miller, AS, Bock, C, Fujimoto, M, **Steeber, DA**, Doyle, C, Tedder, TF. Dendritic cell CD83 provides a progression signal required for CD4<sup>+</sup> T cell positive selection in the thymus. *FASEB Journal* 2001; 15: A672.
  33. **Steeber, DA**, Zhang, X-Q, Fujimoto, Y, Poe, JC, Pisetsky, DS, Tedder, TF. L-selectin deficiency in MRL-lpr mice eliminates lymphadenopathy and reduces autoimmunity. *FASEB Journal* 2001; 15: A1059.
  32. Shimada, Y, Takehara, K, **Steeber, DA**, Tedder, TF, Sato, S. Expression of L-selectin or ICAM-1 is required for a shift from delayed-type response (DTR) to immediate-type hypersensitivity response (IHR) in repeated elicitation of contact hypersensitivity. *FASEB Journal* 2001; 15: A715.
  31. Fiscus, LC, Van Herpen, J, **Steeber, DA**, Tedder, TF, Tang, ML. L-selectin is required for the development of airway hyperresponsiveness, but not airway inflammation in a murine model of asthma. *Journal of Allergy and Clinical Immunology* 2001; 107: S39.
  30. Inaoki, M, Sato, S, Shimada, Y, Kawara, S, **Steeber, DA**, Tedder, TF, Takehara, K. Decreased expression levels of L-selectin on subsets of leukocytes in severe psoriasis. *FASEB Journal* 2000; 14: A1147.
  29. Nagaoka, T, Kaburagi, Y, Takehara, K, **Steeber, DA**, Tedder, TF, Sato, S. Delayed wound healing in the absence of intercellular adhesion molecule-1 or L-selectin expression. *FASEB Journal* 2000; 14: A1147.
  28. Li, X, Tu, L, Murphy, PG, **Steeber, DA**, Tedder, TF. CHST1 and CHST2 sulfotransferase expression by vascular endothelial cells regulates shear-resistant leukocyte rolling via L-selectin. *FASEB Journal* 2000; 14: A1145.
  27. Murphy, PG, Tu, L, Li, X, **Steeber, DA**, Tedder, TF. Characterization of novel L-selectin ligands expressed by vascular endothelial cells. *FASEB Journal* 2000; 14: A1145.
  26. **Steeber, DA**, Tu, L, Zhang, X-Q, Tedder, TF. Soluble L-selectin is present in mouse and human sera at comparable levels. *FASEB Journal* 2000; 14: A1145.
  25. Haribabu, B, **Steeber, DA**, Sellars, DD, Bock, CB, Snyderman, R, Verghese, MW. Knockout mice reveal role of leukotriene B<sub>4</sub> receptors (BLTR) in inflammation. *FASEB Journal* 2000; 14: A1094.
  24. Wilcox, DA, Hodivala-Dilke, KM, **Steeber, DA**, Shattil, SJ, Hynes, RO, White, GC. Expression of a functional murine  $\alpha_{IIb}$ -human  $\beta_3$  heterodimer complex on the surface of megakaryocytes derived from  $\beta_3$ -knockout mice. *Thrombosis and Haemostasis* 1999; 24: S24.
  23. Leid, JG, **Steeber, DA**, Tedder, TF, Jutila, MA. Induction of an important epitope on leukocyte L-selectin by mAb and hyperthermic conditions, and regulation by cytochalasin B. *FASEB Journal* 1999; 13: A313.

