

CURRICULUM VITAE
ALEXANDRA FREEMAN, MD

PRESENT ADDRESS

National Institutes of Health
Building 10, Room 11N234
9000 Rockville Pike
Bethesda, MD 20892
(301)594-9045
freemaal@mail.nih.gov

CITIZENSHIP: USA

EDUCATION

- Carleton College, BA degree in Biology, magna cum laude, 1988-1992
- Georgetown University School of Medicine, MD degree, magna cum laude, 1993-1997

EMPLOYMENT

Residency: Pediatrics, Yale-New Haven Children's Hospital, Yale University School of Medicine, New Haven, CT, 1997-2000

Fellowship: Pediatric Infectious Disease, Children's Memorial Hospital, Northwestern University, The Feinberg School of Medicine, Chicago, IL, 7/00-6/04

Medical Officer: HIV and AIDS Malignancy Branch, NCI NIH, Bethesda, MD, 7/04-6/05

Staff Clinician: Laboratory of Clinical Infectious Diseases, NIAID, NIH 6/05-1/08.

Assistant Professor of Pediatric Infectious Diseases: Georgetown University Hospital, Department of Pediatrics, 7/06-1/08

Physician II: SAIC-Frederick, Clinical Monitoring Research Branch, In Support of Laboratory of Clinical Infectious Diseases, NIAID, NIH, Bethesda, MD, 1/08-4/09

Staff Clinician: Laboratory of Clinical Infectious Diseases, NIAID, NIH 4/09-current

BOARD CERTIFICATION

- Pediatric Board Certification, October, 2000
- Pediatric Infectious Disease Board Certification, August, 2003

LICENSURE

- Illinois, 2000-2006
- Washington, DC, 2006-2010
- Maryland, 2007-current

AWARDS and HONORS

- Phi Beta Kappa, 1992
- Pathology Honor Society, 1995
- Alpha Omega Alpha, 1996
- Pediatric Infectious Disease Society Fellowship Grant, \$45,000 yearly, 6/02-6/04.
- NIH Clinical Center, Bench-to-Bedside Award, joint award with Dr. Edward Mitre for “Role of Pathogen-specific IgE and histamine release in the hyper-IgE syndrome”, \$100,000 yearly for 2 years, 2007-2009.
- NIH Director’s Award 2008
- NIH Clinical Center, Bench-to-Bedside Award, joint award with Dr. Manfred Boehm and Dr. Steven Holland for “Aneurysm formation in patients with STAT3 mutations”, \$135,000 yearly for 2 years, 2009-2011.
- NIH Director’s Award 2010
- NIAID Special Act Award 2010

COMMITTEES

- Infection Control Committee, Children's Memorial Hospital, 2001-2004
- Editorial Board, Infectious Diseases in Children, 2007- 2010
- FDA Advisory Committee, May 2010
- Operational Review Committee of the NIH Clinical Center’s Nutrition Department, 2010
- ID Advisory Board 2009-current

SOCIETY MEMBERSHIP

- Pediatric Infectious Disease Society
- Infectious Disease Society of America

RESEARCH EXPERIENCE

- Sequencing and analysis of the ABL and BCR genes, University of Oklahoma Biochemistry Department, 9/92-6/93
- Epidemiologic studies of tuberculosis, Rosebud Public Health Service Hospital, Rosebud Reservation, South Dakota, 6/94-8/94
- New molecular tools to study Kawasaki Disease pathogenesis.
 - Preceptor: Anne Rowley, MD, Northwestern University, The Feinberg School of Medicine
- Ophthalmologic Changes in Chronic Granulomatous Disease; clinical research project with the division of ophthalmology
- Pediatric HIV, involved with clinical research protocols at HIV and AIDS Malignancy Branch, NCI, NIH, 7/04-current.
- Primary Immune deficiencies, involved with primarily the Hyper IgE syndrome protocol with the Laboratory of Clinical Infectious Disease, NIAID, NIH, 3/05-current.

INVITED SPEAKER

- "New Molecular Tools to Study Kawasaki Disease Pathogenesis", St. Jude/PIDS Pediatric Microbial Research Conference, Memphis, TN, 2/03.

