



# DIVISION OF RHEUMATOLOGY

## Mission

The mission of the Division of Rheumatology is to ensure outstanding care for children with rheumatologic diseases now and in the future. To accomplish this mission, the division is dedicated to the following goals:

- To provide state-of-the-art, compassionate care to children with rheumatologic disorders.
- To generate new knowledge by clinical and basic research that will lead to improved care and cure.
- To provide high-quality education and training in the field of pediatric rheumatology to students, trainees, and other health professionals.

## FACULTY

### A. Kim Ritchey, MD

Professor of Pediatrics  
Vice Chair for International Affairs  
Interim Chief, Division of  
Rheumatology

### Scott Canna, MD

Assistant Professor of Pediatrics  
and Immunology  
Scholar, Mellon Institute for  
Pediatric Research

### Elaine A. Cassidy, MD

Assistant Professor of Pediatrics  
Associate Director, Fellowship Program

### Abbe N. de Vallejo, PhD

Associate Professor of Pediatrics  
and Immunology  
Director, Flow Core Facility  
Faculty, University of Pittsburgh  
Cancer Institute  
Faculty, McGowan Institute for  
Regenerative Medicine  
Investigator, Pittsburgh Claude  
Pepper Older Americans  
Independence Center

### Daniel A. Kietz, MD, PhD

Professor of Pediatrics and  
Internal Medicine

Director, Fellowship Program  
Clinical Director, Rheumatology

### Margalit E. Rosenkranz, MD

Assistant Professor of Pediatrics

### Kathryn S. Torok, MD

Assistant Professor of Pediatrics  
Assistant Professor of Clinical and  
Translational Science

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## OVERVIEW OF DIVISION

**T**he Pediatric Rheumatology Division is composed of three full-time clinicians, one clinician/investigator, and two basic scientists. Members of the division are highly regarded as outstanding clinicians, investigators, and educators. Clinicians routinely receive the highest patient satisfaction scores in the hospital. Investigators are actively and successfully competing for research support in times of limited funding. A very highly regarded new investigator, Scott Canna, MD, joined the division, and his expertise broadens the basic research portfolio of the division. An additional basic scientist, Amanda Poholek, PhD, will be joining the division in the next fiscal year. The fellowship program for training pediatric rheumatologists is highly regarded nationally, and every year the program accepts one outstanding fellow. One challenge for the division has been recruitment of a permanent division chief. Nonetheless, because of outstanding faculty and excellent support staff, the division remains highly effective and productive at all levels.

## CLINICAL ACTIVITIES

**T**he clinical service continues to be a model of efficiency in delivery of care. Most clinical activity is in the outpatient arena. Within the past fiscal year, the division began to offer same-day clinic appointments. All patients who called for an appointment were offered an appointment that day, and 68% of the same-day appointments were filled. Clinic volume was 4,889 visits, of which 33% were new patients and 67% return visits. This represents a 1.3% increase in outpatient volume and 2.85% increase in charges.

Many patients with rheumatologic disease require prolonged infusions of medication. Activity in the Infusion Center has increased over the past decade as new medications have become available. In this fiscal year, the division supervised 751 infusions of medications in the Infusion Center. Increasingly, ultrasound is being used in the clinic to document joint disease as well as response to treatment to enhance patient care. Injection of medication directly into a joint is an important part of overall treatment management of patients with rheumatologic disorders and joint disease. The division performed 134 joint injections during the past year.

The division primarily provides a consultative service for hospitalized patients. Approximately 90 consultations were performed last year.

Daniel Kietz, MD, PhD, continues to be the clinical director of the division. Because he is trained in both medical and pediatric rheumatology, he attends a satellite clinic for adolescents, young adults, and adult patients within the UPMC Lupus Center of Excellence in the Pittsburgh neighborhood of Oakland.

Kathryn Torok is a national leader in the area of pediatric scleroderma and the clinical director of one of the few pediatric scleroderma clinics in the nation. The center at Children's Hospital of Pittsburgh is part of the University of Pittsburgh Scleroderma Center. Patients are seen for clinical care and are also enrolled into numerous studies regarding pediatric scleroderma.

