

Division Introduction

Under the direction of Jeffrey Kahn, M.D., Ph.D., the Division of Pediatric Infectious Disease directs and manages two active in-patient infectious disease consultation services; one dedicated to general infectious diseases and the other dedicated to infections in the immunocompromised hosts. The Division has an active ambulatory service for children with infectious diseases, including a large clinic for HIV-infected and HIV-exposed children and adolescents at Children’s Medical Center. The Infection Control and Prevention Programs at all three Children’s campuses (Dallas, Plano, and Our Children’s House) are managed under the medical directorship of Michael Sebert, M.D.

The Division was established in the early 1960’s with one faculty member, John D. Nelson, M.D. Shortly thereafter, George McCracken joined the Division and the two managed the Division for decades, graduating more than 100 fellows, many of whom are currently leaders in academics and in the field of Infectious Diseases making the fellowship program one of, if not the, longest standing and productive Pediatric Infectious Diseases fellowship programs in the world. Drs. Nelson and McCracken were the founding editors for the Pediatric Infectious Diseases Journal, the top publication in the field of Pediatric Infectious Diseases. Currently, the Division has nine faculty members, four fellows, and several research and administrative support staff.



**Jeffrey Kahn, M.D., Ph.D.
Division Chief**

The Division provides an active infectious disease consultation service at Children's and other hospitals on the UT Southwestern campus, including Parkland Memorial Hospital and Clements University Hospital. Each year the Division provides consultation and care to more than 700 infants, children, adolescents, and young adults. Faculty care for patients with inherited or acquired immunodeficiency, including those receiving immunosuppressive therapy for cancer, organ transplantation, bone marrow, and stem cell transplantation, as well as patients with inflammatory bowel disease and rheumatologic disorders and a wide variety of classic as well as unusual infectious disease problems.

Division faculty members publish an average of 10-12 papers yearly in peer-reviewed journals and are actively engaged in clinically applied research involving the areas of:

- Molecular epidemiology of respiratory syncytial virus and activation of the innate immune system by RSV
- The link between pulmonary infection and asthma, specifically the role of dendritic cells in response to rhinovirus infection in the pathogenesis of asthma
- HIV/AIDS
- Malaria epidemiology, eradication and elimination
- Ebola response preparedness
- Molecular biology of Leishmania
- Hepatitis E virus
- Infections in immunocompromised hosts
- Fungal infections
- Transplant Infectious Diseases
- Antimicrobial stewardship
- Outbreak investigations
- Innate immune response to neuroinvasive Flaviviruses

The Division is dedicated to the training of medical students, residents, and fellows. Since 1965 more than 100 physicians have completed training in the Division’s fellowship training program, and greater than 80 percent of them have academic appointments at universities and children’s hospitals worldwide.

Faculty

There are nine full-time faculty members in the Division of Pediatric Infectious Disease.

Honors / Awards

Best Pediatric Specialists in Dallas, *D Magazine*

- Michelle Gill
- Jeffrey Kahn
- Jeffrey McKinney
- Paul Sue

UT Southwestern Leaders in Clinical Excellence Awards: Mentoring Award

- Jeffrey McKinney

Invited Lectures

Amanda Evans

- 50th Annual Kenneth C. Haltalin Pediatrics for the Practitioner Conference, Dallas, TX, April 2018
 - *"Return of the Great Pox: Addressing Syphilis in Newborn and Teens in Your Community"*

Michelle Gill

- Japan Pediatric Society 121st Annual Meeting, Fukuoka, Japan, April 2018
 - *"Evaluating Disease Mechanisms Pediatric Asthma: Evidence for IgE-Mediated Regulation of Plasmacytoid Dendritic Cell Antiviral Responses"*
- Boston City Wide Allergy & Immunology Grand Rounds, Boston, MA, April 2018
 - *Evaluating Disease Mechanisms Pediatric Asthma: Evidence that IgE Regulates Dendritic Cell Antiviral Responses"*

Natasha Hanners

- 50th Annual Kenneth C. Haltalin Pediatrics for the Practitioner Conference, Dallas, TX, April 2018
 - *"A Pediatrician's Guide to Zika Virus and Other Vector-borne Diseases"*