- "Immunizations", lecture quarterly for Northwestern University Feinberg School of Medicine Medical Students, 7/02 and 7/03.
- "Hyper-IgE Syndrome Variants". American Academy of Allergy, Asthma and Immunology Annual Meeting, Florida, 3/06.
- NIAID Grand Rounds, June, 2006.
- Georgetown University Hospital, Pediatric Grand Rounds, January, 2007
- Franklin Square Hospital Center Grand rounds, July, 2007
- CHILDx Symposium, Salt Lake City, November, 2007
- Pediatric Academic Society Annual Conference, Honolulu, May, 2008
- Pediatric Academic Society Annual Conference, Vancouver, May 2010
- Canadian Society of Allergy and Clinical Immunology, November 2010
- Annual European Congress of Rheumatology, May 2011
- Immune Deficiency Foundation, June 2011

PUBLICATIONS: Peer-reviewed, published and in press

1. Chissoe, S., Bodenteich, A., Wang, Y., Burian, D., Clifton, S, Crabtree, J., **Freeman, A.**, Iyer, K., Jian, .., *et al.* Sequence and Analysis of the Human ABL Gene, the BCR Gene, and Regions Involved in the Philadelphia Chromosomal Translocation. *Genomics* 27: 67-82, 1995.
2. **Freeman, AF**, Mancini, AJ, Yoge, R. Is Noma Neonatorum a Presentation of Ecthyma Gangrenosum in the Newborn? *Pediatric Infectious Disease Journal* 21: 83-84, 2001.
3. **Freeman, AF**, Shulman, ST. Macrolide Resistance in Group A Streptococcus. *Pediatric Infectious Disease Journal* 21: 1158-1160, 2002.
4. **Freeman, AF**, Crawford, SE, Finn, LS, Lopez-Andreu, JA, Ferrando-Monleon, S, Perez-Tamarit, D, Cornwall, M, Shulman, ST, Rowley, AH. Inflammatory Pulmonary Nodules in Kawasaki Disease. *Pediatric Pulmonology* 36:102-106, 2003.
5. **Freeman, AF**, Ben-Ami, T, Shulman, ST. *Streptococcus pneumoniae* empyema necessitatis: a case report and review of the literature. *Pediatric Infectious Disease Journal* 23: 177-178, 2004.
6. **Freeman, AF**, Zheng, XT, Lane, JC, Shulman, ST. *Pasteurella aerogenes* hamster bite peritonitis. *Pediatric Infectious Disease Journal* 23: 368-370, 2004.
7. **Freeman, AF**, Shulman ST. Refractory Kawasaki disease. *Pediatric Infectious Disease Journal* 23:463-4, 2004.
8. Zheng X, **Freeman AF**, Villafranca J, Shortridge D, Beyer J, Kabat W, Dembkowski K, Shulman ST. Antimicrobial susceptibilities of invasive pediatric Abiotrophia and Granulicatella infections. *Journal of Clinical Microbiology* 42: 4323-6, 2004.
9. **Freeman AF**, Jacobsohn DA, Shulman ST, Bellini WJ, Jaggi P, Leon G, Keating GF, Kim F, Pachman LM, Kletzel M. A new complication of stem cell transplantation: measles inclusion body encephalitis. *Pediatrics* 114: e657-60, 2004.
10. **Freeman AF**, Crawford SE, Cornwall ML, Garcia FL, Shulman ST, Rowley AH. Angiogenesis in fatal acute Kawasaki disease coronary artery and myocardium. *Pediatric cardiology*, 26: 578-584, 2005.
11. **Freeman AF**, Shulman ST. Issues in the diagnosis of Kawasaki disease. *Progress in Pediatric Cardiology* 19: 123-129, 2004.

