

Curriculum Vitae

Name: Wayne G. Shreffler
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Place of Birth:

Education

B.S.	Cell & Molecular Biology	University of Washington
Ph.D.	Characterization of the deg/EnaC gene, <i>unc-8</i> , and its suppressor loci. Advisor: Eve J. Wolinsky, Ph.D.	New York University, Graduate School of Arts & Sciences
M.D.	Medicine	New York University, School of Medicine

Postdoctoral Training

7/98-6/00	Residency	Pediatrics	Albert Einstein College of Medicine/ Montefiore Medical Center
7/00-6/03	Fellowship	Allergy and Immunology; Research Mentors: Hugh A. Sampson & Lloyd Mayer	Mount Sinai School of Medicine

Faculty Academic Appointments

7/03-06/09	Assistant Professor	Pediatrics/ Allergy & Immunology	Mount Sinai School of Medicine
7/09-10/09	Associate Professor	Pediatrics/ Allergy & Immunology	Mount Sinai School of Medicine
11/09-present	Adjunct Associate Professor	Pediatrics/ Allergy & Immunology	Mount Sinai School of Medicine
11/09-present	Lecturer (Pending Appointment)	Pediatrics	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions

7/03-10/09	Attending Physician	Pediatrics	Mount Sinai Medical Center
11/09-	Assistant Pediatrician	Pediatrics	Massachusetts General Hospital

Other Professional Positions

Major Administrative Leadership Positions

Local

7/07-10/09	Course co-director, A/I Fellowship Basic Immunology	Mount Sinai Allergy/ Immunology Training Program
11/09-	Director, Food Allergy Center	Massachusetts General Hospital

Committee Service

Local

2007-2009	Medical School Admissions	Mount Sinai School of Medicine
	2007-current	Member
2007-2009	Graduate School Curriculum Committee	Mount Sinai Graduate School of Biological Sciences
	2007-2009	Member, Immunology Core
2010-	MGHfC Research Council	Member

National and International

2000-current	Food allergy, Anaphylaxis, Dermatology, and Drug Allergy (FADDA)	American Academy of Allergy, Asthma & Immunology
	2000-03	Fellow-in-training member
	2003-current	Member
2001-current	Mechanisms of Asthma and Allergic Inflammation Interest Section (MAAI)	American Academy of Allergy, Asthma & Immunology
	2001-03	Fellow-in-training member
	2003-current	Member
2009-10	Program Committee	American Academy of Allergy, Asthma & Immunology
	2009-current	Abstract Reviewer, MAAI section

Professional Societies

2000-current	American Academy of Allergy, Asthma & Immunology	
	2000-03	Fellow-in-training member
	2003-09	Member
	3/09-current	Fellow

Grant Review Activities

2007	The Wellcome Trust Award 6/07	The Wellcome Trust Ad hoc Member
2008	Raine Priming Grant Review Group 9/08	Raine Medical Research Foundation Ad hoc Member
2008	FAAN Peer Review Group 10/08	The Food Allergy & Anaphylaxis Network Ad hoc Member
2009	Peer Reviewed Medical Research Program 7/09	Department of Defense Congressionally Directed Medical Research Program Ad hoc Member
2010	Food Allergy Initiative/ Howard Gitis Memorial Research Award 1/10	American Academy of Allergy, Asthma & Immunology Ad hoc Reviewer

Editorial Activities

Ad hoc Reviewer

Journal of Allergy and Clinical Immunology (Editorial Board Member 2010-)
 Journal of Leukocyte Biology
 Clinical and Experimental Allergy
 International Archives of Allergy and Immunology
 Biomed Central Immunology
 Allergy
 FEBS Letters
 Pediatrics

Other Editorial Roles

2010	Editorial Board Member	The Journal of Allergy and Clinical Immunology
2009, 2010	Mechanisms of Asthma and Allergic Inflammation Section, AAAAI	Annual Meeting Abstract Reviewer

Honors and Prizes

2001, 2002, 2003	AAAAI Travel Award	American Academy of Allergy, Asthma & Immunology	Research
2006, 2008	Child Health Research Center Retreat	National Institute of Child Health and Human Development	Research
2007, 2008	School in Hypersensitivity & Allergic Diseases	Clinical Immunological Society/ American Academy of Allergy, Asthma & Immunology	Research

Report of Funded and Unfunded Projects

Funding Information

Past

4/06-7/07 **Molecular & Developmental Biology in Pediatric Research
NCCAM/ K12 HD052890**

Trainee

The objective of this grant was to support my career development.