Paul Sue

- 50th Annual Kenneth C. Haltalin Pediatrics for the Practitioner Conference, Dallas, TX, April 2018
 - *"When Defenses Fail: Approaching Infections in the Immunocompromised Host"*

Dawn Wetzel

- UT Southwestern Biochemistry Seminar Series, Dallas, TX, January 2018
 - *"Targeting A New therapy for Leishmaniasis"*
- UT Southwestern Infectious Diseases Seminar, Dallas, TX, March 2019
 - *"Targeting A New Therapy for Leishmaniasis"*

Michelle Hsiang

- 50th Annual Kenneth C. Haltalin Pediatrics for the Practitioner Conference, Dallas, TX, April 2018
 - *"Malaria- Pediatric Cases from Dallas and an Update On Elimination Efforts Worldwide"*
- World Health Organization, Technical Consultation on Research Requirements to Support Policy Recommendations on Highly Sensitive Malaria Diagnostic Tests, Geneva, Switzerland, June 2018
 - *"Highly Sensitive Diagnostics for Malaria Elimination, A Review of Past, Ongoing, and Planned Studies"*

- PATH, Foundation for Innovative Diagnostics, Bill and Melinda Gates Foundation Partners Meeting on Ultrasensitive RDTs, New Orleans, LA, USA, Oct 2018
 - *“Performance Evaluation of an Ultra-Sensitive Rapid Diagnostic Test for Malaria in the Low Transmission Setting of Zambezi Region, Namibia”*
- Novartis Foundation, Social Business, and Global Program Meeting, Basel, Switzerland, September 2018
 - *“Targeted Parasite Elimination for Malaria Elimination in Namibia”*

Conference Presentations

Pediatric Infectious Disease Society/St. Jude Children’s Research Hospital Conference, Memphis, TN, March 2018

James L, Most Z, Costello K, Warraich G, Dietz S, Hebert C, **Evans AS**.

Poster, *“Missed Opportunity Encounters for Early Diagnosis of Adolescents with HIV Infection”*

Pichilingue-Reto P, Pavageau L, Kakkilava V, **Evans AS**

Poster, *“Congenital Toxoplasmosis in a Premature Infant, Associated with Maternal Ingestion of Deer Meat”*

Hassouneh L, Pichilingue Reto P, Chaisavaneeyakorn S, **Wetzel DM**.

Poster, *“An Outbreak of Pediatric Brucellosis in Dallas”*

American Society of Tropical Medicine and Hygiene (ASTMH), New Orleans, LA, Oct 2018

Ntuku, N, Whittemore, B, Smith-Gueye, C, Dausab, L, Uusiku, P, Katokele, S, Prach, L, Golden, A, Jang, I, Domingo, G, Bousema, T, Dufour, M, Greenhouse, B, Mumbengegwi, D, Gosling, R and **Hsiang, M**.

Poster, *“Time to Negativity of Standard and Ultra-Sensitive Plasmodium Falciparum Histidine-Rich Protein 2 Rapid Diagnostic Tests in Zambezi Region, Namibia”*

Prach LM, Schrubbe L, Tambo M, Whittemore B, Tessema S, Das S, Wu L, Dufour MSK, Ntuku H, Smith-Gueye C, Golden A, Jang IK, Uusiku P, Katokele S, Domingo GJ, Gosling R, Greenhouse B, Mumbengegwi D, **Hsiang MS**.

Poster, *“Performance Evaluation of an Ultra-Sensitive Rapid Diagnostic Test for Plasmodium Falciparum Malaria Active Case Detection in the Low Transmission Setting of Zambezi Region, Namibia”*

Other Conferences

Gill M, Liu AH, Calatroni A, Krouse RZ, Shao B, Schiltz A, Gern JE, Togias A, Busse WW.

Pediatric Academic Society/Society of Pediatric Research, Toronto, CA, May 2018
Invited Science Presentation, *“Enhanced Plasmacytoid Dendritic Cell Antiviral Responses After Omalizumab”*

Hanners, N, de la Cruz Rivera P, Mar K, Eitson J, Usui N, Douglas C, Konopka G, Schoggins JW.

