



Interdisciplinary Research Training Program in AIDS

Building stronger scientific leaders of tomorrow

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FOREWORD

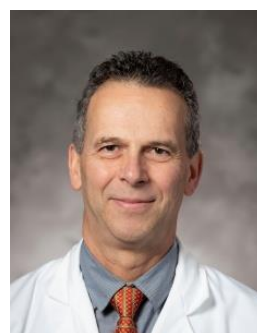
In response to the magnitude and course of the AIDS epidemic, more than 30 years ago Duke University established an interdisciplinary research training program to recruit and train promising young investigators in the field of HIV/AIDS research. Support for the program is awarded by the National Institute of Allergy and Infectious Diseases. The NIAID selected Duke University as a site for the training program because of the broad range of scientific expertise of investigators assembled here, their quality of work and prominence at the forefront of AIDS research, and their collaborative activities in both clinical and basic science arenas. These attributes provide excellent training opportunities for postdoctoral fellows, both clinical and basic scientists who are interested in developing a career in HIV/AIDS research.

Coordinated and administered by the adult Division of Infectious Diseases, the IRTPA has enrolled all of the allotted positions in the program since the grant was first funded in 1990. Beginning in 2009, the training grant has also funded up to two trainees at the Duke University Medical Center research site in Moshi, Tanzania – the first time HIV research focusing principally on international issues has been supported. Over the years, the range of opportunities for research training has expanded to include wide arrays of programs in areas of basic research, clinical research, and socio-behavioral research options. These have gained strong support from core laboratories in Molecular Immunology, Flow Cytometry, Molecular Virology and Clinical Research as well as the Human Vaccine Institute.

Continuing and expanding the interdepartmental collaboration, this training program offers its trainees not only a wide range of resources and research opportunities at Duke, but also the opportunity to participate in and to learn from an environment that encourages cross-fertilization between basic scientists and clinicians. It is our hope that the program will meet career objectives and foster a lasting interest in and dedication to HIV/AIDS research among the very select group of talented young investigators chosen as trainees.



Nathan Thielman, MD, MPH
Professor of Medicine and Global
Health
Director, Global Health
Residency/Fellowship Pathway
Program
Co-Director of IRTPA T32

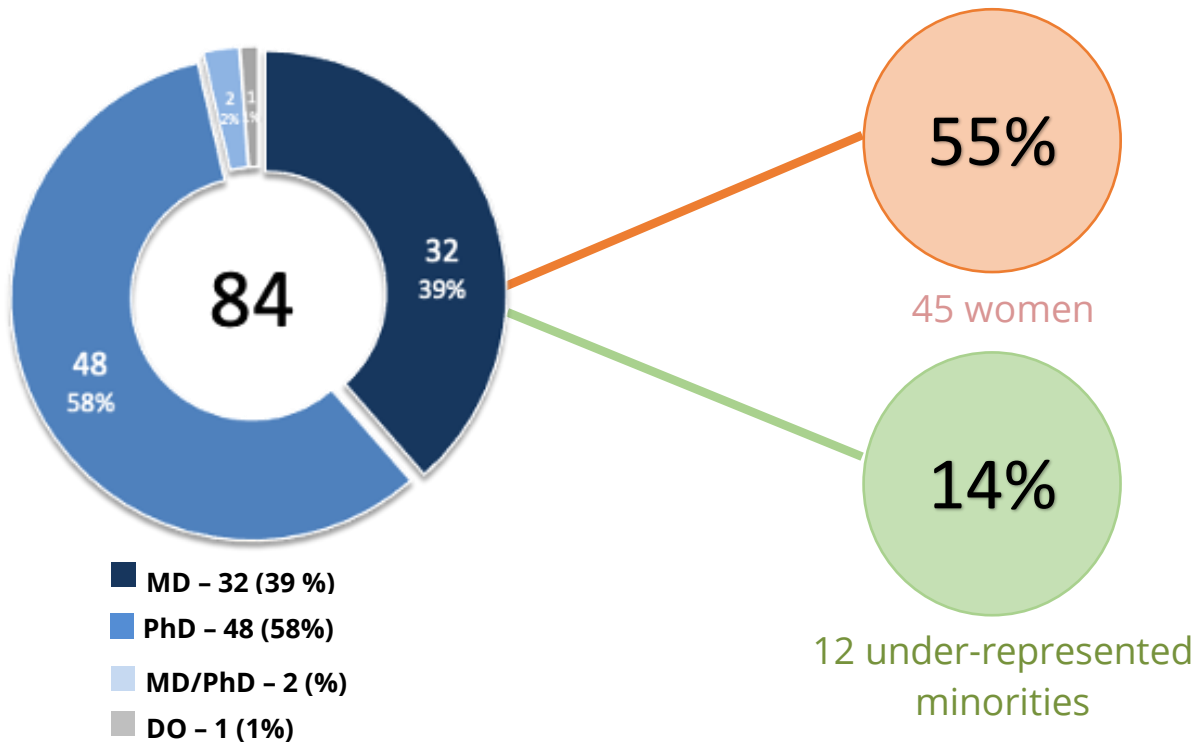


Guido Ferrari, MD, MPH
Professor of Surgery
Associate Professor in
Molecular Genetics and
Microbiology
Co-Director of IRTPA T32

PROGRAM OVERVIEW

84 doctoral level trainees have been part of the

AIDS Training Program since the appointment of the first trainee in **1990**



>90% are working in the HIV/AIDS research fields

>98% have published their work

100% presented their work at national and international meetings

» Training Programs:

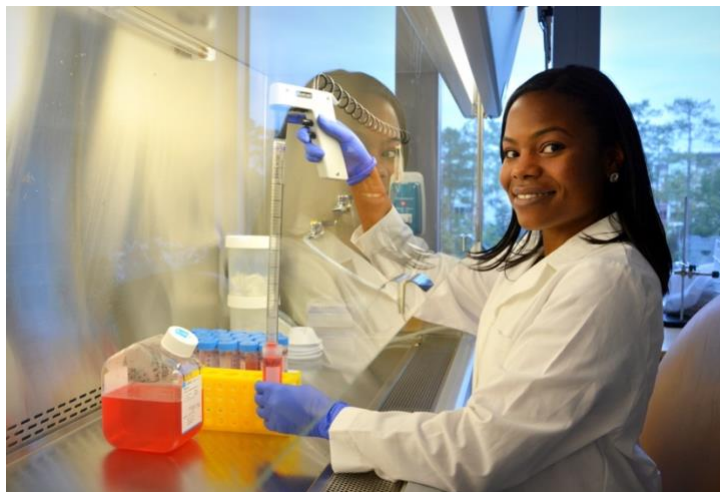
- HIV Immunology
- Center for Human Systems Immunology (CHSI)
- HIV/Viral Pathogenesis
- Adult Clinical HIV/ Infectious Diseases
- Global Health
- Social & Behavioral Sciences

» Enrichment Opportunities:

- Duke Scholars in Molecular Medicine
- Human Vaccines
- Health Policy
- Biomedical Engineering
- Computational Biology and Bioinformatics

TRAINING CURRICULUM

Prospective post-doctoral level candidates who wish to be considered for funding in the Duke Interdisciplinary Research Training Program in AIDS have a variety of research training opportunities available, depending on their interests and background. New applicants for the grant are expected to identify a scientific mentor from among the IRTPA faculty under whose guidance planned research will be conducted. Trainees selected for the IRTPA will embark upon a series of selected, structured and monitored activities that lead toward the development of a highly qualified biomedical investigator in the field of HIV research through one of the six offered programs and five enrichment opportunities. These specific activities will vary from trainee to trainee depending on his or her research project and goals, but all will fulfill certain expectations, unique to this training.



LaTonya Williams, Ph.D., IRTPA Postdoctoral Trainee 2013-2016

The available training programs can be categorized into two different research approaches. The first are laboratory-based research options which may be selected by those with PhDs and by MDs with interest and skills in laboratory-based research. Historically, this type of training has represented approximately 60% of selected trainees. The second category includes patient-centered clinical research opportunities which may have a laboratory component, but which primarily involve patient care research issues (Adult and Pediatric, Global HIV/AIDS, and Social/Behavioral Sciences). Historically about 40% of the training positions have been of this type, with most of these positions occupied by MDs.

In addition to the primary research program track and optional selected enrichment opportunities, trainees must complete required training activities. These activities were designed to provide knowledge and build experience upon multiple key characteristics that are critical to understanding and practicing sound research in biomedical field. These include: Training in Responsible Conduct of Research, Training in Human and Animal Research, Scientific Writing, Grant Development, Weekly Journal Clubs, Training in Presentation Skills, State of the Art Technology Training, Data Integrity, and Statistics for Biomedical Sciences. The following table outlines the training requirements, learning objectives, and the measured outcomes.

Required Courses/ Training Activities	Requirement	Learning Objective	Outcomes
1. Training in Responsible Conduct of Research (RCR).	Trainee to complete training per Duke Requirements	<ul style="list-style-type: none"> Learn how to comply with regulations and guidelines for responsible conduct of research Understand what protected health information means, why it is important and how to comply 	<ul style="list-style-type: none"> Trainee research adheres to all regulatory requirements Trainee continues to seek out new information to maintain compliance
2. A) Training in Human and Animal Research Required Training by Duke for PHI: CITI modules. B) "Research Regulations and You: The What, the Why, and the How" Dr. MA Moody, Chief Medical Officer.	Trainee to attend once within T32 training period	<ul style="list-style-type: none"> Understand what protected health information means, why it is important and how to comply Understand what is needed for compliance with animal research. 	<ul style="list-style-type: none"> Trainee research adheres to all regulatory requirements Trainee continues to seek out new information to maintain compliance
3. A) "Scientific Writing hosted by Dr. Cary Moskowitz of the Duke Thompson Writing Program. B) Gopen Writing Course hosted by Duke Office of Research Development	Trainees to complete both of these activities once per T32 training period	<ul style="list-style-type: none"> Learn how to write effectively for scientific research Improve writing efficiency and organization for scientific manuscript writing 	<ul style="list-style-type: none"> Trainee will utilize new writing skills and improve their effectiveness in communicating ideas in manuscripts, grants, progress reports and other scientific writing
4. A) Grant Development: K Club, Duke Office Faculty Development, B) MGM Grant Writing Course	Trainee to choose at least 1 of these options to complete within T32 training period	<ul style="list-style-type: none"> Learn effective grant writing skills Write a research grant 	<ul style="list-style-type: none"> Trainee will understand all components of writing an NIH grant Trainee will write their own research grant
5. Journal Club (Infectious Disease, Virology, DHVI, Immunology, Global Health, others related to individuals Enrichment Opportunity)	Trainee to choose at least 1 journal club session and attend twice/month and present paper once/year	<ul style="list-style-type: none"> Learn how to critically evaluate current literature Keep current with the literature both as it pertains to the trainee's research and more broadly to the field Present research papers 	<ul style="list-style-type: none"> Trainee can critically evaluate manuscripts to understand the current state of the field, and to be able to review manuscripts for journals Trainee will improve their public speaking and presentation skills
6. A) Present Research Project at Bi-monthly Training Grant Meetings B) "Science Communication" Training hosted by University Communications and Duke Science and Society	Trainee to participate and present their research at T32 bi-monthly meetings once/year	<ul style="list-style-type: none"> Learn how to clearly and effectively communicate in giving talks Learn effective strategies for visual presentation Learn how to field questions 	<ul style="list-style-type: none"> Trainee will be able to give clear, effective short and long talks on their research Trainee will develop PowerPoint presentations that are clear, interesting and effective
7. Data Integrity: Database Design and Reproducible Research." Dr. Jason Stout, Infectious Diseases	Trainee to participate once within the T32 training period	<ul style="list-style-type: none"> Understand how to construct databases for research Learn how to minimize human error in clinical and basic research Understand the importance of reproducible analysis in research 	<ul style="list-style-type: none"> Trainee will utilize concepts for maintaining data integrity in their own research Trainee will use appropriate database structures for their own research Trainee will use reproducible analysis techniques for their own research
8. A) "Statistics for Biomedical Scientists" CFAR Seminars. B) Biostatistics Course	Attend at least 1 session during course of training period. Options: Formal Duke class and/or CFAR Program Offerings	<ul style="list-style-type: none"> Understand appropriate statistical tests to use for common research questions Understand how and when in a research project to communicate with statisticians 	<ul style="list-style-type: none"> Trainee will learn appropriate statistical tests to apply to their own research Trainee will seek statistical support for more complex analyses at an early stage in their research project
9. A) Participate in CFAR Chalk Talks, B) CFAR Annual Research Symposium	Attend at least 1 CFAR Chalk Talk per Year. Submit abstract for poster or oral presentation each year for CFAR Retreat and participate in practice poster and talk sessions led by Drs. Thielman and/or Ferrari before CFAR Retreat	<ul style="list-style-type: none"> Actively participate in research "hot topics" Network with Senior CFAR Faculty Members Practice preparing posters Practice developing short oral presentation Network with HIV/AIDS investigators 	<ul style="list-style-type: none"> Trainee will utilize new ideas in their own research Trainee will develop relationships with other faculty and scientists at Duke that will enrich their current research and provide a network to support their future career