7/06-6/08

**Characterization of the adjuvant activity of the peanut allergen, Ara h 1
Food Allergy Initiative**

PI

The objectives of this study were to identify receptors for peanut allergens expressed on dendritic cells and define mechanisms of allergen-induced activation of dendritic cells. This was used to obtain preliminary data for my K08 application.

2/08-1/10

**Clinical relevance of peanut epitope recognition by IgE and IgG4 in adults
FAAN**

Co-PI

The objectives of this study are to better understand the relationship between allergen-specific IgE and IgG specificity and function to patient clinical sensitivity.

9/07-7/10

Mechanisms of peanut (*A. hypogaea*) glycan adjuvant activity

NIAID/ K08 AI067722

PI (359,625)

The objectives of this study are to define mechanisms of innate immune activation by peanut allergens and how that contributes to allergic sensitization.

9/09-7/10

Mechanisms of peanut (*A. hypogaea*) glycan adjuvant activity (supplement)

NIAID/ K08 AI067722-03S1

PI (49,011)

Supplement grant to K08

7/08-8/10

Mechanisms of oral immunotherapy-induced suppression of type I hypersensitivity

NIAID/ R03 AI079544

PI (169,500)

The objectives of this study are to identify the mechanisms of basophil/ mast cell down-regulation induced by allergen immunotherapy with a focus on developing methodological advances in the characterization of basophil activation by flow cytometry.

Current

11/09-8/11

**DISCOVER (supplement)
NIEHS P50 ES015903-03S1**

Co-Investigator (51,968 current year direct costs)

The purpose of the project is to examine how indoor and outdoor exposure to particulate matter and allergens may impact the airways of asthmatic children.

My role is to measure basophil activation in the context of particulate matter and allergen exposure and its relationship to other markers of oxidative stress.

9/09-7/14

**Mechanisms of asthma-dietary interventions against environmental triggers
NIEHS/ EPA/ P01 ES018176**

Co-Investigator (37,578 current year direct costs)

The long-term goal of the ASTHMA-DIET (A Study To Understand The Mechanisms Of Asthma--Dietary Interventions To Protect Against Environmental Triggers) Program is to understand how diet influences the asthmatic response to indoor and outdoor airborne pollutants and allergens, with the expectation of translating these findings into practical dietary strategies to improve pediatric asthma health.

My role will be to evaluate basophil activation as a biomarker of allergic inflammation.

12/09-11/14

**Mechanisms of clinical reactivity or tolerance to mouse allergen; The JAX Cohort.
NIAID/ R01 AI081845**

PI (3,401,959)

The purpose of this grant is to study the dose-response relationships between mouse allergen exposure and immune response in a occupational cohort in the hope that the knowledge gained from this study will provide the foundation upon which to devise preventative and therapeutic interventional in both occupational and community settings.

Report of Local Teaching and Training

Teaching of Students in Courses

2002-2009	Pathogenesis and Mechanisms of Host Defenses, Immunology Section Medical Students	Mount Sinai School of Medicine 6 one-hour small group sessions
7/2003	Scientific Research Design, Analysis and Communication Undergraduate students	New York University 8 one-hour lectures

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)

2003-2009	Allergy/ Immunology Fellowship Immunology Course Clinical Fellows	Mount Sinai Division of Allergy/ Immunology 8 one hour sessions
2010-	Boston Allergy/ Immunology Fellowship Introductory Immunology Course Clinical Fellows	Brigham & Woman Hospital/ Massachusetts General Hospital 1 one hour session
2010-	Allergic Disease Mechanisms Journal Club Postdoctoral and Clinical Fellows	Massachusetts General Hospital Course director, 1 monthly session

Clinical Supervisory and Training Responsibilities

2003-2009	Pediatric Allergy/ Immunology Preceptor/ Mount Sinai Medical Center	Weekly clinic session
2010	Allergy / Immunology Preceptor	Weekly clinic session

Laboratory and Other Research Supervisory and Training Responsibilities

2003-current	Supervision of post-doctoral research	Daily mentorship
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Formally Supervised Trainees

2003-05	/ Anesthesiology Resident, Mount Sinai Undergrad research supervisor, won regional research awards and accepted to medical school at Penn State	
2004-06	Sciences Research mentor leading to significant contributions to two publications and acceptance to competitive graduate program	, Mount Sinai Graduate School of Biological
2006-07	, Kaiser Permanente Supervised post-doctoral research during fellowship, Editor's choice featured first author publication in the Journal of Allergy and Clinical Immunology	