22. **Steeber, DA**, Zhang, X-Q, Wagner, N, Tedder, TF. L-selectin and beta 7 integrins synergistically regulate lymphocyte subset migration into lymphoid tissues. *FASEB Journal* 1999; 13: A313.
21. Yadav, SS, Currin, RT, **Steeber, DA**, Lemasters, JJ, Tedder, TF, Harland, RC, Clavien, PA. P-selectin mediates ischemia-reperfusion injury in the mouse liver. *American Society of Transplant Surgeons* May, 1998.
20. Kubes, P, **Steeber, DA**, Tedder, TF, Kanwa, S. The role of L-selectin in leukocyte recruitment at various stages of an allergic response. *FASEB Journal* 1998; 12: A806.
19. Patel, DD, Fong, AM, Robinson, LA, **Steeber, DA**, Tedder, TF, Yoshie, O, Imai, T. A novel mechanism for leukocyte migration: fractalkine mediates the rapid capture and integrin-independent firm adhesion of circulating leukocytes. Keystone Symposia "Molecular Mechanisms of Leukocyte Trafficking", Lake Tahoe, NV, March 22-28, 1998, pg. 50.
18. Tedder, TF, Ley, K, **Steeber, DA**. Roles for L-selectin and ICAM-1 in leukocyte rolling in vivo during inflammation. Keystone Symposia "Molecular Mechanisms of Leukocyte Trafficking", Lake Tahoe, NV, March 22-28, 1998, pg. 31.
17. Patel, DD, Fong, AM, Robinson, LA, **Steeber, DA**, Tedder, TF, Yoshie, O, Imai, T. A novel mechanism for leukocyte migration: fractalkine mediates the rapid capture and integrin-independent firm adhesion of circulating leukocytes. *Journal of Investigative Medicine* 1998; 46: 235A.
16. Yadav, SS, Gao, W, Howell, D, **Steeber, DA**, Harland, RC, Tedder, TF, Clavien, PA. L-selectin and intercellular adhesion molecule-1 (ICAM-1) play a critical role in neutrophil adhesion and migration in the warm ischemic mouse liver. *American Society of Transplant Surgeons* May, 1997.
15. **Steeber, DA**, Green, NE, Palmer, SM, Tang, MLK, Tedder, TF. Impaired inflammatory responses in mice deficient in both L-selectin and intercellular adhesion molecule-1. *Journal of Allergy and Clinical Immunology* 1997; 99: 479.
14. Leid, JG, **Steeber, DA**, Tedder, TF, Jutila, MA. Induction of a potentially important conformational change of L-selectin by a mAb directed against a highly conserved region as measured by a second mAb against L-selectin. *Journal of Allergy and Clinical Immunology* 1997; 99: LB78.
13. Tang, MLK, Hale, LP, **Steeber, DA**, Tedder, TF. Role of L-selectin in lymphocyte migration to cutaneous sites of inflammation. *Journal of Allergy and Clinical Immunology* 1997; 99: 1729.
12. Haribabu, B, **Steeber, DA**, Ali, H, Richardson, RM, Tedder, TF, Snyderman, R. Chemoattractant receptor-induced phosphorylation of L-selectin. *Journal of Allergy and Clinical Immunology* 1997; 99: 1005.
11. **Steeber, DA**, Green, NE, Tang, MLK, Sato, S, Tedder, TF. L-selectin: important roles in immune responses and signal transduction. *Australian Society for Biochemistry and Molecular Biology* 1996; 28: 10-01.
10. **Steeber, DA**, Green, NE, Sato, S, Tedder, TF. Lymphocyte migration and humoral immune responses in L-selectin deficient mice. *FASEB Journal* 1996; 10: A1029.
9. Sato, S, Ono, N, **Steeber, DA**, Tedder, TF. CD19 is a response regulator of B lymphocyte development, activation and differentiation. *FASEB Journal* 1996; 10: A1462.

8. **Steeber, DA**, Albrecht, RM. Microvascular changes in murine popliteal lymph nodes following antigen stimulation: A correlative light and electron microscopic study. *Microscopy Research and Technique* 1994; 27: 353.
7. **Steeber, DA**, Albrecht, RM. Characterization of vascular proliferation in the lymph node following local antigen stimulation. *FASEB Journal* 1994; 8: A514.
6. Torhorst, CT, **Steeber, DA**, Hong, JA, Sims, PA, Erickson, CM, Albrecht, RM. In vitro effects of organophosphates (OP) on macrophage killing activity. *Toxicologist* 1994; 14: 124.
5. Hong, JA, Torhorst, CT, **Steeber, DA**, Sims, PA, Erickson, CM, Albrecht, RM. Effects of triphenylphosphate (TPP) on HL-60 cell differentiation. *Toxicologist* 1994; 14: 322.
4. **Steeber, DA**, Butzow, J, Lutz, L, Albrecht, RM. "Immunotoxicity of organophosphates: Inhibition of cell surface antigen expression and cell differentiation." Midwest Society of Electron Microscopists, April 1991, Stevens Point, WI.
3. Bjorling, DE, Rao, VK, Gruel, SM, Albrecht, RM, **Steeber, DA**, Saban, R. Alteration of reactivity of native arteries induced by venous graft placement. *FASEB Journal* 1990; 4: A1149.
2. **Steeber, DA**. "Vascular corrosion casting." Scanning Electron Microscopy meeting, May 1990, Bethesda, MD.
1. **Steeber, DA**, Erickson, CM, Hodde, KC, Albrecht, RM. "Vascular changes in popliteal lymph nodes due to antigen challenge in normal and lethally irradiated mice." Scanning Electron Microscopy meeting, May 1986, New Orleans, LA.

