

DIVISION OF

RHEUMATOLOGY **AND CLINICAL IMMUNOLOGY**



University of
Pittsburgh

DEPARTMENT OF MEDICINE

ANNUAL REPORT | FY20

DIVISION OF
**RHEUMATOLOGY AND
CLINICAL IMMUNOLOGY**
ANNUAL REPORT

TABLE OF CONTENTS

Message from the Chief	3
Faculty Listing	4
Clinical Activities	6
Quality Improvement Initiatives	11
Clinical Locations	12
Research Activities	16
Grants and Contracts Awarded	29
Teaching Activities	34
One-Year Bibliography	38
Acknowledgments	42

DIVISION OF RHEUMATOLOGY

The Division of Rheumatology and Clinical Immunology continues to be a worldwide leader both clinically and academically, engaging in leading edge research that will ultimately offer patients the latest clinical therapies.

Our core research mission is to better understand arthritis, autoimmune, and other connective tissue diseases in order to improve diagnosis and therapies, with the ultimate goal of finding ways to cure and prevent these disorders. UPMC has been named one of the top rheumatology programs in the United States by *U.S. News & World Report* every year since 2007. And, the Division has several physicians and faculty members who are included among the peer-selected "Best Doctors in America."

We are committed to providing the highest quality care for patients with a wide spectrum of arthritis and autoimmune diseases. We are equally committed to mentoring and training medical students, residents, fellows, and junior faculty. These efforts reflect our core research mission to better understand arthritis, autoimmune, and other connective tissue diseases in order to improve diagnosis and therapies, with the ultimate goal of finding ways to cure and prevent these disorders.



Dana Ascherman, MD Interim Chief



Divisional highlights of FY20 include:

- ✦ Innovative clinical and laboratory research programs
- ✦ Unique research and clinical opportunities for future academic rheumatologists
- ✦ Extramural funding to investigate:
 - Pathogenesis of autoimmune diseases
 - Systemic lupus erythematosus
 - Polymyositis
 - Rheumatoid arthritis
 - Vasculitis
 - Osteoarthritis
 - Systemic sclerosis
 - Sjögren's syndrome
 - Mechanisms of pain
 - Lung disease associated with autoimmune diseases

Dana Ascherman, MD

Interim Chief, Division of Rheumatology and Clinical Immunology
Professor of Medicine

Antonio Achkar, MD

Clinical Assistant Professor of Medicine

Rohit Aggarwal, MD, MS

Associate Professor of Medicine
Medical Director, Arthritis and Autoimmunity Center
Sub-Specialty Education Coordinator, Division of Rheumatology and Clinical Immunology

Noah Bass, MD

Clinical Assistant Professor of Medicine
Co-Medical Director, AIM practice

Alan M Berg, MD

Clinical Assistant Professor of Medicine

Santosh Bhusal, MD

Clinical Assistant Professor of Medicine

Mehret Birru-Talabi, MD, PhD

Assistant Professor of Medicine
Co-Program Director, UPMC Rheumatology Fellowship Training Program

Partha S. Biswas, MVSc, PhD

Associate Professor of Medicine

Deborah J. Co, MD

Clinical Assistant Professor of Medicine

Andreea Coca, MD, MPH

Associate Professor of Medicine
Medical Director, Lupus Center of Excellence

Robyn T. Domsic, MD, MPH

Associate Professor of Medicine

Patrizia Fuschiotti, PhD

Assistant Professor of Medicine

Sarah L. Gaffen, PhD

Professor of Medicine
Gerald P. Rodnan Endowed Chair, Professor of Rheumatology

Kenneth N. Gold, MD

Clinical Assistant Professor of Medicine

David J. Helfrich, MD

Clinical Assistant Professor of Medicine
Clinical Director

Yong Gil Hwang, MD

Clinical Assistant Professor of Medicine

Taik Hyun (Josh) Kim, MD

Clinical Instructor of Medicine

Robert A. Lafyatis, MD

Thomas A. Mesdger, Jr., MD, Endowed
Professor for Arthritis Research
Professor of Medicine

Kimberly P. Liang, MD

Assistant Professor of Medicine

Mandy J. McGeachy, PhD

Associate Professor of Medicine

Thomas A. Medsger Jr., MD

Emeritus Professor of Medicine

**Siamak Moghadam-Kia, MD,
MPH**

Assistant Professor of Medicine
Staff Rheumatologist-VA Pittsburgh
Healthcare System

Niveditha Mohan, MD

Associate Professor of Medicine
Program Director, UPMC
Rheumatology Fellowship Training
Program

Larry W. Moreland, MD

Professor of Medicine
Margaret Jane Miller Endowed
Professor of Arthritis Research

Chester V. Oddis, MD

Professor of Medicine
Director, Myositis Center

Thaddeus Anthony Osial Jr, MD

Clinical Associate Professor of
Medicine

Christine Peoples, MD

Clinical Assistant Professor of
Medicine

John Steuart Richards, MBBS

Clinical Associate Professor of
Medicine

Terence Starz, MD

Clinical Professor of Medicine and
Occupational Therapy

Jeremy S. Tilstra, MD, PhD

Assistant Professor of Medicine

CLINICAL ACTIVITIES

Division faculty members are actively involved in seeing outpatients at the UPMC Arthritis and Autoimmunity Center at Falk Clinic, UPMC Mercy, the Oakland Veterans Affairs Medical Center Arthritis Clinic, and the UPMC Lupus Center of Excellence.

In addition, the Division includes twelve community physicians at six outpatient practice locations in Western Pennsylvania. Locations include Pittsburgh, Aspinwall, Bethel Park, Monroeville, Shadyside, and Wexford. In FY20, the total number of outpatient visits to Division facilities (7,435 new visits and 31,121 return visits) totaled 38,556. The total number of inpatient visits was 3,256.

Some significant clinical items to highlight for this year include:

- ✦ The Division of Rheumatology initiated a **telemedicine** partnership with Guthrie Health system. UPP Rheumatology provides Guthrie with telemedicine services, 3 half day sessions each week. **Drs. Andreea Coca** and **Christine Peoples** are the Medical Directors of this Program.
- ✦ In June, the Division of Rheumatology initiated a **Rapid Access Video Encounter (RAVE)** clinic. The RAVE clinic is staffed by rheumatologists that perform rapid evaluations of new UPMC Health Plan patients. RAVE sessions consist of twelve (12) 20-minute video visits. The provider will conduct the visit and categorize the patients in A, B, or C
 - Category A: acute patients that should be seen by Rheumatology within 1-2 weeks
 - Category B: should be seen by Rheumatology, but not urgently
 - Category C: do not require care by a rheumatologist and should be referred back to their PCP or another appropriate provider

Preliminary data suggests that the RAVE clinic increases efficiency and improves healthcare delivery.

Centers

The Division's faculty members assume a consultative and tertiary care role, as well as provide ongoing care to patients with all types of rheumatic diseases. There are several subspecialists who serve as regional and national consultants for patients in the following areas:

The **UPMC Rheumatoid Arthritis Center** is devoted to the management of rheumatoid arthritis (RA). The physicians use a multidisciplinary approach to diagnose and manage patients with RA. The center also participates in clinical and research trials to offer patients innovative therapies. Other physicians and researchers in the center include **Kimberly Liang, MD**, and **Mandy McGeachy, PhD**.

As part of the Accelerating Medicines Partnership (AMP)—a collaboration between the NIH, biopharmaceutical companies, and nonprofit organizations—patients undergoing a medical procedure involving the removal or collection of biological specimens, such as tissues from a joint, are asked as part of their medical care for permission to include samples of these specimens in the Arthritis and Autoimmunity Tissue Bank. **Mandy McGeachy, PhD**, serves as this study's PI.

The Division is also participating in other NIH-sponsored initiatives, including the Treatments Against RA and Effect on FDG PET-CT (TARGET) Trial, which examines the effect of RA disease modifying drugs (DMARDs) on vascular inflammation, and the Strategy to Prevent the Onset of Clinically-Apparent

Rheumatoid Arthritis (StopRA), which uses blood tests to identify healthy individuals who may be at high risk for developing. Additional multi-disciplinary research studies are ongoing and involve metabolomics, Immunochip analysis, and microbiome using the RACER biorepository. A goal of the RA Center leadership is to understand/document the molecular signatures in patients who are in remission and/or low disease activity. Specific pilot projects are underway evaluating regulatory B cells and T helper follicular cells in these patients. Finally, preliminary data is being generated to explore mechanisms of how methotrexate prevents immunogenicity of biologics.

Since his arrival at the University of Pittsburgh in 2013, **Yong Hwang, MD**, has continued to develop a clinical research program in RA under the mentorship of **Larry Moreland, MD**. Dr. Hwang has been actively involved in research developed from the Rheumatoid Arthritis Comparative Effectiveness Research (RACER) registry, as well as a published, peer-reviewed project examining differential response of serum amyloid A (SAA) to different therapies in RA and the value of SAA as a predictor of disease activity. Additionally, he studied the utility of Patient-Reported Outcomes Measurement Information System (PROMIS) for understanding interplay between patient-reported outcome measures and physician driven disease activity measures. Currently, his research is focused on understanding the complex interplay between RA disease activity, patient-reported outcomes and assessing mechanisms, and impact and management of pain in RA. An investigator-initiated study (funded by Pfizer, Inc.), titled as "Subgrouping of Patients with Rheumatoid Arthritis Based on Biophysical and Psychosocial Factors" is ongoing since September 2016. The objective of this study is to identify subgroups of RA patients with distinct pain, inflammation, and psychosocial factors and to investigate whether there are different treatment responses among subgroups.

The **UPMC Lupus Center of Excellence**, located in the Medical Arts Building on the UPMC/University of Pittsburgh's campus, is devoted to the diagnosis and management of systemic lupus erythematosus (SLE) and related systemic autoimmune diseases. The center's physicians use a multidisciplinary approach to diagnose and manage patients with chronic diseases.

Dr. Amr Sawalha was recruited from the University of Michigan as the Division of Rheumatology's Director of the Lupus Center of Excellence of UPMC and Chief of Pediatric Rheumatology at Children's Hospital of Pittsburgh this past year. Dr. Sawalha brings with him 14 years of combined clinical and research experience and a particular interest in lupus and in elucidating the genetic and epigenetic basis of autoimmune diseases. **Dr. Andreea Coca** was appointed the Medical Director of the Lupus Center.

Other faculty members in the Lupus Center of Excellence include **Kimberly Liang, MD, MS**, and **Jeremy Tilstra, MD, PhD**, both active in clinical, translational, and basic research activities. The Lupus Center physicians are working closely with **Kelly Liang, MD**, from the Renal-Electrolyte Division, to co-manage patients with lupus nephritis. Pediatric and adolescent lupus patients are typically evaluated and managed by a pediatric rheumatologist, Daniel Kietz, MD, who has a weekly clinic in the Lupus Center of Excellence. In addition, the UPMC Lupus Center of Excellence conducts clinical research trials and has a number of NIH-funded and industry-sponsored studies. **Dr. Coca** is principal investigator in a number of Sjögren's syndrome and lupus clinical trials within the Lupus Center of Excellence.

Currently, there are two clinical trials actively recruiting, for which Dr. Coca is the principal investigator: 1) A Randomized, Double-Blind, Placebo-Controlled, Parallel-Group, Phase 3 Study of Baricitinib in Patients with Systemic Lupus Erythematosus (SLE). This is a multicenter study evaluating the efficacy and safety of baricitinib in patients with SLE receiving standard therapy, and 2) A Phase 2, Double-blind, Randomized, Placebo-controlled Multicenter Study to Evaluate Efficacy, Safety, and Tolerability of JBT-101 in Systemic Lupus Erythematosus. One hundred adults with SLE and active joint disease with at least moderate pain will be enrolled in this study to evaluate the safety, efficacy, and mechanisms of action of JBT-101(cannabinoid derivative).

The UPMC Lupus Center of Excellence has also been maintaining a longitudinal Lupus Registry, which allows for rigorous data collection and storage of biological samples for research purposes.

Utilizing resources made available from the registry, **Dr. Kimberly Liang**, in collaboration with Dr. Kelly Liang, is studying whether possible urine biomarkers predictive of classes of lupus nephritis.

Dr. Tilstra has a research focus on SLE and discovering underlying causes of the disease. He is currently the lead for recruitment of SLE and Sjögren's patients to the microbiome project, which aims to collect both blood and microbiome samples from patients with these autoimmune diseases. These samples will be compiled with a larger patient cohort collected by other researchers at UPMC. These samples will be used to identify similarities and differences of the microbiome between patient populations afflicted with varying diseases. Another research interest is to evaluate how immune cells change once they enter the target organ in the setting of autoimmunity. Dr. Tilstra's future work will use blood, urine, and residual biopsy samples to determine which factors may be predictive of outcomes in lupus nephritis.

Dr. Sawalha has initiated the process to enhance organized recruitment of lupus patients in the Lupus Registry. He is working with 3 study coordinators involved in the registry to accurately link medical record information to samples already collected within the registry. Dr. Sawalha is also revisiting the type of samples to be collected longitudinally from new lupus patients in the registry, the process of recruitment, and the type of medical and disease activity information that needs to be recorded. He is also working with the Department of Medicine to use electronic medical records analysis resources to identify and systematically evaluate lupus patients within UPMC. The goal is to develop a large lupus cohort at UPMC for clinical, translational, and basic studies. Dr. Sawalha's own research effort focuses on elucidating the genetic and epigenetic basis of lupus and other related autoimmune diseases. His team applies state-of-the-art genomic, epigenomic, and bioinformatics methodologies, and subsequent functional studies using both in vitro and in vivo systems to identify and characterize genetic loci and pathways involved in the pathogenesis of immune-mediated diseases. Using careful clinical phenotyping and extensive national and international collaborations, his team aims at discovering genomic and epigenomic markers for disease progression, specific organ involvement, and response to therapy in systemic autoimmunity. His vision for the Lupus Center at UPMC includes enhancing integrated care for lupus patients, providing a format for scientific discussion for lupus at UPMC, enhancing the interaction and collaboration between basic scientists and clinical researchers in lupus across the institution, and developing a funding mechanism to provide seed funds for lupus research at UPMC. He also envisions establishing an external advisory board composed of nationally and internationally renowned experts in lupus to help guide the direction of the Lupus Center of Excellence at UPMC.

The **University of Pittsburgh Myositis Center** mission is to provide a state-of-the-art diagnosis and treatment center for all aspects of immune-mediated muscle disorders and related diseases and to lead the way in clinical and basic science research in the inflammatory myopathies. Our goal is to develop better therapies for the treatment of myositis and its complications and to aid in the cure of myositis. We strive to educate patients and providers regarding the diagnosis and management of these diseases.

Chester V. Oddis, MD, has been involved in myositis research for over 30 years with a longstanding interest in the epidemiology, clinical features, autoantibody correlations, and treatment of myositis. His research has contributed to a better understanding of inflammatory myopathy and the elucidation of the pathogenesis of this rare autoimmune disease. He has investigated the pulmonary complications of myositis and the treatment of this common problem. As Director of the Myositis Center at the University of Pittsburgh, Dr. Oddis supervises and manages one of the world's largest clinically and serologically-defined, longitudinal myositis databases which includes over 1000 patients with adult polymyositis, adult dermatomyositis, and overlap myositis disorders.

Rohit Aggarwal, MD, MS, Co-Director of the Myositis Center at the University of Pittsburgh, is an international expert in various forms of myositis and associated interstitial lung disease. His interests include clinical and translational research in myositis and associated interstitial lung disease, including outcome measures and clinical trials. Dr. Aggarwal is vice-chair of the medical

board of The Myositis Association (TMA), a myositis patient organization, as well as chair of the scientific committee of the International Myositis Assessment and Clinical Studies (IMACS) Group, a consortium of myositis experts around the world. He is the current co-chair of the American College of Rheumatology (ACR) abstract review committee myopathy section. Along with Dr. Oddis, Dr. Aggarwal is instrumental in the development of one of the largest myositis repositories of clinical data and samples in the country with more than 1500 subjects.