- 2006-07 / Staff Physician-Researcher Utrecht Medical Center
Research mentor and thesis committee member on the relationship of allergen-specific IgE diversity and effector function. Work published as Editor's Choice article in the Journal of Allergy and Clinical Immunology.
- 2007-09 , Albert Einstein College of Medicine
Research mentor on regulation of basophil signaling (R03) published in abstract form and in preparation as manuscript -- accepted to Duke, Tufts, Einstein and other medical schools. Oral presentation 2010 AAAAI.
- 2007-08 , Ohio State Univ Medical Center
Supervised post-doctoral research during fellowship leading to two publications and academic appointment.
- 2009-2010 Mount Sinai Allergy/ Immunology
Supervising post-doctoral research on the mechanisms of cellular (basophil and Treg) immune regulation during exposure to dietary antigen.
- 2007-current
Supervising post-doctoral research on the mechanisms of alternative dendritic cell activation by peanut allergen.
- 2010-current , MGH Allergy/ Immunology Training Program
Supervising post-doctoral research on the capacity of human basophils to modulate adaptive immunity and their regulation during immunotherapy
- 2010-current , MGH Pediatric Gastroenterology Training Program
Supervising post-doctoral research on early risk factors for the development of eosinophilic esophagitis and biomarkers of disease activity

Local Invited Presentations

Local

- 2010 Persistence or Resolution of Food Allergy in Children/ Pediatric Grand Rounds
MassGeneral Hospital for Children, Boston MA
- 2010 Spectrum of Allergic GI Disease / Department of Medicine/ Division of Gastroenterology
Grand Rounds
Massachusetts General Hospital, Boston MA
- 2010 Spectrum of Food Allergy/ Department of Medicine/ Division of Pulmonary Grand
Rounds
Massachusetts General Hospital, Boston MA
- 2010 Food Allergy/ Northshore Hospital: Pediatrics CME Course
Northshore Hospital, Danvers MA
- 2010 Food Allergy/ Newton-Wellesley Pediatrics CME Course
Newton-Wellesley Hospital, Newton MA
- 2010 Alternative Human DC activation by Allergen as a Potential Mechanism Contributing to
Allergic Sensitization/ Mucosal Immunology Laboratory Research Seminar
Massachusetts General Hospital, Boston MA
- 2011 Clinical Spectrum of Food Allergy. MGH Pediatrics Chief's Conference
Massachusetts General Hospital, Boston MA
- 2011 Food Allergy: A Spectrum of Failed Immune Tolerance/ Frontiers in Pediatric
Gastroenterology
Massachusetts General Hospital, Boston MA

Report of Regional, National and International Invited Teaching and Presentations

Invited Presentations and Courses

Regional

- 2002 Update on Pediatric Food Allergy/ Pediatric Teaching Rounds
Albert Einstein College of Medicine/ Children's Hospital at Montefiore, Bronx, NY
- 2004 Diagnosis and Management of Food Allergy/ Grand Rounds
Richmond Medical Society, Staten Island, NY
- 2006 Innate Immune Activation by Peanut Allergen/ Research Symposium
Food Allergy Initiative Annual Conference, New York, NY
- 2008 Innate Immune Activation by Allergen/ Research Symposium
Food Allergy Initiative Annual Conference, New York, NY
- 2009 Determinants of Food Allergy Severity and Persistence
Boston City Wide Allergy Conference, Boston, MA
- 2009 The unique phenotype of peanut-allergen activated dendritic cells, Immunology Seminar
Center for Immunology and Inflammatory Disease, Massachusetts General Hospital,
Boston, MA
- 2010 Basophil Anergy and Its Role in Immunotherapy-induced Immune Modulation/ Allergy &
Immunology Department Seminar Series
Boston Children's Hospital, Boston, MA
- 2011 Determinants of Oral Tolerance versus Mucosal Allergy
50th Annual Swineford Allergy Conference. Charlottesville, VA

