

Ashley R. Sloat, Ph.D.

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Education

- 08/2004-12/2007 North Dakota State University, Fargo, North Dakota
Baccalaureate (BS equivalent) Microbiology
- *Summa cum laude* (GPA 4.0/4.0)
 - Chemistry, biotechnology, and Spanish minors
- 07/2008-04/2013 University of Michigan, Ann Arbor, Michigan
Ph.D., Biomedical Sciences
- Specialty in T cell-mediated immune disorders
 - UM Graduate Teacher Certificate

Certification

- 2014-present Patent Agent (license #72241)

Intellectual Property Consulting

Owner, President

- 2017-present Aurora Consulting LLC, Traverse City, MI

Director of Operations

- 2016 Aurora Consulting LLC, Sunnyvale, CA

Sr. Patent Strategy Specialist

- 2015-2016 Hudak Consulting Group, LLC, Sunnyvale, CA

Patent Agent

- 2014-present USPTO – registration No. 72,241

Patent strategy specialist

- 2013-2015 Hudak Consulting Group, LLC, Sunnyvale, CA

Patent Infringement Research

- June 2013 University of Michigan, Ann Arbor, MI in collaboration with Marshall, Gerstein & Borun LLP, Chicago, IL

Technology Licensing

- 2012-2013 Office of Technology Transfer, University of Michigan, Ann Arbor, MI

Scientific Writing

Regulatory writing

2013-present Phrixus Pharmaceuticals, Ann Arbor, MI

Editorial board

2009-2013 Faculty of 1000 Associate Editor, *Stem Cells and Regeneration* section

Bibliography

Patent Publications

1. Hudak JA, **Sloat AR**, Wolff KL. Systems and Methods for Managing Intellectual Property Assets. US Nonprovisional Patent Application Serial No. 14/823,432 (US 2016/0042460A1), filed August 11, 2015.

Publications: peer-reviewed

1. Vomhof-DeKrey EE, Hermann RJ, Palmer MF, Benton K, **Sandy AR**, Dorsam S, and Dorsam GP. 2008. TCR signaling and environment affect vasoactive intestinal peptide receptor-1 expression in primary mouse CD4 T cells. *Brain Behav Immun* 22(7): 1032-40.
2. Dorsam GP, Hoselton SA, **Sandy AR**, Samarasinghe AE, Vomhof-DeKrey EE, Dorsam ST and Schuh JM. 2010. Expression profiling and network analysis of peripheral blood monocytes in a chronic model of allergic asthma. *Microbiol Immunol* 54: 558-563.
3. **Sandy AR** and Maillard I. 2009. Notch signaling in the hematopoietic system. *Expert Opin Biol Ther*, Nov 9(11): 1383-1389.
4. Denny MF, Yalavarthi S, Zhao W, Thacker SG, Anderson M, **Sandy AR**, McCune WJ, and Kaplan MJ. 2010. A distinct subset of proinflammatory neutrophils isolated from patients with system lupus erythematosus induces vascular damage and synthesizes type I IFNs. *J Immunol* 184(6): 3284-3297.
5. Vomhof-DeKrey EE, Sandy AR, Failing JJ, Hermann, RJ, Hoselton SA, Schuh JM, Weldon AJ, Payne KJ, Dorsam GP. 2011. Radical reversal of vasoactive intestinal peptide (VIP) receptors during early lymphopoiesis. *Peptides*, 32(10): 2058-2066. PMID 21878358
6. Zhang Y, **Sandy AR**, Wang J, Radojic V, Shan GT, Tran IT, Friedman A, Kato K, He S, Cui S, Hexner E, Frank DM, Emerson SG, Pear WS, Maillard I. 2011. Notch signaling is a critical regulator of allogeneic CD4+ T cell responses mediating graft-versus-host disease. *Blood* 117: 299-308.
7. Tran IT, **Sandy AR**, Carulli AJ, Ebens C, Chung J, Shan GT, Radojic V, Friedman A, Gridley T, Shelton A, Reddy P, Samuelson LC, Yan M, Siebel CW and Maillard I. 2013. Blockade of individual Notch ligands and receptors controls graft-versus-host disease. *J Clin Invest* 123(4): 1590-1604.
8. **Sandy AR**, Chung J, Toubai T, Shan GT, Tran IT, Friedman A, Blackwell TS, Reddy P, King PD, and Maillard I. 2013. T cell-specific Notch inhibition block graft-versus-host disease by inducing a hyporesponsive program in alloreactive CD4⁺ and CD8⁺ T cells. *J Immunol* 190(11): 5818-5828.
9. **Sandy AR**. 2013. *The role of Notch signaling in T cell-mediated immune disorders*. Graduate Program in Immunology Dissertation. University of Michigan, Ann Arbor, Michigan.
10. **Sandy AR**, Stoolman J, Malott K, Pongtornpipat P, Segal B, and Maillard I. 2013. Notch signaling regulates T cell accumulation and function in the Central Nervous System during Experimental Autoimmune Encephalomyelitis. *J Immunol* 19(4): 1606-1613.