TRAINING PROGRAMS: LABORATORY BASED RESEARCH OPPORTUNITIES

Trainees enrolled in the Duke IRTPA will have a variety of opportunities among the funded HIV research programs. A part of IRTPA offered training opportunities consist of laboratory-based research. The following is brief description of IRTPA laboratory-based research programs:

» PROGRAMS IN HIV IMMUNOLOGY

The Duke Human Vaccine Institute (DHVI) encompasses a number of outstanding research programs including molecular and cellular biology of the thymus, human retroviruses/host-virus interactions and HIV vaccine development. The director of DHVI, Barton Haynes, M.D., is a Frederic M. Hanes Professor of Medicine and Immunology at Duke University Medical Center, as well as the recipient of the 2013 American Association of Immunologists Steinman Award for Human Immunology Research. He is also the Director and Principal Investigator for the Center for HIV-AIDS Vaccine Immunology-Immunogen Discovery. Dr. Haynes is an expert in host innate and adaptive immune responses to the human immunodeficiency virus (HIV) and tuberculosis (TB). A broad range of research programs which offer opportunities for prospective IRTPA trainees are present in the DHVI and several are headed up by IRTPA faculty including the Duke Center for HIV/AIDS Vaccine Immunology and Immunogen Discovery (Director Barton Haynes), the Duke CIVICS Center (Director MA Moody), the Duke Center for HIV Structural Biology (Director, Kevin Saunders), Structural Biology (Director Priyamvada Acharya), and the Viral Genetic Analysis Core (Co-Director Wilton Williams). A considerable variety of research opportunities are available in this environment and several current and recent trainees are centered in this Institute.



Dr. Barton Haynes, Director

In addition to the research quality of the laboratories of these investigators, it is worth noting that this group of investigators and mentors has a longstanding commitment to training future generations of HIV research scientists. Recognizing that such a commitment is critical to the success of any long-term academic research program, numerous DHVI faculty members have distinguished themselves as mentors, and a long list of previous IRTPA trainees have benefited from being part of this program. To find out more about DHVI and ongoing work, please visit <http://dhvi.duke.edu>

CENTER FOR HUMAN SYSTEMS IMMUNOLOGY (CHSI)

The mission of the Duke Center for Human Systems Immunology (CHSI) mission is to accelerate human systems immunology research by providing expertise on cutting-edge immunological assays and develop new models and analytical methods. Specific objectives of CHSI are to drive innovations in systems immunology, cross-train the next generation of researchers, and build a community that fosters exchange and integration of scientific knowledge across disciplines. The center is directed by Dr. Georgia Tomaras, Ph.D. and Dr. Cliburn Chan, Ph.D. and is comprised of eight divisions: Antibody Dynamics and Immune Function (lead by Dr. Georgia Tomaras, Ph.D.), Cellular Effector Function (lead by Dr. Guido Ferrari, MD), Immune Informatics (lead by Dr. Joshua Granek, Ph.D.), Immunology, Inflammation, and Immunotherapy (lead by: Dr. Smita K Nair, Ph.D.) Innate & Comparative Immunology (lead by Dr. Keith Reeves, Ph.D.), Mathematical Modeling (lead by Cliburn Chan, Ph.D.), Neutralizing Response Analytics (lead by Dr. Xiaoying Shen, Ph.D.) and Statistical & Computational Immunology (lead by Dr. Zhicheng Ji, Ph.D. and Dr. Jichun Xie, Ph.D.).



*Dr. Georgia Tomaras,
Co-Director*



Dr. Cliburn Chan, Co-Director

CHSI provides several training opportunities, including workshops in data science, statistics, and complex assay analytics: the scholars program that offers year-long quantitative faculty mentoring for biomedical trainees on data-driven research projects; and a short series of six seminars on systems immunology that will be offered in 2023. We would also welcome T32 trainees who want to teach basic virology, immunology, or vaccinology to quantities scientists in our “Immunology for Quants” seminar series led by Dr. Marina Tuyishime, Ph.D.. Whether you are on a science, medical, informatics, or statistical track, CHSI has opportunities that will provide trainees with first-hand experience at tackling the problems in systems immunology, and help them to learn and apply techniques working with top investigators in the field. This is a new Training Program available to IRTPA trainees as of 2022 and more information can be found on the [CHSI website](#).