National

- 2001 The hypoallergenicity of soy sauce, Selected Abstract Presentation
AAAAI Annual Meeting, New Orleans, LA
- 2006 The major glycoprotein allergen from *Arachis hypogaea*, Ara h 1, may facilitate Th2
priming through its specific recognition by DC-SIGN, Selected Abstract Presentation
Keystone Symposium on Allergy, Allergic Inflammation and Asthma, Breckenridge, CO
- 2007 Mechanisms of innate and adaptive immunity to food allergens, NIAID Symposium
AAAAI Annual Meeting, San Diego, CA
- 2007 Ara h 1 Activates Human Dendritic Cells to Induce Th2 Immunity
AAAAI/ CIS Hypersensitivity School, Estes Park, CO
- 2008 Persistence or Resolution of Food Allergy, Pediatric Pulmonary Research Rounds
Rainbow Children's/ University Hospital, Cleveland, OH
- 2008 Persistence or Resolution of Food Allergy, Pediatric Pulmonary Research Rounds
Rainbow Children's/ University Hospital, Cleveland, OH
- 2008 Mechanisms of Basophil Suppression and the Relationship to Clinical Tolerance
AAAAI/ NIAID/ CIS Hypersensitivity School, Park City, UT
- 2008 Role of Milk-Specific Regulatory T cells in the Resolution of Milk Allergy
CHRCDA Child Health Research Retreat, Gavelston, TX
- 2009 Immune Response to Peanuts: Relevance of Carbohydrates, Session 5704/ Glycoallergens
AAAAI Annual Meeting, Washington, DC
- 2009 Determinants of Food Allergy Persistence and Severity, Allergy-Immunology Research
Rounds
Feinberg School of Medicine, Northwestern University, Chicago, IL
- 2010 Food Allergens and Allergenicity, NIAID Symposium, Course 1605: Multiple Functions

- of Allergens and Understanding Allergenicity, Invited Lecture
AAAAI Annual Meeting, New Orleans, LA
- 2010 Omalizumab-Induced Changes in IgE-Dependent Cell Activation and Treatment Outcomes, Symposium 2531: Findings from the Inner-City Anti-IgE Therapy for Asthma (ICATA), Invited Lecture
AAAAI Annual Meeting, New Orleans, LA
- 2010 Food Allergy or Autoimmune Colitis? Workshop 4815: Immune Deficiency, Allergy, Autoimmunity, Invited Lecture
AAAAI Annual Meeting, New Orleans, LA
- 2010 IgE sensitization to milk and peanut are associated with increased IL-4 but not GATA-3. Oral Abstract Session 5604, Selected Abstract
AAAAI Annual Meeting, New Orleans, LA
- 2010 Basophil Activation and Anergy in Humans During Allergen Exposure, Invited Lecture
NIH/ NIAID Allergy/ Immunology Fellowship, Clinical Immunology Lecture, Bethesda, MD
- 2010 Food Allergy and Complementary Feeding. Early Nutrition: Impact on Short and Long-Term Health
68th Nestle Nutrition Institute Workshop. Washington, DC

International

- 2007 Innate and Adaptive Immune Mechanisms in the Resolution or Persistence of Milk Allergy, Annual Scientific Conference
Ilhan Foundation, Melbourne, Australia
- 2007 Resolution or Persistence of Milk Allergy, Allergology Research Rounds,
Utrecht Medical Center, Utrecht, The Netherlands
- 2009 Mechanisms of Food Allergy Persistence and Severity, Symposium on Translational Medicine
Fundación Jimenez Diaz Hospital, Madrid, Spain
- 2009 Basophil Regulation During Allergic Inflammation or Tolerance
EuroBAT, Conference on Basophil Activation, Rotterdam, The Netherlands
- 2009 Persistence or Resolution of Food Allergy
EAACI Pediatric Allergy & Asthma Meeting, Venice, Italy
- 2010 Basophils as Biomarkers of Allergic Inflammation and Targets of Immunomodulation
Translational Research Symposium, ALK-Bello, Copenhagen, Denmark
- 2010 Mechanisms of Basophil Anergy and its Relationship to Tolerance
German Society of Allergy and Clinical Immunology/ European Mast Cell and Basophil Research Network, International Meeting on Basophils and Mast Cells, Berlin, Germany

Report of Clinical Activities and Innovations

Current Licensure and Certification

- 1999-2009 New York State Board of Education,
2000 USMLE completed
2004-current American Board of Pediatrics
2005-current American Board of Allergy and Immunology
2009-current Massachusetts Board of Registration,