11. Wood S, Feng J, Chung J, Radojic V, **Sandy AR**, Friedman A, Shelton A, Yan M, Siebel CW, Bishop DK, Maillard I. 2015. Transient blockade of Delta-like Notch ligands prevents allograft rejection mediated by cellular and humoral mechanisms in a mouse model of heart transplantation. *J Immunol* 194(6): 2899-2908. PMID 25687759.
12. Neal LM, Qui Y, Chung J, Xing E, Cho W, Malachowski AM, **Sandy-Sloat A**, Osterholzer JJ, Maillard I, Olszewski MA. 2016. T Cell Restricted Notch Signaling Contributes to Pulmonary Th1 and Th2 Polarization During *Cryptococcus neoformans* Infection. *J Immunol* submitted.

Book chapter: peer-reviewed

1. **Sandy AR**, Jones M, Maillard I. 2010. Notch signaling and development of the hematopoietic system. Reichrath J and Reichrath S (Eds.). *Notch signaling in embryology and cancer*. Austin: Landes Bioscience and Springer Science+Business Media.

Presentations

Patent Strategy Presentations

1. "Patently Strategic: Patent Strategy for Entrepreneurs." SPARK, Ann Arbor, Michigan, 04/2016.

Abstracts and poster presentations

1. **Sandy AR**, Hoselton S, Schuh J, Dorsam G. Elevated Ikaros Expression Profiles in Fungal-Sensitized CD11b⁺ Lung Leukocytes. Poster presentation. ASBMB Conference. Moorehead, MN 10/2006.
2. **Sandy AR**, Hoselton S, Schuh J, Dorsam G. Elevated Ikaros Expression Profiles in Fungal-Sensitized CD11b⁺ Lung Leukocytes. Poster presentation. Department of Chemistry and Molecular Biology, North Dakota State University. Fargo, ND, 05/2007.
3. **Sandy AR**, Failing J, Vomhof-DeKrey E, Hoselton S, Schuh J, Dorsam G. The Tumor Suppressor Ikaros Transcription Factor is Crucial for the Anti-Proliferative Vasoactive Intestinal Peptide Receptor-1 Expression in Developing Thymocytes. Poster presentation. ASBMB Conference. Moorehead, MN 10/2007.
4. **Sandy AR**, Failing J, Vomhof-DeKrey E, Hoselton S, Schuh J, Dorsam G. The Tumor Suppressor Ikaros Transcription Factor is Crucial for the Anti-Proliferative Vasoactive Intestinal Peptide Receptor-1 Expression in Developing Thymocytes. Poster presentation. Centers of Biomedical Research Excellence Meeting. Fargo, ND, 01/2008.
5. **Sandy AR**, Failing J, Vomhof-DeKrey E, Hoselton S, Schuh J, Dorsam G. The Tumor Suppressor Ikaros Transcription Factor is Crucial for the Anti-Proliferative Vasoactive Intestinal Peptide Receptor-1 Expression in Developing Thymocytes. Poster presentation. ASBMB/FASEB Meeting. San Diego, CA, 04/2008.
6. **Sandy AR**, Failing J, Vomhof-DeKrey E, Hoselton S, Schuh J, Dorsam G. The Tumor Suppressor Ikaros Transcription Factor is Crucial for the Anti-Proliferative Vasoactive Intestinal Peptide Receptor-1 Expression in Developing Thymocytes. Poster presentation. Department of Chemistry and Molecular Biology, North Dakota State University. Fargo, ND, 05/2008.
7. **Sandy AR**, Failing J, Vomhof-DeKrey E, Hoselton S, Schuh J, Dorsam G. The Tumor Suppressor Ikaros Transcription Factor is Crucial for the Anti-Proliferative Vasoactive Intestinal Peptide Receptor-1 Expression in Developing Thymocytes. Poster presentation. Centers of Biomedical Research Excellence Meeting. Fargo, ND, 06/2008.
8. **Sandy AR**, Shan GT, Tran IT, Friedman A, Wang J, He S, Hexner E, Frank D, Emerson SG, Pear WS, Zhang Y, Maillard I. Notch signaling critically regulates multiple effector functions of alloreactive T cells during graft-versus-host disease Poster presentation. Cold Spring Harbor Laboratory Spring Meeting. Gene Expression and Signaling in the Immune System. Cold Spring Harbor, NY, 04/2010.
9. **Sandy AR**, Tran IT, Shan GT, Friedman A, Wang J, Kato K, He S, Hexner E, Emerson SG, Pear WS, Zhang Y, Maillard I. Notch Signaling is a Critical Regulator of Allogeneic T cell Responses Mediated Graft-versus-Host Disease. Oral and poster presentation. Autumn