» PROGRAM IN HIV/VIRAL PATHOGENESIS



Dr. Micah Luftig, Director

The Department of Molecular Genetics and Microbiology was established in 2002 as a fusion of the existing Departments of Genetics and Microbiology. Among its areas of research focus are studies designed to better understand the pathogenicity of various microorganisms including HIV. As part of the restructuring of the new department, a series of research centers was created that provide the focus for much of the activity within the department. These centers facilitate the research activities and training programs within these areas of interest, including interactions with trainees from IRTPA. The Department of Molecular Genetics and Microbiology is committed to providing a highly interactive atmosphere in which students and postdoctoral fellows will flourish. Each faculty member embraces the belief that the success of individual members of the department, from students to postdoctoral fellows to faculty, is enhanced through the day-to-day interactions with other investigators. Collaboration between laboratories is common, and many groups hold joint lab meetings. Graduate students and postdoctoral fellows are an essential and integral part of this process,

and they benefit from an environment in which they have the opportunity to gain intellectually from a number of faculty within a close-knit group. As a result, this department has created an environment for graduate and postgraduate training, which strongly supports the development of creative and independent scientists.

Several IRTPA faculty members have labs within Department of Molecular Genetics and Microbiology including *Drs. Jack Keene, , Joseph Heitman, David Tobin* and *Dr. Micah Luftig*, who is the director of this program. For more information on the IRTPA faculty and their research, visit the [MGM faculty and research webpage](#).

TRAINING PROGRAMS

CLINICAL HIV RESEARCH OPPORTUNITIES

The clinical side of HIV/AIDS research has played an important part in advancing the field through investigating various issues related to HIV-infected patient care as well as HIV prevention. IRTPA offers four programs in distinct areas of clinical research. Trainees enrolled in these programs will be presented with opportunities to engage on various levels of clinical research, that encompass everything from clinical study design to improving patient care on global scale.

» PROGRAM IN ADULT CLINICAL HIV/INFECTIOUS DISEASES



Dr. Nwora Lance Okeke,
Director

The Duke Division of Infectious Diseases broad expertise in patient-oriented clinical HIV research. Clinician investigators within the Division currently lead research programs in: HIV in injection drug use (Dr. Mehri McKellar), mycobacterial infections in persons with HIV (Dr. Jason Stout), HIV/Hepatitis C co-infection (Dr. Susanna Naggie), the HIV care continuum in low and middle income countries (Dr. Nathan Thielman), HIV-associated endemic mycoses (Dr. Thuy Le), cardiovascular disease outcomes in persons with HIV (Dr. Nwora Lance Okeke), and HIV pre-exposure prophylaxis (Drs. McKellar, Okeke and Dr. Charles Burns). Many of these programs are supported by extramural funding from the NIH. However, a significant part of the ID HIV clinical research portfolio is supported by funds from the Department of Health and Human Services, philanthropic organizations (eg the Duke Endowment, Elton John Foundation) and internal mechanisms including from the within the Division's HIV research program have been enriched by established biospecimen repositories

maintained by the Duke CFAR. The availability of banked plasma from persons with HIV enrolled in research studies or as part of routine clinical care has fostered productive collaborations between Duke ID investigators and scientists in other Departments across Duke.

Duke's Division of Infectious Diseases has been a world leader in HIV-related fungal infections for over 30 years. The Division's program in HIV-related mycology is anchored by the research labs of Dr John Perfect, and Dr. Andrew Alspaugh, two of the world's leading researchers in *Cryptococcus neoformans*, and the research program of Dr. Thuy Le, a world-renowned expert in *Talaromyces marneffeii*. The Division's cryptococcus research program focuses on *Cryptococcus neoformans* as a model organism to study fungal pathogenesis in order to find new targets for antifungal or vaccine development and to assess the role of HIV-induced immunosuppression in the course of cryptococcal disease. Translational work in this field is also being done including work on new antifungal agents and exploration of immunogenetic factors affecting the response of fungal infections to therapy. Dr. Le's research program in talaromycosis focuses on the development of novel non-culture based diagnostics for *Talaromyces* infection in low and middle income countries. The Duke IRTPA provides training opportunities within these established scientific programs in HIV-related mycology, under the mentorship of global leaders in the field of opportunistic fungal infections.

PROGRAM IN MATERNAL/CHILD HIV INFECTION

This program is led by Dr. Dorothy Dow, who is faculty in Pediatric Infectious Diseases at Duke and works primarily in Moshi, Tanzania where she is co-site leader of the Kilimanjaro Christian Medical Centre-Duke University Collaboration. She possesses extensive experience in mentoring scientists in the design and conduct of HIV-related clinical trials both domestically and internationally. In the prevention of perinatal transmission of HIV, she was an investigator on a PEPFAR funded project evaluating the early infant diagnosis program in Tanzania using dried blood spot and summarizing HIV resistance mutations among those found to be HIV_infected. In the area of treatment of HIV-infected children and adolescents, she is Principal Investigator of the NIH R01 funded clinical trial, Sauti ya Vijana, a mental health and life skills intervention for young people living with HIV in Tanzania. She is co-chair of the IMPAACT network study 2016 evaluating a mental health intervention for youth living with HIV in South Africa, Botswana, Zimbabwe, and Malawi. She is a member of the Adolescent HIV Implementation Science Alliance (AHISA) and is co-director of the Duke CFAR clinical core. Her current research interests focus on the prevention and treatment of HIV in adolescents with a focus on mental health in US-based and international settings. Her leadership of multiple research projects in Moshi, Tanzania intersect with the IRTPA focus on International HIV issues, and thus allow trainees an opportunity to understand impact of research on global health scale.