Practice Activities

2000-2009	Ambulatory Care, Mount Sinai Faculty Practice	Pediatric Allergy/ Immunology	1 session per week
2000-2009	Inpatient Consult, Mount Sinai Medical Center	Pediatric Allergy/ Immunology	2 months per year
2005-2009	Ambulatory Care, Mount Sinai Faculty Practice	Pediatric Allergic Gastrointestinal Disorders	2-3 sessions per month
2010-current	Ambulatory Care, Massachusetts General Practice Organization	Pediatric Allergy/ Immunology (Food Allergy Center)	1 session per week
2010-current	Ambulatory Care, Massachusetts General Practice Organization	Adult Allergy/ Immunology (Food Allergy Center)	1 session per week
2010-current	Inpatient Consult Service, Massachusetts General Hospital	Pediatric Allergy/ Immunology	4 weeks per year

Report of Technological and Other Scientific Innovations

Assay for measuring epitope-specific IgE and IgG4 to allergens US Patent application filed. Sampson HA, Shreffler WG, Beyer K. Methods of determining allergen response using microarray immunoassay techniques.

Report of Education of Patients and Service to the Community

Activities

- 2007 Mount Sinai Department of Pediatrics/ Community Health Group, Speaker
Gave lecture/ presentation to community on role of environmental allergens in asthma and effective means of abatement.
- 2008 APFED/ Jaffe Food Allergy Institute conference
Lecture and Q & A on the role of the allergist in the evaluation of suspected allergic gastrointestinal disease
- 2010 FAC-sponsored Educational Event
School Safety for Children with Food Allergy

Educational Material for Patients and the Lay Community

Books, monographs, articles and presentations in other media

Educational material or curricula developed for non-professional students

Patient educational material

Report of Scholarship

Peer reviewed publications in print or other media

Research investigations

1. Reed SG; **Shreffler WG**; Burns JM Jr; Scott JM; Orge Md; Ghalib HW; Siddig M; Badaro R. An improved serodiagnostic procedure for visceral leishmaniasis. *Am J Trop Med Hyg* 43: 632, 1990

2. Scott JM; **Shreffler WG**; Ghalib HW; el Asad A; Siddig M; Badaro R; Reed SG. A rapid and simple diagnostic test for active visceral leishmaniasis. *Am J Trop Med Hyg* 44: 272, 1991
3. Burns JM Jr, **Shreffler WG**, Rosman DE, Sleath PR, March CJ, Reed SG. Identification and synthesis of a major conserved antigenic epitope of *Trypanosoma cruzi*. 89: 1239, 1992
4. Burns JM Jr, **Shreffler WG**, Benson DR, Ghalib HW, Badaro R, Reed SG. Molecular characterization of a kinesin-related antigen of *Leishmania chagasi* that detects specific antibody in African and American visceral leishmaniasis. *Proc Nat Acad Sci. USA* 90: 775, 1993
5. **Shreffler WG**, Burns JM Jr, Badaró R, Ghalib HW, Button LL, McMaster WR, Reed SG. Antibody responses of visceral leishmaniasis patients to gp63, a major surface glycoprotein of *Leishmania* species. *J Infect Dis* 167: 426, 1993
6. Frevert U, Sinnis P, Cerami C, **Shreffler W**, Takacs B, Nussenzweig V. Malaria circumsporozoite protein binds to heparan sulfate proteoglycans associated with the surface membrane of hepatocytes. *J Exp Med* 177:1287, 1993
7. Peralta JM, Teixeira MG, **Shreffler WG**, Pereira JB, Burns JM Jr, Sleath PR Reed SG. Serodiagnosis of Chagas' disease by enzyme-linked immunosorbent assay using two synthetic peptides as antigens. *J Clin Microbiol* 32: 971, 1994
8. **Shreffler W**, Wolinsky E. The unc-8 and sup-40 genes regulate ion channel function in *Caenorhabditis elegans* motoneurons. *Genetics* 139: 1261, 1995
9. **Shreffler W**, Wolinsky E. Genes controlling ion permeability in both motoneurons and muscle. *Beh Genet* 27: 211, 1997
10. Tavernarakis N, **Shreffler W**, Wang S, Driscoll M. unc-8, a DEG/ENaC family member, encodes a subunit of a candidate mechanically gated channel that modulates *C. elegans* locomotion. *Neuron* 18: 107, 1997
11. **Shreffler WG**, Beyer K, Chu T-H T, Burks AW, Sampson HA. Microarray immunoassay: Association of clinical history, in vitro IgE function and heterogeneity of allergenic peanut epitopes. *J All Clin Immunol* 113: 776-82, 2004
12. **Shreffler WG**, Lencer DA, Bardina L, Sampson, HA. IgE and IgG4 epitope mapping by microarray immunoassay reveals the diversity of immune response to the peanut allergen, Ara h 2. *J All Clin Immunol* 116: 893-9, 2005
13. Li HA, Nowak-Wegrzyn A, Charlop-Powers Z, **Shreffler W**, Chehade M, Thomas S, Roda G, Dahan S, Sperber K, Berin MC. Transcytosis of IgE-antigen complexes by CD23a in human intestinal epithelial cells and its role in food allergy. *Gastroenterology* 131: 47-58, 2006
14. **Shreffler WG**, Charlop-Powers Z, Sicherer SH. Lack of association of HLA class II alleles with peanut allergy. *Ann Allergy Asthma Immunol* 96: 865-9, 2006
15. Knight AK, **Shreffler WG**, Sampson HA, Sicherer SH, Noone S, Mofidi S, Nowak-Wegrzyn A. Skin prick test to egg white provides additional diagnostic utility to serum egg white-specific IgE antibody concentration in children. *J All Clin Immunol* 117: 842-7, 2006
16. **Shreffler WG**, Castro RR, Kucuk ZY, Charlop-Powers Z, Grishina G, Yoo S, Burks AW, Sampson HA. The major glycoprotein allergen from *Arachis hypogaea*, Ara h 1, is a ligand of DC-SIGN and acts as a Th2 adjuvant in vitro. *J Immunol*, 177:3677-85, 2006.
17. **Shreffler WG**, Visness CM, Burger M, Cruikshank WW, Lederman HM, de la Morena M, Grindle K, Calatroni A, Sampson HA, Gern JE. Standardization and performance evaluation of mononuclear cell cytokine secretion assays in a multicenter study. *BMC Immunology* 7:29, 2006
18. Flinterman AE, Knol EF, Andrae DA, Bardina L, den Hartog Jager CF, Pasmans SG, Buijnzeel-Koomen CA, Sampson HA, van Hoffen E, **Shreffler WG**. Peanut epitopes for IgE and IgG4 in peanut-sensitized children in relation to severity of peanut allergy. *J All Clin Immunol* 121:737-43, 2008
19. Hyman SJ, **Shreffler WG**, Rapaport R. Type I diabetes, autoimmune thyroid disease and chronic urticaria. *Pediatr Diabetes* May 7; PMID 18466206, 2008
20. Nowak-Wegrzyn A, Bloom K, Sicherer SH, **Shreffler WG**, Noone S, Wanich N, Sampson HA.