Siamak Moghadam-Kia, MD, MPH, has specifically studied the clinical features of dermatomyositis patients possessing a novel autoantibody and its association with interstitial lung disease and survival. His research interests include clinical features and treatment of idiopathic inflammatory myopathies, autoantibodies and biomarkers in idiopathic inflammatory myopathies, and cutaneous manifestations of systemic rheumatic disease.

The Myositis Center has two investigator-initiated studies actively recruiting. The first, Abatacept for the Treatment of Myositis-associated Interstitial Lung Disease (ATtackMy-ILD), is an investigator-initiated proof of concept multi-center study that will evaluate the efficacy, safety and tolerability of abatacept (ABT) in anti-synthetase-associated interstitial lung disease (Syn-ILD) in a randomized, placebo-controlled 6-month (24-week) study. The primary objective is to evaluate the efficacy, safety and tolerability of ABT and standard of care (SOC) vs. SOC alone in patients with Syn-ILD. We will enroll 20 adult Syn-ILD subjects (a myositis-associated syndrome with a high incidence of ILD approaching 80%), using a 1:1 randomization scheme for active drug:placebo for 24 weeks, thus enrolling 10 subjects to receive SOC plus active Drug and 10 subjects to receive SOC plus placebo. All patients will then enter an optional open label follow-up after the 24-week randomized, controlled phase, during which all subjects receive 24 weeks of ABT in the same fashion as the initial study phase.

The second study, "A multi-center, double-blind, placebo controlled, proof of concept study to evaluate the efficacy and tolerability of tocilizumab in adults with refractory dermatomyositis and polymyositis" is a multi-center, double-blind, randomized placebo-controlled proof of concept pilot study is evaluating the efficacy and tolerability of tocilizumab (TCZ) in adult dermatomyositis (DM) and polymyositis (PM) patients. Participants must be 18 years of age or older with "definite" or "probable" DM or PM. 40 participants will be randomly assigned to TCZ or placebo in a 1:1 ratio (approximately 20 per arm). Participants will complete 10 study visits during this 48-week clinical trial.

With the faculty involvement of **Kimberly Liang, MD**, and **Niveditha Mohan, MD**, the **UPMC Center for Vasculitis** focuses on providing the best possible care to patients, education and support for families, and access to new treatment options for those suffering from vasculitis, a disease characterized by the inflammation of blood vessels. The University of Pittsburgh is one of 11 academic sites involved with the NIH-funded Vasculitis Clinical Research Consortium (VCRC). We offer innovative research studies for patients with these rare diseases.

The University of Pittsburgh and UPMC **Center for Scleroderma** supports clinical and basic science research, patient care, fellow training, and patient education on systemic sclerosis, localized scleroderma, related fibrosing conditions, and Raynaud phenomenon. **Robert Lafyatis, MD**, leads the Scleroderma Center. Patients from the United States and foreign countries are referred to the center for evaluation and multidisciplinary treatment of systemic sclerosis and other related disorders. Clinic patients are evaluated by Robert Lafyatis, MD, and **Robyn T. Domsic, MD, MPH**. Drs. Lafyatis and Domsic believe in multidisciplinary care for scleroderma patients. They collaborate extensively with clinicians and scientists in the pulmonary, gastroenterology, and vascular biology groups to help patients with specialized treatment of their complications, as well as to help learn more about pathogenesis of these complications.

Immune cell dysfunction is a major component of scleroderma (SSc) pathogenesis. Our research interests focus on understanding the role of T lymphocytes, the predominant cell-type in the affected tissues of patients, in disease pathogenesis. Patients have few therapeutic options, and a

better understanding of the molecular and cellular mechanisms underlying loss of self-tolerance, activation of effector immune pathways, and of the interactions between the immune and stromal cells will lead to innovative therapies that selectively target the aberrant immune response, resulting in better efficacy and less toxicity.

Patrizia Fuschiotti, PhD, has research interests focused on the cellular and molecular mechanisms of pathogenesis by T cell and T cell-derived cytokines in inflammatory conditions. Particular emphasis is given to the roles played by cytokine IL-13 and its receptors (IL-13Ra1 and IL-13Ra2) in fibrosis, autoimmunity, and cancer. The context of this work is in human diseases primarily affecting the skin, namely SSc, an autoimmune connective tissue disease whose main clinical feature is fibrosis, and cutaneous T cell lymphoma (CTCL). She has shown that IL-13 and its molecular pathways are involved in both diseases, acting as a major pro-fibrotic factor in SSc and as an autocrine factor for CTCL. Recent work focused on studying the T cell-mediated immune responses in SSc skin disease, as well as the molecular mechanisms underlying IL-13 overproduction by specific skin-resident T cell subsets in SSc patients with active disease. Additional work focused on studying the role of IL-13 in CTCL development and progression, as well as in developing strategies aimed at targeting IL-13 and its molecular pathways for inhibiting proliferation of malignant lymphocytes. A new research direction in collaboration with Regeneron aims to test the efficacy of the Dupilumab antibody as a potential therapeutic for CTCL. She has also applied single-cell RNA-sequencing on CTCL skin tumor samples, aiming to obtain a better understanding of CTCL pathogenesis and to open avenues for innovative and more specific therapies in CTCL tailored to specific patients.

The Division of Rheumatology, under the leadership of **Dr. Niveditha Mohan** and **Dr. Rohit Aggarwal**, has developed a curriculum to train fellows in the use of **Musculoskeletal Ultrasound** (MSK USG) for both diagnostic and therapeutic purposes. An annual workshop is held every January, in collaboration with PM&R, to introduce the basics of MSK USG. Monthly USG procedure clinics are precepted by Dr. Mohan and Dr. Aggarwal to train fellows in using MSK USG for therapeutic interventions such as arthrocentesis. With the addition of new faculty members who are trained in MSK USG, there is a plan to increase this to twice a month. A cadaver workshop with MSK USG was organized in June to train fellows in MSK USG procedures. Fellows are encouraged to enroll in certification programs such as US Sonar to improve their clinical skills. Research protocols using MSK USG are being planned for the upcoming academic year.

Telemedicine

The director of UPMC Rheumatology Telemedicine Services, **Christine Peoples, MD**, has provided tele-rheumatology services for nearly six years and has been recognized as one of the top providers of telehealth services in the country. She provides tele-rheumatology services throughout Pennsylvania at the following locations: UPMC Northwest, UPMC Bedford, UPMC Cole Memorial Hospital, and Guthrie Hospital (starting in August 2019). Through videoconferencing, our physicians can 1) identify rheumatologic diseases early; 2) manage chronic rheumatologic diseases; and 3) provide important follow-up care. Dr. Peoples also provides the rheumatology consultations for patients who are part of the Empower 3 Center for Health program, an innovative direct pay practice where patients pay one fee and receive unlimited health care.

The UPMC tele-rheumatology program continues to grow and be recognized nationally. The UPMC Bedford teleconsult center received an award from the AAMC for improving access to specialist physicians and part of the award included our tele-rheumatology program at UPMC Bedford that is directed by Dr. Peoples.

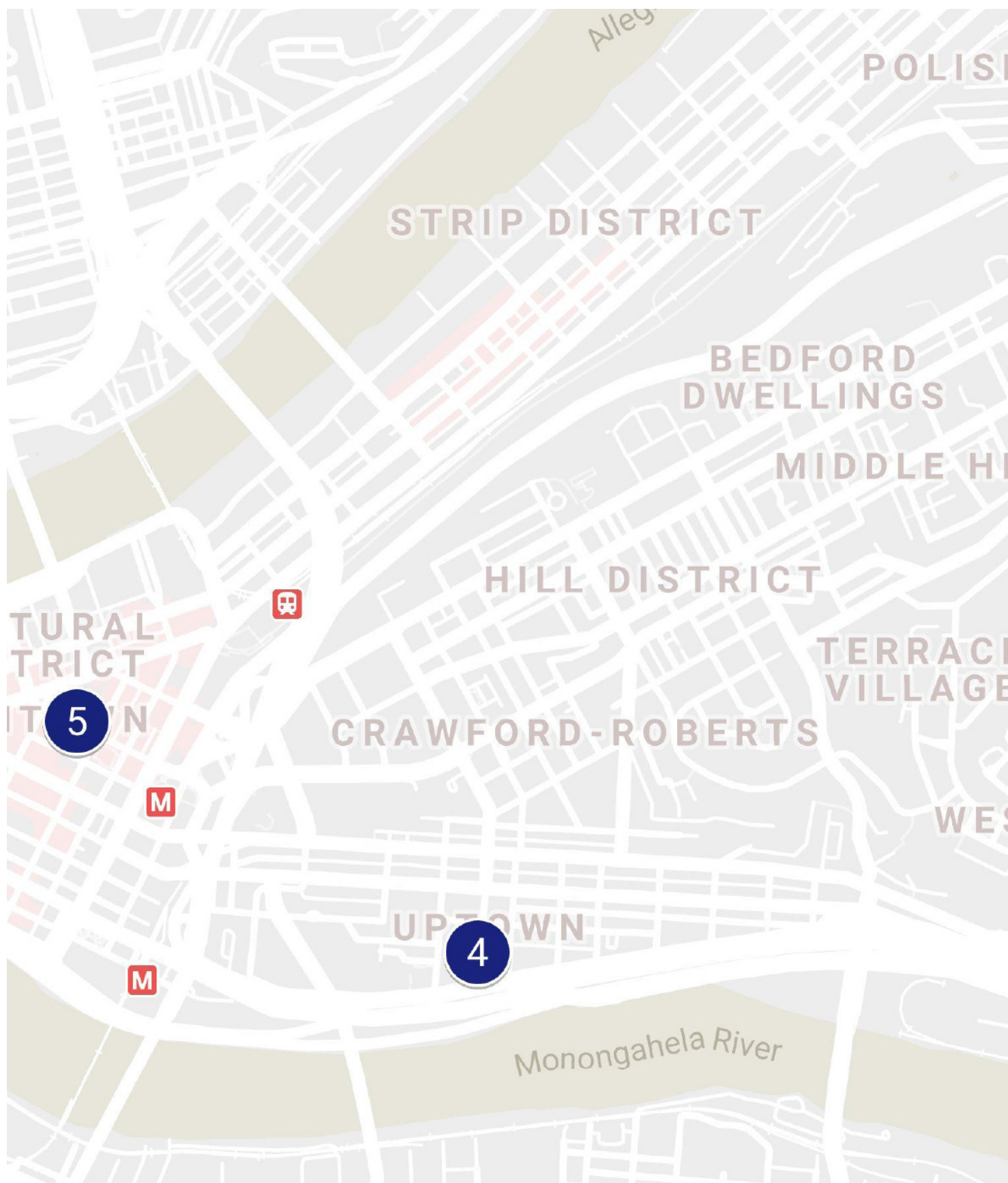
QUALITY IMPROVEMENT INITIATIVES

The Division's focus on quality is evidenced by its work with rheumatic disease patients on parenteral biologic modifier therapies and other immunosuppressive medications. Additionally, our physician-researchers have successfully developed methods of improving patient education and safety monitoring for those patients requiring immunosuppressive medications. Our practices consistently surpass quality standards set for the care of osteoarthritis, rheumatoid arthritis, and osteoporosis. We expanded our immunization initiative to include herpes zoster, influenza, and hepatitis B as well as pneumococcal vaccination, influenza and herpes zoster.

The Division participated in an HSD initiative to standardize the follow-up care plans for outpatients with chronic clinical problems. The goal of the initiative is to decrease the variability in the frequency and rationale to see return patients and to improve the use of specialists for the right patients and assure patient-focused access.

We reviewed the division's top clinical conditions in the outpatient setting to create an evidence-based approach to how often patients with chronic medical conditions should be seen in "routine" specialty clinic visits. The interval between return appointments for non-acute, chronic clinical management was defined based on the peer-reviewed literature, professional guidelines, expert opinion and consensus of the division's physicians. The division was successful in defining appropriate follow-up care plans.

Following American College of Rheumatology guidelines, we have worked on a number of quality improvement projects, with the aim of improving physician efficacy, nursing work-flow, and patient satisfaction. So far, we have implemented a High Risk Medication Monitoring Protocol that will allow streamlining of adequate orders for medication monitoring. The other quality improvement process refers to Perioperative Management of High Risk Immunosuppressive Medication.



A stylized map of Pittsburgh, Pennsylvania, serves as the background for the page. The map is in shades of gray and white, showing the city's grid-like street pattern and the Allegheny River. Several areas are labeled in a light gray, sans-serif font: 'UPPER HILL' in the top left, 'NORTH OAKLAND' in the center, 'ST OAKLAND' in the bottom left, and 'TECHNOLOGY CENTER' in the bottom left. Five numbered blue circles with white numbers are placed on the map to indicate specific clinical locations: circle 1 is in the upper left, circle 2 is in the center, circle 3 is in the upper right, circle 4 is in the lower center, and circle 5 is in the bottom left. The text 'CLINICAL LOCATIONS Central' is positioned in the top right corner, with 'CLINICAL' in a bold, orange, sans-serif font and 'LOCATIONS Central' in a smaller, blue, sans-serif font.

CLINICAL LOCATIONS *Central*

1

UPMC Arthritis and Autoimmunity Center

Falk Medical Building
3601 Fifth Avenue, Suite 2B
Pittsburgh (Oakland), PA 15213

2

UPMC Lupus Center of Excellence, Multi-specialty Clinic & Pediatric Rheumatology

Medical Arts Building
3708 Fifth Avenue, Suite 501
Pittsburgh (Oakland), PA 15213

3

UPMC Arthritis and Internal Medicine

Shadyside Place
580 South Aiken Avenue, Suite 430
Pittsburgh (Shadyside), PA 15232