## RESEARCH AND OTHER SCHOLARLY ACTIVITIES

The division is actively involved in clinical, translational, and basic research. The clinical faculty participate in CARRA—the Childhood Arthritis and Rheumatology Research Alliance—the main national research group for collaborative research at a national level. They are involved in registry activity and several prospective, observational outcome trials. With Margalit Rosenkranz's leadership, the division is also involved in pharmaceutical trials of novel agents for the treatment of rheumatology conditions in children. Torok's research is focused on the inflammatory and profibrotic cytokines involved in pediatric scleroderma. She uses a translational approach by comparing these proteins in serum and skin biopsy specimens with clinical parameters of disease activity and damage in her pediatric scleroderma cohort. Abbe De Vallejo leads a basic research program on the immunobiology of aging and inflammatory syndromes. Canna uses genetic and functional insights from patients and model systems to find ways to subtype patients with systemic inflammatory response syndrome (SIRS)/sepsis in diagnostically and therapeutically meaningful ways. Grant dollars to the division totaled \$1,083,556, of which \$985,381 were direct dollars. Total grant dollars increased by 75% when compared to the prior year.

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### A. Kim Ritchey, MD

#### RESEARCH

*Children's Oncology Group (COG).* A. Kim Ritchey is an active clinical investigator and local principal investigator (PI) for a number of COG trials at Children's Hospital of Pittsburgh of UPMC. The local PI of a COG trial is responsible for overseeing the research activity of that protocol at the institution. One such trial is testing the efficacy of the tyrosine kinase inhibitor dasatinib when it is added to standard chemotherapy for children with Philadelphia chromosome-positive acute lymphoblastic leukemia. This trial is partially funded by Bristol-Myers Squibb. Ritchey is involved with oversight of the development and performance of pediatric cancer clinical trials at the national level. He is a member of the National Cancer Institute (NCI) Pediatric Leukemia/Lymphoma Steering Committee, which reviews all COG proposals for clinical research in the areas of leukemia and lymphoma. As chair of the COG Data Safety Monitoring Committee, he leads the group which has oversight of all phase II and III clinical trials.

Ritchey served as local PI for the Pediatric Brain Tumor Consortium, a collaboration of 12 institutions funded by the NCI to offer potentially practice-changing phase I research for children with brain tumors.

Ritchey served as the local PI for a study of the thrombopoietin agonist romiplostim for children with chronic idiopathic thrombocytopenic purpura.

#### ADVISORY COMMITTEE MEMBERSHIPS

##### National:

- Chair, Data Safety Monitoring Committee A, COG
- Pediatric Leukemia/Lymphoma Review Committee, NCI, National Institutes of Health (NIH)

##### Departmental:

- Center for Rare Diseases Committee
- Leadership Council
- Leadership Team
- Executive Committee
- Promotion and Tenure Committee

##### Divisional (hematology/oncology):

- Fellowship Oversight Committee
- Chair, Clinical Competency Committee
- Chair, Advanced Practice Provider Committee

##### Hospital-based:

- Global Health Service Committee
- Medical Executive Committee



A. Kim Ritchey, MD  
Interim Division Chief, Rheumatology

## Regional:

- Board of Directors, Hemophilia Center of Western Pennsylvania
- Board of Directors, Make-a-Wish Foundation

## EDITORSHIPS

- Editor-in-chief, Pediatric Treatment Board, Physician Data Query, NCI, NIH

## PROFESSIONAL AFFILIATIONS/SOCIETY MEMBERSHIPS

- American Society of Clinical Oncology
- American Society of Hematology

- American Society of Pediatric Hematology/Oncology
- COG
- Thrombosis and Hemostasis Research Society