#### Invited Book Chapters

6. **Steeber, DA**, Subramanian, H, Grailer, JJ, Conway, RM, Storey, TJ. L-selectin-mediated leukocyte migration. In: *Adhesion Molecules: Function and Inhibition*; 2007; Ley, K (Ed), Birkhauser Publishing, Basel, Switzerland, pp. 27-70.
5. Tedder, TF, Li, X, **Steeber, DA**. The selectins and their ligands: Adhesion molecules of the vasculature. In: *Advances in Molecular and Cell Biology*; 1999; Bittar, EE, Garrod, DR, North, AJ, Chidgey, MAJ (Eds.), JAI Press Inc., Stamford, CT, pp. 65-111.
4. **Steeber, DA**, Tedder, TF. The molecular basis of lymphocyte migration. In: *Inflammation: Basic Principles and Clinical Correlates*; 1999; Gallin, JI and Snyderman, R (Eds.), Lippincott Williams & Wilkins, Philadelphia, PA, pp. 593-605.
3. Robinson, LA, **Steeber, DA**, Tedder, TF. The selectins in inflammation. In: *Inflammation: Basic Principles and Clinical Correlates*; 1999; Gallin, JI and Snyderman, R (Eds.), Lippincott Williams & Wilkins, Philadelphia, PA, pp. 571-583.
2. Tedder, TF, Green, N, Miller, A, **Steeber, DA**. L-selectin function and inflammatory disease. In: *Leukocyte Recruitment in Inflammatory Disease*; 1995; Peltz, G (Ed.), RG Landes Co., Austin, TX, pp. 165-210.
1. **Steeber, DA**, Albrecht, RM. Effects of antigen stimulation and irradiation on the blood vascular system of murine lymph nodes. In: *Scanning Electron Microscopy of Vascular Casts: Methods and Applications*; 1992; Motta, PM, Murakami, T and Fujita, H (Eds.), Kluwer Academic Publishers, Boston, MA, pp. 313-329.

**Invited lectures**

19. April 2013, “The Sticky Truth Behind Inflammation” Lecture Series, Dept. of Kinesiology, University of Wisconsin-Milwaukee, Milwaukee, WI.
18. March 2011, “New Insights into the Role of L-selectin in Regulating Lymphocyte Migration” Multidisciplinary Conference, Medical College of Wisconsin, Milwaukee, WI.
17. February 2009, “Why Are Immune Cells Sticky” Cell and Molecular Biology Seminar Series, Dept. of Biological Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI.
16. July 2008, “How and Why Leukocytes Migrate” Department of Dermatology, Kanazawa University Graduate School of Medical Science, Kanazawa, Japan.
15. July 2008, “Lymphocyte Trafficking: A Key Regulator of Lymphoid Tissue Homeostasis” Department of Dermatology, Chukyo General Hospital, Nagoya, Japan.
14. July 2008, “Regulation of Leukocyte Migration and its Effects on Maintaining Homeostasis” Department of Dermatology, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan.
13. February 2008, “The In’s and Out’s of Mucosal Lymphocyte Migration” Department of Animal Sciences, University of Wisconsin, Madison, WI.
12. November 2005, “Role of Leukocyte Migration in the Pathogenesis of Murine Lupus” Department of Physiology, Medical College of Wisconsin, Milwaukee, WI.
11. July 2004, “Morphometry, Stereology and Quantitative Aspects of Immunolabeling.” Department of Animal Sciences, University of Wisconsin, Madison, WI.
10. October 2003, “Role of adhesion molecules in health and disease.” Biology Colloquium Seminar Series, Department of Biological Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI.
9. March 2002, “Regulation of leukocyte migration by adhesion molecules.” Department of Biological Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI.
8. February 2002, “Defining adhesion molecule cascades that direct leukocyte migration.” Indiana University Purdue University Indiana (IUPUI), Indianapolis, IN.
7. April 2002, “Roles for soluble L-selectin and ICAM-1 in regulating leukocyte/endothelial cell interactions.” Department of Rheumatology, Duke University Medical Center, Durham, NC.
6. February 2001, “Role of adhesion molecules in the pathogenesis of rheumatoid arthritis.” Department of Rheumatology, Duke University Medical Center, Durham, NC.
5. May 2000, “Loss of L-selectin function is protective in a murine model of lupus.” Department of Rheumatology, Duke University Medical Center, Durham, NC.
4. May 1997, “Cooperative interactions between L-selectin and intercellular adhesion molecule-1: Impaired inflammatory responses in L-selectin/ICAM-1 deficient mice.” Institute of Molecular Medicine and Genetics, Medical College of Georgia, Augusta, GA.
3. April 1997, “Cooperative interactions between L-selectin and intercellular adhesion molecule-1: Impaired inflammatory responses in L-selectin/ICAM-1 deficient mice.” Genetics Institute, Cambridge, MA.

2. October 1996, “L-selectin: Important roles in immune responses and signal transduction.” Immunology seminar series at The Hanson Centre for Cancer Research, Adelaide, Australia.
1. October 1996, “L-selectin: Important roles in immune responses and signal transduction.” Immunology seminar series at The Walter and Elizabeth Hall Institute (WEHI), Melbourne, Australia.