- Immunology Conference, Chicago, IL, 11/2010.
10. Tran IT, **Sandy AR**, Shan GT, Radojic V, Friedman A, Shelton A, Yan M, Siebel CW, Maillard I. Inhibition of individual Notch ligands and receptors provides a new targeted therapeutic approach in graft-versus-host disease. University of Michigan Department of Internal Medicine Research Day, Ann Arbor, MI, 05/2011.
 11. **Sandy AR**, Rao P, Pongtornpipat P, Segal B, Maillard I. Notch signaling is a critical regulator of myelin-reactive T cells mediating experimental autoimmune encephalomyelitis. 2011 Graduate Program in Immunology Retreat, Ann Arbor, MI, 05/2011.
 12. **Sandy AR**, Chung J, Tran IT, Shan GT, Friedman A, King PD, Zhang Y, Maillard I. Notch signaling critically regulates CD4⁺ and CD8⁺ T cell responses after allogeneic bone marrow transplantation. The Notch Meeting, Athens, Greece, 10/2011.
 13. Tran IT, **Sandy AR**, Carulli A, Shan GT, Radojic V, Friedman A, Shelton A, Samuelson L, Yan M, Siebel CW, Maillard I. In vivo blockade of individual Notch ligands and receptors provides a new targeted therapeutic approach in graft-versus-host disease. American Society of Hematology Annual Meeting and Exposition, San Diego, CA, 12/2011.
 14. Ebens CL, Chung J, Koch U, Tran IT, **Sandy AR**, Yu A, Friedman A, Yan M, Siebel CW, Radtke F, Maillard I. Identification of Notch Ligand Source in Acute Graft-Versus-Host Disease. Oral Presentation. 23rd Annual Pediatric Research Symposium. Ann Arbor, MI 10/2012.
 15. **Sandy AR**, Chung J, Tran IT, Shan GT, Friedman A, Blackwell TS, Reddy P, King PD, Maillard I. Notch inhibition in alloreactive CD4⁺ and CD8⁺ T cells blocks graft-versus-host disease by inducing a hyporesponsive program with features of split T cell anergy. Oral presentation. American Society of Hematology Meeting. Atlanta, GA. 12/2012.

Research presentations- University of Michigan, Ann Arbor

1. "Identifying Novel Targets and Pathways Regulated by Notch Signaling in T Cells." Stem Cell Club, Life Sciences Institute, 02/2009.
2. "Identifying Novel Targets and Pathways Regulated by Notch Signaling in T Cells." Mouse genetics interest group, Mouse Club, 04/2009.
3. "Identifying Novel Targets and Pathways Regulated by Notch Signaling in T Cells." Cell and Developmental Biology Group Meeting, 08/2009.
4. "Notch Signaling is a Critical Regulator of Allogeneic T Cell Responses Mediating Graft-versus-host Disease." Cell and Developmental Biology Retreat, 10/2009.
5. "Molecular Dissection of Notch Signaling in Alloimmune T cell Responses." Mouse genetics interest group, Mouse Club, 04/2010.
6. "Notch signaling after allogeneic hematopoietic stem cell transplantation." Stem Cell Club, Life Sciences Institute, 05/2010.
7. "Molecular Dissection of Notch Signaling in Alloimmune T cell Responses." Cell and Developmental Biology Group Meeting, 05/2010.
8. "Notch signaling in allogeneic and autoimmune responses." Autoimmune disease interest group, Joint Lab Meeting, 11/2010.
9. "Notch signaling is a critical regulator of alloimmune T cell responses mediating graft-versus-host disease." Immunology Program Seminar Series, 2/2011.
10. "Notch signaling is a critical regulator of alloimmune and MOG-reactive T cell responses." Autoimmune disease interest group, Joint Lab Meeting, 06/2011.
11. "Notch signaling in alloimmunity and autoimmunity." Stem Cell Club, Life Sciences Institute, 06/2011.
12. "Notch signaling in alloimmunity and autoimmunity." Notch Club, 07/2011.
13. "Notch signaling is a critical regulator of alloimmune and autoreactive T cell responses." Immunology Program Seminar Series, 2/2012.
14. "Notch signaling is a critical regulator of alloimmune and autoreactive T cell responses." Cell and Developmental Biology Group Meeting, 02/2012.
15. "New mechanisms of Notch action in alloreactive T cells." Life Sciences Institute Colloquium, 03/2012.