4

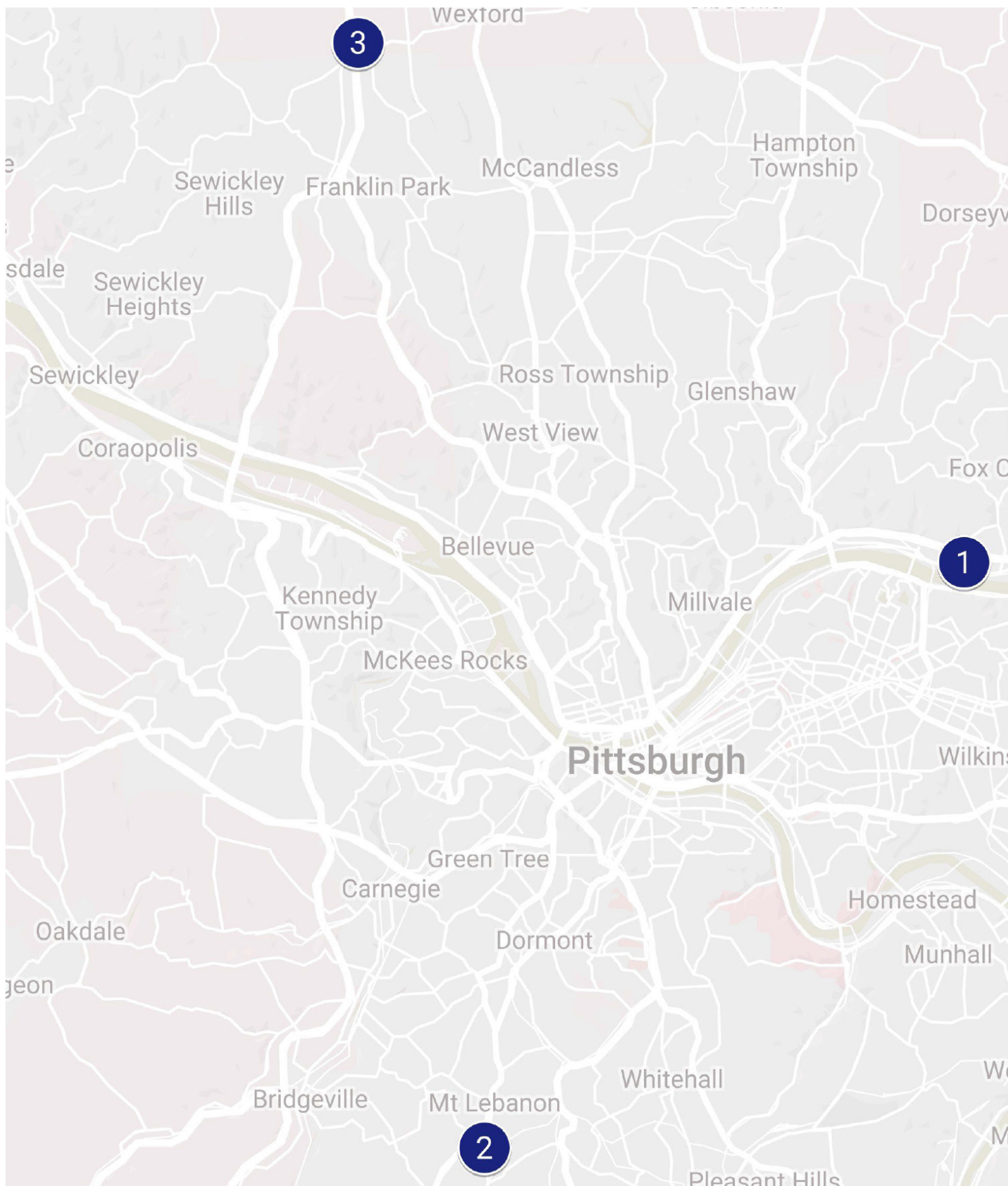
UPMC Arthritis and Autoimmunity Center—UPMC Mercy

Douglas Lienesch, MD
1400 Locust Street, Suite 2100, Building D
Pittsburgh, PA 15219

5

Margolis Rheumatology—UPMC

Heinz 57 Center
339 Sixth Avenue, Fifth Floor
Pittsburgh, PA 15222





CLINICAL LOCATIONS *Peripheral*

- 1 Margolis Rheumatology—UPMC St. Margaret**
Medical Arts Building
200 Delafield Road, Suite 4040
Pittsburgh (Aspinwall), PA 15215
- 2 UPMC Bethel Park Rheumatology**
2000 Oxford Drive, Suite 680
Bethel Park, PA 15102
- 3 UPMC Arthritis and Autoimmunity Center—Wexford**
117 VIP Drive, Suite 120
Wexford, PA 15090
- 4 UPMC Rheumatology—Monroeville**
600 Oxford Drive, Suite 210
Monroeville, PA 15146

RESEARCH ACTIVITIES

Extramural funding remained consistent during the past year. Major faculty areas of investigative interest include basic mechanisms of tissue injury and pathogenesis as well as clinical features, natural history, and therapy of systemic sclerosis, systemic lupus erythematosus, polymyositis-dermatomyositis, rheumatoid arthritis, vasculitis, and osteoarthritis.

Moreover, the Division was able to renew its T32 training grant in collaboration with the Department of Immunology, and **Dr. Sarah Gaffen** continues to be a Co-Director of this training grant.

Research Centers

A major focus of the Division is to define fundamental processes that underlie mechanisms of autoimmunity and how these may ultimately be harnessed for patient benefit. One major focus is how the IL-17/Th17 arm of the immune system drives pathogenesis in autoimmunity. Research in this area is conducted in the laboratories of **Drs. Sarah Gaffen** (Director of Basic Rheumatology Research), **Mandy McGeachy**, and **Partha Biswas**, all of whom work in a highly collaborative manner using tissue culture systems, mouse models, and human cell systems/samples. **Dr. Gaffen's** main research emphases are on the molecular basis of IL-17 receptor-mediated signal transduction and infectious disease susceptibility in the context of IL-17 deficiency (as occurs in patients taking biologic drugs that block IL-17-related signaling pathways). Her group also assesses skin manifestations of autoimmunity, such as psoriasis. **Dr. Biswas's** group is interested in IL-17 immune responses in the kidney, using mouse models of glomerulonephritis (a model of lupus nephritis and Goodpasture syndrome) and cells from patients with kidney diseases. **Dr. McGeachy's** group focuses on how Th17 cells are generated in both mice and humans and how these cells interact with stromal cells to induce pathology in autoimmune conditions.

The **Scleroderma Center** also has a very active research program. **Drs. Lafyatis** and **Domsic** conduct clinical trials to find new treatments for systemic sclerosis and its complications, including skin fibrosis, Raynaud phenomenon, digital ulcers, interstitial lung disease, and pulmonary arterial hypertension. In translational studies, **Dr. Lafyatis** investigates fibroblast and macrophage biology in the pathogenesis of systemic sclerosis, working closely with **Patrizia**

RESEARCH BY THE NUMBERS

In FY20, the Division of Rheumatology received over \$9.1m in research funding from the Public Health Service and other federal agencies, industry, and various societies and foundations. Research expenditures exceeded \$6.9m, an increase of 21% from FY19.

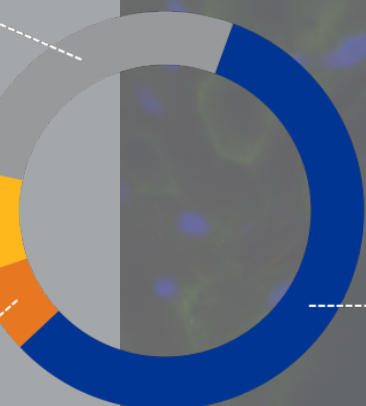
GRANTS & CON FY20

27% Industry

9% Society and Foundations

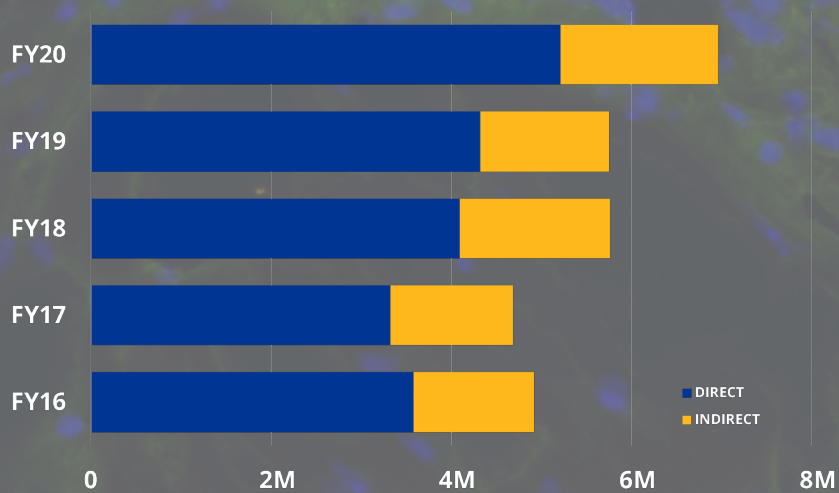
7% Other Federal

TRACTS AWARDED



RESEARCH EXPENDITURES

FY16-FY20



Fuschiotti, PhD, who conducts research on the role of T cells in systemic sclerosis. **Dr. Domsic** leads the Pittsburgh observational study of patients with systemic sclerosis, which over the years has contributed greatly to the medical literature regarding the clinical manifestations of systemic sclerosis. **Dr. Domsic's** research focuses on creating risk prediction models to help manage patients, developing improved outcome measures, and clinical trial design.

Research Activities

Research activities in FY20 include:

- **Dana Ascherman, MD**, is engaged in research that focuses on animal models of myositis as well as pulmonary complications of the anti-synthetase syndrome and rheumatoid arthritis. He is developing collaborative efforts with Pulmonary to continue research on these rare diseases.
- **Dana Ascherman, MD**, and **Daniel Kass, MD (PACCM)**, continue to operate the interdisciplinary Autoimmune Interstitial Lung Disease Clinic, which promotes the care of patients with inflammatory lung disease and facilitates clinical/translational research efforts in this arena.
- **Partha Biswas, PhD**, is the recipient of a PACER Catalytic Proposal funded by the Department of Medicine and the Pittsburgh Innovation Institute. The goals of the study is to identify uremictoxin(s) that cause defects in the antifungal activity of neutrophils.
- **Robyn Domsic, MD, MPH**, has continued funding from the Department of Defense as the Principal Investigator of an international, multicenter observational trial to develop and validate new trial outcomes in Raynaud phenomenon.
- **Patrizia Fuschiotti, PhD**, had her article, "Single-cell lymphocyte heterogeneity in advanced Cutaneous T-Cell Lymphoma skin tumors, " featured on the cover of *Clinical Cancer Research*. The article discussed how single-cell RNA sequencing (scRNA-seq) technology was used to profile the transcriptomes of thousands of individual cells from advanced-stage Cutaneous T-cell Lymphoma (CTCL) skin tumors.
- **Patrizia Fuschiotti, PhD**, has an investigator-initiated research grant with Regeneron to perform preclinical studies on the use of Dupilumab in cutaneous T cell lymphomas.
- **Sarah Gaffen, PhD**, was awarded the BioLegend William E. Paul prize for excellence in cytokine research, to be awarded at the 2020 International Cytokine and Interferon Society conference in November.
- **Dr. Gaffen's** student **Felix Aggor** successfully defended his PhD dissertation in July 2020, titled "Mechanistic insights into the roles of IL-22 in oral anti-fungal immunity."
- **Dr. Robert Lafyatis's** Single Cell Core was administratively opened as a fully functioning Core under the Dean's Office, offering sc-RNA-seq, Cite-seq, 5'scRNA-seq and sc-ATAC-seq. Core-related activities have steadily increased, reflecting increasingly broad utilization by multiple investigators. MC6842909.
- **Kimberly Liang, MD, MS**, serves as the site principal investigator (PI) for the Lupus Clinical Investigators Network (LuCIN). She continues recruiting for a phase II clinical trial protocol (PAISLEY study), sponsored by Bristol-Myers Squibb.
- **Dr. Liang** is also completing an R21-funded clinical trial investigating whether sildenafil improves endothelial dysfunction in rheumatoid arthritis.
- **Siamak Moghadam-Kia, MD, MPH**, was elected as one of the new members of the International Myositis Assessment and Clinical Studies Group (IMACS) meeting committee in February 2019.
- **Mandy McGeachy, PhD**, received a PACER Award, ITTC/University of Pittsburgh studying

novel targets in human Th17 cells.

- **Drs. McGeachy, Biswas, and Gaffen's** *Nature Immunology* article, "IL-17 metabolically reprograms activated fibroblastic reticular cells for proliferation and survival," was highlighted in a "News and Views" commentary in *Nature Immunology* and in *Nature Reviews Immunology*.
- **Mehret Birru Talabi, MD, PhD**, received a four-year career development award from the Robert Wood Johnson Harold Amos Medical Faculty Development Program in addition to receiving an NIH K23 award focusing on novel qualitative research in the area of reproductive health and rheumatic disease.
- **Dr. Talabi** was also a top recipient of the Innovation Discovery Pilot Award, Pittsburgh Autoimmunity Center of Excellence in Rheumatology.
- **Dr. Talabi** was one of eight faculty leaders across the UPMC healthcare system awarded as a Beckwith Fellow from the Beckwith Center for Shared Decision-Making. She was also the recipient of a UPMC excellence in Patient Experience Award.
- **Jeremy Tilstra, MD**, received a DOD Lupus Concept Award and continues his K08 research in T cell exhaustion in lupus nephritis.

Faculty Research Interests and Activities

Dana P. Ascherman, MD *Interim Division Chief*

Dr. Ascherman's research has investigated the role of cell-mediated immunity in the pathogenesis of idiopathic inflammatory myopathy, a systemic autoimmune disorder resulting in damage to muscle as well as extra-muscular tissues that include skin, joints, lung, and the vascular system. While this effort initially focused on human cells and tissue, the relative rarity of this disorder led Dr. Ascherman to develop a novel antigen-induced model replicating several cardinal features of this disease—namely, myositis and interstitial lung disease. Beyond support for the role of histidyl-tRNA synthetase (HRS=Jo-1) in human disease, this work has generated some intriguing observations regarding the ability of peptides to generate species-specific antibody responses—fueling a computational biology collaboration exploring the contribution of peptide stability to antigenicity, immunogenicity, and affinity maturation. Complementing these studies, more recent work has centered on the interaction between HRS and signaling components of the innate immune system that not only support the development of class-switched autoantibody responses, but also promote a robust myositis phenotype. Dissecting the relationship between HRS-induced innate immune activation, NF- κ B-mediated transcriptional pathways, and subsequent transition to antigen driven adaptive immune responses therefore represents a major focus of ongoing work. Additional areas of investigation include biomarker development in autoimmune interstitial lung disease. Collectively, these efforts underscore an expanding basic and translational research program uniting themes of autoimmune disease mechanisms and structural immunology.

Professional Affiliations and Society Memberships

- Member, American Association of Immunology, 2007-present

Major Lectureships and Seminars

- Speaker, Division of Pulmonary Medicine, University of Pittsburgh, COPD Seminar Series, Pittsburgh, PA, 2019
- Speaker, Internal Medicine, University of Pittsburgh, Internal Medicine Update, Pittsburgh, PA, 2019
- Lecturer, University of Pittsburgh, Autoimmunity and Immunopathology Course, 2020
- Speaker, Department of Medicine Grand Rounds, University of Pittsburgh, Shadyside Hospital, Pittsburgh, PA, 2020

Editorships

- Ad Hoc Reviewer, Multiple Journals (*Annals of Rheumatic Disease, Arthritis and Rheumatology, Arthritis Care and Research, Arthritis Research and Therapy, Brain Research, British Medical Journal Open, Chest, Cytokine, Journal of Clinical Rheumatology, Journal of Immunology, Journal of Rheumatology, Medicine, Nature Reviews in Rheumatology, PLoS One, Scandinavian Journal of Rheumatology, Seminars in Arthritis and Rheumatism*), 2002-present
- Review Editor, *Frontiers In Immunology*, 2018-present

Rohit Aggarwal, MD, MS

Dr. Aggarwal's research interests center on myopathies, including polymyositis, dermatomyositis, and inclusion body myositis. He is also interested in autoimmune or connective tissue disease-related interstitial lung disease or pulmonary fibrosis.

Study Sections

- Abstract Reviewer, American College of Rheumatology, 2014-present
- Grants Reviewer, Global Conference on Myositis (GCOM), 2019

Advisory Committee Memberships and Leadership Positions

- Member, Scientific Committee, International Myositis Assessment & Clinical Studies Group, 2012-present

- Co-Chair, Abstract Committee, Myopathy Section, American College of Rheumatology, 2014-2019
- Member, Medical Advisory Board, The Myositis Association, 2014-2020
- Member, Professional Relationship Committee, The Myositis Association, 2016-present
- Chair, IMACS Project, Steering Committee, 2016-present
- Chair, Scientific Committee, International Myositis Assessment & Clinical Studies Group, 2017-present
- Primary Mentor, Muscle Ultrasound pre and post exercise as tool to assess disease activity in Juvenile Myositis (Cure JM Foundation), 2017-2019
- Vice-Chair, Medical Advisory Board, The Myositis Association, 2017-2019
- Member, Scientific Committee, Global Conference on Myositis, 2018-present
- Member, Scientific Committee, The Myositis Association, 2018-present
- Consultant, ClinicalTrials.gov, 2018-2020
- Member, Chair, Medical Advisory Board, The Myositis Association, 2019-present

Editorships

- Ad hoc Reviewer, Multiple journals (*Nature Reviews Rheumatology*, *Annals of Rheumatic Disease*, *Arthritis & Rheumatology*, *Journal of Clinical Epidemiology*), 2017-2020
- Editor, *Managing Myositis: A Practical Handbook*, 2019
- Associate Editor, *Rheumatology (Oxford)*, 2020

Mehret Birru-Talabi, MD, PhD

Dr Birru-Talabi is interested in clinical and health services research pertaining to the reproductive health care of women with rheumatic diseases. Specific areas of investigation include development of tools to optimize family planning care and counseling, evaluation of safety and efficacy of contraceptive methods, and cross-disciplinary provider education; overall, Dr. Birru-Talabi's research seeks to improve reproductive health care and outcomes for women with autoimmune and connective tissue diseases.