NIH / NICHD, Child Health Research Centers Annual Meeting, Nashville, TN, October 2018
Oral Presentation, *“Interferon-Mediated Control of Neuropathogenic Flaviviruses”*

Ntuku H, Mumbengegwi D, Roberts KW, Tambo M, McCreesh P, Whittemore B, Dufour MSK, Prach LM, Siloka G, Siame N, Smith-Gueye C, Katokele S, Uusiku P, Bennett A, Smith J, Kleinschmidt I, Gosling R, **Hsiang MS**.

Multilateral Initiative on Malaria (MIM) Meeting. Dakar, Senegal, 2018

Oral Presentation, *“Reactive Focal Interventions to Reduce Malaria Transmission, Preliminary Results from a Cluster Randomized Controlled Trial in Namibia”*

Education and Training

The Division of Pediatric Infectious Disease provides educational opportunities for medical students and pediatric residents in addition to its accredited fellowship program.

Pediatric Infectious Diseases is a consultative service, in which faculty interact with all divisions in the department and assist in the management of children with a variety of underlying medical problems. Most consultations involve hospitalized patients, but there are general infectious disease and HIV/AIDS clinics in which patients are managed on an outpatient basis. Medical students can elect to work in these clinics under supervision of the fellows and faculty. The elective rotation is open to second-, third- and fourth-year medical students and pediatric residents, the latter being given more autonomy because of their greater clinical experience. Visitors from other medical schools and residency training programs are welcome.

The Infectious Diseases Service is an elective-only rotation among our house officers. Thus, we are pleased to consistently attract residents who self-select month-long training experiences in Infectious Diseases. Individualized by Amanda Evans, these blocks have allowed residents to choose among training exposures in our outpatient clinics, our general infectious diseases consult service, and our immunocompromised host clinical service. Residents consistently contribute to our division rounds, including via formal presentations of contemporary cases and new research findings. In addition, trainees interested in infectious diseases work with our colleagues in public health, in the bone marrow transplant unit, the clinical microbiology lab, and with our dedicated infectious diseases pharmacists. Resident scholarly projects have been mentored by our faculty, and we take pride in facilitating nationally competitive ID fellowship searches by our UT Southwestern resident cadre.

The Division of Pediatric Infectious Disease has a long tradition of training fellows in the subspecialty. Since 1965, more than 100 fellows from 28 countries have completed training in infectious diseases. Eighty percent are involved in teaching and research in university-affiliated medical centers.

Many graduates are leaders in the field of infectious diseases, and some have become division directors and department chairs or deans of medical schools.

The purposes of the training program are to provide a background in laboratory techniques of classical microbiology, immunology, and molecular biology, to provide experience in application of the scientific method to clinical and laboratory research, and to develop competence in diagnosis and management of infectious diseases. Clinical training is in the form of consultations, rounds, and conferences, and outpatient Infectious Disease and HIV Clinics.

Dr. Kahn serves as the Pediatric Infectious Disease Fellowship Program Director. All division faculty, each with specific clinical and research interests, actively participate in the training program. Each trainee is instructed in all relevant basic laboratory methods, including fundamentals of aerobic and anaerobic bacteriology, antibiotic susceptibility testing, antibiotic assays, serologic techniques, immunoelectrophoresis, the fluorescent antibody method, tissue culture technique, and leukocyte function studies.

Additionally, the fellows have ample opportunity to work with collaborators in molecular microbiology to acquire basic techniques such as PCR, microarray analyses, cloning, transcriptome analyses and purification of bacterial outer membrane components (e.g. endotoxin).



Dr. Jeffrey Kahn, Drs. Sujitra Chaisavaneeyakorn and Regina Rowe (graduating fellows) and Dr. Michael Sebert

The trainee carries through one or more research protocols of his or her own design with supervision by the program directors and collaborators. This is tailored to the interests and capabilities of the individual trainee, either in basic laboratory experimentation or in clinical research.

The clinical experience at Children's Medical Center and on the neonatal service at Parkland Health & Hospital System and the newly opened Clements University Hospital is extensive. There are approximately 120,000 outpatient visits, 9,000 pediatric admissions, and 16,000 deliveries per year. A high proportion of these have infectious disease problems; therefore, trainees have the opportunity to see many common infections and most of the rarer disorders.

Infectious disease clinical rounds are conducted daily; there are outpatient clinics at least four days each week. The Division averages approximately 60 inpatient consultations monthly and 15-20 new outpatient consultations monthly.