Dr. Dorothy Dow, Director

PROGRAM IN GLOBAL HIV/AIDS



Dr. Nathan Thielman, Director

The program in Global HIV/AIDS at Duke University Medical Center has profited enormously by the founding of the Duke Global Health Institute in 2006. This event catalyzed the integration of global research activities into other HIV programs at Duke (including IRTPA).. The major site of International HIV research at Duke is Kilimanjaro Christian Medical Centre (KCMC) in Moshi, Tanzania. Research support for the partnership has included funding from 6 different NIH Institutes, and the KCMC Clinical Research Site (CRS) continues participation in the IMPAACT network. The development of laboratory support for this program has been a tremendous success with research capability now available in clinical chemistries, hematology, serology, microbiology, molecular virology, flow cytometry, and cellular cryopreservation. This substantial laboratory infrastructure and a well-trained research staff are available to support clinical research in Moshi, Tanzania.

For more information on Duke Global Health Institute and HIV/AIDS research, please visit <http://globalhealth.duke.edu>

» PROGRAM IN SOCIAL AND BEHAVIORAL SCIENCES

The development of new methods to respond to substance abuse and treatment issues are critically needed in areas of HIV prevention. The IRTPA program in Social and Behavioral sciences is led by Dr. Amy Corneli, who is also Director of the Social and Behavioral Sciences Core of the Duke CFAR, an Associate Professor in the Departments of Population Health Sciences and Medicine, and a faculty member of the Duke Clinical Research Institute (DCRI). She has been engaged in the behavioral aspects of biomedical HIV prevention in sub-Saharan Africa since 2001, including contributing to several biomedical HIV prevention clinical trials and leading NIH-funded studies exploring sexual behaviors related to and adherence with pre-exposure prophylaxis (PrEP). Dr. Corneli's U.S.-based HIV-related research portfolio includes investigating methods to increase PrEP uptake and adherence among Black men who have sex with men (BMSM), and she currently leads two CFAR Administrative "Ending the HIV Epidemic" supplements with BMSM and Black women in the U.S. South

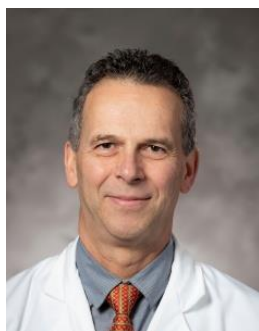


Dr. Amy Corneli, Director

A social scientist by training, Dr. Corneli has conducted qualitative and mixed-method research primarily in biomedical HIV prevention and bioethics in multiple countries in sub-Saharan Africa, the Middle East, South and Southeast Asia, and in the U.S. A significant portion of her research portfolio has focused on engaging patients/participants and other key stakeholders in qualitative research to inform clinical research, socio-behavioral interventions, and material and scale/questionnaire development as well as to assess participant perceptions of intervention/clinical trial implementation. Her HIV-related research focuses on identifying evidence-based strategies for linking populations at HIV risk to PrEP care, support PrEP adherence to achieve protective levels, and keep clients engaged in PrEP care for as long as their HIV risk persists. Her research in bioethics has explored innovative methods for improving informed consent comprehension and shortening consent forms, the acceptability of informed assent, and the functioning of research ethics committees.

ENRICHMENT OPPORTUNITIES

IRTPA offers five enrichment opportunities that allow for a more individualized training approach. These opportunities represent distinct areas of concentration that are designed complement and strengthen each fellow's training path and allow trainees to explore other areas of interest related to his or her research. The trainees have an option to pick one of the five enrichment programs during their first year and will work with the Program Directors and Directors of EO to develop a personalized plan based on their specific research career goals. This program is co-led by Drs. Georgia Tomaras and Guido Ferrari. Dr. Ferrari has spearheaded efforts within the Duke School of Medicine to implement increased interdisciplinary opportunities for the graduate, post-doctoral, and medical students. He established and led a task force of eight faculty from basic (3), clinical (3), and biomedical engineering (2) tracks within Duke University to facilitate discussion on interdisciplinary training which encompasses the biological basic science, medicine, biomedical engineering, business, and the school of policy.



Dr. Guido Ferrari, Co-Director



Dr. Georgia Tomaras, Co-Director

DUKE SCHOLARS IN MOLECULAR MEDICINE



Dr. Neil Surana, Director

Through the Duke Scholars in Molecular Medicine (DSMM) program, trainees have a unique opportunity to identify unmet problems in clinical medicine related to their areas of basic scientific inquiry as well as gain firsthand knowledge of the process of bench to bedside translation. Among the four established focus tracks that DSMM offers, the Infectious Diseases track is the one that trainees can identify as their enrichment opportunity. The direct clinical experiences are complemented by case conferences where the participants are involved in patient presentations, pathological and radiographic correlates, and discussions about “missing” links- areas where there are knowledge gaps (mechanistic, therapeutic, and diagnostic) and how those gaps may be addressed through basic scientific investigations. *Neil Surana, MD, PhD*, is Director of the DSMM program, and *Drs. Stacey Maskarinec, Micah McClain, and Josh Thadden*, along with *Dr. Surana*, are all Co-Directors of the DSMM Infectious Diseases track. In addition to the clinical experiences, program participants will engage in clinical research-focused journal clubs where they learn about the transition from pre-clinical studies into clinical trials, learn about the stages of clinical research, and identify challenges and barriers in the translation of ideas and knowledge from the bench to clinic.