Editorships

- Reviewer, Multiple journals (*Journal of General Internal Medicine*, *Journal of General Internal Medicine*, *Seminars in Arthritis and Rheumatism*, *BMJ Open Access*, *Clinical Rheumatology*, *Journal of Rheumatology*), 2016-present

Honors and Awards

- Fellow, Beckwith Center for Shared Decision-Making, UPMC, 2020
- Recipient, Excellence in Patient Experience Award, UPMC, 2020



Photo

Dr. Birru-Talabi is a 2020 Beckwith Center Fellow.

Partha S. Biswas, MVSc, PhD

The research focus in the Biswas laboratory centers on understanding the impact of Interleukin-17 receptor signaling in renal immunity and autoimmunity by combining basic and translation research. The kidney is often subject to irreversible damage caused by infections and auto-inflammatory conditions. The incidence of end-stage kidney damage is increasing worldwide and represents a major clinical and economic burden. Currently, there are no effective treatments for this fatal condition. The complex inflammatory cytokine network and renal inflammatory events that drive the progression of kidney injury to irreversible damage is poorly understood. The research program in the Biswas laboratory is divided into several areas focused around IL-17 receptor signaling in the kidney: 1) Determining how IL-17 drives irreversible kidney damage, with the ultimate goal of revealing effective therapeutic approaches to block IL-17 signaling in chronic kidney diseases, including lupus nephritis; 2) Defining the mechanisms of IL-17-mediated renal immunity against disseminated candidiasis and uropathogenic *E. coli* infection; and 3) Understanding the role of IL-17 receptor signaling in renal fibrosis, the final outcome of acute or chronic kidney diseases leading to kidney dysfunction.

Study Sections

- Study Section Member, Congressionally Directed Medical Research Program, Department of Defense-Autoimmune Diseases Panel, 2019

Advisory Committee Memberships and Leadership Positions

- Member, Pediatric Rheumatology Fellow Advisory Committee, 2014-2019
- Member, Faculty Advisory Committee, 2015-2019
- Member, Rheumatology Fellow Advisory Committee, 2015-2019
- Co-Director, Samuel and Winters Emma Foundation Grant Award, University of Pittsburgh, 2018-present
- Chair, Underrepresented minority undergraduate research program, University of Pittsburgh, Microbiology and Immunology Program, 2020

Editorships

- Editorial Board, *Journal of Immunology, Infections and Inflammatory Disease*, 2015-2020
- Editorial Board Member, *Cytokine*, 2016-2020
- Editorial Board Member, *Scientific Reports*, 2016-2020
- Ad Hoc Reviewer, Multiple journals (*Annals of Rheumatology*, *PLOS One*, and numerous others), 2018-present

Major Lectureships and Seminars

- Lecturer, College of Veterinary Medicine, University of Tennessee, July 2019

Andreea Coca, MD, MPH

Dr. Coca's research interests stem from her exposure to the field of public health during her master's years. She is very interested in the epidemiology of rheumatic diseases, outcome research and quality improvement projects. In addition, she enjoys providing patients with access to latest advancements in treatment, through enrollment in clinical trials in systemic lupus erythematosus and Sjögren's syndrome. She also works closely with uveitis specialists for database development and an inception cohort of uveitis and inflammatory eye disease patients.

Advisory Committee Memberships and Leadership Positions

- Co-Director, Rheumatology-Ophthalmology Inflammatory Eye Disease clinic, 2015-2019

Professional Affiliations and Society Memberships

- Member, American College of Rheumatology, 2007-present

Major Lectureships and Seminars

- Lecturer, UPMC Mercy Hospital, Grand Rounds, Pittsburgh, 2019

Robyn T. Domsic, MD, MPH

Dr. Domsic's research focuses on improving the care of patients with scleroderma. Her research to date has focused on creating and testing risk stratification strategies for scleroderma patients. These tools can be used to improve both patient care and clinical trial design. Her second main area of research interest is Raynaud's phenomenon and the vascular manifestations of scleroderma. Specifically, she is interested in novel imaging techniques for vascular involvement in scleroderma and in assessing new outcome measures for testing therapies that treat Raynaud's phenomenon. Dr. Domsic continues to be actively involved in several multi-center clinical trials investigating potential therapies for the management of scleroderma and Raynaud's phenomenon. She has current funding for an investigator-initiated trial examining the effect of atorvastatin on Raynaud's phenomenon that will be completed only at the University of Pittsburgh.

Study Sections

- Grants reviewer, National Medical Research Council of Singapore, 2019-2020

Advisory Committee Memberships and Leadership Positions

- Member, Scleroderma Research Stakeholders Committee, 2020

Editorships

- Editorial Board, *Journal of Scleroderma and Related Disorders*, 2016-present
- Ad Hoc Reviewer, Multiple journals (*Arthritis and Rheumatology*, *Seminars in Arthritis and Rheumatology*, *Chest*), 2019-2020

Patrizia Fuschiotti, PhD

Dr. Fuschiotti's research interests include the cellular and molecular mechanisms of pathogenesis by T cell and T cell-derived cytokines in chronic inflammatory conditions, with particular emphasis is given to the roles played by cytokine IL-13 and its receptors (IL-13Ra1 and IL-13Ra2) in fibrosis, autoimmunity, and cancer. The context of this work has been in human diseases primarily affecting the skin, namely systemic sclerosis (SSc), an autoimmune connective tissue disease whose main clinical feature is fibrosis, and cutaneous T cell lymphoma (CTCL). Dr. Fuschiotti has shown that IL-13 and its molecular pathways are involved in both diseases, acting as a major pro-fibrotic factor in SSc and as an autocrine factor for CTCL. In addition to understanding the underlying mechanisms of pathogenesis, Dr. Fuschiotti has also been developing strategies aimed at targeting IL-13 and its molecular pathways for therapeutic relief. Recent work includes single-cell transcriptome analysis of CTCL skin tumors to investigate tumor heterogeneity with the aim to develop therapeutic strategies tailored to specific patients.

Advisory Committee Memberships and Leadership Positions

- Director, University of Pittsburgh, Department of Immunology, Comprehensive Immunology Program in Immunology, 2019-2020

Sarah L. Gaffen, PhD

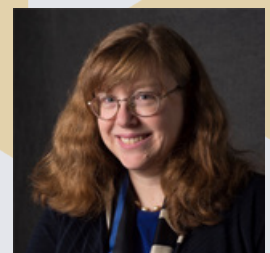
The immune system strikes a remarkably tight balance between controlling infections and limiting immunity to self. T cell-derived cytokines are a case in point: while critical for protecting against infectious disease, they also mediate pathology in autoimmunity. The Gaffen lab studies a cytokine called IL-17, which links innate and adaptive immunity through regulation of neutrophils and innate antimicrobial proteins. IL-17 and its receptor are unique in structure and sequence from other known cytokine families, and the Gaffen lab was among the first to study signaling mechanisms mediated by this novel protein. Dr. Gaffen's group takes a variety of biochemical, molecular, and in vivo approaches to defining IL-17 biology. In terms of infections, the Gaffen lab was the first to demonstrate that IL-17 is critical for immunity to mucosal fungal infection with the commensal fungus, *Candida albicans*, causative agent of oral and vaginal thrush and also of systemic candidiasis, a serious hospital-acquired infection with >50% mortality. Research in the Gaffen lab is heavily focused on defining the biological function of IL-17 and its receptor in the context of the oral mucosa. Treatment of autoimmune diseases has been revolutionized by biologic drugs that neutralize cytokines, such as etanercept (a TNF receptor antagonist) and tocilizumab (an IL-6 receptor antagonist). Many of these drugs target the Th17/IL-17 pathway, and antibodies to IL-17 were approved in 2016 for psoriasis. Dr. Gaffen's group aims to understand the physiological impact of cytokine blockade in humans, particularly with respect to the IL-17 signaling pathway.

Study Sections

- Chair, Immunity & Host Defense (IHD) study section, University of Pittsburgh School of Medicine PACER grant reviews, 2019
- Grant Advisory Panel, University of Pittsburgh, MedImmune-Pitt Joint Steering Committee, Pittsburgh, 2019-present

Advisory Committee Memberships and Leadership Positions

- Founding Chair, University of Pittsburgh, Junior Academic Faculty Mentoring Committee in Immunology (JAM Sessions), Pittsburgh, 2018-present
- Co-Chair, Gordon Research Conference on Fungal Immunology, Science Advisory Board for the FEBS Advanced Lecture course on



Photo

Dr. Gaffen is the 2020 recipient of the ICIS-BioLegend William E. Paul Award in recognition of her contribution in deciphering the role of IL-17.

Human Fungal Pathogens, Nice, France, 2019

- Member, Grant Advisory Panel, International Cytokine & Interferon Society, 2019-2021

Editorships

- Editorial Board, *Signals, Journal of the ICIS*, 2019-present

Major Lectureships and Seminars

- Speaker, ICIS, International Cytokine & Interferon Society Meeting, Vienna, Austria, October 2019
- Speaker, MidWinter Conference of Immunologists, Asilomar, CA, January 2020
- Speaker, University of Toledo Graduate Research Symposium, Toledo, OH, 2020

Honors and Awards

- Recipient, William E. Paul Award, International Cytokine & Interferon Society (ICIS), 2020

Yong Gil Hwang, MD

Rheumatoid arthritis (RA) is a common immune-mediated disease. Patients with established RA indicate that 47% of patients continue to have widespread pain despite relatively low levels of inflammation. Dr. Hwang's current research interest is to identify subgroups of RA patients with distinct pain, inflammation, and psychosocial factors and to investigate whether there are different treatment responses among subgroups.

Robert A. Lafyatis, MD

Dr. Lafyatis's laboratory effort is focused on understanding scleroderma (systemic sclerosis), and developing novel therapeutic approaches based on identifying biomarkers of the disease process and utilizing biomarkers in clinical trials. The lab has utilized a biomarker approach in a clinical trial of fresolimumab (anti-TGF-beta) to show a role for TGF-beta in skin fibrosis associated with systemic sclerosis. The lab is also applying its pharmacodynamic biomarker of skin disease to trials of tocilizumab (trial completed), and C-82 and rilonacept (ongoing). The research group has particular interest in understanding the mechanisms stimulating immune response in systemic sclerosis, focusing on innate immune responses leading to fibrosis and vascular injury. The lab's data show increased expression of interferon responsive genes in circulating monocytes of scleroderma patients, prompting current investigations into the stimulus for this pattern of gene expression and the effect of interferon on fibrosis and vascular injury. Most recently, we have been examining the transcriptome of single cells in the skin and lungs of patients with systemic sclerosis to better understand changes in gene expression in different immune and connective tissue cell types that lead to disease.

To aid in developing new therapies for systemic sclerosis, we are studying the pathogenesis through existing murine models, particularly bleomycin-induced skin and lung fibrosis, testing novel therapeutics to clarify the relationship between innate immunity and fibrosis. Our goal is to gain insight from these models that will enable us to propose more informative early phase clinical trials, utilizing biomarkers to show target engagement and as a surrogate clinical response.

Study Sections

- Member, NIH Study Section (ACTS), 2018-2019
- Member, Advisory Board, Boehringer-Ingelheim/Grant Review Committee DISCOVERY AWARDS, 2018-2020

Advisory Committee Memberships and Leadership Positions

- Director, Single Cell Core, University of Pittsburgh, 2018-2019
- Member, Advisory Board, Forbius, 2018-2019
- Member, Appointments and Promotion Committee, University of Pittsburgh, 2019-2020

Editorships

- Reviewer, Multiple journals (*American Journal of Respiratory Cell and Molecular Biology*, *Journal of Immunology*, *British Journal of Dermatology*, *Journal of Cell Science*, *Journal of*

Dermatologic Science, American Journal of Pathology, Arthritis & Rheumatism Journal), 2005-present

Kimberly P. Liang, MD

Dr. Liang's interests lie in the heterogeneity of rheumatic diseases and their link pathologically to atherosclerosis and vascular disease. Her current research focus is on the evaluation of risks, determinants, and management strategies of premature cardiovascular disease (CVD) in RA patients, through the use of novel noninvasive vascular studies that serve as measures of subclinical atherosclerosis and surrogate markers of future CVD events. Her NIH-funded R21 proposal investigates whether sildenafil use in RA patients improves endothelial dysfunction (as assessed by brachial artery flow-mediated dilation and peripheral arterial tone) and improves serum biomarkers of atherosclerosis and inflammation. Her NIH-funded K23 proposal investigated whether RA patients are more likely to develop vulnerable, atherosclerotic plaques than non-RA patients, as assessed by novel microbubble contrast-enhanced carotid ultrasound (CU) imaging techniques. Dr. Liang's Vasculitis Foundation-funded proposal investigates whether CU can differentiate between active disease vs. atherosclerotic damage in large-vessel vasculitis. She is interested in developing expertise in novel vascular techniques and applying this technology to the diagnosis and follow-up of rheumatic disease patients with vascular diseases. She is also actively engaged in multiple clinical trials and observational studies of patients with SLE, vasculitis, and RA.

Editorships

- Ad hoc Reviewer, Multiple journals (*Arthritis and Rheumatology, Arthritis Care and Research, The Journal of Rheumatology*), 2015-present

Mandy J. McGeachy, PhD

Th17 cells cause chronic tissue inflammation in autoimmune diseases like psoriasis, multiple sclerosis, and Crohn's disease. However, Th17 cells and other 'type-17' cells provide vital protection against commensals and opportunistic pathogens at barrier surfaces and also aid in wound repair. Many of these effects are achieved through IL-17. Perhaps due to these dual functions of Th17 cells, therapies targeted towards the IL-17 pathway are highly efficacious in some diseases, but have had mixed results in others. The McGeachy lab studies how inflammatory Th17 cells are generated and regulated and how they mediate their effects through IL-17 in different tissues. The goal of this research is to determine the best approaches to modulate Th17-driven pathology while conserving the beneficial protective roles of Th17 cells. Key questions being addressed include 1) Molecular mechanisms that regulate Th17 differentiation in humans, with a focus on the interplay between costimulatory and cytokine signaling; 2) Functional regulators of in vivo Th17 effector cell pathogenicity; 3) Regulation of Th17 migration in different tissues; and 4) Th17:tissue interactions that lead to stromal cell remodeling during chronic inflammation.

Study Sections

- Ad hoc Reviewer, NIH HAI Study Section, 2019

Editorships

- Ad hoc Reviewer, Multiple journals (*Journal of Immunology, Blood, European Journal of Immunology, Arthritis and Rheumatology, Immunity, Nature Immunology, and Journal of Experimental Medicine, PLOS One, Journal of Experimental Medicine*), 2012-present
- Editorial Board, *Cytokine*, 2014-present
- Editorial Board, *Scientific Reports*, 2015-present
- Editorial Board, *Frontiers in Multiple Sclerosis and Neuroimmunology*, 2017-2019

Siamak Moghadam-Kia, MD, MPH

Dr. Moghadam-Kia's interests are inflammatory myopathies and biomarker clinical studies.

