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. Dr. McCracken remains the Chief Editor of the Journal. Currently, the Division has eleven faculty members, four fellows, and several research and administrative support staff.

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:

- Streptococcus pneumoniae infections
- 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
- Microarray analyses to identify unique genetic signatures of children with various infectious diseases, particularly RSV and MRSA
- Neonatal infections
- Malaria epidemiology, eradication and elimination
- Ebola response preparedness
- Molecular biology of Leishmania
- Hepatitis E virus
- Antimicrobial stewardship
- Outbreak investigations

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 eleven full-time faculty members in the Division of Pediatric Infectious Disease, with two new additions to the team in 2016.

Natasha Hanners, M.D.
Assistant Instructor

- **B.S.**, Biology
  Flinders University of South Australia, Bedford Park, South Australia, 1999
- **B.A.**, Psychology
  University of Texas at Dallas, Richardson, TX, 2005
- **M.D.**
  UT Southwestern Medical Center, Dallas, TX, 2009

**Postdoctoral Training**
- Residency, Pediatrics
  UT Southwestern Medical Center/Children’s Health, Dallas, TX, 2009-2011
- Chief Residency, Pediatrics
  UT Southwestern Medical Center/Children’s Health, Dallas, TX, 2012-2013
- Fellowship, Pediatric Infectious Disease
  UT Southwestern Medical Center/Children’s Health, Dallas, TX, 2013-2016

**Interests**
- Virus-host interactions, Type I Interferon responses, encephalitis, neurovirology, Flavivirus interactions, including Zika virus neurotropism

Michael TeKippe, M.D., Ph.D.
Assistant Instructor

- **B.S.**, B.S., Biology and Mathematics
  Iowa State University, Ames, IA, 2002
- **M.D., Ph.D.**
  Duke University School of Medicine, Durham, NC, 2010

**Postdoctoral Training**
- Residency, Pediatrics
  St. Louis Children’s Hospital, St. Louis, MO, 2010-2013
- Fellowship, Pediatric Infectious Disease
  Vanderbilt Children’s Hospital, Nashville, TN, 2013-2014
- Fellowship, Pediatric Infectious Disease
  UT Southwestern Medical Center/Children’s Health, Dallas, TX, 2014-2016

**Interests**
- Severe bacterial infections and their management, mechanisms of pathogenesis in *Pseudomonas aeruginosa*, the response of the innate immune system to *Pseudomonas*

Honors / Awards

Natasha Hanners

- Excellence in Research Award, Department of Pediatrics, UT Southwestern/Children’s Health
Jeffrey Kahn

- Best Pediatric Specialists in Dallas, D Magazine

Jeffrey McKinney

- Promotion to Professor

Paul Sue

- Best Doctors in Dallas, D Magazine

Invited Lectures

Michelle Gill

- NIAID/NIH, IgE Regulation in Allergenic Disease Workshop, Rockville, MD, April 2016
  - “IgE-Mediated Regulation of Plasmacytoid Dendritic Cell Antiviral Responses”
  - “Understanding the Role of Dendritic Cells in Anti-viral Immunity”
- American Academy of Pediatrics, PREP Board Review Course, Invited Speaker for Infectious Disease, Kansas City, MO, February 27-March 2; Philadelphia, PA, September 2016
  - “Viral Infections in Pediatrics: RNA Viruses”
  - “Viral Infections in Pediatrics: DNA Viruses”
  - “Infectious Disease Workshop: Case studies of Meningitis and Brain Abscess/Intracranial Infections”

Michelle Hsiang

- CDC/UCSF/UTSW Malaria Elimination Meeting, Atlanta, GA, January 2016
  - “Reactive Case Detection Learnings and Plans for Targeted Parasite Elimination in Swaziland”

Ruth Levitz

- Texas Woman’s University, Denton, TX, April 2016
  - “Transcriptome Analyses of Human Macrophages Infected with Clinical Isolates of Respiratory Syncytial Virus Reveal Distinct Patterns of Innate Immune Activation”

Michael Sebert

- American College of Healthcare Executives North Texas Chapter Panel Discussion, McKinney, TX, April 2016
  - “Management and Prevention of Hospital Acquired Infection”

Dawn Wetzel

- 5th Global Summit on Toxicology and Applied Pharmacology, Houston, TX, September 2016
  - “Targeting Cell Entry as Therapy for Leishmaniasis”
Conference Presentations

Sue P, Laetsch T, Stewart K, Winick N

Poster, Pediatric Academic Society/Society of Pediatric Research, Baltimore, MD, May 2016
“Cytomegalovirus (CMV) Infection as a Cause of Fever and Morbidity among Pediatric Cancer Patients on Maintenance Chemotherapy”

Evans AS, McElvania Tekippe E, Stewart K, Kahn JS.