- Tolerance to extensively heated milk in children with cow's milk allergy. *J All Clin Immunol* 122:342-7, 2008
21. Cerecedo I, Zamora J, **Shreffler WG**, Lin J, Bardina L, Dieguez MC, Wang J, Muriel A, de la Hoz B, Sampson HA. Mapping of the IgE and IgG4 sequential epitopes of milk allergens with a peptide microarray-based immunoassay. *J All Clin Immunol* 122:589-94, 2008
 22. Lemon-Mulé H, Sampson HA, Sicherer SH, **Shreffler WG**, Noone S, Nowak-Wegrzyn A. Immunologic changes in children with egg allergy ingesting extensively heated egg. *J All Clin Immunol* 122:977-83, 2008
 23. **Shreffler WG**, Wanich N, Moloney M, Nowak-Wegrzyn A, Sampson HA. The association of allergen-specific regulatory T cells with the onset of clinical tolerance to milk protein. *J All Clin Immunol* 123:43-57, 2009 (highlighted as Editor's Choice)
 24. Wanich N, Nowak-Wegrzyn A, Sampson HA, **Shreffler WG**. Allergen-specific basophil activation associated with clinical tolerance in patients with milk allergy. *J All Clin Immunol* 123:789-94.e20, 2009 (highlighted as Editor's Choice)
 25. Gern JE, Visness CM, Gergen PJ, Wood RA, Bloomberg GR, O'Connor GT, Kattan M, Sampson HA, Witter FR, Sandel MT, **Shreffler WG**, Wright RJ, Arbes SJ Jr, Busse WW. The Urban Environment and Childhood Asthma (URECA) birth cohort study; design, methods, and study population. *BMC Pulm Med* 8:17 2009
 26. Jones SM, Pons L, Roberts JL, Scurlock AM, Perry TT, Kulis M, **Shreffler WG**, Steele P, Henry KA, Adair M, Francis JM, Durham S, Vickery BP, Zhong X, Burks AW. Clinical efficacy and immune regulation with peanut oral immunotherapy. *J All Clin Immunol* 124:292-300, 2009
 27. Lin J, Bardina L, **Shreffler WG**, Andreae DA, Ge Y, Wang J, Bruni FM, Fu Z, Han Y, Sampson HA. Development of a novel peptide microarray for large-scale epitope mapping of food allergens. *J Allergy Clin Immunol* 124:315-22, 2009
 28. Järvinen KM, Amalanayagam S, **Shreffler WG**, Noone S, Sicherer SH, Sampson HA, Nowak-Wegrzyn A. Epinephrine treatment is infrequent and biphasic reactions are rare in food-induced reactions during oral food challenges in children. *J Allergy Clin Immunol* 124:1267-72, 2009; and reply 126:182-3
 29. Wang J, Lin J, Bardina L, Goldis M, Nowak-Wegrzyn A, **Shreffler WG**, Sampson HA. Correlation of IgE/IgG4 milk epitopes and affinity of milk-specific IgE antibodies with different phenotypes of clinical milk allergy. *J Allergy Clin Immunol* vol. 125 (3) pp. 695-702, 702.e1-702.e6, 2010
 30. Ditto AM, Neilsen CV, Neerukonda S, **Shreffler WG**, Bryce PJ. Clinical reactivity to raw peanut correlates with IgE binding to conformational epitopes of Ara h 1: a Case Report. vol. E pub ahead of print, 2010
 31. Sicherer SH, Wood RA, Stablein D, Burks AW, Liu AH, Jones SM, Fleischer DM, Leung DYM, Grishin A, Mayer L, **Shreffler WG**, Lindblad R, Sampson HA. Immunologic features of infants with milk or egg allergy enrolled in an observational study (CoFAR) of food allergy. *J Allergy Clin Immunol*. 125:1077-38, 2010
 32. Blumchen K, Ulbricht H, Staden U, Dobberstein K, Beschorner J, de Oliveira LC, **Shreffler WG**, Sampson HA, Niggemann B, Wahn U, Beyer K. *J Allergy Clin Immunol*. 126:83-91, 2010
 33. Vereda A, Andreae DA, Lin J, **Shreffler WG**, Ibanez MD, Cuesta-Herranz J, Bardina L, Sampson HA. Identification of IgE sequential epitopes of lentil (Len c 1) by means of peptide microarray immunoassay. *J Allergy Clin Immunol*. 126:596-601.e1, 2010

