

Pediatrics 2017 Annual Report – Division Highlights

Allergy, Immunology & Rheumatology

DIVISION DESCRIPTION

The Division of Allergy, Immunology, and Rheumatology provides state-of-the-art, evidence-based care for children with asthma, allergies, immunologic disorders and rheumatologic diseases.

Our basic and clinical research projects are designed to better understand and find more effective treatments for these diseases.

2017 HIGHLIGHTS

- **James Gern, MD**, and Bruce Klein, MD, are part of a team of investigators led by PI Cameron Currie, PhD, on a new, two-year UW2020 grant, “[The Human Microbiome in Health and Disease](https://research.wisc.edu/funding/uw2020/round-3-projects/the-human-microbiome-in-health-and-disease/)” (<https://research.wisc.edu/funding/uw2020/round-3-projects/the-human-microbiome-in-health-and-disease/>). The award leverages the Children’s Respiratory Research and Environment Workgroup (CREW), led by Dr. Gern, and the Wisconsin Longitudinal Study (WLS), one of the longest-running investigations of human health.
- The [American Society for Cell Biology \(ASCB\)](#) selected **Anna Huttenlocher, MD**, as one of its 2017 fellows ([link to YIR article on faculty awards](#)) recognition of her meritorious efforts to advance cell biology and/or its applications and for her service to ASCB.

Dr. Huttenlocher, in conjunction with co-PI Igor Slukvin, MD, PhD, also received a two-year, \$450,000 UW2020 grant, “[Engineering leukocytes generated from human iPS cells to treat human disease](https://research.wisc.edu/funding/uw2020/round-3-projects/engineering-leukocytes-generated-from-human-ips-cells-to-treat-human-disease/)” (<https://research.wisc.edu/funding/uw2020/round-3-projects/engineering-leukocytes-generated-from-human-ips-cells-to-treat-human-disease/>). The project will use CRISPR gene editing to generate a panel of iPS cell lines that lead to the production of neutrophil and macrophage populations that are expert killers of microbial pathogens.

Finally, Julia Chini and Meng Lou, two undergraduate students mentored by Dr. Huttenlocher, received 2017-2018 University of Wisconsin Hilldale Undergraduate/Faculty Research Fellowships.

- **Daniel Jackson, MD**, received funding for a consortium led by Children’s Hospital of Boston. The group will initiate an asthma prevention study, “Controlling and Preventing Asthma Severity in Kids (CASK),” which will determine whether omalizumab (anti-IgE) therapy given to 2- and 3-year-old children at high risk for asthma prevents progression to childhood asthma. This seven-year, National Institutes of Health/National Institute of Allergy and Infectious Diseases (NIH/NIAID) U01 grant includes a subcontract to UW-Madison totaling over \$2 million.

Dr. Jackson was also awarded the Burton Zweiman Memorial Lectureship at the 2017 American Academy of Allergy Asthma and Immunology (AAAAI) annual meeting. This honorary lectureship, “Targeting Viruses in the Primary and Secondary Prevention of Asthma,” recognized Dr. Jackson’s outstanding service to the specialty and science of allergy and immunology.

- Allergy and immunology fellow **Halie Anderson, MD**, (mentor: **Daniel Jackson, MD**) received the Asthma Diagnosis & Treatment Interest Section Fellow-in-Training Outstanding Abstract Award at

the 2017 American Academy of Allergy Asthma and Immunology (AAAAI) annual meeting. Her abstract, "Increased rhinovirus-induced innate immune response in peripheral blood during infancy is associated with improved lung function at school age," was also selected for the meeting's featured poster session.

- **Robert F. Lemanske, Jr., MD**, is the co-principal investigator on a National Institutes of Health Clinical and Translational Science Award. The award, which is for \$6,237,009 per year for five years, permits the continuation of the UW Institute of Clinical and Translational Research (ICTR). The goal of ICTR is to create an environment that transforms research into a continuum from investigation through discovery and to translation in real-life community practice, thereby linking even the most basic research to practical improvements in human health.
- In recognition of their efforts to improve the health of Plain families in Wisconsin, **Christine Seroogy, MD**, and colleagues on the Wisconsin Plain Community Project received a 2017 UW-Madison Community-University Partnership Award ([link to YIR article on faculty awards](#)) from Chancellor Rebecca Blank.