The three-year fellowship training program aims to provide individuals with sufficient background to pursue a career of independent research, teaching, and managing patients with wide variety of pediatric infectious diseases.

Research Activities

Pediatric Infectious Disease faculty are actively engaged in numerous investigations that provide an invaluable opportunity to learn the most modern molecular biologic techniques and to apply these to common clinical problems in pediatrics. The Division has a long-standing history in clinic investigation and has published landmark papers in many areas including clinical trials of anti-inflammatory agents in bacterial meningitis, diagnostic studies using polymerase chain reaction (PCR) in congenital syphilis and pneumonia, and studies of endotoxin concentrations in body fluids of infants and children with meningococcal or Haemophilus meningitis and correlating these values with outcomes.

- Jeffrey Kahn's areas of scientific research include emerging pathogens, respiratory syncytial virus, human metapneumovirus and rhabdoviral vectors.
- Michelle Gill, whose research centers on evaluating the role of dendritic cells in pediatric respiratory viral infections and allergic disease, partners with the Division of Pediatric Allergy and Immunology to investigate the roles of dendritic cells, respiratory viruses and IgE-mediated allergy in asthma pathogenesis.
- Natasha Hanners' clinical and research interest is in viral encephalitis and the innate immune response in control on neuroinvasive viruses.
- Michelle Hsiang conducts malaria epidemiological and clinical research in low transmission areas of Africa and Asia to address the unique challenges of diagnosis, surveillance and treatment of individuals and populations in these settings.
- Dawn Wetzel focuses on host: pathogen interactions in, and drug development for, the parasitic infection leishmaniasis.
- Paul Sue's interests are in the epidemiology and clinical features of hepatitis E virus, fungal infections in the immunocompromised host, fecal microbial transplant and transplant infectious diseases.

Research areas include:

- The link between pulmonary infection and asthma
- Malaria
- HIV/AIDS

- Immunogenetic profiles of children with various infections
- Respiratory syncytial virus
- Hepatitis E virus
- Innate immune response to Flaviviruses
- Infection Control and Prevention
- Infections in immunocompromised hosts
- Fungal infections
- Transplant Infectious Diseases

The Division has established collaborative research programs with members of the Departments of Microbiology and Immunology at UT Southwestern. The principle goals of these collaborative projects are:

- To delineate the molecular immunobiologic basis for the pathogenesis of certain infectious diseases in pediatrics
- To define and control the inflammatory processes involved in bacterial infections, such as bone and joint infections
- To develop the immunobiologic profiles of children with infectious diseases

Clinical Activities

The Division provides an active infectious disease consultation service at Children's and other hospitals on the UT Southwestern campus including Parkland Memorial Hospital and Clements University Hospital. Each year, the Division provides consultation and care to more than 700 infants. Faculty care for patients with inherited or acquired immunodeficiency, including those receiving immunosuppressive therapy for cancer, organ transplantation, bone marrow, and stem cell transplantation, as well as patients with inflammatory bowel disease and rheumatologic disorders and a wide variety of classic as well as unusual infectious disease problems.

In addition to the infectious disease outpatient clinic and the infection control program at Children's, the Division is responsible for directing:

- The AIDS-Related Medical Services Clinic (ARMS) under the leadership of Amanda Evans, M.D.
- The Infection Control Program under the leadership of Michael Sebert, M.D.
- The Solid Organ Transplant Infectious Diseases Clinic under the leadership of Paul Sue, M.D.

Patient Visits

	2017	2018
Inpatient consultations	550	702
Inpatient follow up visits	2,000	2,457
New Outpatient visits	520	383
Follow-up outpatient visits	360	490

Current Grant Support

Amanda Evans

Grantor: DFAN/Ryan White Part D Women Infants Children, Youth & Affected Family Members AIDS Healthcare
Title of Project: Coordinated Services and Access to Research for Women, Infants, children, and Youth
Role: Principal Investigator
Dates: 2017 - Present

Michelle Gill

Grantor: NIAID

Title of Project: Mechanistic Study Development for ICAC3 MUPPITS and CoNAC Protocols

Role: Principal Investigator (NIAID ICAC3 Administrative Site: University of Wisconsin)

Dates: 2015 – 2019

Grantor: NIH NIAID Inner City Asthma Consortium 3 (ICAC3, UM1AI 114271)