Other peer reviewed publications

1. **Shreffler WG**. *Pediatrics* Literature review abstracts 2005-9
2. **Shreffler WG**. Evaluation of basophil activation in food allergy: present and future applications. *Curr Opin Allergy Clin Immunol*. 6:226-33, 2006
3. Moloney M, **Shreffler WG**. Basic science for the practicing physician: flow cytometry and cell sorting. *Annals Allergy Asthma Immunol* 5:544-9, 2008

4. Berin MC, **Shreffler WG**. Th2 adjuvants: implications for food allergy. *J All Clin Immunol* 121:1311-20, 2008
5. **Shreffler WG**. The perfectly potent peanut. *J All Clin Immunol* 123:352-3, 2009
6. Lin J, Bardina L, **Shreffler WG**. Microarrayed allergen molecules for diagnostics of allergy. *Methods Mol Biol* 524:259-72, 2009

Professional educational materials or reports, in print or other media

Andreae A, **Shreffler WG**. Pathophysiology, diagnosis, and management of common variable immune deficiency. In: UpToDate, Rose BD (Ed), UpToDate, Wellesley, MA, 2003-8

Shreffler WG. OpenWetWare contributors, "Shreffler," OpenWetWare, <http://openwetware.org/index.php?title=Shreffler&oldid=312635>

Thesis

Characterization of the deg/EnaC gene, *unc-8*, and its suppressor loci. Advisor: Eve J. Wolinsky, Ph.D.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings

(Only Senior Authored since 2009; * indicates those selected for oral or featured presentation)

