

# Stanford

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## Hayley Gans

Clinical Professor, Pediatrics - Infectious Diseases

### CLINICAL OFFICES

- **Pediatric Infectious Disease**

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### ACADEMIC CONTACT INFORMATION

- **Alternate Contact**

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### Bio

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### CLINICAL FOCUS

- Infectious Diseases, Pediatric
- Pediatric Infectious Diseases

### ACADEMIC APPOINTMENTS

- Clinical Professor, Pediatrics - Infectious Diseases
- Member, Maternal & Child Health Research Institute (MCHRI)

### ADMINISTRATIVE APPOINTMENTS

- Fellowship Program Director, Pediatric Infectious Diseases, (2006-2017)
- Co-director, Pediatric Infectious Diseases Program for Immunocompromised Hosts, Children's Hospital at Stanford, (2013- present)
- Associate Fellowship Director, Pediatric Infectious Diseases, Stanford University Medical Center, (2017- present)
- Director, Fellowship Education, Department of Pediatrics, Stanford University Medical Center, (2017- present)

### HONORS AND AWARDS

- Faculty Fellows Leader Program, Stanford University Medical Center (2011)
- Certificate of Achievement, Stanford clinical Effectiveness Leadership Training, Stanford University School of Medicine (2017)
- Fuji Apple Award in Recognition of Contribution to Fellowship Education and Mentorship, Department of Pediatrics, Stanford University Medical Center (2018)

### PROFESSIONAL EDUCATION

- Fellowship: Stanford University School of Medicine (1998) CA

- Medical Education: State University of New York Syracuse Medical School Registrar (1991) NY
- Board Certification: Pediatric Infectious Diseases, American Board of Pediatrics (1999)
- Residency: Stanford University Medical Center (1994) CA
- Internship: Stanford University Medical Center (1992) CA
- M.D., SUNY at Syracuse , Medicine (1991)

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

The focus of my laboratory is defining the immune response to viral vaccines evaluating the ontogeny of responses in infants and limitations in immunocompromised hosts. We have studied the memory effector T cells response in infants given an early two-dose measles vaccine regimen, measuring CD4+, CD4+CD45RO+ and CD4+CD45RO+CCR7-T cells that produce IFN $\gamma$ . We have also analyzed key markers of activation, using cell surface markers CD69 and CD40-ligand. In addition, we have studied innate immunity and the interactions with the adaptive immune system. We have measured dendritic cell and monocyte populations and function in infants and children and the effects on measles-specific CD4+ T cell responses. These analyses have also been applied to both term and preterm infants receiving polio vaccine, and children receiving varicella vaccination. Our findings have revealed relative limitations in both the innate and adaptive immune system of healthy infants and children as compared with adults. Currently, we are investigating mechanisms responsible for these restrictions. We are also examining the acquisition and persistence of viral immunity in two immunocompromised states, HIV infection and transplantation. The goals of these studies are to define immune profiles in populations where obstacles to vaccination exist to offer insights for the development of novel vaccine strategies.

In my role as Co-director of the Pediatric Infectious Diseases Program for Immunocompromised Hosts I am involved with research related to these populations, including outcome studies, epidemiologic studies focusing on respiratory illness in solid organ transplant, fever and neutropenia in Oncology, and risk factors for Post-transplant Lymphoproliferative Disease and cytomegalovirus disease in transplant recipients. In addition, we are studying the efficacy of vaccines and prophylactic measures, such as synagis, in these populations.

### CLINICAL TRIALS

- COVID-19: Pediatric Research Immune Network on SARS-CoV-2 and MIS-C, Recruiting
- CMV T Cell Immunity in Pediatric Solid Organ Transplant Recipients, Not Recruiting
- Ontogeny of Measles Immunity in Infants, Not Recruiting

## Teaching

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### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Infectious Diseases (Fellowship Program)

## Publications

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### PUBLICATIONS

- **Immunizing pediatric liver transplant recipients against varicella virus using live-attenuated vaccination**  
Harmann, K., Sear, K., Nadimpalli, S., Chen, S. F., Gans, H., Bensen, R.  
WILEY.2022
- **Vaccine-Associated Measles Encephalitis in Immunocompromised Child, California, USA.** *Emerging infectious diseases*  
Costales, C., Sahoo, M. K., Huang, C., Guimaraes, C. V., Born, D., Kushner, L., Gans, H. A., Doan, T. A., Pinsky, B. A.  
2022; 28 (4): 906-908
- **Live Virus Vaccination of Pediatric Solid-Organ Transplant Candidates Within One Month Prior to Transplantation: A Multi-Center Experience.** *Transplant infectious disease : an official journal of the Transplantation Society*  
Rosenthal, A., Madigan, T., Chen, S. F., Gans, H., Nadimpalli, S.