Role: Co-Investigator (PI: R Gruchalla)

Title of Project: Immunologic Approaches to Reduce Asthma

Dates: 2014 – 2021

Natasha Hanners

Grantor: NIH 5 K12 HD-068369-07, UT Southwestern Department of Pediatrics

Title of Project: Antecedents & Sequelae of Childhood Onset Diseases

Role: Co- Principal Investigator

Dates: 2016 – 2018

Grantor: Children's Medical Center CCRAC

Title of Project: Interferon-mediated Control of Encephalitogenic Viruses

Role: Principal Investigator

Dates: 2015 – 2018

Michelle Hsiang

Grantor: Horchow Family Fund

Title of Project: Scholarship Award for Endowed Scholars in Pediatrics, UT Southwestern

Role: Principal Investigator

Dates: 2014 – Present

Grantor: NIH / NIAID

Title of Project: Evaluating re-active surveillance strategies for malaria elimination in Swaziland

Role: Principal Investigator

Dates: 2012 – 2019

Grantor: The Bill and Melinda Gates Foundation A128488

Title: Achieving Global Malaria Eradication through Accelerated Regional Elimination, Subproject 1.3: Evaluation of new, highly sensitive point of care diagnostics for asymptomatic infections in Namibia

Role: Co-PI (PI: Feachem and Gosling)

Dates: 2017 – 2020

Grantor: The Bill and Melinda Gates Foundation

Title: Shrinking the Malaria Map: Maintaining Progress Towards Malaria Eradication, Sub-project: Accelerating Progress on Elimination, Project: Targeted Parasite Elimination (TPE)

Role: Co-PI (PI: Feachem and Gosling)

Dates: 2014 – 2018

Grantor: Novartis Foundation

Title: Eliminating Plasmodium falciparum with ACTs in sub-Saharan Africa

Role: Co-PI (Feachem and Gosling)

Dates: 2014 – 2018

Grantor: Burroughs Wellcome Fund – American Society of Tropical Medicine and Hygiene

Title of Project: Malaria Elimination Surveillance in Swaziland: Investigation of Strategies to Improve Sensitivity and Efficiency for Detection of Secondary Cases

Role: Principal Investigator

Dates: 2012 – 2018

Jeffrey Kahn

Grantor: National Institutes of Health (R21 AI126109-01)

Title of Project: Innate Immune Activation by Respiratory Syncytial Virus

Role: Principal Investigator (Co-Investigator – Ruth Levitz)

Dates: 2016 – 2018

Grantor: National Institutes of Health (IR21AI140462-01A1)

Title of Project: Digital Nanobubble Biosensor for Point-of-Care Respiratory Syncytial Virus Detection

Role: Co-Investigator with Ruth Levitz (PI, Qin)

Dates: 2018 –2020

Dawn Wetzel

Grantor: Children’s Clinical Research Advisory Council (CCRAC) Jr. Investigator Award

Title of Project: Targeting Cell Entry as Therapy for Leishmaniasis

Role: Principal Investigator

Dates: 2016 – 2018

Grantor: NIH NIAID, R21 AI121820

Title of Project: The Role of Flagellar Motility to Innate Immune Recognition of Bacteria

Role: Collaborator; Brent Berwin, PI (Dartmouth College)

Dates: 2016 – 2019

Grantor: Children’s Clinical Research Advisory Council (CCRAC) Early Investigator Award

Title of Project: Role of Host Cells in Treatment-Resistant Pediatric Leishmaniasis

Role: Principal Investigator

Dates: 2018 – 2020

Grantor: Harrington Discovery Institute Scholar-Innovator Award

Title of Project: Developing Novel Antiparasitics That Affect Tubulin Dynamics

Role: Principal Investigator

Dates: 2019 – 2020

Peer-Reviewed Publications

1. Ağaç D, Gill MA, Farrar JD. [Adrenergic Signaling at the Interface of Allergic Asthma and Viral Infections](#). *Front Immunol*. 2018 Apr 11;9:736. PMID: 29696025
2. Coutrier FN, Tirta YK, Cotter C, Zarlinda I, González IJ, Schwartz A, Maneh C, Marfurt J, Murphy M, Herdiana H, Anstey NM, Greenhouse B, Hsiang MS, Noviyanti R. [Laboratory challenges of Plasmodium species identification in Aceh Province, Indonesia, a malaria elimination setting with newly discovered P. knowlesi](#). *PLoS Negl Trop Dis*. 2018 Nov 30;12(11):e0006924. PMID: 30500828

