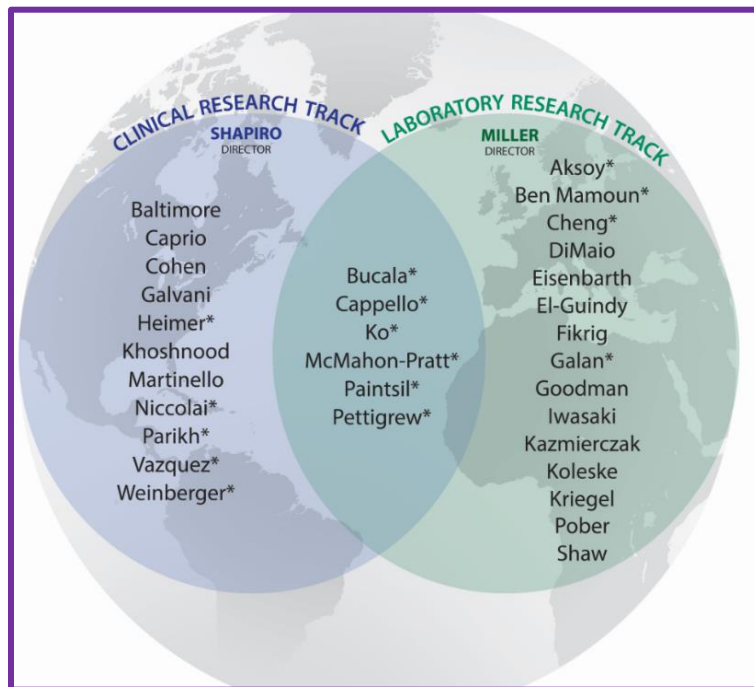


FELLOWSHIP TRAINING IN PEDIATRIC INFECTIOUS DISEASES AT YALE

Program Overview: Our goals are to identify and to recruit outstanding applicants to our program, to help them learn to think critically and to acquire research skills and experience that will prepare them for careers in clinical/translational research in globally significant infectious diseases that will make a real contribution to improving health. The program is tailored to each individual trainee yet is designed to assure that all gain core competencies to be able to perform top quality clinical/translational research. The formal programs of each trainee will vary, depending on their prior training and current plans for their careers. Trainees who do not already have an advanced degree (e.g., PhD, MPH) are encouraged to enroll in either a PhD or a Master of Health Science degree program during their training. The skills that they gain through our program of focused didactic training, interactions with a diverse group of scholars in a multidisciplinary academic community and a mentored research experience with outstanding scientists who are experienced mentors will provide them with the tools to begin successful careers in academic pediatric infectious diseases.

Two training tracks: Clinically-based and Laboratory-based translational research – with opportunities for international research (Global Health) in either track. Figure below illustrates the tracks and training faculty. The background Globe represents the conduct of research in globally significant infectious diseases. Faculty with active international research collaborations are designated with an asterisk (*).



Length of training: The period of training is generally 3 years, although individuals committed to a research career may stay for an additional (4th) year. Funding for the full 3 years of fellowship is provided by the Department of Pediatrics, Yale-New Haven Hospital, and an NIH Training Grant (T32) that is currently in its 37th year of continuous support. Fellows are encouraged to apply for individual fellowship awards to support the transition to faculty status.

Timetable/Schedule for trainees: The table below outlines the general schedule of most trainees. The specific didactic training and mentored research that each trainee pursues is individualized and of course will vary depending on their prior training and the research track and the specific research projects they choose.

First Year (supported by Departmental/Hospital funds)	
Pediatric Infectious Disease Consultation Service	9 months
Pediatric Infectious Diseases Outpatient Clinic	Weekly while on consultation service
Research	3 months (Startup)
Diagnostic bacteriology/mycology/virology	4x/week while on ID service.
Pediatric Immunology Clinic	Biweekly (3-4 hrs.)

Pediatric Tuberculosis Clinic	Biweekly (3-4 hrs.)
Second and Third Years	
Mentored Research	10.5 months/year concurrent with didactic training
Didactic Training	See descriptions/examples below
Pediatric Infectious Disease Consultation Service	6 weeks/year
Pediatric Infectious Diseases Outpatient Clinic	Weekly while on consultation service
Pediatric Immunology Clinic	Biweekly (3-4 hrs.)
Pediatric Tuberculosis Clinic	Biweekly (3-4 hrs.)
Additional Conferences: <u>Weekly Conferences:</u> Pedi ID sit down rounds (once a month U of CT Pedi ID group joins us); Adult ID conference; Dept of Pediatrics fellows' conference; Dept. of Epidemiology of Microbial Diseases (School of Public Health) research conference; Pedi Grand Rounds <u>Bi-weekly conferences:</u> Pedi ID Research in Progress; Pedi ID Journal Club; Pedi ID Board Review	
Fourth/Fifth Year (optional--supported by other grant and departmental funds) 85-90% research; opportunity to serve as a junior attending	

Didactic offerings available at Yale University to Pediatric Infectious Diseases Trainees (examples of courses below):

The Combined Program in the Biological and Biomedical Sciences (BBS)