11. Jaggi P, **Freeman AF**, Katz BJ. Chronic granulomatous disease presenting with eosinophilic inflammation. *Pediatric Infectious Disease Journal* 24:1020-1, 2005.
12. **Freeman AF**, Holland SM. Hyper IgE syndrome: review and future directions. *Expert Opinion in Clinical Immunology* 1:645-651, 2005.
13. **Freeman AF**, Shulman ST. Kawasaki disease: summary of the American Heart Association Guidelines. *American Family Physician* 74: 1141-1148, 2006.
14. Roberts SM*, **Freeman AF***, Harrington SM, Holland SM, Murray PR, Zelazny AM. Linezolid resistant *Staphylococcus aureus* in two pediatric patients on low dose linezolid therapy. * Co-First Authors, *Pediatric Infectious Disease Journal* 25: 562-564, 2006.
15. **Freeman AF**, Davis J, Anderson VL, Barson W, Darnell D, Puck JM, Holland SM. *Pneumocystis jiroveci* infection in patients with hyper-immunoglobulin E Syndrome. *Pediatrics* 118: e1271-5, 2006.
16. Ling JC, **Freeman AF**, Gharib AM, Arai AE, Lederman RJ, Rosing DR, Holland SM. Coronary artery aneurysms in patient with Hyper-IgE recurrent infection syndrome. *Clinical Immunology* 2006; 122: 255-8.
17. **Freeman AF** and Holland SM. Persistent bacterial infections and primary immune disorders. *Current Opinions in Microbiology* 2007; 10: 70-75.
18. **Freeman AF**, Collura-Burke CJ, Patronas NJ, Ilcus LS, Darnell D, Davis J, Puck JM, Holland SM. Brain abnormalities in patients with Hyper IgE Syndrome. *Pediatrics* 2007; 119: e1121-5.
19. **Freeman AF**, Kleiner DE, Hadiminti H, Davis J, Quezado M, Anderson V, Puck JM, Holland SM. Causes of death in Hyper-IgE Syndrome. *Journal of Allergy and Clinical Immunology*, 2007; 119: 1234-40.
20. Holland SM, DeLeo FR, Elloumi HZ, Hsu AP, Uzel G, Brodsky N, **Freeman AF**, Demidowich A, Davis J, Turner ML, Anderson VL, Darnell DL, Welch P, Kuhns DB, Frucht DM, Malech HL, Gallin JI, Kobayashi SD, Whitney AR, Voyich J, Musser JM, Woellner C, Schäffer AA, Puck JM, Grimbacher B. STAT3 mutations in Hyper IgE Recurrent Infection Syndrome (HIES). *New England Journal of Medicine*, 2007; 357: 1608-19.
21. Domingo DL, **Freeman AF**, Davis J, Puck JM, Tianxia W, Holland SM, Hart TC. Novel intraoral phenotypes in Hyper -immunoglobulin E syndomre. *Oral Disease*, 2008, 14: 73-81.
22. Purdy JB, **Freeman AF**, Martin SC, Ryder C, Elliott-DeSorbo DK, Zeichner S, Hazra R. Virologic Response Using Directly Observed Therapy in Adolescents with HIV: an Adherence Tool. *Journal of the Association of Nurses in AIDS Care* 2008, 19: 158-65.
23. Milner JD, Brenchley JM, Laurence A, **Freeman AF**, et al. Impaired T(H)17 cell differentiation in subjects with autosomal dominant hyper-IgE syndrome. *Nature* 2008; 452: 773-6.
24. Paulson ML, **Freeman AF**, Holland SM. Hyper IgE syndrome: an update on clinical aspects and the role of signal transduction and activation of transcription 3. *Current Opinions in Allergy and Clinical Immunology* 2008; 8: 527-33.
25. **Freeman AF**, Domingo DL, Holland, SM. Hyper IgE (Job's) syndrome: a primary immune deficiency with oral manifestations. *Oral Diseases* 2009; 15: 2-7.