Study Section

- Abstract Reviewer, Muscle Biology Myositis and Myopathies, American College of Rheumatology, 2019

Advisory Committee Memberships and Leadership Positions

- Special Reviewer, Reading Room on MedPage Today, American College of Rheumatology, 2019
- Vice-Chair, International Myositis Assessment and Clinical Studies Group (IMACS), International Classification of Diseases (ICD) Scientific Interest Group, 2020

Professional Affiliations and Society Memberships

- Member, American College of Rheumatology, 2015-2018

Niveditha Mohan, MD

Dr. Mohan's research centers on clinical trials in vasculitis.

Advisory Committee Memberships and Leadership Positions

- Member, Interviewing Committee, University of Pittsburgh School of Medicine Admissions, 2000-2019
- Member, Program Evaluation Committee, University of Pittsburgh Medical Center, 2019
- Member, Clinical Competency Committee, University of Pittsburgh Medical Center, 2019-present

Larry W. Moreland, MD

Dr. Moreland's engages in translational research on diseases such as rheumatoid arthritis, vasculitis, lupus, and seronegative spondyloarthropathies. He has extensive experience in clinical trials and long-term registries for patients with autoimmune diseases. Specific areas of interest are pathogenesis, biomarkers, and outcomes research. He has many ongoing collaborations with colleagues at the University of Pittsburgh, as well as numerous investigators at other academic institutions. In addition to being the Rheumatology Division Chief, he is Director of the University of Pittsburgh and UPMC Rheumatoid Arthritis Center and Vasculitis Center.

Advisory Committee Memberships and Leadership Positions

- Advisory Board, International Tumor Necrosis Factor Antagonists Working Group, 1998-2019
- Member, Arthritis Foundation Rheumatoid Arthritis Working Group, 2007-2019
- Member, Vasculitis Clinical Research Consortium, 2008-2019
- Member, ACR/EULAR Task Force for Development of Criteria for Early Rheumatoid Arthritis, 2008-2019
- Member, Institutional Advisory Board, Pitt Clinical and Translational Science Institute (CTSI), 2008-2019
- Member, Arthritis Foundation Peer Review Council for Training Awards, 2008-2019
- Member, Steering Committee, Physical Therapy/Occupational Therapy T32 Grant, 2009-2019
- Member, International Advisory Committee, Japan College of Rheumatology, 2009-2019
- Member, University of Pittsburgh School of Medicine Ambassadors Program, 2009-2019
- Member, University of Pittsburgh Comparative Effectiveness Research Clinical Trials Working Group, 2010-2019
- Director, FOCIS (Federation of Clinical Immunology Societies), University of Pittsburgh, 2010-2019
- Member, University of Pittsburgh Rehabilitation and Research Training Center Program for a Center on Enhancing the Health and Wellness of Individuals with Arthritis, 2010-2019
- Member, University of Pittsburgh Comparative Effectiveness Research Clinical Trials Working Group, 2010-2019

Editorships

- Section Editor, Rheumatoid Arthritis Section, *Current Rheumatology Reports*, 1998-2019
- Editorial Board, *Journal of Rheumatology*, 1999-2019
- Editorial Board, *American Journal of Medicine*, 2001-2019
- Contributor, Rheumatoid Arthritis, *Up to Date*, 2010-2019

Honors and Awards

- Member, American Society of Clinical Investigation, 2000-2019
- Honoree, Best Doctors, *Pittsburgh Magazine*, 2019
- Honoree, Best Doctors in America, 2019

Chester V. Oddis, MD

Dr. Oddis has been involved in myositis research for over 30 years with a longstanding interest in the epidemiology, clinical features, autoantibody correlations, and treatment of myositis. As Director of the Myositis Center at the University of Pittsburgh, he supervises and manages one of the world's largest clinically and serologically defined, longitudinal myositis databases with more than 1,000 patients who have adult polymyositis, adult dermatomyositis, and overlap myositis disorders. He was the Principal Investigator on the RIM (Ritubimab in Myositis) Trial, the first multicenter clinical trial in myositis funded by the National Institutes of Health (N01 AR042273) and the largest clinical trial ever completed in myositis. It enrolled 200 subjects from 20 adult and 11 pediatric national and international centers. He collaborates with many national and international myositis investigators and has been involved with task forces developing clinical trial guidelines for both myositis as well as connective tissue disease associated interstitial lung disease (ILD). In 2008, he developed the Rheumatic Disease Data Management System (RDMS) enabling myositis investigators to link disease activity and damage measures with clinical, laboratory, serologic, and experimental data over time. RDMS is web-based, enabling real-time entry of clinical data, and it includes a robust specimen tracking system leading to a valuable specimen repository. Dr. Oddis has written extensively on the diagnosis and management of patients with myositis, including use of novel immunosuppressive agents such as tacrolimus.

Editorships

- Book Editor, *Managing Myositis: A Practical Guide*, Springer Nature Switzerland AG, 2020

Major Lectureships and Seminars

- Invited Lecturer, 27th Annual Rheumatology Board Review and Clinical Update, University of California, San Francisco, August 2019
- Invited Lecturer, Ohio Association of Rheumatology, Columbus, Ohio, August 2019
- Invited Lecturer, Pennsylvania Rheumatology Society Annual Meeting, Hershey, PA, September 2019
- Invited Lecturer, Virginia Rheumatology Society, September 2019
- Invited Lecturer, American College of Rheumatology, November 2019
- Invited Lecturer, Rheumatology Grand Rounds, University of Washington, January 2020
- Invited Lecturer, Emirates Rheumatology Academy, Best of ACR, Dubai, UAE, February 2020

Honors and Awards

- Honoree, Best Doctors, *Pittsburgh Magazine*, 2019
- Bone Bash Medical Honoree, Arthritis Foundation, Pittsburgh, PA, 2019
- Master, American College of Rheumatology, 2019

John Steuart Richards, MD

Dr. Richards's research interests include participation in the VA Cooperative Studies Program #594: Comparative Effectiveness in Gout: Allopurinol vs. Febuxostat. He is also the site PI for the Veterans Affairs Rheumatoid Arthritis Registry.

Advisory Committee Memberships and Leadership Positions

- Member, Rheumatology Field Advisory Committee, Veterans Affairs, 2010-2020
- Member, Food and Drug Administration Arthritis Advisory Committee, 2016-2020
- Vice Chair, Veterans Affairs Rheumatology Consortium, 2017-2021
- Member, VA Pittsburgh Institutional Review Board (IRB), 2019-2020
- Mentor, Rheumatology Fellowship Case Conferences, University of Pittsburgh, Pittsburgh, 2019-2020
- Member, Rheumatology Fellowship Education Committee, University of Pittsburgh, 2019-2020

Professional Affiliations and Society Memberships

- Member, International Society for Clinical Densitometry, 2004-present
- Member, American Society for Bone and Mineral Research, 2008-present

Editorships

- Ad hoc Reviewer, Multiple journals (*Journal of Healthcare for the Poor and Underserved*, *BMC Musculoskeletal Disorders*), 2014-present

Jeremy S. Tilstra, MD, PhD

Lupus nephritis is the most common serious complication of lupus. Lupus nephritis can be seen in up to 40% of lupus patients and is more common in pediatric and minority populations. Dr. Tilstra's research focus is to understand basic signaling mechanisms leading to lupus nephritis. The need for further basic understanding of lupus nephritis is exemplified by the fact that only one new medication has been approved for lupus in the last 50 years and is not indicated for lupus nephritis. Therefore, his work focuses on two distinct pathways to better define this complex disease state. The first is to evaluate the MyD88 signaling pathways in murine lupus through the assessment of several upstream receptors using a reductionist approach and genetic manipulation to determine the roles of TL9, TLR7, and IL-1 signaling on lupus pathogenesis and lupus nephritis. In a secondary project, Dr. Tilstra is evaluating the interaction between the renal parenchyma and cellular infiltrates to better understand tissue specific effects of autoimmunity in the setting of lupus nephritis.

Study Sections

- Grant Reviewer, Lupus Research Alliance, 2019-present
- Grant reviewer, Congressionally directed medical research programs, Lupus Research Program, 2020

Advisory Committee Memberships and Leadership Positions

- Director, FOCIS Center of Excellence, University of Pittsburgh, 2016-present
- Member, Subspecialty Education Committee, UPMC Internal Medicine Residency Program, Pittsburgh, PA, 2019-present
- Member, Rheumatology Chief Search Committee, Department of Medicine, University of Pittsburgh and UPMC, Pittsburgh, PA, 2019-present

Major Lectureships and Seminars

- Lecturer, Medical Grand Rounds, Department of Medicine, University of Pittsburgh, Pittsburgh, PA, 2019
- Invited Lecturer, Kongress der Deutschen Gesellschaft für Rheumatologie, Dresden, Germany, 2019
- Oral abstract presenter, American College of Rheumatology Annual Meeting, Atlanta, GA, 2019
- Presenter, University of Pittsburgh, Senior Vice Chancellor Series, 2019
- Presenter, Computation and Systems Biology and Immunology Workshop, University of Pittsburgh, Pittsburgh, PA, 2020

*Photo*

Dr. Tilstra presented on T cell exhaustion during the 2019 SVC Research Seminar Series

GRANTS AND CONTRACTS

AWARDED

July 1, 2019 to June 30, 2020

PUBLIC HEALTH SERVICE

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Aggarwal, Rohit	Myositis Patient-Centered Tele-Research (My PACER)	NIAMS	\$109,840	\$37,556
Ascherman, Dana	Innate Immune Activation in Autoimmune Myopathy	NIAMS	\$212,139	\$102,207
Biswas, Partha S.	Twist1 Subphenotypes and Pulmonary Fibrosis	NHLBI	\$14,680	\$7,927
Biswas, Partha S.	Mechanisms of IL-17 Mediated Host Defense in the Kidney	NIDDK	\$193,568	\$108,054
Biswas, Partha S.	Regulation of IL-17 Signaling by RNA Binding Proteins in Autoimmune Pathology	NIAID	\$75,000	\$39,437
Biswas, Partha S.	Mechanisms of neutrophil dysfunction in antifungal immunity	NIAID	\$271,476	\$149,392
Domsic, Robyn	Addressing Critical Knowledge Gaps in Early Diffuse Scleroderma Trial Design	NIAMS	\$132,000	\$74,170
Domsic, Robyn	Translational Studies for Identifying and Targeting Novel Pathways in Systemic Sclerosis Pathogenesis (Clinical Core)	NIAMS	\$88,211	\$30,566
Domsic, Robyn	Autoantibodies Define Scleroderma Subgroups with Distinct Relationships to Cancer	NIAMS/Johns Hopkins University	\$32,361	\$18,284
Domsic, Robyn	A Phase 2, Double-blind, Randomized, Placebo-controlled, Multicenter Study to Evaluate Efficacy, Safety, and Tolerability of JBT-101 in Systemic Lupus Erythematosus	NIAID/Emory University	\$97,335	\$48,915
Domsic, Robyn	A Phase 2, Double-blind, Randomized, Placebo-controlled, Multicenter Study to Evaluate Efficacy, Safety, and Tolerability of JBT-101 in Systemic Lupus Erythematosus	NIAID/Emory University	\$97,335	\$48,915
Gaffen, Sarah	Host and Fungal Regulation of Type 17 Immunity to Oral Candidiasis	NIDCR	\$392,837	\$136,862
Gaffen, Sarah	IL-17-dependent RNA Binding Proteins in Immunity to Mucosal Candidiasis	NIAID	\$49,863	\$28,173
Gaffen, Sarah	Regulation of IL-17 Signaling by RNA Binding Proteins in Autoimmune Pathology	NIAID	\$74,795	\$40,794
Gaffen, Sarah	Host and Fungal Regulation of Type 17 Immunity to Oral Candidiasis (Supplement)	NIDCR	\$53,955	\$21,074
Gaffen, Sarah	Molecular Mechanisms of IL-17-dependent autoimmune signaling	NIAID	\$320,154	\$175,440
Gaffen, Sarah	Surgery Triggered Immune Response and Liver Metastases	NCI/Ohio State University	\$8,592	\$4,853
Lafyatis, Robert	International Workshop on Scleroderma Research	NIAMS	\$14,959	\$0

PUBLIC HEALTH SERVICE

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Lafyatis, Robert	NIAMS: Center for Research Translation (CORT)	NIAMS	\$61,646	\$14,125
Lafyatis, Robert	Dimethyl Fumarate in Systemic Sclerosis-Associated Pulmonary Arterial Hypertension	NIAMS	\$95,517	\$43,031
Lafyatis, Robert	The Role of Calcium Entry Through the Mitochondrial Uniporter in Regulating Cardiac Metabolism and Physiology	NHLBI	\$6,124	\$3,460
Lafyatis, Robert	Open chromatin and transcriptional regulation of dermal myofibroblasts in SSc	NIAMS	\$224,617	\$110,684
Lafyatis, Robert	Translational Studies for Identifying and Targeting Novel Pathways in Systemic Sclerosis Pathogenesis	NIAMS	\$103,394	\$31,579
Lafyatis, Robert	Translational Studies for Identifying and Targeting Novel Pathways in Systemic Sclerosis Pathogenesis-Genomics Core (Dartmouth sub)	NIAMS	\$129,245	\$0
Lafyatis, Robert	Translational Studies for Identifying and Targeting Novel Pathways in Systemic Sclerosis Pathogenesis (Minority Supplement)	NIAMS	\$61,477	\$0
Lafyatis, Robert	Translational Studies for Identifying and Targeting Novel Pathways in Systemic Sclerosis Pathogenesis (Project 1)	NIAMS	\$141,108	\$78,923
Lafyatis, Robert	Mapping Age-Related Changes in the Lung	NHLBI	\$31,066	\$17,552
Lafyatis, Robert	Defining Dysregulated Immune and Fibrotic Pathways in Morphea	NIAMS	\$4,842	\$2,736
Lafyatis, Robert	Type II Alveolar Redox Control in Fibrogenesis and Resolution	NHLBI	\$24,827	\$14,027
Lafyatis, Robert	Immune Tolerance Network-Core Lab for FFPE Skin Biopsy Tissue	NIAID/Benaroya Research Inst.	\$3,188	\$1,801
Lafyatis, Robert	Immune Tolerance Network: Evaluation of Brentuximab Vedotin for Diffuse Cutaneous Systemic Sclerosis: A Phase 1/2 Multicenter Randomized, Double Blinded, Safety Study	NIAID/Benaroya Research Inst.	\$18,764	\$10,602
Lafyatis, Robert	GATA6 in pulmonary arterial hypertension	NHLBI/Boston University	\$7,263	\$4,104
Liang, Kimberly	Does Sildenafil Improve Endothelial Dysfunction in Rheumatoid Arthritis?	NIAMS	\$97,489	\$38,523
Liang, Kimberly	The Impact of Fc gamma Receptor Signaling on Lupus-Induced Atherosclerosis	NHLBI/University of North Carolina	\$14,341	\$8,103
Mcgeachy, Mandy J.	Generation of a 'humanized' CD28 mouse for in vivo studies of role of costimulation during Th17 development costimulation during Th17 development	NIAID	\$49,863	\$27,722
Mcgeachy, Mandy J.	IL-17 regulates LN stromal cell metabolism and function	NIAID	\$237,762	\$127,490
Mcgeachy, Mandy J.	Role of Toll-like Receptor 9 in Fibroblastic Reticular Cell-based Therapy for Intra-abdominal Sepsis	NIAID	\$3,227	\$1,822
Moreland, Larry W.	UPITT Rheumatoid Arthritis Combined Center (UPITT RACC)	DOD	\$109,479	\$59,120
Moreland, Larry W.	UPITT Rheumatoid Arthritis Combined Center (UPITT RACC) Supplemental Funding	DOD	\$10,554	\$5,699
Tilstra, Jeremy	Evaluating T cell Exhaustion in Systemic Lupus Erythematosus	NIAMS	\$155,550	\$12,440
TOTAL PUBLIC HEALTH SERVICE			\$3,830,442	\$1,686,162