»» HEALTH POLICY

The Health Policy enrichment opportunity is designed to give broader access to trainees for short-term experiences. Offered through Center for Health Policy (CHP) which is directed by Dr. Kathryn Whetten, the health policy enrichment opportunity allows for in-depth look into societal issues that surround current HIV/AIDS global epidemic, as well as a chance to participate in development and implementation of decisions impacting global health sustainability. Dr. Whetten's research interests focus on the relationship between health behaviors and outcomes of disadvantaged communities and individuals. Dr. Whetten's current research projects address issues surrounding HIV/AIDS, mental health, substance abuse and being orphaned. She and her teamwork with colleagues in the Southeastern U.S., Tanzania, Kenya, Ethiopia, India, Cambodia, and Russia, conducting research and designing interventions as means of improving public health policy on global scale.



Dr. Kathryn Whetten, Director

»» HUMAN VACCINES

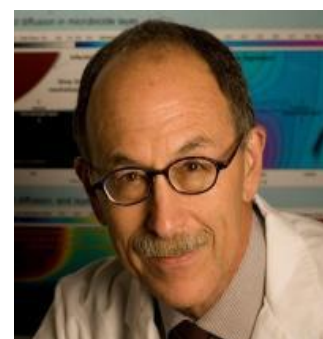


Prof. Thomas Denny, Director

The Human Vaccines enrichment program combines expertise in mucosal and systemic virology, molecular biology, microbiology and animal models in interactive teams setting that work together to bring rapid and novel research approach to HIV, TB, and flu vaccine discovery and design. Directed by Thomas Denny, Chief Operating Officer of the Duke Human Vaccine Institute (DHVI), Center for HIV/AIDS Vaccine Immunology and Immunogen Discovery (CHAVI-ID), and Immunology and Virology Quality Assessment Center, this enrichment opportunity allows trainees firsthand look at the research, program management, and regulatory efforts that are all part of innovative vaccine development strategies at DHVI. As a leader in the field, DHVI serves as unique model for operational approach in bridging basic academic research with translational mentality through collaborative partnerships across private companies, government agencies, and other academic institutions.

»» BIOMEDICAL ENGINEERING

In the past few decades, the extensive nature of HIV research efforts have been extending virology and immunology field boundaries through incorporation of expertise from other scientific areas. Dr. David Katz, a Nello L. Teer Jr. Professor of Biomedical Engineering, has focused his research on applying engineering techniques and perspective to problems in the development of HIV infection prevention methods. He pioneered a course as part of the Biomedical Engineering 563 on "Transport Processes in HIV Transmission and its Prevention", which teaches students about the conceptualization of phenomena in HIV transmission prophylaxis that require engineering approaches to understand and address. The goal of this enrichment opportunity in biomedical engineering is to allow trainees to bridge their research work in collaboration efforts with BME investigators.



Dr. David Katz, Director

» COMPUTATIONAL BIOLOGY AND BIOINFORMATICS



Dr. Cliburn Chan, Director

The computational biology and bioinformatics enrichment opportunity is designed to give trainees an opportunity to learn and apply better data analysis practices in their research. Directed by Dr. Cliburn Chan, who is also a director of Duke CFAR Biostatistics and Computational Biology Core, this opportunity allows trainees to grow their skills and knowledge of biostatistical and bioinformatics methods and their application in HIV/AIDS research. Through the Duke CFAR Core, Dr. Chan has significantly contributed to unique, innovative, and cutting-edge methods and software applications relevant to HIV/AIDS research and CFAR investigators. Recent contributions include: development of multivariate Bayesian statistical mixture models for the automated identification of cell subsets from multi-parameter flow cytometry data including very rare cells and antigen-specific cells labeled with combinatorially encoded multimers; methods for analysis of sparse time series data in HIV non-human primate studies (submitted); methods for inferring the unmutated common ancestor sequence for broadly neutralizing antibodies. In addition, Dr. Chan has also spearheaded numerous services and training opportunities for young investigators working on HIV/AIDS research, with some of these including weekly walk-in clinics and Software Carpentry workshops in R and Python to teach practical computing and analysis skills.

In addition to investigators working with Dr. Chan, trainees will have access to mentoring opportunities in the Program for Computational Biology and Bioinformatics, directed by *Dr. Alex Hartemink* who is Professor of Computer Science, Statistical Science, and Biology at Duke University. His research interests lie in computational systems biology and machine learning. Specifically, his work focuses on the development and application of new statistical learning algorithms to complex problems in systems biology.

PROGRAM ADMINISTRATIVE STRUCTURE

Funding: The primary funding for the IRTPA comes from NIH awarded T32 training grant, which for the past 30 years has been part of Duke's CFAR effort to recruit and train well-qualified candidates in the field of HIV/AIDS research.

Program Directors: In its 24th year, the IRTPA transitioned to co-directorship by Georgia Tomaras, PhD and Nathan Thielman, MD, MPH, and in the 31st year, Guido Ferrari, MD was added to the directorship team. These three directors, reflect complementary strengths and the ability to jointly provide substantive oversight to the greatest breadth of trainees. Each have substantial expertise in training young investigators and in their roles with the IRTPA, they oversee recruiting, selecting and retaining outstanding trainees from diverse backgrounds; engaging appropriate faculty mentors; and developing new and enhanced training opportunities across a breadth of relevant fields of inquiry. Jointly, they provide oversight for day-to-day management of the IRTPA and IRTPA staff, including implementation of policies, procedures and processes.