26. **Freeman AF**, Holland SM. Clinical Manifestations, etiology, and pathogenesis of the hyper IgE syndromes. *Pediatric Research* 2009; 65: 32R-37R.
27. Sobanko JF, Freeman AF, Palmore TN, Mendoza D, Lee R, Cowen EW. A Sri Lankan woman with rheumatoid arthritis and anesthetic plaques. *Journal Academic Dermatology* 2009; 60: 1018-21.
28. Vinh DC, **Freeman AF**, Shea YR, Malech HL, Abinun M, Weinberg GA, Holland SM. Mucormycosis in chronic granulomatous disease: association with iatrogenic immunosuppression. *J Allergy Clin Immunology* 2009; 123: 1411-3.
29. Vinh DC, Shea YR, Sugui JA, Parrilla-Castellar ER, Freeman AF, Campbell JW, PI talluga S, Jones PA, Zelazny A, Kleiner D, Kwon-Chung KJ, Holland SM. Invasive aspergillus due to *Neosartorya udagawae*. *Clinical Infectious Diseases* 2009; 49: 102-11.
30. Melia E, **Freeman AF**, Shea YR, Hsu A, Holland SM, Olivier KN. Pulmonary nontuberculous mycobacterial infections in Hyper-IgE syndrome. *J Allergy Clinical Immunology* 2009; 124: 617-8.
31. Vinh DC, Shea YR, Jones PA, **Freeman AF**, Zelazny A, Holland SM. Chronic invasive aspergillosis caused by Aspergillus viridinutans. *Emerging Infectious Diseases* 2009; 15: 1292-4.
32. Zhang Q, Davis JC, Lamborn IT, **Freeman AF**, Jing H, Favreau AJ, Matthews HF, Davis J, Turner ML, Uzel G, Holland SM, Su HC. Combined immunodeficiency associated with DOCK8 mutations. *New England Journal of Medicine* 2009; 361: 2046-55.
33. **Freeman AF**, Holland SM. Antimicrobial prophylaxis for primary immunodeficiencies. *Current Opinion in Allergy and Clinical Immunology* 2009; 9: 525-30.
34. Gharib A, Hsu A, Welch P, Holland SM, **Freeman AF**. Coronary abnormalities in Hyper IgE recurrent infection syndrome: depiction at multi-detector row coronary CT angiography. *AJR Am J Roentgenology* 2009; 193: W478-81.
35. **Freeman AF**, Olivier KN, Rubio TT, Bartlett G, Ochi WJ, Claypool RJ, Ding L, Kuhns DB, Holland SM. Intrathoracic nontuberculous mycobacterial infections in otherwise healthy children. *Pediatric Pulmonology* 2009; 44: 1051-6.
36. **Freeman AF**, Davis J, Hsu AP, Holland SM, Puck JM. Autosomal dominant Hyper IgE syndrome (February 2010) in : GeneReviews at GeneTests: Medical Genetics Information Resource [database online].
37. Woellner C, Gertz EM, Schaffer AA, Lagos M, Perro P, Glockner EO, Pietrogrande MC, Cossu F, Franco JL, Matamoros N, Pietrucha B, Heropolitanska-Pliszka E, Yeganeh M, Moin M, Espanol T, Ehl S, Gennery AR, Abinun M, Breborowicz A, Niehues T, Kilic SS, Junker A, Turvey SE, Plebani A, Sanchez B, Garty BZ, Pignata C, Cancrini C, Litzman J, Sanal O, Baumann U, Bacchetta R, Hsu AP, Hammarstrom L, Davies EG, Eren E, Arkwright PD, Moilanen JS, Viemann D, Khan S, Marodi L, Cant AJ, **Freeman AF**, Puck JM, Holland SM, Grimbacher B. Mutations in STAT3 and diagnostic guidelines for hyper-IgE syndrome. *J Allergy Clinical Immunology* 2010; 125: 424-432.
38. Vinh DC, Sugui JA, Hsu AP, **Freeman AF**, Holland SM. Invasive fungal disease in autosomal-dominant Hyper IgE syndrome. *Journal of Allergy and Clinical Immunology* 2010; 125: 1389-90.