16. "Notch signaling is a critical regulator of MOG-reactive CD4⁺ T cell responses during experimental autoimmune encephalomyelitis." Cell and Developmental Biology Group Meeting, 11/2012.
17. "Notch signaling is a critical regulator of CNS-infiltrating MOG-reactive CD4⁺ T cell during experimental autoimmune encephalomyelitis. Immunology Program Seminar Series, 01/2013.
18. "The role of Notch signaling in T cell-mediated immune disorders." Graduate Program in Immunology Thesis Defense, 04/2013.

Memberships in Professional Societies

2004-2013 National Society of Collegiate Scholars

Teaching and related services

Courses – University of Michigan, Ann Arbor, MI

- 09-12/2010 Graduate Student Instructor
Cell and Developmental Biology 530
- I lectured one hour every week to a subset of the students. I was responsible for grading homework and exams for the entire class in collaboration with the other eight graduate student instructors.
- 01/2011-04/2011 Graduate Student Instructor
PIBS 505
- I facilitated discussions and presented material regarding proper use of animal subjects and avoiding plagiarism/data fabrication.
- 01-04/2012 Graduate Student Instructor
Immunology 850
- I provided extensive feedback to students regarding presentation style and content. I also graded student presentations, exams, and grants.
- 04-2012 Guest Lecturer
Immunology 440
- I lectured undergraduate and graduate students on the basic principles of autoimmunity and transplantation.

Direct mentoring

- 2010-present Mentoring of undergraduate students, University of Michigan, Ann Arbor, MI
- Kelli Malott (CMB)
 - Prae Pongtornpipat (MCDB)
- Current: Laboratory technician at the University of Arizona Cancer Center

Honor and Awards

North Dakota State University, Fargo, ND

- 09/2004 Admission with Distinction
- 09/2004 Honor Scholarship
- 09/2004 Sam Walton Community Scholarship
- 2004-2007 College of Agriculture Dean's List
- 01/2005 Lion's Club Scholarship
- 01/2005 Gordon Larson Scholarship
- 09/2005 Vernon E. Wendlandt Scholarship
- 09/2006 Vernon E. Wendlandt Scholarship

09/2006 Christoferson, Lee A. Sr. Scholarship
09/2006 Doubly Microbiology Scholarship
09/2007 Steinhaus-Rhinehart Scholarship
09/2007 Doubly Microbiology Scholarship
10/2007 ASBMB/FASEB, San Diego, CA Travel Award

University of Michigan, Ann Arbor, MI

09/2008 Maas/Dean Fellowship
05/2011 Monte V. Hobbs Award
12/2012 American Society of Hematology Abstract Achievement Award

Service

2004-2007 Biotechnology and Microbiology Club, North Dakota State University, Fargo, ND
09/2004 American Heart Association Six-Mile Heart Walk, Fargo, ND
04/2005 Multiple Sclerosis Walk volunteer, Fargo, ND
10/2005 Yunker Farm volunteer, Fargo, ND
12/2005 Scholarship Recognition Luncheon, Fargo, ND
12/2005 Innovis Health Festival of Trees volunteer, Fargo, ND
04/2006 Sigma Alpha Big Event volunteer, Fargo, ND
10/2006 15th Annual Day of Caring by United Way, Fargo, ND
11/2006 Dorothy Day House of Hospitality and Food Pantry, Fargo, ND
12/2006 Caroling at Little Falls Lutheran Center, Little Falls, MN
03/2007 Dorothy Day Food Pantry, Fargo, ND
03/2007 Ronald McDonald House Volunteer, Fargo, ND
04/2007 NDSU Wild for Wellness Fair volunteer, Fargo, ND
04/2007 Multiple Sclerosis Walk volunteer, Fargo, ND
11/2007 Ronald McDonald House Volunteer, Fargo, ND
2007 Mentoring E.L.L. students at Carl Ben Eielson School, Fargo, ND
2008 Biochemistry Journal Club, North Dakota State University, Fargo, ND
06/2008 Bike MS: Larkin Hoffman 150 Ride, Minneapolis, MN
2008-2011 Graduate Student Council, University of Michigan, Ann Arbor, MI
04/2009 Relay for Life, Ann Arbor, MI
09/2010-present Graduate Student Affairs Committee, University of Michigan, Ann Arbor, MI
2010-2011 Immunology Program Social Chair, University of Michigan, Ann Arbor, MI
04/2011 Relay for Life, Ann Arbor, MI