### **Direct Research Supervision**

#### **Postdoctoral Fellows**

Masanari Kodera, MD, 12/2004 – 5/2006

#### **Research Technicians**

Andrew Karalewitz, BS, 2007-2008

Nastassia Richardson, BS, 2008

#### **Graduate Students**

Hariharan Subramanian, PhD 2008, Thesis “Role of L-selectin-mediated signaling in SLC-induced lymphocyte migration”

Rochelle M. Conway, PhD 2009, Thesis “Lymphocyte migration plays a key role in the generation of a mucosal immune response”

Jamison J. Grailer, PhD 2010, Thesis “Differences in lymphocyte subset recruitment by anatomically distinct lymphoid tissues during homeostasis and inflammation”

Jessica J. Loppnow, PhD student, PhD 2013, Thesis “Adhesion molecule regulation of regulatory T cell migration”

Vyara Z. Matson, PhD student, 2009-present

Abner Fernandez, MS student, 2011-present

Sreya Biswas, MS student, 2011-present

#### **Undergraduate Students**

Valarie Hohlweck, Jessica Tommerup, Nathan Berg, Morgan Scharrer, Andrew Karalewitz, David Gallegos, Theresa Thompson, Susan Strenk, Dusty Kopecky, Elizabeth Buenger, Nathan Stark, Nastassia Richardson, Alex Lichtenstein, Liya Davidova, Anita Karra, Richard M. Mueller, Kimberly C. Ohlrich, Amy L. Rymaszewski, Gaormormee Yang, Allison E. Bartoszek, Stephanie Bora, Sean Mackman, Kareem William, Margaret Linden, Amber Huffine, Ahmed Al-Muhairi, Rishi Sharma, Louis Palen

#### **High School Students**

Marie Baylon, Margaret Aasen, Nancy Gao, Jenna Lieungh, Alyssa Myszewski

#### **High School Science Teachers**

Elizabeth Zdrojewski, Judy Birschbach

### **Major Service**

#### **National**

#### **Journal reviews**



*Am. J. Physiol., Arth. Rheum., Biomed. Mater., Blood, Cell. Immunol., Eur. J. Immunol., FASEB J., Immunity, Int. Immunol., J. Biol. Chem., J. Cell Biol., J. Immunol. Methods, J. Immunol., J. Invest. Derm., J. Leuk. Biol., J. Thromb. Haemost., Microcirculation, Microsc. Microanal., Mol. Cancer Ther., Nature Med., Nature Rev. Immunol., New Engl. J. Med.*

### **Grant reviews**

American Heart Association, member of the Vascular Wall Biology 1 study group, 2002-2005  
Wellcome Trust  
Kentucky Science and Engineering Foundation (KSEF)  
National University of Singapore Academic Research Fund

### **Professional organizations**

World Congress for Microcirculation, 2004-2007, member of the local organizing committee for the Eighth World Congress for Microcirculation meeting, Milwaukee in August, 2007.

American Association of Immunologists:

- 2006    Chaired the Block Symposium “Trafficking of Immune Cells,” Boston, MA.
- 2005    Block Chair: “Cellular Adhesion, Migration and Inflammation”  
          Organized all oral and poster Block sessions, San Diego, CA.  
          Chaired the Block Symposium “Leukocyte Adhesion Mechanisms.”
- 2004    Block Chair: “Cellular Adhesion, Migration and Inflammation”  
          Organized all oral and poster Block sessions, Washington DC.  
          Chaired the Block Symposium “Soluble Mediators of the Immune System.”
- 2003    Block Chair: “Cellular Adhesion, Migration and Inflammation”  
          Organized all oral and poster Block sessions, Denver, CO.
- 1999    Chaired Block Symposia: “Selectins and their ligands”  
          Co-chaired Block Symposia: “Inflammation and inflammatory diseases”  
          Washington DC.
- 1997    Co-chaired Symposia: “Leukocyte Migration and Inflammation,” San Francisco, CA.

### **University, College and Department**

Institutional Animal Care and Use Committee (IACUC)  
    Member 2007 – present; Vice Chair 2010 – present  
Director, Flow Cytometry Core Facility, 2004-present  
Graduate Committee, 2004-2010, 2012-present  
Thesis committees, 22 MS and PhD committees across multiple Colleges and departments

### **Teaching Experience**

BioSci 401 Immunology Lecture, taught each fall, average 80 students  
BioSci 402 Immunological Techniques, taught each spring semester, average 16 students  
BioSci 925 Graduate Seminar in Cell and Molecular Biology, taught each fall semester, average 12 students