2021: e13667

- **Using Speed Mentoring to Expand Scholarship Perspectives and Opportunities for Fellows.** *Journal of graduate medical education*  
Guerin, A., Okamura, E., Rotandi, C. L., Halpern-Felsher, B., Blankenburg, R., Gans, H. A.  
2021; 13 (3): 423-424
- **Improving Pediatric Subspecialty Recruitment Using an Interdivisional Department Session.** *Journal of graduate medical education*  
Okamura, E., Rotandi, C. L., Guerin, A., Halpern-Felsher, B., Blankenburg, R., Gans, H. A.  
2021; 13 (3): 424-426
- **Varicella zoster immune globulin (human) (VARIZIG) in immunocompromised patients: a subgroup analysis for safety and outcomes from a large, expanded-access program.** *BMC infectious diseases*  
Gans, H., Chemaly, R. F.  
2021; 21 (1): 46
- **Do I Belong Here? Confronting Imposter Syndrome at an Individual, Peer, and Institutional Level in Health Professionals.** *MedEdPORTAL : the journal of teaching and learning resources*  
Rivera, N., Feldman, E. A., Augustin, D. A., Caceres, W., Gans, H. A., Blankenburg, R.  
2021; 17: 11166
- **Standardization of Post-operative Antimicrobials Reduced Exposure While Maintaining Good Outcomes in Pediatric Liver Transplant Recipients.** *Transplant infectious disease : an official journal of the Transplantation Society*  
Bio, L. L., Schwenk, H. T., Chen, S. F., Conlon, S., Gallo, A., Andy Bonham, C., Gans, H. A.  
2020: e13538
- **Kinetics of SARS-CoV-2 positivity of infected and recovered patients from a single center.** *Scientific reports*  
Huang, J. n., Zheng, L. n., Li, Z. n., Hao, S. n., Ye, F. n., Chen, J. n., Gans, H. A., Yao, X. n., Liao, J. n., Wang, S. n., Zeng, M. n., Qiu, L. n., Li, et al  
2020; 10 (1): 18629
- **A 10-Month-Old Female With Complicated Mastoiditis Due to Fusobacterium necrophorum: A Case Report and Literature Review.** *Journal of the Pediatric Infectious Diseases Society*  
Rosenthal, A. n., Gans, H. n., Schwenk, H. T.  
2020
- **Genetic associations with a fever after measles-containing vaccines.** *Human vaccines & immunotherapeutics*  
Klein, N. P., Zerbo, O. n., Goddard, K. n., Wang, W. n., Fohner, A. E., Wiesner, A. n., Shokoohi, V. n., Coller, J. n., Bok, K. n., Gans, H. A.  
2020: 1-7
- **Pneumocystis jiroveci in solid organ transplantation: Guidelines from the American Society of Transplantation Infectious Diseases Community of Practice** *CLINICAL TRANSPLANTATION*  
Fishman, J. A., Gans, H., AST Infect Dis Community Practice  
2019
- **Risk Factors of Ambulatory Central Line-Associated Bloodstream Infection in Pediatric Short Bowel Syndrome.** *JPEN. Journal of parenteral and enteral nutrition*  
Seddik, T. B., Tian, L., Nespore, C., Kerner, J., Maldonado, Y., Gans, H.  
2019
- **Adenovirus relationship to rejection: Two sides of the coin**  
Mojica, C., Gans, H., Chen, S. F.  
WILEY.2019
- **Pneumocystis jiroveci in Solid Organ Transplantation - Guidelines from the American Society of Transplantation Infectious Diseases Community of Practice.** *Clinical transplantation*  
Fishman, J. A., Gans, H. n.  
2019: e13587
- **Preventing Measles among Immunosuppressed Cancer and Hematopoietic Cell Transplant Patients: A Position Statement by the American Society for Transplantation and Cellular Therapy.** *Biology of blood and marrow transplantation : journal of the American Society for Blood and Marrow Transplantation*  
Pergam, S. A., Englund, J. A., Kamboj, M. n., Gans, H. A., Young, J. H., Hill, J. A., Savani, B. n., Chemaly, R. F., Dadwal, S. S., Storek, J. n., Duchin, J. n., Carpenter, P. A.