Molecular biophysics and biochemistry 550a. Molecular Foundations of Medicine
Cell Biology 727b. Advanced Seminar Course
Genetics 620a. Topics in Medical Genetics
Immunobiology 527b. Advanced Immunology Seminar
Neuroscience 507b. Cellular and Molecular Mechanisms of Neurological Disease
Cellular & Molecular Physiology 600b Principles of Mammalian Physiology

The National Clinician Scholars Program (NCSP) (Formerly the Robert Wood Johnson Clinical Scholars Program (RWJCSP))

Multivariate Statistics
Quantitative Clinical Epidemiology

The Yale Investigative Medicine Program

IMED 625 Principles of Clinical Research
IMED 650 Seminars in Clinical Investigation
IMED 610 Translational Research and Molecular Tools
IMED 640 Seminars in Molecular Medicine

School of Public Health

EMD 530b, Hospital Epidemiology
EMD 536b, Investigation of Disease Outbreaks
EMD 557b, Public Health Issues in HIV/AIDS
EMD 560b, Epidemiologic Methods in STD/HIV Research
EMD 565a, Modeling the Epidemiology and Evolution of Infectious Diseases
BIS 511a, GIS Applications in Epidemiology and Public Health
CDE 517a, Developing a Research Protocol
BIS 505a, Introduction to Statistical Thinking I
BIS 505b, Introduction to Statistical Thinking II
CDE 508a, Principles of Epidemiology
CDE 550b, Evidence-based Health Care
BIS 625 Categorical Data Analysis
BIS 631a Topics in Genetic Epidemiology
BIS 635b Topics in Statistical Epidemiology
CDE 619a Advanced Epidemiologic Research Methods
HPA 521a Epidemiology, Health Resources and Health Policy
HIA 570b Cost Effectiveness Analysis and Decision Making

Opportunities for advanced degrees:

Master of Health Science (MHS) Degree Program is offered through the School of Medicine. It requires 2 years of time dedicated to training and mentored research including course work appropriate for our fellows and either a thesis or a manuscript suitable for publication. This degree can be completed during the second and third years of fellowship, while completing an intensive mentored research project.

The Investigative Medicine Program (IMP), inaugurated in 1999 as a Department in the Graduate School, offers a number of courses well suited to the needs of our trainees. This program also grants the PhD degree and is directed exclusively to physicians, most of whom enter the program as fellows in clinical departments. The IMP's parallel paths of training emphasize either laboratory-based or clinically-based translational research. Students in IMP are required to meet the same rigorous standard to complete the requirements for the PhD as is any graduate student, but it is tailored to the unique circumstances of physician-scientists in training. We will support fellows who apply for the PhD in Investigative Medicine, which typically requires an additional 1-2 years of training (4-5 years total to complete both the fellowship and PhD).

Research Training

How the mentor and the research topics are chosen: During the first year of training, fellows have a total of three months free of clinical obligations during which they can identify a potential mentor. Drs. Shapiro and Paintsil meet with each fellow in the first few months to identify the appropriate research track. The Directors of the tracks (Drs. Miller or Shapiro) help the trainees identify potential mentors. Trainees then meet with potential mentors and sometimes have a short-term laboratory rotation with them to help determine whether there is an appropriate "fit." After the trainee chooses a mentor, either Dr. Miller or Dr. Shapiro will meet jointly with the trainee and their respective mentor prior to the initiation of the research project, so that expectations for both fellow and mentor are clearly articulated. In particular, the clinical and divisional responsibilities of the fellow will be spelled out to the mentor, as will the expectations for supervision and career development. The trainee is encouraged to become progressively more independent in determining the course of his/her research over time. One major purpose of the fellowship is to permit the trainee to develop her/his own ideas and to develop the habit of posing clear questions that can be answered with hypothesis-driven research methods. The mentor guides this process through insistence on basic research principles, such as developing clear and important questions, well-formed hypotheses and meticulous attention to controls.

The Yale faculty listed on the websites below are among the diverse pool of eligible mentors for Pediatric ID Fellows:

[Yale Pediatric Infectious Diseases Division](#)

[Department of Microbial Pathogenesis](#)

[Yale Interdisciplinary Program in Microbiology](#)

[Yale School of Public Health Division of Epidemiology of Microbial Diseases](#)

[Yale Adult Infectious Diseases Division](#)

Yale University is a truly global institution, and many Infectious Diseases training faculty are engaged in international collaborative research. Trainees may have opportunities to spend part of their fellowship working internationally under the guidance of a Yale faculty mentor and an international colleague.

Current Post-Doctoral Fellows (2021-22):

Leonard Emuren, MD (University of Ibadan College of Medicine)

Christine Miller, DO (Touro College of Osteopathic Medicine)

Emma Taylor-Salmon, MD (Drexel University College of Medicine)

Elissa Zirinsky, MD (Oakland University William Beaumont School of Medicine)

Application Process

Applications are currently being accepted through the [ERAS](#) system. For additional assistance, please contact our Program Coordinator, Ms. Susan Prisley (susan.prisley@yale.edu).