## HONORS

- *Best Doctors in America*, Woodward/White, Inc.
- Best Doctors, *Pittsburgh Magazine*
- UPMC Honor Roll: Excellence in Patient Care (top three of 70)
- Patient Satisfaction Award, Children's Hospital of Pittsburgh of UPMC
- Top 10 Press Ganey faculty scores

**Scott W. Canna, MD**

## RESEARCH

Inflammation is a core pathogenic mechanism in virtually every disease process. Systemically, this culminates in SIRS, identified since ancient times as sepsis. Blocking inflammation in SIRS has been largely disappointing, conferring neither broad benefit nor harm. This research uses genetic and functional insights from patients and model systems to find ways to subtype patients with SIRS/sepsis in diagnostically and therapeutically meaningful ways.

Patients found to have monogenic defects causing excessive innate immune responses have been particularly helpful. Most “autoinflammatory” patients have chronic organ-specific or systemic inflammation but not typically SIRS. The dramatic response of many “autoinflammatory” patients to inhibition of the inflammasome-activated cytokine interleukin (IL)-1 has reinvigorated the quest for anti-inflammatory targets in SIRS and reinforced the therapeutic potential of targeting the inflammasome and related innate immune pathways.

This group studies the intersections of hyper- and auto-inflammation, specifically two related disorders that typify the concept of hyperinflammatory SIRS: hemophagocytic lymphohistiocytosis and macrophage activation syndrome. The researchers combine clinical insights from rheumatology and innate immunity with basic models of overwhelming systemic inflammation to define new disease subtypes and disease activity biomarkers, to flesh out mechanisms of inflammatory disease, and to test promising therapeutic strategies.

## REGULATORY EXPERIENCE

## Human:

- Associate investigator and site PI, “Therapeutic Use of Tadekinig Alfa in NLRC4 Mutation and XIAP Deficiency,” NCT03113760, 2017 to the present
- PI, University of Pittsburgh Human Subjects Protocol PRO16120025, “Natural History of Autoinflammatory Disease,” 2017 to the present
- Associate investigator, National Institute of Allergy and Infectious Diseases protocol 17-I-0016, “Natural History, Pathogenesis, and Outcome of Autoinflammatory Diseases (NOMID/CAPS, DIRA, CANDLE, SAVI, NLRC4-MAS, Still's-like Diseases, and Other Undifferentiated Autoinflammatory Diseases),” NCT02974595, 2016 to the present
- Sub-investigator, CARRA Legacy Registry, 2013 to the present

## Animal:

- PI, Animal Protocol 16129653, 2016 to the present

## STUDY SECTIONS

- CARRA Scientific Review Committee, 2017 to the present
- Peer reviewer, Rheumatology Research Foundation Innovative Research Award, Basic Science Section, 2016 to the present
- Abstract reviewer, American College of Rheumatology annual scientific meeting, 2016 to the present

## ADVISORY COMMITTEE MEMBERSHIPS

- Medical Advisory Board, AB2Bio Ltd., Geneva, Switzerland, 2015 to the present

## EDITORSHIPS

- *Arthritis and Rheumatology*
- *Frontiers in Immunology*

**MAJOR LECTURESHIPS**

- “IL-18 at the Intersection of Auto- and Hyperinflammation,” invited presentation, KFO 249 Symposium: Defects of the Innate Immune System in Autoinflammation and Autoimmunity, Dresden, Germany, August 2017
- “IL-18 at the Intersection of Auto- and Hyperinflammation,” invited presentation, FOCIS annual meeting, NIH Immunology Interest Group Symposium, Chicago, Ill., June 2017
- “Chronic IL-18 of Diverse Origins Defines and Drives the Hyperinflammatory Macrophage Activation Syndrome,” oral abstract presentation, Keystone Pattern Recognition Signaling Symposium, Banff, Alberta, Canada, March 2017
- “CNS Manifestations of Autoinflammatory Disease,” Children’s Hospital of Pittsburgh Neuroimmunology Conference, Pittsburgh, Pa., March 2017
- “Cytokines in Systemic Inflammation: Following the Monogenic Breadcrumb Path,” Children’s Hospital of Pittsburgh Molecular Medicine Research Seminar, Pittsburgh, Pa., January 2017
- “IL-18 at the Intersection of Auto- and Hyper-Inflammation,” University of Pittsburgh Department of Immunology Seminar Series, Pittsburgh, Pa., December 2016