2019

- **Parental Risk Factors for Fever in their Children 7-10 Days After the First Dose of Measles-Containing Vaccines.** *Human vaccines & immunotherapeutics*  
Zerbo, O. n., Modaressi, S. n., Goddard, K. n., Lewis, E. n., Bok, K. n., Gans, H. n., Klein, N. P.  
2019
- **Measles Maternal Antibodies With Low Avidity Do Not Interfere With the Establishment of Robust Quantity and Quality Antibody Responses After the Primary Dose of Measles, Mumps, and Rubella Vaccine Administered at 12-Months of Age.** *Journal of the Pediatric Infectious Diseases Society*  
Collins, C. A., Gelinias, L. n., Yasukawa, L. L., Audet, S. n., Abu-Raya, B. n., Turvey, S. E., Beeler, J. A., Kollmann, T. R., Gans, H. A.  
2019
- **Response to editor regarding "Improvement of psychiatric symptoms in youth following resolution of sinusitis".** *International journal of pediatric otorhinolaryngology*  
Frankovich, J., Sidell, D., Gans, H., Brown, K., Mahony, T., Thienemann, M.  
2018; 112: 208-9
- **Central line replacement following infection does not improve reinfection rates in pediatric pulmonary hypertension patients receiving intravenous prostanoid therapy** *PULMONARY CIRCULATION*  
McCarthy, E. K., Ogawa, M. T., Hopper, R. K., Feinstein, J. A., Gans, H. A.  
2018; 8 (1): 2045893218754886
- **Palatal Petechiae in the Absence of Group A Streptococcus in Pediatric Patients with Acute-Onset Neuropsychiatric Deterioration: A Cohort Study.** *Journal of child and adolescent psychopharmacology*  
Mahony, T., Sidell, D., Gans, H., Cooperstock, M., Brown, K., Cheung, J. M., Farhadian, B., Gustafson, M., Thienemann, M., Frankovich, J.  
2017
- **Improvement of psychiatric symptoms in youth following resolution of sinusitis** *INTERNATIONAL JOURNAL OF PEDIATRIC OTORHINOLARYNGOLOGY*  
Mahony, T., Sidell, D., Gans, H., Brown, K., Farhadian, B., Gustafson, M., Sherr, J., Thienemann, M., Frankovich, J.  
2017; 92: 38-44
- **Fever and Renal Failure in a Child With DiGeorge Syndrome and Tetralogy of Fallot.** *Journal of the Pediatric Infectious Diseases Society*  
Itoh, M., Kann, D. C., Schwenk, H. T., Gans, H. A.  
2015; 4 (4): 373-375
- **Pleural Effusion and Fever in an Immunocompromised Patient.** *Journal of the Pediatric Infectious Diseases Society*  
Kay, A. W., Itoh, M., Valdez, J., Chen, S. F., Mathew, R., Gans, H. A.  
2015; 4 (1): e6-9
- **Loss of passively acquired maternal antibodies in highly vaccinated populations: an emerging need to define the ontogeny of infant immune responses.** *journal of infectious diseases*  
Gans, H. A., Maldonado, Y. A.  
2013; 208 (1): 1-3
- **The status of live viral vaccination in early life.** *Vaccine*  
Gans, H. A.  
2013; 31 (21): 2531-2537
- **Measles humoral and cell-mediated immunity in children aged 5-10 years after primary measles immunization administered at 6 or 9 months of age.** *journal of infectious diseases*  
Gans, H. A., Yasukawa, L. L., Sung, P., Sullivan, B., Dehovitz, R., Audet, S., Beeler, J., Arvin, A. M.  
2013; 207 (4): 574-582
- **Innate Immune Dysfunction is Associated with Enhanced Disease Severity In Infants with Severe Respiratory Syncytial Virus Bronchiolitis** *JOURNAL OF INFECTIOUS DISEASES*  
Gans, H. A., Yasukawa, L. L., Sung, P., Sullivan, B., Dehovitz, R., Audet, S., Beeler, J., Arvin, A. M.  
2013; 207 (4): 574-582
- **IMP-Producing Carbapenem-Resistant Klebsiella pneumoniae in the United States** *JOURNAL OF CLINICAL MICROBIOLOGY*  
Limbago, B. M., Rasheed, J. K., Anderson, K. F., Zhu, W., Kitchel, B., Watz, N., Munro, S., Gans, H., Banaei, N., Kallen, A. J.  
2011; 49 (12): 4239-4245