OTHER FEDERAL

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Domsic, Robyn	Optimizing Patient-Reported and Vascular Outcome Measures in Systemic Sclerosis-Associated Raynaud Phenomenon	DOD	\$371,677	\$88,337
Tilstra, Jeremy	Metabolic Reprogramming in Lupus Nephritis	DOD	\$76,213	\$40,856
TOTAL OTHER FEDERAL			\$447,890	\$129,193

SOCIETY AND FOUNDATIONS

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Aggarwal, Rohit	Novel Outcome Measures in Adult Myositis Using a Physical Activity Monitor and the PROMIS Physical Function Assessments	Myositis Association	\$15,404	\$1,232
Aggarwal, Rohit	Development and Validation of Antisynthetase Syndrome Classification Criteria	American College of Rheumatology Research	\$65,000	\$0
Biswas, Partha S.	Regulation of renal IL-17 signaling in antibody-mediated kidney diseases	Rheumatology Research Foundation	\$91,944	\$7,356
Domsic, Robyn	The Scleroderma Patient-Centered Intervention Network (SPIN) Cohort	Jewish General Hospital	\$3,740	\$0
Domsic, Robyn	The Genome and Microbiome Repository Project	UPMC Enterprises	\$2,047	\$0
Domsic, Robyn	Genome Research in African American Scleroderma Patients (GRASP)	Scleroderma Research Foundation/ Johns Hopkins University	\$1,105	\$331
Gaffen, Sarah	Regulation of renal IL-17 signaling in antibody-mediated kidney diseases	Rheumatology Research Foundation	\$92,727	\$7,419
Majumder, Saikat	Careers in Immunology Fellowship	American Association of Immunologists	\$54,606	\$0
Moreland, Larry W.	The Genome and Microbiome Repository Project	UPMC Enterprises	\$2,400	\$0
Noaiseh, Ghaith	Lupus Clinical Investigators Network (LuCIN)	Alliance for Lupus Research	\$50,294	\$0
Oddis, Chester V.	The Genome and Microbiome Repository Project	UPMC Enterprises	\$2,229	\$0
Talabi, Mehret Birru	A Patient and Provider Decision Support Intervention to Advance Reproductive Care for Women with Rheumatic Dis	Robert Wood Johnson Research Institute	\$93,495	\$11,219
Tilstra, Jeremy	The Genome and Microbiome Repository Project	UPMC Enterprises	\$2,045	\$0
Tilstra, Jeremy	Evaluating T Cell Exhaustion in Systemic Lupus Erythematosus	Alliance for Lupus Research	\$99,992	\$0
TOTAL SOCIETY AND FOUNDATIONS			\$577,027	\$27,557

INDUSTRY

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Aggarwal, Rohit	Abatacept for the Treatment of Myositis-associated Interstitial Lung Disease (Attack My-ILD)	Bristol Meyers-Squibb	\$332,498	\$99,750
Aggarwal, Rohit	Open Label Proof of Concept Study to Evaluate Efficacy and Safety of Adrenocorticotrophic Hormone Gel in Refractory Dermatomyositis or Polymyositis (Admin Core)	Questcor Pharmaceuticals, Inc.	\$74,519	\$22,356
Aggarwal, Rohit	Open Label Proof of Concept Study to Evaluate Efficacy and Safety of Adrenocorticotrophic Hormone Gel in Refractory Dermatomyositis or Polymyositis (Clinical Trial)	Questcor Pharmaceuticals, Inc.	\$13,938	\$4,181
Domsic, Robyn	Scleroderma Lung Study III: Combining of anti-fibrotic effects of Pirfenidone with mycophenolate to treat scleroderma-related interstitial lung disease (SLS III)	Genentech, Inc./ University of California Los Angeles	\$36,712	\$11,013
Domsic, Robyn	Long-term Follow-Up of Participants of the Phase II Study to Evaluate Subcutaneous Abatacept v Placebo in diffuse Cutaneous Systemic Sclerosis-A Double-Blind, Placebo-Controlled, Randomized Trial (ASSET)	Bristol Meyers-Squibb/ University of Michigan	\$1,839	\$552
Fuschiotti, Patrizia	Role of dupilumab on CTCL tumor cell proliferation	Regeneron Pharmaceuticals, Inc.	\$214,083	\$127,167
Hwang, Yong Gil	Pilot Study Using PainDetect in Rheumatoid Arthritis	Pfizer Inc.	\$65,004	\$18,201
Lafyatis, Robert	ELPIDERA Phase 1 Study: Testing Therapeutic Approach (ANTI-LOXL2) Efficacy in Murine Models of Systemic Sclerosis (SSc)	Moderna, Inc.	\$41,130	\$25,295
Lafyatis, Robert	Evaluation of Tofacitinib in Early Diffuse Cutaneous Systemic Sclerosis: A Phase I/II Single Center Safety Study	Pfizer Inc./ University of Michigan	\$135,194	\$39,206
Lafyatis, Robert	A Phase 1 Open-Label Study to Determine the Safety and Tolerability of AVID200, a Transforming Growth Factor β (TGFβ) Inhibitor, in Patients with Diffuse Cutaneous Systemic Sclerosis (Clinical Trial)	Formation Biologics	\$49,627	\$17,369
Lafyatis, Robert	A Phase 1 Open-Label Study to Determine the Safety and Tolerability of AVID200, a Transforming Growth Factor β (TGFβ) Inhibitor, in Patients with Diffuse Cutaneous Systemic Sclerosis	Formation Biologics	\$167,313	\$58,561
Lafyatis, Robert	Telomeres, Senescence, and Metabolism in AEC2	MedImmune, Inc.	\$52,342	\$32,191
Lafyatis, Robert	Telomeres, Senescence, and Metabolism in AEC2	MedImmune, Inc.	\$4,191	\$2,578
Lafyatis, Robert	Senescence and the validation of new therapeutic concepts for lung fibrosis	Boehringer Pharmaceuticals	\$21,537	\$13,246
Moreland, Larry W.	Open Label Study to Evaluate Efficacy and Safety of Short-Term, Adjunctive Adrenocorticotrophic Hormone (ACTH) Gel Therapy in Rheumatoid Arthritis	Questcor Pharmaceuticals, Inc.	\$69,761	\$20,929
Moreland, Larry W.	Evaluation of the Precision and Sensitivity of Tilmanocept Uptake Value (TUV) on Tc 99m Tilmanocept Planar Imaging	Navide Bio-pharmaceuticals	\$59,983	\$17,995
Oddis, Chester V.	Tocilizumab in the Treatment of Refractory Polymyositis and Dermatomyositis	Genentech, Inc.	\$472,957	\$141,887
TOTAL INDUSTRY			\$1,812,628	\$652,476

<i>PUBLIC HEALTH SERVICE</i>	<i>\$3,830,442</i>	<i>\$1,686,162</i>
<i>OTHER FEDERAL</i>	<i>\$447,890</i>	<i>\$129,193</i>
<i>SOCIETY AND FOUNDATIONS</i>	<i>\$577,027</i>	<i>\$27,557</i>
<i>INDUSTRY</i>	<i>\$1,812,628</i>	<i>\$652,476</i>
<i>TOTAL</i>	<i>\$6,667,986</i>	<i>\$2,495,388</i>

TEACHING ACTIVITIES

Division faculty members have extensive teaching responsibilities, both in the Department of Medicine (DOM) and in the School of Medicine.

Faculty members are involved at all levels of the educational process, from directing first-year courses to having medical students participate in a four-week Rheumatology elective. Interns and more senior Internal Medicine residents rotate on the Rheumatology Service for two to four weeks. Faculty and fellows teach residents in the Rheumatology Clinics during their ambulatory medicine block. Faculty members also lecture at noon conferences every year as well as the annual Department of Medicine "Update in Internal Medicine" conference series. Moreover, Rheumatology invites outside speakers to give Medicine Grand Rounds every year.

Medical Students

The Division offers two medical student courses, directed by **Dr. Mehret Birru-Talabi**, Associate Director of the Rheumatology Fellowship Training Program who was also recently named as an Assistant Dean, helping to oversee the MSTP training program. The first year course is entitled "Immunology in Health and Disease" which encompasses an overview of basic immunology as well as several lectures given by the Division of Rheumatology and Clinical Immunology faculty. These lectures cover all of the autoimmune diseases commonly encountered by rheumatologists in their clinical practice. The second year course is entitled "Skin and Musculoskeletal Diseases" and includes a 3-hour workshop led by the rheumatology faculty during which they formally teach and lead a discussion with small groups of medical students. Many cases are presented to the student in a PowerPoint format, and the students are instructed on the differential diagnosis, assessment and management of common rheumatic diseases.

Medical Residents

The Division of Rheumatology has placed special emphasis on resident teaching. **Dr. Jeremy Tilstra** serves as the Division's Subspecialty Education Coordinator, overseeing all resident education in rheumatology. Residents do their inpatient and outpatient electives in rheumatology on a routine basis. Rheumatology fellows and faculty lead the residents' twice weekly educational sessions under the Rheumatology Clinical Review Course (RCRC). Residents can opt for a research elective in rheumatology, where they work with specific mentors on a well-defined research project with the aim of an abstract and presentation at the annual American College of Rheumatology (ACR) meeting. Rheumatology fellows and faculty also teach during residents' musculoskeletal rotation and ambulatory medicine blocks, where residents get hands-on experience with the evaluation and musculoskeletal examination of patients seen in rheumatology clinic. During the annual Fellows Competition, fellows give a short lecture to residents on "Rheumatology Made Ridiculously Simple." Finally, rheumatology faculty participate in annual resident luncheon interactions to help residents learn more about the subspecialty.

Rheumatology Fellowship

The University of Pittsburgh Rheumatology Division has one of the largest rheumatology training programs in the country. The UPMC Rheumatology Fellowship training program, under the direction of **Dr. Niveditha Mohan**, has a total of six fellows in clinical training and additional optional 3rd year positions supported by a NIH funded T32 Research Training Grant. The program has applied to the Rheumatology Research Foundation for a grant (results are due in September 2020) for expanding the training program to four fellows each year, with further support from the Veteran Affairs Pittsburgh Healthcare System (VAPHS) starting in 2021. The aim of the expansion is to address the workforce shortage in the community while extending our services to underserved populations within our system such as UPMC Mercy Hospital. Rheumatology faculty are intrinsically involved in all aspects of the rheumatology fellows' education, including formal didactic lectures, small group problem based learning, scholarly activity mentoring, precepting of clinical activities in the office and inpatient setting, and various other activities. Fellows completing this program routinely elect to enter academic medicine with focus on primary research, education, or clinical care.

Since taking over as program director in 2019, Dr. Mohan has launched an innovative Clinician Educator training pathway using the educational infrastructure of the University of Pittsburgh ICRE. Trainees receive advanced degree training in medical education and develop scholarly projects around educational philosophy, curriculum development and program development for medical students, residents and fellows. Starting this year, an elective in telerheumatology under the supervision of **Dr. Christine Peoples**, a leader in telemedicine within UPMC, has been introduced to prepare and train fellows to face the challenges of a changing healthcare landscape during this global pandemic and in the future. Fellows will also rotate through two new multidisciplinary clinics (pulmonary/rheumatology and ophthalmology/rheumatology) in their second year of training. New electives in dermatology and pain management in conjunction with the PM&R department have also been introduced. The division is also mandating implicit bias training for all faculty members involved in fellowship recruitment in order to support our mission to promote diversity, inclusion and equity in our program. In the upcoming academic year, she will be working on introducing curricula which will address the needs of fellows who are planning to become clinicians in the community setting, by developing a program to teach them the business of rheumatology practice.

Our clinical training for fellows includes a comprehensive didactic curriculum involving the Summer Didactic Lecture Series, Immunology Lecture Series, monthly Journal Club, monthly radiology conferences, and weekly Grand Rounds. All of these activities have direct faculty supervision and thus, encourage contact between fellows in training and academic faculty. We currently have seven clinical fellows in either their first or second year of fellowship.



Clinical Fellows

* Indicates departing fellow

Silvia Martinez Laverde, MD

Medical School: Universidad de los Andes, Bogota Colombia

Residency: UPMC Mercy

***Nicole Hunt, MD**

Medical School: University of the West Indies, Jamaica

Residency: Howard University Hospital, Washington, DC

Current Position: Private practice, Cantonsville, MD

***Reshad Mahmud, MD, MS**

Medical School: Albany Medical College, Albany, NY

Residency: University of Pittsburgh Medical Center

Current Position: Rheumatologist, Valley Medical Center, Renton, WA

Cristina Padilla, MD

Medical School: University of Texas Southwestern Medical School

Residency: University of Rochester-Strong Memorial Hospital

Steven Taylor, MD

Medical School: University of Arizona

Residency: University of Colorado - Denver

***Nicholas Vaughn, MD, MBA**

Medical School: Saint Louis University School of Medicine

Residency: Medical College of Wisconsin

Current Position: Private practice, Summit, WI

Postdoctoral Fellows and Activities

Rami R. Bechara, PharmD, PhD

Mentor: Sarah Gaffen, PhD

Understanding IL-17 driven autoimmune diseases. Dr. Bechari recently co-authored an article in the Journal of Immunology which describes similarities and differences in IL-17F functions in oral candidiasis.

Raphael Itay, PhD

Dr. Itay is researching the role of STAT3 singling in effector Th17 cells in autoimmune diseases.

Chetan Vilas Jawale, PhD

Mentor: Partha Biswas, PhD

Dr. Jawale's research focus centers around understanding the mechanisms of immune dysfunction in patients with kidney disease. Specifically, Dr. Jawale is investigating the negative impact of uremia on the cells of innate and adaptive immune system. Understanding the mechanisms of immune dysfunction in kidney disease will pave the path for developing therapeutic avenues to boost immunity against fatal blood stream infections often seen in these patients.

Dedong Li, PhD

Mentor: Partha Biswas, PhD

Dr. Li's research focus centers around understanding how pathogen recognition receptors metabolically re-programs innate immune cells to fight infections. Specifically, Dr. Li is investigating the role of glucose transporter 1 in neutrophils during systemic fungal infection. Additionally, Dr. Li is actively involved in understanding the regulation of pathogenic IL-17 signaling in the kidney during autoimmune glomerulonephritis.

Yang Li, PhD

Mentor: Sarah L. Gaffen, PhD

Dr. Li is studying the role of Arid5a in IL17 signal pathway.

Saikat Majumder, PhD

Mentor: Mandy J. McGeachy, PhD

Dr. Majumder's research is focused on mechanisms of activation and regulation of fibroblastic reticular cells during Th17 autoimmune inflammation.

Anna Papazoglou, MD

Dr. Papazoglou is researching the epigenetics of profibrotic macrophages in systemic-sclerosis related Interstitial Lung Disease and Idiopathic Pulmonary Fibrosis.

ONE-YEAR BIBLIOGRAPHY

July 1, 2019 to June 30, 2020

Non-original research publications are in italics. Rheumatology faculty are in bold.

Aggarwal R, Moghadam-Kia S, Lacomis D, Malik A, Qi Z, Koontz D, Burlingame RW, **Oddis CV**. Anti-hydroxy-3-methylglutaryl-coenzyme A reductase (anti-HMGCR) antibody in necrotizing myopathy: treatment outcomes, cancer risk, and role of autoantibody level. *Scand J Rheumatol*. 2019 Dec 5;1-7. Online ahead of print.