**PROFESSIONAL AFFILIATIONS/SOCIETY MEMBERSHIPS**

- American Academy of Pediatrics, 2006 to the present
- American College of Rheumatology, 2009 to the present
- CARRA, 2010 to the present
- Histiocyte Society, 2013 to the present

**Elaine A. Cassidy, MD**

**PROFESSIONAL AFFILIATIONS/SOCIETY MEMBERSHIPS**

- American Academy of Pediatrics
- American College of Rheumatology

**MAJOR LECTURESHIPS**

- “Juvenile Idiopathic Arthritis: Classification, Diagnosis, and Management,” Dubois Regional Medical Center continuing medical education course
- “Pediatric Rheumatology: Diagnoses, Testing, and Treatment,” Arthritis Foundation 2016 Family Day, Pittsburgh, Pa.
- Longitudinal Alliance Project, University of Pittsburgh School of Medicine

**Abbe N. de Vallejo, PhD**

**RESEARCH**

Abbe N. de Vallejo leads a research program examining the immunobiology of aging and inflammatory syndromes.

His research on inflammatory syndromes focuses on rheumatic diseases. The three primary diseases of interest are adult rheumatoid arthritis, juvenile idiopathic arthritis, and juvenile dermatomyositis. Studies are aimed at examining functional subsets of T cells that either alleviate or aggravate disease manifestation and how such cell subsets are affected by medications or are themselves effectors of favorable outcomes of medications. The ultimate goal of these studies is to develop alternative cell-targeted therapies.

De Vallejo’s research on aging takes a developmental view of aging rather than focusing on terminal stages of adult life. Projects examine the aging process across the life span, including mechanisms of lymphocyte senescence, immune/endocrine interactions in the regulation of life span, and immunologic predictors of health outcomes of aging and longevity. The studies include analyses of tissue specimens from human subjects from two large cohorts of elderly persons and from a novel long-lived mouse model. The goal of the projects is to develop age-targeted strategies to enhance immune function.

**STUDY SECTIONS**

- National Scientific Advisory Council, American Federation of Aging Research
- Hypersensitivity, Allergy, and Immune-Mediated Diseases Study Section, Center for Scientific Review, NIH
- Special Emphasis Panel: ZRG1 BDCN-M (02) M, Disorders in Brain Development and in Aging, Center for Scientific Review, NIH

**ADVISORY COMMITTEE MEMBERSHIPS**

National:

- Abstract Selection Committee, Gerontological Society of America

Departmental/interdepartmental:

- Immunology Seminar Series Steering Committee, University of Pittsburgh School of Medicine

University level:

- Healthy Brain Aging Workgroup, University of Pittsburgh Institute on Aging
- Immunology Graduate Program Steering Committee, University of Pittsburgh School of Medicine
- Tenure and Academic Freedom Committee (re-elected), Faculty Senate, University of Pittsburgh
- Faculty Assembly (elected), University Senate, University of Pittsburgh

**EDITORSHIPS**

- Editorial Board, *Aging and Disease*
- Editorial Board, *Rheumatology Current Research*

**MAJOR LECTURESHIPS**

- “Wait-to-Height Ratio, Vascular Health, and Cardiometabolic Risk in Vitamin D-Deficient Overweight and Obese Children,” 2017 Annual Meeting of the Pediatric Academic Societies, San Francisco, Calif., May 2017
- “*In Vivo* Imaging of Venous Side Microcirculation in Older Adults at 7T,” Conference on Alzheimer’s Disease as a Neurovascular Inflammatory Disorder, New York Academy of Sciences, New York, N.Y., December 2016
- “Deletion of Pregnancy-Associated Plasma Protein A (PAPPA) Protects Long-Lived Mice from LPS Endotoxigenesis,” IGF Basic Science Symposium, Eighth International Congress of the IGF and Growth Hormone Research Societies, Tel Aviv, Israel, November 2016
- “Synovitis in Juvenile Idiopathic Arthritis Is Mediated by TCR-Independent Axis of Inflammation,” Autoimmunity Workshop, 2016 International Congress of Immunology, Melbourne, Australia, August 2016