Dr. Seroogy also received a \$4,000 mini-grant from the Baldwin Wisconsin Idea Endowment for her project, "Blood Lead Level Testing in Plain Newborns."

RECENT PUBLICATIONS

Anderson HM, **Jackson DJ**. Microbes, allergic sensitization, and the natural history of asthma. *Curr Opin Allergy Clin Immunol*. 2017 Apr;17(2):116-122. doi: 10.1097/ACI.0000000000000338. PubMed PMID: 28030377.

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GRANT SUPPORT

Faculty/Role	Funding Agency	Title
Bochkov, Yury A (PI)	DHHS, PHS, National Institutes of Health & University of California-San Diego	Polyvalent rhinovirus C vaccine
Co, Dominic (co-PI) with Syverson, Grant D	Arthritis Foundation	Development of a CME online education program
Gern, James E (PI) with Bochkov, Yury A (co-I)	DHHS, PHS, National Institutes of Health & Children's Hospital of	Viral persistence & the microbiome in bronchiolitis and risk of recurrent wheeze

	Boston	
Gern, James E (PI) with Jackson, Daniel J, Lemanske Robert F and Seroogy, Christine A (co-Is)	DHHS, PHS, National Institutes of Health	Children's respiratory research and environment workgroup (CREW)
Gern, James E (PI) with Seroogy, Christine A (co-I) and Bochkov, Yury A (Project II Co-Investigator & Virology Core Leader)	DHHS, PHS, National Institutes of Health	Mechanisms and environmental determinants of rhinovirus illness severity
Gern, James E (PI) with Lemanske, Robert F (co-Director)	DHHS, PHS, National Institutes of Health	Wisconsin allergy research training (WISCART) program
Gern, James E (PI) with Bochkov, Yury A (co-I)	DHHS, PHS, National Institutes of Health & Massachusetts General Hospital	Infant specific-IgE, rhinovirus-C bronchiolitis, and incident asthma in MARC-35
Gern, James E (co-MPI) with Busse, William (co-MPI); Jackson, Daniel (co-I); and Bochkov, Yury (Senior Scientist)	DHHS, PHS, National Institutes of Health	Inner City Asthma Consortium 3 (ICAC3)
Gern, James E (co-I) with Sun, Xin (PI) and McCulley, David (co-I)	UWF - Wisconsin Partnership - MERC	Zooming in on childhood asthma: disease causality and personalized medicine
Huttenlocher, Anna (PI)	American Heart Association Greater Midwest	Mechanisms of macrophage-dependent neutrophil reverse migration during tissue damage
Huttenlocher, Anna (PI)	Cancer Research Institute	Role of innate immune system in fibrolamellar hepatocellular carcinoma - Fhl2 as a putative molecular target
Huttenlocher, Anna (PI)	Cancer Research Institute	The role of neutrophils and CXCL8-CXCR1/2 signaling in glioblastoma cell invasion
Huttenlocher, Anna (PI)	DHHS, PHS, National Institutes of Health	Adhesive regulation during cell migration
Huttenlocher, Anna (PI)	DHHS, PHS, National Institutes of Health	Cell migration and wound repair
Huttenlocher, Anna (PI)	DHHS, PHS, National Institutes of Health	Integrated training for physician scientists
Huttenlocher, Anna (PI)	Duke University	CARRA registry
Huttenlocher, Anna (PI)	European Molecular Biology Organization	In vivo study of the interaction between the transcriptional coactivator FHL2 and the actin cytoskeletal protein mAbp1 during invasive cell migration
Huttenlocher, Anna (PI)	UWF - University of Wisconsin Foundation	MSTP student travel award
Huttenlocher, Anna (PI)	Vilas (William F) Trust Estate	Vilas distinguished achievement professorship
Huttenlocher, Anna (PI)	Wisconsin Alumni Research	Engineering leukocytes generated