Aggor FEY, Break TJ, Trevejo-Nuñez G, Whibley N, Coleman BM, Bailey RD, Kaplan DH, Naglik JR, Shan W, Shetty AC, McCracken C, Durum SK, **Biswas PS**, Bruno VM, Kolls JK, Lionakis MS, **Gaffen SL**. Oral epithelial IL-22/STAT3 signaling licenses IL-17-mediated immunity to oral mucosal candidiasis. *Sci Immunol*. 2020 Jun 5;5(48):eaba0570.

Ahn SS, Lee B, Kim D, Jung SM, Lee SW, Park MC, Park YB, **Hwang YG**, Song JJ. Evaluation of macrophage activation syndrome in hospitalised patients with Kikuchi-Fujimoto disease based on the 2016 EULAR/ACR/PRINTO classification criteria. *PLoS One*. 2019 Jul 18;14(7):e0219970. eCollection 2019.

Ballou ER, Gaffen SL, Gow NAR, Hise AG. Empowering Women: Moving from Awareness to Action at the Immunology of Fungal Infections Gordon Research Conference. Pathogens. 2019 Jul 17;8(3):103.

Bernstein EJ, Jaafar S, Assassi S, **Domestic RT**, Frech TM, Gordon JK, Broderick RJ, Hant FN, Hinchcliff ME, Shah AA, Shanmugam VK, Steen VD, Khanna D. Performance Characteristics of Pulmonary Function Tests for the Detection of Interstitial Lung Disease in Adults with Early Diffuse Cutaneous Systemic Sclerosis. *Arthritis Rheumatol*. 2020 Jun 25. Online ahead of print.

Birru Talabi M, Clowse MEB, Blalock SJ, Hamm M, Borrero S. Perspectives of Adult Rheumatologists Regarding Family Planning Counseling and Care:

A Qualitative Study. *Arthritis Care Res (Hoboken)*. 2020 Mar;72(3):452-458.

Birru Talabi M, Clowse MEB, Blalock SJ, **Moreland L**, Siripong N, Borrero S. Contraception Use Among Reproductive-Age Women With Rheumatic Diseases. *Arthritis Care Res (Hoboken)*. 2019 Aug;71(8):1132-1140. Epub 2019 Jul 3.

Birru Talabi M, Clowse MEB, Blalock SJ, Switzer G, Yu L, Chodoff A, Borrero S. Development of ReproKnow, a reproductive knowledge assessment for women with rheumatic diseases. *BMC Rheumatol*. 2019 Oct 21;3:40. eCollection 2019.

Birru Talabi M, Clowse MEB. Antirheumatic medications in pregnancy and breastfeeding. Curr Opin Rheumatol. 2020 May;32(3):238-246.

Birru Talabi M, Eudy AM, Jayasundara M, Haroun T, Nowell WB, Curtis JR, Crow-Hercher R, White CW, Ginsberg S, Clowse MEB. Pregnancy, Periods, and "The Pill": Exploring the Reproductive Experiences of Women with Inflammatory Arthritis. *ACR Open Rheumatol*. 2019 Apr 15;1(2):125-132. eCollection 2019 Apr.

Bueno M, Papazoglou A, Valenzi E, Rojas M, Lafyatis R, Mora AL. Mitochondria, Aging, and Cellular Senescence: Implications for Scleroderma. Curr Rheumatol Rep. 2020 Jun 19;22(8):37.

Chandra T, Tilstra JS. Cerebral venous sinus thrombosis as the initial presentation of systemic lupus erythematosus. Lupus. 2020 Feb;29(2):213-215. Epub 2020 Jan 10.

Cillo AR, Kürten CHL, Tabib T, Qi Z, Onkar S, Wang T, Liu A, Duvvuri U, Kim S, Soose RJ, Oesterreich S, Chen W, **Lafyatis R**, Bruno TC, Ferris RL, Vignali DAA. Immune Landscape of Viral- and Carcinogen-Driven Head and Neck Cancer. *Immunity*. 2020 Jan

14;52(1):183-199.e9. Epub 2020 Jan 7.

Cohen EM, Edwards RR, Bingham CO 3rd, Phillips K, Bolster MB, **Moreland LW**, Neogi T, Marder W, Wohlfahrt A, Clauw D, Lee YC. Pain and Catastrophizing in Patients With Rheumatoid Arthritis: An Observational Cohort Study. *J Clin Rheumatol*. 2019 Aug;25(5):232-236.

Distler JHW, Györfi AH, Ramanujam M, Whitfield ML, Königshoff M, Lafyatis R. Shared and distinct mechanisms of fibrosis. Nat Rev Rheumatol. 2019 Dec;15(12):705-730. Epub 2019 Nov 11.

Elliott SE, Kongpachith S, Lingampalli N, Adamska JZ, Cannon BJ, Blum LK, Bloom MS, Henkel M, **McGeachy MJ, Moreland LW**, Robinson WH. B cells in rheumatoid arthritis synovial tissues encode focused antibody repertoires that include antibodies that stimulate macrophage TNF- α production. *Clin Immunol*. 2020 Mar;212:108360. Epub 2020 Feb 5.

Eng SWM, Olazagasti JM, Goldenberg A, Crowson CS, **Oddis CV**, Niewold TB, Yeung RSM, Reed AM. A Clinically and Biologically Based Subclassification of the Idiopathic Inflammatory Myopathies Using Machine Learning. *ACR Open Rheumatol*. 2020 Mar;2(3):158-166. Epub 2020 Feb 10.

Fuschiotti P. T cells in SSc skin lesions: knowing your enemy. Nat Rev Rheumatol. 2020 May;16(5):253-254.

Gaffen SL, Moutsopoulos NM. Regulation of host-microbe interactions at oral mucosal barriers by type 17 immunity. Sci Immunol. 2020 Jan 3;5(43):eaau4594.

Gaydosik AM, Queen DS, Trager MH, Akilov OE, Geskin L, **Fuschiotti P**. Genome-wide transcriptome analysis of the STAT6-regulated genes in advanced-stage cutaneous T-cell lymphoma. *Blood*. 2020 May

21: blood.2019004725. Online ahead of print.

Gaydosik AM, Tabib T, Geskin LJ, Bayan CA, Conway JF, **Lafyatis R, Fuschiotti P**. Single-Cell Lymphocyte Heterogeneity in Advanced Cutaneous T-cell Lymphoma Skin Tumors. *Clin Cancer Res*. 2019 Jul 15;25(14):4443-4454. Epub 2019 Apr 22.

Goel R, Gribbons KB, Carette S, Cuthbertson D, Hoffman GS, Joseph G, Khalidi NA, Koenig CL, Kumar S, Langford C, Maksimowicz-McKinnon K, McAlear CA, Monach PA, **Moreland LW**, Nair A, Pagnoux C, Quinn KA, Ravindran R, Seo P, Sreih AG, Warrington KJ, Ytterberg SR, Merkel PA, Danda D, Grayson PC. Derivation of an angiographically based classification system in Takayasu's arteritis: an observational study from India and North America. *Rheumatology (Oxford)*. 2020 May 1;59(5):1118-1127.

Gordon RA, **Tilstra JS**, Marinov A, Nickerson KM, Bastacky SI, Shlomchik MJ. Murine lupus is neutrophil elastase-independent in the MRL.FasIp model. *PLoS One*. 2020 Apr 3;15(4):e0226396. eCollection 2020.

Gourh P, Safran SA, Alexander T, Boyden SE, Morgan ND, Shah AA, Mayes MD, Doumatey A, Bentley AR, Shriner D, **Domsic RT**, Medsger TA Jr, Ramos PS, Silver RM, Steen VD, Varga J, Hsu V, Saketkoo LA, Schiopu E, Khanna D, Gordon JK, Kron B, Criswell LA, Gladue H, Derk CT, Bernstein EJ, Bridges SL Jr, Shanmugam VK, Kolstad KD, Chung L, Kafaja S, Jan R, Trojanowski M, Goldberg A, Korman BD, Steinbach PJ, Chandrasekharappa SC, Mullikin JC, Adeyemo A, Rotimi C, Wigley FM, Kastner DL, Boin F, Remmers EF. HLA and autoantibodies define scleroderma subtypes and risk in African and European Americans and suggest a role for molecular mimicry. *Proc Natl Acad Sci U S A*. 2020 Jan 7;117(1):552-562.

Gribbons KB, Ponte C, Carette S, Craven A, Cuthbertson D, Hoffman GS, Khalidi NA, Koenig CL, Langford CA, Maksimowicz-McKinnon K, McAlear CA, Monach PA, **Moreland LW**, Pagnoux C, Quinn KA, Robson JC, Seo P, Sreih AG, Suppiah R, Warrington KJ, Ytterberg SR, Luqmani R, Watts R, Merkel PA, Grayson PC. Patterns of Arterial Disease in Takayasu's Arteritis and Giant Cell Arteritis. *Arthritis Care Res (Hoboken)*. 2019 Aug 23;10:1002/acr.24055. Online ahead of print.

Herath K, Contis L, Aggarwal N, **Birru Talabi M**. A Case of Unrelenting Fevers. *Arthritis Care Res (Hoboken)*. 2019 Oct;71(10):1310-1316.

Hernandez-Mir G, Raphael I, Revu S, Poholek CH, Avery L, Hawse WF, Kane LP, **McGeachy MJ**. The Alzheimer's Disease-Associated Protein BACE1 Modulates T Cell Activation and Th17 Function. *J Immunol*. 2019 Aug 1;203(3):665-675. Epub 2019 Jun 17.

Hughes M, Pauling JD, Jones J, Denton CP, **Domsic RT**, Frech TM, Herrick AL, Khanna D, Matucci-Cerinic M, McKenzie L, Saketkoo LA, Gooberman-Hill R, Moore A. Multicenter Qualitative Study Exploring the Patient Experience of Digital Ulcers in Systemic Sclerosis. *Arthritis Care Res (Hoboken)*. 2020 May;72(5):723-733.

James JA, Guthridge JM, Chen H, Lu R, Bourn RL, Bean K, Munroe ME, Smith M, Chakravarty E, Baer AN, Noaiseh G, Parke A, Boyle K, Keyes-Elstein L, **Coca A**, Utset T, Genovese MC, Pascual V, Utz PJ, Holers VM, Deane KD, Sivits KL, Aberle T, Wallace DJ, McNamara J, Franchimont N, St Clair EW. Unique Sjögren's syndrome patient subsets defined by molecular features. *Rheumatology (Oxford)*. 2020 Apr 1;59(4):860-868.

Jawale CV, Ramani K, Li DD, Coleman BM, Oberoi RS, Kupul S, Lin L, Desai JV, Delgoffe GM, Lionakis MS, Bender FH, Prokopenko AJ, Nolin TD, **Gaffen SL, Biswas PS**. Restoring glucose uptake rescues neutrophil dysfunction and protects against systemic fungal infection in mouse models of kidney disease. *Sci Transl Med*. 2020 Jun 17;12(548):eaay5691.

Kass DJ, Nouraie M, Glassberg MK, Ramreddy N, Fernandez K, Harlow L, Zhang Y, Chen J, Kerr GS, Reimold AM, England BR, Mikuls TR, Gibson KF, Dellaripa PF, Rosas IO, **Oddis CV, Ascherman DP**. Comparative Profiling of Serum Protein Biomarkers in Rheumatoid Arthritis-Associated Interstitial Lung Disease and Idiopathic Pulmonary Fibrosis. *Arthritis Rheumatol*. 2020 Mar;72(3):409-419. Epub 2020 Feb 5.

Khanna D, Spino C, Johnson S, Chung L, Whitfield ML, Denton CP, Berrocal V, Franks J, Mehta B, Molitor J, Steen VD, **Lafyatis R**, Simms RW, Gill A, Kafaja S, Frech TM, Hsu V, **Domsic RT**, Pope JE, Gordon JK, Mayes MD, Schiopu E, Young A, Sandorfi N, Park J, Hant FN, Bernstein EJ, Chatterjee S, Castellino

FV, Ajam A, Wang Y, Wood T, Allanore Y, Matucci-Cerinic M, Distler O, Singer O, Bush E, Fox DA, Furst DE. Abatacept in Early Diffuse Cutaneous Systemic Sclerosis: Results of a Phase II Investigator-Initiated, Multicenter, Double-Blind, Randomized, Placebo-Controlled Trial. *Arthritis Rheumatol*. 2020 Jan;72(1):125-136. Epub 2019 Dec 10.

Kirkpatrick L, Collins A, Sogawa Y, **Birru Talabi M**, Harrison E, Kazmerski TM. Sexual and reproductive healthcare for adolescent and young adult women with epilepsy: A qualitative study of pediatric neurologists and epileptologists. *Epilepsy Behav*. 2020 Mar;104(Pt A):106911. Epub 2020 Jan 24.

Lear TB, Lockwood KC, Larsen M, Tuncer F, Kennerdell JR, Morse C, Valenzi E, Tabib T, Jurczak MJ, Kass DJ, Evankovich JW, Finkel T, **Lafyatis R**, Liu Y, Chen BB. Kelch-like protein 42 is a profibrotic ubiquitin E3 ligase involved in systemic sclerosis. *J Biol Chem*. 2020 Mar 27;295(13):4171-4180. Epub 2020 Feb 17.

Lear TB, McKelvey AC, Evankovich JW, Rajbhandari S, Coon TA, Dunn SR, Londino JD, McVerry BJ, Zhang Y, Valenzi E, Burton CL, Gordon R, Gingras S, Lockwood KC, Jurczak MJ, **Lafyatis R**, Shlomchik MJ, Liu Y, Chen BB. KIAA0317 regulates pulmonary inflammation through SOCS2 degradation. *JCI Insight*. 2019 Oct 3;4(19):e129110.

Leclair V, Landon-Cardinal O, **Aggarwal R**, Bansback N, Campbell C, Feldman BM, Jarry M, McNamara S, White B, Hudson M; CIMS Investigators. Proceedings of the 2019 Canadian Inflammatory Myopathy Study Symposium: Clinical Trial Readiness in Myositis. *J Rheumatol*. 2020 Jun 15;jrheum.200480. Online ahead of print.

Li X, Bechara R, Zhao J, **McGeachy MJ, Gaffen SL**. IL-17 receptor-based signaling and implications for disease. *Nat Immunol*. 2019 Dec;20(12):1594-1602. Epub 2019 Nov 19.

Li X, Kim SE, Chen TY, Wang J, Yang X, Tabib T, Tan J, Guo B, Fung S, Zhao J, Sembrat J, Rojas M, Shiva S, **Lafyatis R**, St Croix C, Alder JK, Di YP, Kass DJ, Zhang Y. Toll interacting protein protects bronchial epithelial cells from bleomycin-induced apoptosis. *FASEB J*. 2020 Jun 28. Online ahead of print.

Liu C, Chikina M, Deshpande R, Menk AV, Wang T, Tabib T, Brunazzi EA, Vignali KM, Sun M, Stolz DB, **Lafyatis RA**, Chen W, Delgoffe GM, Workman CJ, Wendell SG, Vignali DAA. Treg Cells Promote the SREBP1-Dependent Met-

abolic Fitness of Tumor-Promoting Macrophages via Repression of CD8⁺ T Cell-Derived Interferon- γ . *Immunity*. 2019 Aug 20;51(2):381-397.e6. Epub 2019 Jul 23.

Mackey RH, Kuller LH, **Moreland LW**. Inflammatory joint diseases and atherosclerosis: time to look beyond the 'lipid paradox'. *Curr Opin Lipidol*. 2019 Aug;30(4):342-349.

Maehara T, Kaneko N, Perugino CA, Mattoo H, Kers J, Allard-Chamard H, Mahajan VS, Liu H, Murphy SJ, Ghebremichael M, Fox D, Payne AS, **Lafyatis R**, Stone JH, Khanna D, Pillai S. Cytotoxic CD4⁺ T lymphocytes may induce endothelial cell apoptosis in systemic sclerosis. *J Clin Invest*. 2020 May 1;130(5):2451-2464.