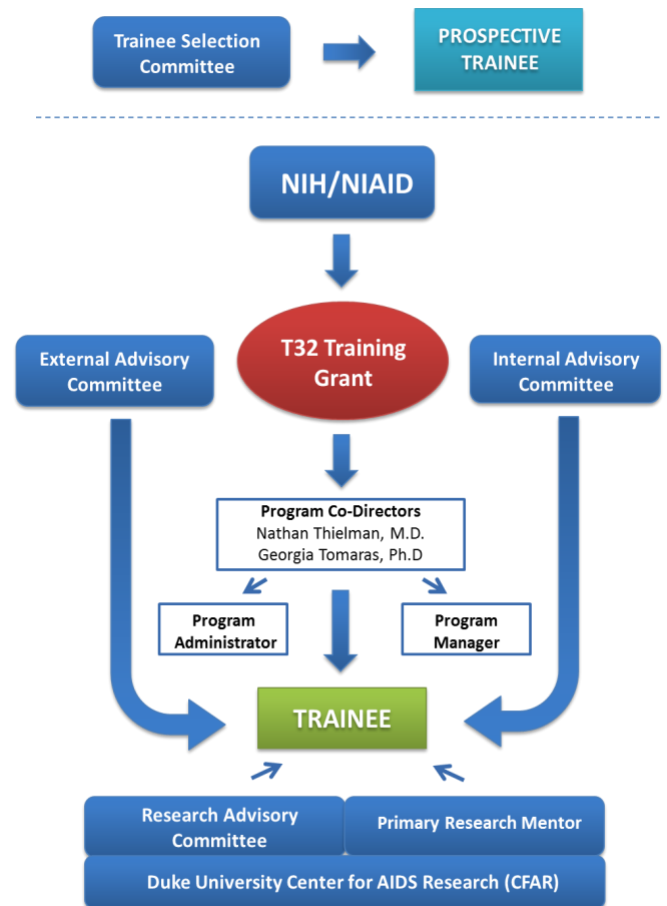
Program Staff: IRTPA program staff is comprised of program administrator and manager who aid Program Directors in managing grant work

Trainee Selection Committee (TSC): the primary attribute to the success of the IRTPA is due in part to the history of the outstanding trainees that have been part of this program through the years. In order to maintain the pool of well-qualified trainees, the primary duty of the TSC is to review applications of prospective trainees. Together with Program Directors, the TSC score, evaluate, and select new trainees into the program.

Internal Advisory Committee (IAC): the primary responsibilities of the IAC is to assist with the selection of qualified trainees by providing a written review and recommendation of applicant research proposals as well as to meet with Program Directors bi-annually to review and provide written recommendations on trainee progress toward career goals and assess adequacy of the mentoring.

External Advisory Committee (EAC): The EAC will provide expert oversight on all aspects of the training program through annual site visit to evaluate and advise the training program on opportunities for improvement. During the visits, the EAC will meet with Program Directors to review progress of the program. In addition, the trainees will give short presentation to showcase their recent scientific findings, after which the EAC will meet 1:1 with each of the trainees to discuss their research training.

Research Advisory Committee (RAC): This committee will comprise 2-4 faculty members with expertise that will complement the trainee's research area and career goals. Each trainee will be required to complete an individual development plan (IDP) that can be used for discussion with committee members to guide the training period and to track individual goals. Committee members will be responsible for reviewing trainee research progress (including submitted abstracts, publications), assessing progress towards agreed upon milestones, and providing specific guidance during their training period toward the desired career path.



TRAINEE SELECTION & REQUIREMENTS

ELIGIBILITY

New applicants for the grant are expected to identify a scientific mentor from among the IRTPA faculty under whose guidance the research will be conducted as well as prepare a plan for the proposed research. A minimum 2-year research commitment is required, and preference will be given to those anticipating 3-year research commitments. For MD candidates completing their clinical fellowship training, it is expected that they will be subspecialty board-eligible since they will have successfully completed the ABIM Certification exam. During the 2- to 3-year research assignment, the MD trainees will have no clinical responsibilities except for one 1/2 day/week in the HIV clinic at Duke or the VA Medical Center. In addition to their research mentors, all IRTPA research trainees will be assigned a Division advisor.

SELECTION

Selection of trainees for the Interdisciplinary Research Training Program in AIDS is linked to their research plan and their research faculty mentor/advisor. Having actively sought potential promising candidates through advertisements, clinical training programs and local laboratories of participating faculty, all prospective trainees will be required to complete the following:

- ☐ **Completed application form**
- ☐ **Current curriculum vitae**
- ☐ **Summary of proposed research plan**
 - *4 pages in length (not including the references). Please include Abstract, Specific Aims, and Research Strategy sections. Research Strategy section should include the following: Hypothesis, Significance, Innovation, Approach, Data Analysis, and Timeline.*
- ☐ **Letter of support from prospective mentor who will serve as scientific advisor**
 - *This letter should indicate in sufficient detail the actual laboratory or clinical research project, the likelihood of success, certification of sufficient resources to support the trainee and the commitment of time to the trainee*
- ☐ **3 letters of recommendation from prior mentors or supervisors**

Interested candidates, please email Melissa Kerkau at melissa.kerkau@duke.edu to request application form.

APPOINTED TRAINEES

All trainees appointed to the IRTPA will be required to follow program's requirements. The following is the outline of key terms that are expected of all IRTPA trainees:

DUKE APPOINTMENT POLICY AND PROCESS FOR POSTDOCTORAL APOINTEES

Postdoctoral Appointees are classified in one of two categories: Postdoctoral Associate or Postdoctoral Scholar. The difference in definition between Postdoctoral Associates and Postdoctoral Scholars is the description of the Purpose of Appointment.

All Postdoctoral Appointees at Duke are required to begin their terms of appointment as Postdoctoral Associates. Recipients of training grants or fellowships may not enter Duke as Postdoctoral Scholars but must spend a minimum of one month on the Duke University Compensatory Payroll before moving to the non-compensatory payment system. Salary for the mandatory one-month employee period will come first from the Principal Investigator (or primary Mentor in the case of NIH NRSA Institutional Research T32 Training Grants), to be supplemented if necessary, by funding from the department/responsible unit, or from the Dean.

Section 2-A: Postdoctoral Associate

The Postdoctoral Associate meets all elements of the definition of a Postdoctoral Appointee.

Purpose of Appointment: The Postdoctoral Associate performs specific services in exchange for compensation.

Payment Method: The Postdoctoral Associate receives payment through the Duke University Compensatory Payroll.