	Foundation	from human iPS cells to treat human disease
Huttenlocher, Anna (co-PI) with Beebe, David (PI)	DHHS, PHS, National Institutes of Health	Understanding cell migration through microscale in vitro models
Huttenlocher, Anna (co-I) with Keller, Nancy (PI)	National Science Foundation	ERFI-MIKS proposal: microfluidic-based screening of multi-kingdom microbial communication molecules
Jackson, Daniel J (PI) with Lemanske, Robert F (co-I)	DHHS, PHS, National Institutes of Health & Children's Hospital of Boston	Controlling and preventing asthma progression in kids (CASK)
Jackson, Daniel J (co-MPI) with Lemanske, Robert F (co-MPI); Gern, James E (Project II PI); Seroogy, Christine M; Smith Judith A (co-Is); Bochkov, Yury (Microbiology Core Leader)	DHHS, PHS, National Institutes of Health	COAST
Jackson, Daniel J (PI)	Glaxosmithkline	A long-term access programme for subjects with severe asthma who participated in a GSK-sponsored mepolizumab clinical study
Jackson, Daniel J (PI)	Glaxosmithkline	An open-label study to characterize the pharmacokinetics and pharmacodynamics of mepolizumab administered subcutaneously in children from 6 to 11 years of age with severe eosinophilic asthma - 200363
Jackson, Daniel J (PI)	Glaxosmithkline	Mechanisms underlying asthma exacerbations prevented with & persistent despite immune-based therapy: A systems approach (MUPPITS-2)
Jackson, Daniel J (PI)	DHHS, PHS, National Institutes of Health & Pennsylvania State University	AsthmaNet, April-Ocelot viral determinations and bacterial detection
Jackson, Daniel J (PI)	DHHS, PHS, National Institutes of Health & Pennsylvania State University	AsthmaNet, Infant-Avica nasal bacterial and viral detection
Jackson, Daniel J (PI)	DHHS, PHS, National Institutes of Health & Pennsylvania State University	AsthmaNet, STICS (biome study)
Jackson, Daniel J (PI)	DHHS, PHS, National Institutes of Health & Pennsylvania State University	AsthmaNet, STICS (main study)
Jackson, Daniel J (PI) with Lemanske, Robert F (co-I)	DHHS, PHS, National Institutes of Health & University of Arizona	ORBEX

Jackson, Daniel J (co-I) with Denlinger, Loren; Jarjour, Nizar; and Krishnan, Jerry (co-MPIs)	DHHS, PHS, National Institutes of Health	The Great Lakes PrecISE Partnership
Lemanske, Robert F and Sorkness, Christine (co-MPIs); Jackson, Daniel J (co-I)	DHHS, PHS, National Institutes of Health & Pennsylvania State University	AsthmaNet
Lemanske, Robert F (PI)	DHHS, PHS, National Institutes of Health & University Of Colorado - Denver	Improved prediction of response to asthma medication using small molecules
Lemanske, Robert F (co-PI) with Drezner, Marc (co-PI) and Seroogy, Christine A (Assistant Director, Pediatrics, of the UW ICTR Clinical Research Unit)	DHHS, PHS, National Institutes of Health	UW Institute for Clinical & Translational Research (UW-ICTR)
Seroogy, Christine M (PI)	DHHS, PHS, National Institutes of Health	The role of the anergy-related E3 ubiquitinating ligase, GRAIL, in tumor immune evasion
Seroogy, Christine M (PI)	DHHS, PHS, National Institutes of Health & Northwestern University	Lipid regulation of the development of responsiveness to allergen in neonates and infants
Seroogy, Christine M (PI) with Wald, Ellen (co-I) and Baker, Mei Wang; Laffin, Jennifer; Rice, Gregory; Scott Schwoerer, Jessica (collaborators)	UWF - Wisconsin Partnership - MERC	Improved health care delivery to Wisconsin Amish infants
Singh, Anne Marie (PI)	DHHS, PHS, National Institutes of Health	Staphylococcus aureus and regulatory T cells in oral immunotherapy
Smith, Judith A (PI)	DHHS, PHS, National Institutes of Health	Regulation of human immune function by 17q21 asthma risk polymorphism
Smith, Judith A (PI)	DHHS, PHS, National Institutes of Health	The role of the unfolded protein response in brucella melitensis replication
Smith, Judith A (PI)	DHHS, PHS, National Institutes of Health & Federal University of Minas Gerais	Brucella survival strategy requires endoplasmic reticulum restructuring and interferes with innate immunity
Smith, Judith A (PI)	Wisconsin Alumni Research Foundation	Development of IL-17 targeting small molecule therapeutics for autoimmune diseases
Smith, Judith A (PI)	Wisconsin Alumni Research Foundation	Immunogenetics of axial spondyloarthritis
Smith, Judith A (co-PI) with Splitter, Gary and Harms, Jerome (co-PIs)	DHHS, PHS, National Institutes of Health	Brucella epitope recognition by CD8+ T cells