Mallampalli RK, Li X, Jang JH, Kaminski T, Hoji A, Coon T, Chandra D, Welty S, Teng Y, Sembrat J, Rojas M, Zhao Y, **Lafyatis R**, Zou C, Sciruba F, Sundt P, Lan L, Nyunoya T. Cigarette smoke exposure enhances transforming acidic coiled-coil-containing protein 2 turnover and thereby promotes emphysema. *JCI Insight*. 2020 Jan 30;5(2):e125895.

McMahan ZH, **Domsic RT**, Zhu L, Medsger TA, Casciola-Rosen L, Shah AA. Anti-RNPC-3 (U11/U12) Antibodies in Systemic Sclerosis in Patients With Moderate-to-Severe Gastrointestinal Dysmotility. *Arthritis Care Res (Hoboken)*. 2019 Sep;71(9):1164-1170. Epub 2019 Aug 6.

Moghadam-Kia S, Aggarwal R, Oddis CV. Myositis in clinical practice-relevance of new antibodies. *Best Pract Res Clin Rheumatol*. 2018 Dec;32(6):887-901. Epub 2019 Apr 17.

Moghadam-Kia S, Oddis CV, Ascherman DP, Aggarwal R. Risk Factors and Cancer Screening in Myositis. *Rheum Dis Clin North Am*. 2020 Aug;46(3):565-576. Epub 2020 Jun 7.

Morse C, Tabib T, Sembrat J, Buschur KL, Bittar HT, Valenzi E, Jiang Y, Kass DJ, Gibson K, Chen W, Mora A, Benos PV, Rojas M, **Lafyatis R**. Proliferating SPP1/MERTK-expressing macrophages in idiopathic pulmonary fibrosis. *Eur Respir J*. 2019 Aug 22;54(2):1802441. Print 2019 Aug.

Nagaraja V, Spino C, Bush E, Tsou PS, **Domsic RT, Lafyatis R**, Frech T, Gordon JK, Steen VD, Khanna D. A multicenter randomized, double-blind, placebo-controlled pilot study to assess the efficacy and safety of riociguat in systemic sclerosis-associated digital ulcers. *Arthritis Res Ther*. 2019 Sep

3;21(1):202.

Naglik JR, **Gaffen SL**, Hube B. *Candidalysin: discovery and function in Candida albicans infections*. *Curr Opin Microbiol*. 2019 Dec;52:100-109. Epub 2019 Jul 6.

Oddis CV. Myopathy for the general internist: Statins and much more. *Cleve Clin J Med*. 2019 Oct;86(10):656-664.

Pachera E, Assassi S, Salazar GA, Stelato M, Renoux F, Wunderlin A, Blyszczuk P, **Lafyatis R**, Kurreeman F, de Vries-Bouwstra J, Messemaker T, Feghali-Bostwick CA, Rogler G, van Haaften WT, Dijkstra G, Oakley F, Calcagni M, Schniering J, Maurer B, Distler JH, Kania G, Frank-Bertoncelj M, Distler O. Long noncoding RNA H19X is a key mediator of TGF- β -driven fibrosis. *J Clin Invest*. 2020 Jun 30:135439. Online ahead of print.

Pendergrass SA, Buyske S, Jeff JM, Frase A, Dudek S, Bradford Y, Ambite JL, Avery CL, Buzkova P, Deelman E, Fesinmeyer MD, Haiman C, Heiss G, Hindorff LA, Hsu CN, Jackson RD, Lin Y, Le Marchand L, Matise TC, Monroe KR, **Moreland L**, North KE, Park SL, Reiner A, Wallace R, Wilkens LR, Kooperberg C, Ritchie MD, Crawford DC. A phenotype-wide association study (PheWAS) in the Population Architecture using Genomics and Epidemiology (PAGE) study reveals potential pleiotropy in African Americans. *PLoS One*. 2019 Dec 31;14(12):e0226771. eCollection 2019.

Peters BM, Coleman BM, Willems HME, Barker KS, Aggor FEY, Cipolla E, Verma AH, Bishu S, Huppler AH, Bruno VM, **Gaffen SL**. The Interleukin (IL) 17R/IL-22R Signaling Axis Is Dispensable for Vulvovaginal Candidiasis Regardless of Estrogen Status. *J Infect Dis*. 2020 Apr 7;221(9):1554-1563.

Quinn KA, Gelbard A, Sibley C, Sirajuddin A, Ferrada MA, Chen M, Cuthbertson D, Carette S, Khalidi NA, Koenig CL, Langford CA, McAlear CA, Monach PA, **Moreland LW**, Pagnoux C, Seo P, Specks U, Sreih AG, Ytterberg SR, Merkel PA, Grayson PC. Subglottic stenosis and endobronchial disease in granulomatosis with polyangiitis. *Rheumatology (Oxford)*. 2019 Dec 1;58(12):2203-2211.

Quinn KA, Gribbons KB, Carette S, Cuthbertson D, Khalidi NA, Koenig CL, Langford CA, McAlear CA, Monach PA, **Moreland LW**, Pagnoux C, Seo P, Sreih AG, Warrington KJ, Ytterberg SR,

Novakovich E, Merkel PA, Grayson PC. Patterns of clinical presentation in Takayasu's arteritis. *Semin Arthritis Rheum*. 2020 May 19;50(4):576-581. Online ahead of print.

Ramani K, **Biswas PS**. Interleukin-17: Friend or foe in organ fibrosis. *Cytokine*. 2019 Aug;120:282-288. 2019 Feb 14.

Rivadeneira DB, DePeaux K, Wang Y, Kulkarni A, Tabib T, Menk AV, Sam-path P, **Lafyatis R**, Ferris RL, Sarkar SN, Thorne SH, Delgoffe GM. Oncolytic Viruses Engineered to Enforce Leptin Expression Reprogram Tumor-Infiltrating T Cell Metabolism and Promote Tumor Clearance. *Immunity*. 2019 Sep 17;51(3):548-560.e4. Epub 2019 Aug 27.

Rodriguez-Pla A, Warner RL, Cuthbertson D, Carette S, Khalidi NA, Koenig CL, Langford CA, McAlear CA, **Moreland LW**, Pagnoux C, Seo P, Specks U, Sreih AG, Ytterberg SR, Johnson KJ, Merkel PA, Monach PA; for the Vasculitis Clinical Research Consortium. Evaluation of Potential Serum Biomarkers of Disease Activity in Diverse Forms of Vasculitis. *J Rheumatol*. 2020 Jul 1;47(7):1001-1010. Epub 2019 Sep 1.

*Sammaritano LR, Bermas BL, Chakravarty EE, Chambers C, Clowse MEB, Lockshin MD, Marder W, Guyatt G, Branch DW, Buyon J, Christopher-Stine L, Crow-Hercher R, Cush J, Druzina M, Kavanaugh A, Laskin CA, Plante L, Salmon J, Simard J, Somers EC, Steen V, Tedeschi SK, Vinet E, White CW, Yazdany J, Barbhaiya M, Bettendorf B, Eudy A, Jayatilake A, Shah AA, Sullivan N, Tarter LL, **Birru Talabi M**, Turgunbaev M, Turner A, D'Anci KE. 2020 American College of Rheumatology Guideline for the Management of Reproductive Health in Rheumatic and Musculoskeletal Diseases. *Arthritis Care Res (Hoboken)*. 2020 Apr;72(4):461-488. Epub 2020 Feb 26./*Arthritis Rheumatol*. 2020 Apr;72(4):529-556. Epub 2020 Feb 23.*

Saygin D, **Domsic RT**. Pulmonary Arterial Hypertension In Systemic Sclerosis: Challenges In Diagnosis, Screening And Treatment. *Open Access Rheumatol*. 2019 Dec 27;11:323-333. eCollection 2019.

Saygin D, **Oddis CV**, Marder G, **Moghadam-Kia S**, Nandkumar P, Neiman N, Dzanko S, Koontz D, **Aggarwal R**. Follow-up results of myositis patients treated with H. P. Acthar gel. *Rheumatology (Oxford)*. 2020 Mar 11:keaa076. Online ahead of print.

Saygin D, Tabib T, Bittar HET, Valenzi E, Sembrat J, Chan SY, Rojas M, **Lafyatis R**. Transcriptional profiling of lung cell populations in idiopathic pulmonary arterial hypertension. *Pulm Circ*. 2020

Feb 28;10(1). eCollection 2020 Jan-Mar.

Skaug B, Khanna D, Swindell WR, Hinchcliff ME, Frech TM, Steen VD, Hant FN, Gordon JK, Shah AA, Zhu L, Zheng WJ, Browning JL, Barron AMS, Wu M, Visvanathan S, Baum P, Franks JM, Whitfield ML, Shanmugam VK, **Domsic RT**, Castellino FV, Bernstein EJ, Wareing N, Lyons MA, Ying J, Charles J, Mayes MD, Assassi S. Global skin gene expression analysis of early diffuse cutaneous systemic sclerosis shows a prominent innate and adaptive inflammatory profile. *Ann Rheum Dis*. 2020 Mar;79(3):379-386. Epub 2019 Nov 25.

Spiera R, Hummers L, Chung L, Frech TM, **Domsic R**, Hsu V, Furst DE, Gordon J, Mayes M, Simms R, **Lafyatis R**, Martynov V, Wood T, Whitfield ML, Constantine S, Lee E, Dgetluck N, White B. Safety and Efficacy of Lenabasum in a Phase II, Randomized, Placebo-Controlled Trial in Adults With Systemic Sclerosis. *Arthritis Rheumatol*. 2020 Apr 26. Online ahead of print.

Tilstra JS, John S, Gordon RA, Leibler C, Kashgarian M, Bastacky S, Nickerson KM, Shlomchik MJ. B cell-intrinsic TLR9 expression is protective in murine lupus. *J Clin Invest*. 2020 Jun 1;130(6):3172-3187.

Tomasson G, Farrar JT, Cuthbertson D, McAlear CA, Ashdown S, Cronholm PF, Dawson J, Gebhart D, Lanier G, Luqmani RA, Milman N, Peck J, Robson JC, Shea JA, Carette S, Khalidi N, Koening CL, Langford CA, Monach PA, **Moreland L**, Pagnoux C, Specks U, Sreih AG, Ytterberg SR, Merkel PA; Vasculitis Clinical Research Consortium. Feasibility and Construct Validation of the Patient Reported Outcomes Measurement Information System in Systemic Vasculitis. *J Rheumatol*. 2019 Aug;46(8):928-934. Epub 2019 Mar 1.

Traineau H, **Aggarwal R**, Monfort JB, Senet P, **Oddis CV**, Chizzolini C, Barbaud A, Francès C, Arnaud L, Chasset F. Treatment of calcinosis cutis in systemic sclerosis and dermatomyositis: A review of the literature. *J Am Acad Dermatol*. 2020 Feb;82(2):317-325. Epub 2019 Jul 11.

Trejejo-Nunez G, Elsegeiny W, Aggor FEY, Tweedle JL, Kaplan Z, Gandhi P, Castillo P, Ferguson A, Alcorn JF, Chen K, Kolls JK, **Gaffen SL**. Interleukin-22 (IL-22) Binding Protein Constrains IL-22 Activity, Host Defense, and Oxidative Phosphorylation Genes during

Pneumococcal Pneumonia. *Infect Immun*. 2019 Oct 18;87(11):e00550-19. Print 2019 Nov.

Valenzi E, Bulik M, Tabib T, Morse C, Sembrat J, Trejo Bittar H, Rojas M, **Lafyatis R**. Single-cell analysis reveals fibroblast heterogeneity and myofibroblasts in systemic sclerosis-associated interstitial lung disease. *Ann Rheum Dis*. 2019 Oct;78(10):1379-1387. Epub 2019 Aug 12.

Wolgemuth T, Stransky OM, Chodoff A, Kazmerski TM, Clowse MEB, **Birru Talabi M**. Exploring the Preferences of Women Regarding Sexual and Reproductive Health Care in the Rheumatology Context: A Qualitative Study. *Arthritis Care Res (Hoboken)*. 2020 May 6. Online ahead of print.

Xue D, Tabib T, Morse C, **Lafyatis R**. Transcriptome landscape of myeloid cells in human skin reveals diversity, rare populations and putative DC progenitors. *J Dermatol Sci*. 2020 Jan;97(1):41-49. Epub 2019 Nov 29.

Zhang F, Wei K, Slowikowski K, Fonseka CY, Rao DA, Kelly S, Goodman SM, Tabeachian D, Hughes LB, Salomon-Escoto K, Watts GFM, Jonsson AH, Rangel-Moreno J, Meednu N, Roza C, Apruzzese W, Eisenhaure TM, Lieb DJ, Boyle DL, Mandelin AM 2nd; Accelerating Medicines Partnership Rheumatoid Arthritis and Systemic Lupus Erythematosus (AMP RA/SLE) Consortium, Boyce BF, DiCarlo E, Gravallese EM, Gregersen PK, **Moreland L**, Firestein GS, Hachohen N, Nusbaum C, Lederer JA, Perlman H, Pitzalis C, Filer A, Holers VM, Bykerk VP, Donlin LT, Anolik JH, Brenner MB, Raychaudhuri S. Defining inflammatory cell states in rheumatoid arthritis joint synovial tissues by integrating single-cell transcriptomics and mass cytometry. *Nat Immunol*. 2019 Jul;20(7):928-942. Epub 2019 May 6.

Zhang Y, Jiang M, Nourai M, Roth MG, Tabib T, Winters S, Chen X, Sembrat J, Chu Y, Cardenas N, Tudor RM, Herzog EL, Ryu C, Rojas M, **Lafyatis R**, Gibson KF, McDyer JF, Kass DJ, Alder JK. GDF15 is an epithelial-derived biomarker of idiopathic pulmonary fibrosis. *Am J Physiol Lung Cell Mol Physiol*. 2019 Oct 1;317(4):L510-L521. Epub 2019 Aug 21.

Zhou C, Monin L, Gordon R, Aggor FEY, Bechara R, Edwards TN, Kaplan DH, Gingras S, **Gaffen SL**. An IL-17F.S65L Knock-In Mouse Reveals Similarities and Differences in IL-17F Function in

Oral Candidiasis: A New Tool to Understand IL-17F. *J Immunol*. 2020 Aug 1;205(3):720-730. Epub 2020 Jun 29.

ACKNOWLEDGMENTS

AND PHOTO CREDITS

EXECUTIVE EDITORS

Christopher O'Donnell, PhD

*Assistant Vice Chancellor for Special Projects in the Health Sciences
Executive Vice Chair for Academic Affairs, Department of Medicine
Professor of Medicine, Division of Pulmonary, Allergy and Critical Care Medicine*

Nichole Radulovich, MEd, CRA

Executive Administrator

SENIOR EDITOR AND GRAPHIC DESIGN

Katie Nauman

PROJECT COORDINATOR

Kristen Bagwell

DATABASE DEVELOPMENT

Nemanja Tomic

GRANTS AND RESEARCH EXPENDITURES

Jim Jarvis and Ed Hughes

RHEUMATOLOGY CONTENT MANAGER

Linda Sadej

Photo credits:

Cover photo courtesy of Dr. Partha Biswas.

All other photos courtesy of Department of Medicine/University of Pittsburgh faculty and staff except pages 4-5: 7active Studio, Dreamstime photo ID: 84225297, and page 11: Igokapil, Dreamstime photo ID: 88864214.

Google maps, accessed October 2020 (pages 12-15).

© 2020 Office of Academic Affairs, Department of Medicine, University of Pittsburgh



University of
Pittsburgh

Department of Medicine
School of Medicine

1218 Scaife Hall
3550 Terrace Street
Pittsburgh, PA 15261

Phone 412.648.9636

Website www.dom.pitt.edu