- **Challenges in infant immunity: implications for responses to infection and vaccines** *NATURE IMMUNOLOGY*  
PrabhuDas, M., Adkins, B., Gans, H., King, C., Levy, O., Ramilo, O., Siegrist, C.  
2011; 12 (3): 189-194
- **Preterm Infants' T Cell Responses to Inactivated Poliovirus Vaccine** *JOURNAL OF INFECTIOUS DISEASES*  
Klein, N. P., Gans, H. A., Sung, P., Yasukawa, L. L., Johnson, J., Sarafanov, A., Chumakov, K., Hansen, J., Black, S., Dekker, C. L.  
2010; 201 (2): 214-222
- **Age-Related Increase in the Frequency of CD4(+) T Cells That Produce Interferon-gamma in Response to Staphylococcal Enterotoxin B during Childhood** *JOURNAL OF INFECTIOUS DISEASES*  
Hanna-Wakim, R., Yasukawa, L. L., Sung, P., Fang, M., Sullivan, B., Rinki, M., Dehovitz, R., Arvin, A. M., Gans, H. A.  
2009; 200 (12): 1921-1927
- **Immune responses to mumps vaccine in adults who were vaccinated in childhood** *Annual Meeting of the Pediatric-Academic-Societies/Society-of-Pediatric-Research*  
Hanna-Wakim, R., Yasukawa, L. L., Sung, P., Arvin, A. M., Gans, H. A.  
UNIV CHICAGO PRESS.2008: 1669-75
- **Effects of interleukin-12 and interleukin-15 on measles-specific T-cell responses in vaccinated infants** *VIRAL IMMUNOLOGY*  
Gans, H. A., Yasukawa, L. L., Zhang, C. Z., Wakim, R. H., Rinki, M., Dehovitz, R., Arvin, A. M.  
2008; 21 (2): 163-172
- **Primary vaccine failure after 1 dose of varicella vaccine in healthy children** *44th Annual Meeting of the Infectious-Diseases-Society-of-America*  
Michalik, D. E., Steinberg, S. P., LaRussa, P. S., Edwards, K. M., Wright, P. F., Arvin, A. M., Gans, H. A., Gershon, A. A.  
UNIV CHICAGO PRESS.2008: 944-49
- **EOSINOPHILIC MENINGOENCEPHALITIS: PSYCHIATRIC PRESENTATION AND TREATMENT** *INTERNATIONAL JOURNAL OF PSYCHIATRY IN MEDICINE*  
Hong, D. S., Bernstein, M., Smith, C., Gans, H., Shaw, R. J.  
2008; 38 (3): 287-295
- **Age-dependent differences in IgG isotype and avidity induced by measles vaccine received during the first year of life** *JOURNAL OF INFECTIOUS DISEASES*  
Nair, N., Gans, H., Lew-Yasukawa, L., Long-Wagar, A. C., Arvin, A., Griffin, D. E.  
2007; 196 (9): 1339-1345
- **Immunogenicity of aerosol measles vaccine given as the primary measles immunization to nine-month-old Mexican children** *42nd Annual Meeting of the Infectious-Diseases-Society-of-America*  
Wong-Chew, R. M., Islas-Romero, R., Garcia-Garcia, M. D., Beeler, J. A., Audet, S., Santos-Preciado, J. I., Gans, H., Lew-Yasukawa, L., Maldonado, Y. A., Arvin, A. M., Valdespino-Gomez, J. L.  
ELSEVIER SCI LTD.2006: 683-90
- **Humoral and cell-mediated immune responses to an early 2-dose measles vaccination regimen in the United States** *41st Annual Meeting of the Infectious-Diseases-Society-of-America*  
Gans, H. A., Yasukawa, L. L., Alderson, A., Rinki, M., DeHovitz, R., Beeler, J., Audet, S., Maldonado, Y., Arvin, A. M.  
UNIV CHICAGO PRESS.2004: 83-90
- **T cell immunity to measles viral proteins in infants and adults after measles immunization** *VIRAL IMMUNOLOGY*  
Gans, H. A., Yasukawa, L. L., Alderson, A., Rinki, M., DeHovitz, R., Maldonado, Y., Arvin, A. M.  
2004; 17 (2): 298-307
- **Induction of cellular and humoral immunity after aerosol or subcutaneous administration of Edmonston-Zagreb measles vaccine as a primary dose to 12-month-old children** *JOURNAL OF INFECTIOUS DISEASES*  
Wong-Chew, R. M., Islas-Romero, R., Garcia-Garcia, M. D., Beeler, J. A., Audet, S., Santos-Preciado, J. I., Gans, H., Lew-Yasukawa, L., Maldonado, Y. A., Arvin, A. M., Valdespino-Gomez, J. L.  
2004; 189 (2): 254-257
- **Measles and mumps vaccination as a model to investigate the developing immune system: passive and active immunity during the first year of life** *International Symposium on Protection of Newborns through Maternal Immunization*  
Gans, H., DeHovitz, R., Forghani, B., Beeler, J., Maldonado, Y., Arvin, A. M.  
ELSEVIER SCI LTD.2003: 3398-3405