**PROFESSIONAL AFFILIATIONS/SOCIETY MEMBERSHIPS**

- American Association of Immunologists
- American College of Rheumatology
- Gerontological Society of America

**HONORS**

- Julie Martin Career Award on Aging, American Federation for Aging Research
- Fellow, Royal Society of Medicine, London, England
- Elected fellow, Global Healthspan Policy Institute, Washington, D.C.
- Medical Student Research Mentoring Merit Award, University of Pittsburgh School of Medicine, 2016
- Lifetime Membership, Growth Hormone Research Society
- Travel Award, Eighth International Congress of the IGF Growth Hormone Research Societies, GRS/IGF Secretariat, 2016
- Faculty Travel Award, International Congress of Immunology, American Association of Immunologists, 2016

**Daniel A. Kietz, MD, PhD****RESEARCH**

Daniel A. Kietz is engaged in various collaborative, industry-sponsored, clinical translation projects on pediatric rheumatic diseases pertaining to the longitudinal perspective of disease courses, treatment responses, and outcomes. He is PI of a phase IV study on safety and efficacy of abatacept in juvenile idiopathic arthritis, a prevalent

autoimmune disease of childhood for which the underlying immune mechanisms are not well understood. He is also co-investigator on a project examining the basic immunology of juvenile idiopathic arthritis.

Kietz is interested in transition of pediatric/adolescent patients into adulthood. Given his qualification as a rheumatologist for children and adults, he can continue providing care to his patients after they reach adulthood. Kietz has interest in investigating the influence of this continuity of care with comprehensive anticipatory guidance on long-term outcomes (medical, social, and professional realms, as well as quality of life).

**PROFESSIONAL AFFILIATIONS/SOCIETY MEMBERSHIPS**

- American Academy of Pediatrics
- American College of Rheumatology
- American Psychoanalytic Association
- Southeastern Child Analytic Consortium

**HONORS**

- Patient Satisfaction Award for Outstanding Achievements in Patient Care, 2016

**Margalit E. Rosenkranz, MD****RESEARCH**

Margalit E. Rosenkranz has been involved in overseeing clinical research studies and is the Pittsburgh site PI for multiple industry-sponsored studies and pediatric rheumatology research group registries and studies (CARRA). She is currently working on bringing in more studies sponsored by industry and the NIH.

**ADVISORY COMMITTEE MEMBERSHIPS**

- CARRA
- Pediatric Rheumatology Collaborative Study Group

**MAJOR LECTURESHIPS AND SEMINARS**

- “Immunopathogenesis of Juvenile Arthritis,” Molecular Pathobiology (MSCMP2740), University of Pittsburgh graduate school course, July 2014, 2015, and 2016
- “Joint Pain in Pediatrics,” physical therapy DPM lecture, University of Pittsburgh, August 2014, 2015, and 2016
- “Evaluation of a Dosing Regimen for Tocilizumab in Patients Younger Than Two Years of Age With Systemic Juvenile Idiopathic Arthritis,” European League Against Rheumatism conference, Madrid, Spain, June 2017

**PROFESSIONAL AFFILIATIONS/SOCIETY MEMBERSHIPS**

- American Academy of Pediatrics
- American College of Rheumatology
- Childhood Arthritis and Rheumatology Research Alliance
- Pediatric Rheumatology Collaborative Study Group

**Kathryn S. Torok, MD****RESEARCH**

Kathryn S. Torok's research is focused on the inflammatory and profibrotic cytokines involved in pediatric scleroderma. She uses a translational approach by comparing these proteins in serum and skin biopsy specimens with clinical parameters of disease activity and damage in her pediatric scleroderma cohort. Understanding which key inflammatory mediators are present during the active phase of disease may foster the development of more effective therapies in localized scleroderma to prevent disease damage, such as limb-length discrepancy and skin and muscle atrophy.