1. S.A. Yoo, G. Grishina, H.A. Sampson, **W.G. Shreffler**. The YKSL motif of DC-SIGN is Necessary for Ligand Internalization. 2009 AAAAI Annual Meeting, Washington DC
2. C.S. Woo, W. Chan, H.A. Sampson, **W.G. Shreffler**. Cell-by-Cell Characterization of Signaling and Activation Marker Upregulation During Basophil Stimulation and Non-Specific Desensitization. 2009 AAAAI Annual Meeting, Washington DC
3. B. Ruitter, H.A. Sampson, **W.G. Shreffler**. Peanut Extract Acts as a Th2-skewing Adjuvant. 2009 AAAAI Annual Meeting, Washington DC
4. B. Ruitter, H.A. Sampson, **W.G. Shreffler**. Myeloid DC treated with peanut allergen promote differentiation of naive T cells into Th2 cells. 2009 Keystone Symposium on Dendritic Cells, Banff Springs, Canada
5. *C.S. Woo, A. Ma, S. Yoo, W. Chan, H.A. Sampson, **W.G. Shreffler**. Protein Tyrosine Phosphatase Inhibition Mimics FcεRI-Induced Anergy and Reveals the Immunomodulatory Role of Hydrogen Peroxide as a Signaling Molecule in Human Basophils. 2010 AAAAI Annual Meeting, New Orleans
6. B. Ruitter, H.A. Sampson, **W.G. Shreffler**. Human dendritic cells stimulated with peanut allergen express high levels of ALDH1A2 and induce RA-sensitive genes in naïve T cells. 2010 AAAAI Annual Meeting, New Orleans
7. G. Clary, B. Ruitter, C.F. Constant, H.A. Sampson, **W.G. Shreffler**. Retinoic acid is sufficient for the induction of IL-5, CD38 and α4β7, in human T cells, but not IL-4 or IL-13. 2010 AAAAI Annual Meeting, New Orleans

8. A. Praslick, M. Masilmani, M. Gross, **W.G. Shreffler**. Further characterization of putative basophil nanotubes by confocal microscopy. 2010 AAAAI Annual Meeting, New Orleans
9. *B. Ruitter, G. Grishina, H.A. Sampson, **W.G. Shreffler**. Human dendritic cells stimulated with peanut express high levels of ALDH1A2 and induce RA-sensitive genes in naïve T cells. 2011 EAACI-GA²LEN 9th Immunology Winter School, Davos, Switzerland
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Narrative Report

The focus of my research effort (80%) is on the mechanisms of initial allergic sensitization and the subsequent factors that lead to manifest allergic diseases or its regulation and resolution, primarily in the context of mucosal immunity. This research complements my clinical activities (20%), which have been primarily focused on food allergy and asthma. I have concentrated on three interconnected areas of the allergic immune response: the role of allergens or allergen-associated molecules in determining the fate of initial T cell responses by activating dendritic and other innate immune cells; the role of allergen-specific antibodies (IgE and IgG) in determining and regulating clinical sensitivity; the role of allergen-specific T cells in regulating immunity. In all of these research projects, I have sought to focus primarily on human cell systems that may give the greatest insight into immune responses that occur in patients with disease and may translate into advances in diagnosis, prognostication or therapy. This has driven the innovation of novel techniques of characterizing allergen-specific antibodies at the level of epitopes and the measurement of basophil activation by polychromatic flow cytometry using very limited pediatric samples. These novel techniques are now being applied in the context of ten currently funded interventional and observational clinical studies of food allergy (Consortium for Food Allergy Research, PI Sampson) and asthma (Inner City Asthma Consortium, PI Busse; ASTHMA-DIET, PI Diette; The JAX Cohort, PI Shreffler).

I have become recognized as a thought leader in pediatric food allergy with an active panel of over 650 patients at Mount Sinai primarily referred for suspected food allergy, and major involvement in the design and implementation of several clinical research projects and in particular the mechanistic assays to characterize cellular immune responses in the context of clinical studies. In addition to my laboratory's contributions to the assessment of allergic disease in human subjects, we have made important observations, many only recently and still unpublished, regarding the mechanism of peanut allergen activation of human dendritic cells and the induction of basophil anergy – the two major areas of basic science investigations in my lab. Each of these projects has good potential for new independent funding in the future.

Mentorship and teaching of trainees at all levels in both the clinical and research environments has been a long-standing priority. I have taught for the past several years in the Immunology course for first year medical students, served on the graduate school curriculum committee representing Immunology, lectured for the Allergy/ Immunology Fellowship curriculum and mentored pre-medical/graduate, graduate student, and post-graduate members of my lab in research design, conduct and communication to the highest academic standard possible. I have been committed both to creating an academic experience in my laboratory for all members who have the ambition to contribute intellectually and to assist in obtaining recognition for those contributions by the larger scientific community.

I have developed a highly integrated research and clinical program to better understand the pathogenic mechanisms of food allergy and asthma and provide the best current and future care.