Grants

Sponsor: Immunology Program Miller Fund, University of Michigan, Ann Arbor, MI
Role: Principal researcher
Title: The role of Notch signaling in the expansion of regulatory T cells and in cAMP production by alloreactive CD4⁺ and CD8⁺ T cells during graft-versus-host disease.

Total project period: 05/2011-05/2012

Total direct costs: \$20,000 (research)

Aims and goals: Investigate whether Notch signaling promotes the de novo generation of Tregs in the periphery after allogeneic bone marrow transplantation and if this results in increased cAMP levels in both alloreactive Treg and Tconv.

Sponsor: Rackham Graduate School, University of Michigan, Ann Arbor, MI
Role: Principal recipient
Title: Notch signaling is a critical regulator of allogeneic T cell responses mediating graft-versus-host disease.

Total project period: 03/2009-04/2009

Total direct costs: \$600 (travel)
Aims and goals: Present my research on determining the mechanism of Notch action of alloreactive T cell differentiation during graft-versus-host disease at Cold Spring Harbor Gene Expression and Signaling in the Immune System Conference.

Sponsor: Rackham Graduate School, University of Michigan, Ann Arbor, MI
Role: Principal recipient
Title: Unraveling the mechanisms of *Il2* and *Ifng* gene regulation in Notch-deprived alloreactive T cells.

Total project period: 10/2009-01/2010
Total direct costs: \$1,500 (research)
Aims and goals: Examine if Notch signaling regulates the intensity of NFκB activation in primary alloreactive T cells, leading to enhanced *Il2* and *Ifng* gene transcription.

Sponsor: Rackham Graduate School, University of Michigan, Ann Arbor, MI
Role: Principal recipient
Title: Notch signaling is a critical regulator of allogeneic T cell responses mediating graft-versus-host disease.

Total project period: 10/2010-11/2010
Total direct costs: \$600 (travel)
Aims and goals: Present my research on investigate the signal transduction pathways downstream of the T cell receptor leading to cytokine secretion in Notch-deprived alloreactive CD4⁺ and CD8⁺ T cells at the Autumn Immunology Conference in Chicago, IL.

Sponsor: Rackham Graduate School, University of Michigan, Ann Arbor, MI
Role: Principal researcher
Title: The role of Notch signaling in regulating Foxp3 expression in alloreactive CD4⁺ T cells.

Total project period: 01/2011-04/2011
Total direct costs: \$3,000 (research)
Aims and goals: Determine if Notch-deprived Tregs contribute to suppressed cytokine production by conventional Notch-deficient alloreactive T cells *in vivo* and *in vitro*.

Sponsor: Rackham Graduate School, University of Michigan, Ann Arbor, MI
Role: Principal recipient
Title: Notch critically regulates CD4⁺ and CD8⁺ T cell responses after allogeneic bone marrow transplantation.

Total project period: 09/2011-10/2011
Total direct costs: \$950 (travel)
Aims and goals: Present my research on investigating the signal transduction pathways in Notch-deficient T cells that lead to an anergic-like T cell phenotype during graft-versus-host disease at the Notch Meeting in Athens, Greece.

Sponsor: Rackham Graduate School, University of Michigan, Ann Arbor, MI
Role: Principal recipient
Title: Notch inhibition in alloreactive CD4⁺ and CD8⁺ T cells blocks graft-versus-host disease by inducing a hyporesponsive program with features of split T cell anergy.

Total project period: 12/2012
Total direct costs: \$700 (travel)
Aims and goals: Present my research on investigating the signal transduction pathways in Notch-deficient T cells that lead to an anergic-like T cell phenotype during graft-versus-host disease at the American Society of Hematology Meeting in Atlanta, GA.