Torok serves as the PI for the National Registry for Childhood Onset Scleroderma and as the director of the Pittsburgh Childhood Scleroderma Clinic. Combining these two resources, the University of Pittsburgh hosts the largest single-center collection of clinical and serologic data on pediatric patients with scleroderma in the nation. In addition, Torok is a leader of the Pediatric Scleroderma Steering Committee (localized scleroderma and systemic sclerosis) in CARRA, overseeing the involvement of scleroderma subjects in the CARRA registry and CARRA-related studies. The Torok laboratory serves as the North American biorepository for CARRA's pediatric scleroderma subjects.

**EDUCATIONAL ACTIVITIES**

The division has a training program in pediatric rheumatology that is accredited by the Accreditation Council for Graduate Medical Education. It is led by Director Kietz and Associate Director Cassidy. Four fellows are currently in training. All fellows receive extensive clinical training in the field and pursue scholarly activity. This year, fellows are learning the technique of joint ultrasound in patient management. The rheumatology clinic is a popular elective that is available for both medical students and residents. Cassidy is the course director for the elective. Faculty members continue to educate pediatric residents, pediatric rheumatology fellows, adult rheumatology fellows, and medical students in the outpatient clinic. Torok maintains a localized scleroderma clinical rotation for pediatric dermatology fellows at UPMC. De Vallejo is actively involved in teaching medical students and students in the Graduate School of Public Health. He also serves on several dissertation committees for graduate students in immunology and molecular genetics. He has served as one of the chairs of the comprehensive examination committees graduate students in immunology and cellular and molecular pathology. Finally, Canna and Cassidy have developed an immunology curriculum for all pediatric fellows, which will begin in fiscal year 2018.

**ADVISORY COMMITTEE MEMBERSHIPS**

- Chair, Governing Board, Research and Mission committees, Great Lakes Region and Western Pennsylvania Chapter, Arthritis Foundation
- Lead member, CARRA-Rx Juvenile Localized Scleroderma Steering Committee, CARRA
- Lead member, Juvenile Systemic Sclerosis Committee, CARRA
- Pediatric team, Meeting Planning Committee, Annual American College of Rheumatology

**EDITORSHIPS**

- Member, Editorial Board, *Journal of Scleroderma and Related Disorders*

**MAJOR LECTURESHIPS AND SEMINARS**

- "Health-Related Quality of Life in Pediatric Scleroderma" and "Updates in Research in Pediatric Scleroderma," National Scleroderma Patient Education Conference, Unmask the Cure, New Orleans, La., July 2016
- "Updates in Localized Scleroderma," adult rheumatology grand rounds, University of Pittsburgh Arthritis Institute

**PROFESSIONAL AFFILIATIONS/SOCIETY MEMBERSHIPS**

- Society for Pediatric Research
- American Academy of Pediatrics
- American College of Rheumatology
- American Medical Association
- Childhood Arthritis and Rheumatology Research Alliance
- Pennsylvania Medical Society

**HONORS**

- Doctor of the Year, Scleroderma Foundation
- America's Top Pediatricians, Consumers' Research Council of America



## THREE-YEAR BIBLIOGRAPHY

## 2015

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Constantin T, Pain CE, **Torok KS**, P Höger, Moll M, Nemkova L, Clements P, Foeldvari I. Development of minimum standards of care for juvenile localized Scleroderma. *Arthritis Care Res*. 13-0636. Revision under review. April 2015.

Ferguson I, Weiser P, **Torok, KS**. Treatment of recalcitrant childhood localized scleroderma with infliximab. *Open Rheumatol J*. 2015;9:16-21.

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## 2016

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## 2017

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