- **Jarisch-Herxheimer reaction associated with ciprofloxacin administration for tick-borne relapsing fever** *PEDIATRIC INFECTIOUS DISEASE JOURNAL*  
Webster, G., Schiffman, J. D., Dosanjh, A. S., Amieva, M. R., Gans, H. A., Sectish, T. C.  
2002; 21 (6): 571-573
- **Immune responses to measles and mumps vaccination of infants at 6, 9, and 12 months** *38th Annual Meeting of the Infectious-Diseases-Society-of-America*  
Gans, H., Yasukawa, L., Rinki, M., DeHovitz, R., Forghani, B., Beeler, J., Audet, S., Maldonado, Y., Arvin, A. M.  
UNIV CHICAGO PRESS.2001: 817-26
- **Quantitation of CD4+responder T cell frequencies to measles in vaccinated infants and adults**  
Gans, H. A., Alderson, A., Lew-Yasukawa, L., Rinki, M., DeHovitz, R., Arvin, A. M.  
OXFORD UNIV PRESS INC.2001: 1152-52
- **Developmental maturation of the immune response to measles and mumps live viral vaccines.**  
Gans, H. A., Maldonado, Y., Yasukawa, L. L., Beeler, J., Audet, S., Forghani, B., Rinki, M. M., DeHovitz, R., Hammer, L., Arvin, A. M.  
OXFORD UNIV PRESS INC.2000: 223-23
- **Intravenous ribavirin therapy for adenovirus pneumonia** *PEDIATRIC PULMONOLOGY*  
Shetty, A. K., Gans, H. A., So, S., Millan, M. T., Arvin, A. M., Gutierrez, K. M.  
2000; 29 (1): 69-73
- **IL-12, IFN-gamma, and T cell proliferation to measles in immunized infants** *JOURNAL OF IMMUNOLOGY*  
Gans, H. A., Maldonado, Y., Yasukawa, L. L., Beeler, J., Audet, S., Rinki, M. M., DeHovitz, R., Arvin, A. M.  
1999; 162 (9): 5569-5575
- **Immune responses of 6, 9 and 12 month old infants immunized with measles or mumps vaccine and the effects of passive antibodies on these responses**  
Gans, H. A., Lew-Yasukawa, L., Beeler, J., DeHovitz, R., Maldonado, Y., Arvin, A. M.  
NATURE PUBLISHING GROUP.1999: 161A-161A
- **Deficiency of the humoral immune response to measles vaccine in infants immunized at age 6 months** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*  
Gans, H. A., Arvin, A. M., Galinus, J., Logan, L., DeHovitz, R., Maldonado, Y.  
1998; 280 (6): 527-532
- **Comparison of T-cell responses to measles antigen in infants immunized at 6, 9, and 12 months of age.**  
Gans, H., Galinus, J., DeHovitz, R., Arvin, A., Maldonado, Y.  
OXFORD UNIV PRESS INC.1996: 269-69