Asthma Research

Division Photo


Division Data Summary

<table>
<thead>
<tr>
<th>Research and Training Details</th>
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<tr>
<td>Number of Faculty</td>
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<td>Number of Joint Appointment Faculty</td>
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<td>Number of Research Fellows</td>
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<td>Peer Reviewed Publications</td>
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<td>Outpatient Encounters</td>
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Faculty Members

Gurjit Hershey, MD, PhD, Professor; Division Director
Melinda Butsch Kovacic, MPH, PhD, Research Assistant Professor
Umasundari Sivaprasad, PhD, Research Assistant Professor
Ning Wang, PhD, Research Assistant Professor
Manoj Warrier, MD, Instructor
Chen Weiguo, PhD, Research Assistant Professor

Trainees

- Yasuhiro Tabata, MD/PhD, PGY6, Kyoto University
- Alex Masino, PhD, PGY4, Washington State University
- Kathy Schroer, PhD, PGY4, University of Cincinnati
Significant Accomplishments in FY08

Dr. Hershey
Dr. Hershey delivered the Elliot Ellis lecture at AAAAI in March in Philadelphia, Pennsylvania. The division receives ongoing federal financial support as one of only 11 Asthma and Allergic Diseases Cooperative Research Centers in the country. She was also selected to serve as the Associate Director of the Physician Scientist Training Program at the University of Cincinnati. Recipient of 2008-09 Luther Foundation Award.

Dr. Sivaprasad
Dr. Sivaprasad's research focus since she joined CCHMC in October 2007 has been on elucidating the mechanism by which SerpinB3a, a serine protease inhibitor contributes to the asthma phenotype in murine models. She had demonstrated a novel function for SerpinB3a in mucus production in asthmatic airways and is currently working on elucidating the mechanism for this function of SerpinB3a. Her second research project uses siRNA technology to dissect out the mechanism by which soluble IL-13Ralpha2 expression is induced in human lung epithelial cells. She has demonstrated that, unlike mice, the primary source of soluble IL-13Ralpha2 in humans is from the membrane form of IL-13Ralpha2. She was selected to present her work at the Hypersensitivity School in Utah.

Dr. Butsch Kovacic
Dr. Butsch Kovacic led the development of the "New Patient Visit Questionaire", a dual purpose (clinical and research tool) used in allergy and pulmonary clinics. She submitted several NIH grant proposals focusing on environmental exposures and asthma.

Significant Publications in FY08

Over the past few decades, much effort has been focused on the genetics of asthma, and investigators have identified more than one hundred potential asthma susceptibility genes, of which at least ten have been replicated in numerous independent studies. In parallel, researchers have also identified genetic factors that impact the pharmacotherapeutic responses to the major classes of asthma medications. While the results of the previous studies have been promising, future investigations need to combine genetics, pharmacogenetics, accurate disease genotyping, and environmental exposures to build the foundation for personalized and predictive medicine for the 21st century. The ultimate goal is to enable physicians to identify those at risk for asthma, intervene to prevent or attenuate the disease, and select the optimal medical regimen for each individual patient. If successful, the resulting paradigm shift in medical practice will lead to improved clinical outcomes and decreased health care expenditures.

Division Highlights

Umasundari Sivaprasad
Dr. Sivaprasad was selected to attend and present her work at the Hypersensitivity and Allergic Diseases School held by the Clinical and Immunological Society.

Weiguo Chen
Dr. Chen presented research on the "Role of Interleukin-13 Receptor Alpha2 in Allergic Inflammation" at the Center for Immunological Research, which demonstrated unique biological functions of soluble and membrane forms of interleukin-13 receptor alpha2 in allergic inflammation. He also Collaborated with Dr. Tim LeCras from Division Pulmonary Biology and Dr. William Nichols from Human Genetics on a project to study the relationship between allergen exposure and pulmonary remodeling/pulmonary artery hypertension.

Asthma
Asthma is the most common chronic childhood disease and the most common reason for pediatric hospital admission. Currently in Ohio, asthma is the number one cause of school absenteeism due to chronic illness. CCHMC has made a strong commitment to asthma with the goal of reducing hospital admissions due to asthma by providing evidenced-based care that is individualized to each child's disease, environment, genetics; etc. All of these approaches require further research and the newly established Division of Asthma Research will contribute to new standards for clinical
care through new scientific discoveries and cutting edge research. The mission of the Division of Asthma Research is to create a central base and lead research efforts in asthma around CCHMC, the Cincinnati community, and across the tristate region to effect change and ensure the highest standards for asthma care. There are multiple ongoing federal funded studies that are investigating how asthma develops in early childhood, why asthma attacks occur, and which treatments are most effective.

Division Collaboration

**Collaboration with Allergy and Immunology; Immunobiology; Epidemiology and Biostatistics;**

**Collaborating Faculty:** Dr. Rothenberg; Dr. Wills-Karp; Dr. Nick;

Asthma and Allergic Diseases Cooperative Research Centers

**Collaboration with Immunobiology; Allergy and Immunology;**

**Collaborating Faculty:** Dr. Wills-Karp; Dr. Finkelman; Dr. Rothenberg

Program Project Grant

**Collaboration with Emergency Medicine; General and Community Pediatrics; Biomedical Infomatics; Pulmonary Medicine; Adherence Psychology**

**Collaborating Faculty:** Dr. Strait; Dr. Ruddy; Dr. Simmons; Dr. Kahn; Dr. Aronow; Dr. Kercsmar; Dr. Drotar

Gene Expression Profiles of Acute Asthma

Mentions in Consumer Media

**Division Publications**


5. Iossifova Y, Reponen T, Daines M, Levin L, Khurana Hershey GK. *Comparison of two analytical methods for detecting (1-3)-B-D-glucan in pure fungal cultures and in home dust samples*. Open Allergy J. 2008; 1: 26-34.


Grants, Contracts, and Industry Agreements

**Grant and Contract Awards**

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<td>Genetic Susceptibility for Occupational Asthma National Institutes of Health (University of Cincinnati)</td>
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<td>Biology of IL-13 Receptor Alpha 2</td>
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National Institutes of Health
R01 AI 058157 01/01/04 - 12/31/08 $162,779 / $1,250,000

**Expanding the Genomic Data Analysis Core - Supplement**  
National Institutes of Health (University of Texas Health Sciences Center-San Antonio )  
U19 AI 070412 03/01/08 - 02/28/09 $110,000 / $110,000

**Diesel, Allergens And Gene Interaction In Child Atopy**  
National Institutes of Health (University of Cincinnati )  
R01 ES 011170 07/01/07 - 06/30/09 $13,681 / $27,574

**Epithelial Genes in Allergic Inflammation**  
National Institutes of Health  
U19 AI 070235 09/15/06 - 08/31/11 $673,569 / $3,567,767

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**Role of IL-13 Receptors in Atopic Dermatitis**  
National Institutes of Health  
R01 AR 054490 09/01/07 - 07/31/12 $215,000 / $1,075,000

**Interleukin-13 in Experimental Asthma**  
National Institutes of Health  
P01 HL 076383 06/30/04 - 07/01/09 $273,181 / $273,181

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