38. Kelly JJ, **Freeman AF**, Wang H, Cowen EW, Kong HH. An Amish boy with recurrent ulcerations of the lower extremities, telangiectasias of the hands and chronic lung disease. *J Am Acad Dermatol* 2010; 62: 1031-4.
39. Vinh DC, Patel SY, Uzel G, Anderson VL, **Freeman AF**, et al. Autosomal dominant and sporadic monocytopenia with susceptibility to mycobacteria, fungi papillomaviruses and myelodysplasia. *Blood* 2010; 115: 1519-29.
40. Avila EM, Uzel G, Hsu A, Milner JD, Turner ML, Pittaluga S, **Freeman AF**, Holland SM. Highly variable clinical phenotype of hypomorphic RAG1 mutations. *Pediatrics* 2010; 126: e1248-52.
41. Stover DG, **Freeman AF**, Wright PW, Hummell DS, Ness RM. Diverticulitis in a young man with hyper IgE syndrome. *Southern Medical Journal* 2010.
42. Wu PA, Turner ML, Cowen EW, Wilson E, Shea YR, Jancel T, **Freeman AF**. Sixty-year-old man with slowly expanding nodular plaque on the thigh. *Journal of the American Academy of Dermatology*; 2010: 63: 1083-7.
43. Ge AX, Ryan ME, Holland SM, **Freeman AF**, Anderson VL, Wang F, Fleshman JW. Acupuncture for symptom management in patients with hyper IgE (Job's) syndrome. *Journal of Alternative and Complementary Medicine* 2011.
44. Heimall J, Davis J, Shaw PA, Hsu A, Gu W, Welch P, Holland SM, **Freeman AF**. Paucity of genotype-phenotype correlations in STAT3 mutation positive Hyper IgE syndrome (HIES). *Clinical Immunology*, in press.
45. Conti HR, Baker O, **Freeman AF**, Jang WS, Holland SM, Li RA, Edgerton M, Gaffen SL. New mechanism of oral immunity to mucosal candidiasis in hyper-IgE syndrome. *Mucosal Immunology*, in press.

PUBLICATIONS: Non Peer-reviewed, Book Chapters, and Columns

1. **Freeman, AF**, Shulman, ST. Recent developments in Kawasaki disease. *Current Opinions in Infectious Diseases* 14: 357-361, 2001.
2. **Freeman, AF**, Shulman, ST. Issues in the diagnosis of Kawasaki disease. *Progress in Pediatric Cardiology* 19: 123-128, 2004.
3. Davis, AT, **Freeman AF**, Guzman-Cottrill, J, Jaggi, P, Shulman, ST, Tan, TQ, Yoge, R. Bacterial Infections. In: Green T, Franklin W, Tanz R, eds. Just the Facts: Pediatrics, McGraw-Hill, 2005: 387-411.
4. Davis, AT, **Freeman AF**, Jaggi, P, Shulman, ST. Fungal Infections. In: Green T, Franklin W, Tanz R, eds. Just the Facts: Pediatrics, McGraw-Hill, 2005: 420-424.
5. **Freeman AF** and select co-authors. *What's the Immunodeficiency?* Monthly Column in *Infectious Diseases in Children*, editor P Brunell. March, 2007 to current, monthly.
6. **Freeman AF** and Holland SM. The Hyper IgE syndromes. *Immunology and Allergy Clinics of North America* 2008; 28: 277-91.
7. Freeman AF and Holland SM. Clinical Manifestations of Hyper IgE Syndromes. *Disease Markers* 2010; 29: 123-30.