Poster, ID Week 2016, New Orleans, LA, October 2016
“Development of an Individualized Pediatric Infectious Diseases (I-PID) Elective Increases Pediatric Resident Participation”


Poster, Molecular Parasitology Meeting XXVI, Woods Hole, MA, September 2016
“A Validated Bioluminescence Relative Rate of Kill (BRRoK) Assay for the Rapid Determination of the Initial Rate of Kill for Discovery Antimalarials”

Levitz R, Dozmorov I, Gao Y, Song R, Wakeland E, Kahn J.

Poster, RSV16 10th International Respiratory Syncytial Virus Symposium, Patagonia, Argentina, September 2016
“Clinical Isolates of Respiratory Syncytial Virus Display Distinct Patterns of Host Cell Gene Induction and Viral Gene Expression During Infection of Pulmonary Epithelial Cells and Primary Human Monocyte-Derived Macrophages”

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 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).

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 clinical 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, partners with the Division of Pediatric Allergy and Immunology to evaluate the role of dendritic cells in asthma pathogenesis.
- **Michelle Hsiang’s** research focuses on malaria eradication and elimination.
- **Dawn Wetzel** is involved in investigations of the entry of Leishmania.
- **Paul Sue’s** interests are in the epidemiology and clinical features of hepatitis E virus.

Research areas include:

- The link between pulmonary infection and asthma
- HIV/AIDS
- Microarray analyses to identify unique genetic signatures of children with various infectious diseases, particularly RSV and MRSA
- Neonatal infections
- Immunogenetic profiles of children with various infections
- Respiratory syncytial virus
- Hepatitis E virus
- Infection Control and Prevention

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)
- The Infection Control Program under the leadership of Michael Sebert, M.D.

2016 Patient Visits

<table>
<thead>
<tr>
<th>Service</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient consultations</td>
<td>550</td>
</tr>
<tr>
<td>Inpatient follow up visits</td>
<td>2,000</td>
</tr>
<tr>
<td>New Outpatient visits</td>
<td>520</td>
</tr>
<tr>
<td>Follow-up outpatient visits</td>
<td>360</td>
</tr>
</tbody>
</table>

Current Grant Support

Amanda Evans

**Grantor:** Children’s Medical Center CCRAC Junior Investigator Award  
**Title of Project:** Molecular Mechanisms of Binding and Transcriptional Changes of *Moraxella catarrhalis* Induced by Respiratory Syncytial Virus-Infected Human Cells  
**Role:** Principle Investigator  
**Dates:** 2014 – 2016
Michelle Gill

Grantor: NIAID
Title of Project: Mechanistic Study Development for ICAC3 MUPPITS and CoNAC Protocols
Role: Principle Investigator (NIAID ICAC3 Administrative Site: University of Wisconsin)

Michelle Hsiang

Grantor: Horchow Family Fund
Title of Project: Scholarship Award for Endowed Scholars in Pediatrics, UT Southwestern
Role: Principle Investigator
Dates: 2014 – 2018

Grantor: NIH / NIAID
Title of Project: Evaluating re-active surveillance strategies for malaria elimination in Swaziland
Role: Principle Investigator
Dates: 2012 – 2017

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: Principle Investigator
Dates: 2012 – 2016

Jeffrey Kahn

Grantor: National Institutes of Health
Title of Project: Innate Immune Activation by Respiratory Syncytial Virus
Role: Principle Investigator
Dates: 2016 – 2018

Dawn Wetzel

Grantor: NIH, K08
Title of Project: Targeting Entry Pathways for Leishmaniasis
Role: Principle Investigator
Dates: 2012 – 2017

Grantor: Children’s Medical Center CCRAC
Title of Project: Targeting Cell Entry as Therapy for Leishmaniasis
Role: Principle Investigator
Dates: 2015 – 2017
Peer-Reviewed Publications