If a Postdoctoral Associate switches from payment on the compensatory payroll to the non-compensatory payment system, his or her Continuous Service Credit will continue.

Section 2-B: Postdoctoral Scholar

The Postdoctoral Scholar meets all elements of the definition of a Postdoctoral Appointee.

Purpose of Appointment: The Postdoctoral Scholar participates in a research training program for the principal purpose of developing the individual's research skills for his/her primary benefit.

The activities of the individual in this role do not constitute performance of services (i.e., work). Therefore, the Postdoctoral Scholar acting within the terms of such an award does not have an employer-employee relationship with the University.

Payment Method: The Postdoctoral Scholar receives a stipend from a training grant (i.e., NIH NRSA) or fellowship awarded directly to the University. Copy of the Duke Postdoctoral Policy and the web address of the Office of Postdoctoral Services, where this and other information relevant to postdocs can be found at <http://www.postdoc.duke.edu>

SERVICE AWARD PAYBACK AGREEMENT

Upon appointment, all trainees will be required to sign PHS 6031 Ruth L. Kirschstein National Research Service Award Payback Agreement, which holds trainees obligated to support payback in case of early termination of commitment contract. The PHS 6031 form and conditions of agreement can be found at: <http://grants.nih.gov/grants/funding/416/phs6031.pdf>

TRAINEE EVALUATION

Evaluations on each trainee will be completed annually on the anniversary of the date of their appointment to the training grant. The primary responsibility for evaluation of each trained will be his/her research mentor. Approximately one month prior to the due date for the evaluation, a copy of the Trainee Evaluation Form will be forwarded to the trainee's research mentor. The mentor will be responsible for compiling the information

required on the form and for composing a narrative describing the progress to date of the trainee. Areas of success and achievement will be noted as well as areas for which improvement is sought. A copy of all papers and abstracts on which the trainee is listed as an author will be appended to the completed evaluation form. The research mentor will also complete a counseling session to provide feedback to the trainee and to set goals for future work.

For clinical trainees who also have a division advisor, a copy of the annual evaluation documents will be provided to the IRTPA staff for inclusion in the trainee's file. After this part of the annual evaluation process has been completed, the trainee will meet with an IRTPA program director for an interview to review the previous year's effort and accomplishments. This meeting will serve as a forum for the trainee to discuss any concerns he or she may have with the overall program and/or with their mentors. It also is an opportunity to offer suggestions for improvement of the training experience or to get career advice for the future. The program director will compose a follow-up letter summarizing the previous year's performance and offering goals for the next year of training. This will also be a time to review the longer terms career plans for each trainee and to help identify pathways to subsequent career success. The IRTPA program director's letter will be sent to the trainee with a copy provided to the trainee's research mentor, and for trainees doing clinical research, to the Division Chief and the Division faculty advisor.

IRTPA FACULTY LIST

9/1/2022 – 8/31/2023

Name	Academic Position	Role in IRTPA	Dept of Primary Affiliation
Acharya, Priyamvada	Associate Professor	Faculty	Surgery
Alam, S. Munir	Professor	Faculty	Medicine; Pathology
Alspaugh, J. Andrew	Professor	Faculty	Medicine
Blasi, Maria	Assistant Professor	Faculty	Medicine
Bloomfield, Gerald	Associate Professor	Faculty	Medicine; Global Health
Chan, Cliburn	Associate Professor	Faculty	Biostatistics & Bioinformatics
Corneli, Amy	Associate Professor	Faculty	Population Health Sciences
Dow, Dorothy	Assistant Professor	Faculty	Medicine; Global Health
Ferrari, Guido	Professor	Program Director and Faculty	Surgery; Molecular Genetics & Microbiology
Haynes, Barton	Professor	Faculty	Medicine
Heitman, Joseph	Professor	Faculty	Molecular Genetics & Microbiology
Henderson, Rory	Assistant Professor	Faculty	Medicine
Jost, Stephanie	Instructor	Faculty	Surgery
Klotman, Mary	Professor	Faculty	Medicine
Le, Thuy	Associate Professor	Faculty	Medicine; Molecular Genetics & Microbiology
Luftig, Micah	Associate Professor	Faculty	Molecular Genetics & Microbiology
McClernon, Francis (Joe)	Professor	Faculty	Psychiatry & Behavioral Sciences
McKellar, Mehri	Associate Professor	Faculty	Medicine
Meade, Christina	Associate Professor	Mentor	Psychiatry & Behavioral Sciences
Montefiori, David	Professor	Faculty	Surgery
Moody, M. Anthony (Tony)	Associate Professor	Faculty	Pediatrics; Immunology
Murdoch, David	Associate Professor	Faculty	Medicine, Pulmonary, Allergy, Critical Care Medicine
Naggie, Susanna	Associate Professor	Faculty	Medicine
Okeke, Lance	Assistant Professor	Mentor	Medicine, Infectious Disease
Perfect, John	Professor	Faculty	Medicine
Pollara, Justin	Associate Professor	Faculty	Surgery
Reeves, Keith	Professor	Faculty	Surgery
Rubach, Matthew	Assistant Professor	Faculty	Medicine; Global Health
Saunders, Kevin	Associate Professor	Mentor	Surgery, Immunology, MGM
Sleasman, John	Professor	Faculty	Pediatrics, Allergy and Immunology
Staats, Herman	Professor	Faculty	Pathology
Stout, Jason	Professor	Faculty	Medicine
Thielman, Nathan	Professor	Program Director and Faculty	Medicine; Global Health
Tobin, David	Associate Professor	Faculty	Molecular Genetics & Microbiology
Tomaras, Georgia	Professor	Program Director and Faculty	Surgery; Immunology; Molecular Genetics & Microbiology
Williams, Wilton	Associate Professor	Faculty	Medicine
Woods, Christopher	Professor	Faculty	Medicine