ABSTRACTS and PRESENTATIONS

- **Freeman, AF**, Crawford, SE, Finn, LS, Cornwall, ML, Shulman, ST, Rowley, AH. Inflammatory Pulmonary Nodules in Kawasaki Disease. International Kawasaki Disease Conference, Japan, 2001.
- **Freeman, AF**, Mancini, AJ., Yoge, R. Is Noma Neonatorum a Presentation of Ecthyma Gangrenosum in the Newborn? Infectious Disease Society of America, San Francisco, 2001.
- **Freeman, AF**, Crawford, SE, Finn, LS, Cornwall, ML, Shulman, ST, Rowley, AH. Inflammatory Pulmonary Nodules in Kawasaki Disease. Pediatric Academic Societies' Annual Meeting, Baltimore, 2002.
- Zheng, X, Villafranca, J, Shortridge, D, Beyer, J, Dembrowski, K, **Freeman, A**, Shulman, S. Antimicrobial susceptibility and genotypic characterization of macrolide resistance of invasive *Abiotrophia* and *Granulicatella* isolates from pediatric patients. ICAAC, Chicago, 2003.
- Jaggi, P, **Freeman, AF**, Tan, T. Lemierre's in the modern era. Infectious Disease Society of America, San Diego, 2003.
- **Freeman, AF**, Jacobsohn, DA, Shulman, ST, Bellini, WJ, Jaggi, P, Duerst, RE. A new complication of stem cell transplantation: measles inclusion body encephalitis. Infectious Disease Society of America, San Diego, 2003.
- **Freeman, AF**, Lane, JC, Zheng, XT, Shulman, ST. *Pasteurella aerogenes* hamster bite peritonitis. Infectious Disease Society of America, San Diego, 2003.
- **Freeman, AF**, Ben-Ami, T, Shulman, ST. Pediatric *Streptococcus pneumoniae* empyema necessitatis: a case report and review of the literature. Infectious Disease Society of America, San Diego, 2003.
- **Freeman AF**, Uzel G, Ranne J, Mets M, Shulman ST. Ocular abnormalities in chronic granulomatous disease: genetic, infectious, or granulomatous? Pediatric Academic Societies Annual Meeting, San Francisco, 2004.
- **Freeman AF**, Crawford SE, Cornwall ML, Shulman ST, Rowley AH. Angiogenesis in fatal, acute Kawasaki disease coronary artery and myocardium. Pediatric Academic Societies Annual Meeting, San Francisco, 2004.
- **Freeman AF**, Shulman ST, Rowley AH. Cytokine protein array analysis of acute Kawasaki disease. Pediatric Academic Societies Annual Meeting, San Francisco, 2004.
- **Freeman AF**, Shulman ST, Rowley AH. C-reactive protein in children with a history of Kawasaki disease. 8th International Kawasaki Disease Symposium, San Diego, 2005.
- **Freeman AF**, Shulman ST, Rowley AH. Cytokine protein array analysis in acute Kawasaki disease. 8th International Kawasaki Disease Symposium, San Diego, 2005
- **Freeman AF**, Shulman ST, Rowley AH. Primary human cell culture assays in acute Kawasaki disease. 8th International Kawasaki Disease Symposium, San Diego, 2005
- **Freeman AF**, Barson WJ, Davis J, Puck JM, Holland SM. *Pneumocystis jiroveci* infection in patients with Hyper-Immunoglobulin E syndrome. Infectious Disease Society of America, San Francisco, October, 2005.
- **Freeman AF**, Nadiminti H, Davis J, Puck JM, Kleiner DE, Holland SM. Causes of death in Hyper-Immunoglobulin E syndrome. Infectious Disease Society of America, San Francisco, October, 2005.

- **Freeman AF**, Demidowich A, Rubio TT, Olivier KN, Holland, SM. Pulmonary nontuberculous infections in otherwise healthy children. Pediatric Academic Societies Annual Meeting, May, 2007
- **Freeman AF**, Ling J, Collins MT, McCarthy EF, Davis J, Puck JM, Holland SM. Minimal trauma fractures and reduced bone mineral density in Hyper IgE syndrome. Pediatric Academic Societies Annual Meeting, May, 2007
- Manino E, **Freeman AF**, Hsu AP, Uzel G, Holland SM. The clinical spectrum of hypomorphic RAG mutations. SPR, May 2009.
- Heimall J, **Freeman AF**, Davis J, Hsu A, Gu W, Shaw P, Holland SM. Genotype-Phenotype correlations in Hyper IgE Syndrome (HIES) patients. FOCIS, June, 2009.
- Mannino E, Gharib A, Hsu AP, Heimall J, Holland SM, **Freeman AF**. Coronary artery abnormalities in Hyper IgE syndrome. FOCIS, June, 2009
- **Freeman AF**, Uzel G, Zhang Q, Jing H, Dove C, LaRussa J, Su HC, Holland SM. Infection spectrum of DOCK8 Deficiency. IDSA Annual Meeting, October, 2010.