3. Das BB, Anton K, Knox L, Jarin J, Sue PK. [Successful treatment of giant condyloma in a pediatric heart transplant recipient with topical cidofovir.](#) *Transpl Infect Dis.* 2018 Sep 5:e12989. PMID: 30184307
4. Gill MA, Schlaudecker EP. [Perspectives from the Society for Pediatric Research: Decreased Effectiveness of the Live Attenuated Influenza Vaccine.](#) *Pediatr Res.* 2018 Jan;83(1-1):31-40. PMID: 28945700
5. Gill MA, Liu AH, Calatroni A, et al. [Enhanced plasmacytoid dendritic cell antiviral responses after omalizumab.](#) *J Allergy Clin Immunol.* 2018 May;141(5):1735-1743.e9. PMID: 28870461
6. Goleva E, Babineau DC, Gill MA, et al. [Expression of corticosteroid-regulated genes by PBMCs in children with asthma.](#) *J Allergy Clin Immunol.* 2018 Jul 27. pii: S0091-6749(18)31064-9. PMID: 30059697
7. McCreesh P, Mumbengegwi D, Roberts K, Tambo M, Smith J, Whittemore B, Kelly G, Moe C, Murphy M, Chisenga M, Greenhouse B, Ntuku H, Kleinschmidt I, Sturrock H, Uusiku P, Gosling R, Bennett A, Hsiang MS. [Subpatent malaria in a low transmission African setting: a cross-sectional study using rapid diagnostic testing \(RDT\) and loop-mediated isothermal amplification \(LAMP\) from Zambezi region, Namibia.](#) *Malar J.* 2018 Dec 19;17(1):480. PMID: 30567537
8. Medzihradsky OF, Kleinschmidt I, Mumbengegwi D, Roberts KW, McCreesh P, Dufour MK, Uusiku P, Katokele S, Bennett A, Smith J, Sturrock H, Prach LM, Ntuku H, Tambo M, Didier B, Greenhouse B, Gani Z, Aerts A, Gosling R, Hsiang MS. [Study protocol for a cluster randomised controlled factorial design trial to assess the effectiveness and feasibility of reactive focal mass drug administration and vector control to reduce malaria transmission in the low endemic setting of Namibia.](#) *BMJ Open.* 2018 Jan 27;8(1):e019294. PMID: 29374672
9. Mumbengegwi D, Sturrock H, Hsiang M, et al. [Is there a correlation between malaria incidence and Indoor Residual Spraying coverage in Western Zambezi Region, Namibia?](#) *Public Health Action,* 2018 April, Volume 8, Supplement 1, S44-S49(6).
10. Rowe RK, Gill MA. [Targeting Antiviral Pathways for Treatment of Allergic Diseases.](#) *J Pediatric Infect Dis Soc.* 2018 Dec 26;7(suppl_2):S54-S56. PMID: 30590620
11. Zelman BW, Baral R, Zarlinda I, Coutrier FN, Sanders KC, Cotter C, Herdiana H, Greenhouse B, Shretta R, Gosling RD, Hsiang MS. [Costs and cost-effectiveness of malaria reactive case detection using loop-mediated isothermal amplification compared to microscopy in the low transmission setting of Aceh Province, Indonesia.](#) *Malar J.* 2018 Jun 1;17(1):220. PMID: 29859081

Book Chapter

1. Wetzel DM, Phillips MA. (2018). [Chemotherapy of Protozoal Infections.](#) In: Brunton LL, Hilal-Dandan R, Knollmann BC (Eds.), *Goodman and Gilman's The Pharmacological Basis of Therapeutics* (13th ed., pp 987-999). New York, NY: McGraw-Hill Medical.

Newsletter

Natasha Hanners

- Article, "Strep into My Office," *Pediatric Society of Greater Dallas Newsletter*, 1st Quarter 2018

Paul Sue

- Article, "Fecal Microbial Transplant: Nothing New Under the Sun," *Pediatric Society of Greater Dallas Newsletter*, 4th Quarter 2018