

Expression Profile for Acute Childhood Asthma

TECHNICAL FIELD

Diagnostic: Asthma (2005-0601)

BACKGROUND

Asthma is a chronic inflammatory disorder and, in genetically susceptible individuals, this inflammation leads to increased airway responsiveness to a variety of stimuli and recurrent airway obstruction. Approximately 5% of adults and 7-10% of children in the U.S. have asthma. Roughly 50% of cases develop before the age of 10 and another 33% before the age of 40. Asthma is the fourth leading cause of morbidity and the number one cause of childhood hospitalizations in the U.S. accounting for 1.6 million emergency room visits and 10 million office visits per year. In 1998, asthma accounted for \$11.3 billion in health care costs in the U.S.

The current invention provides insight into global gene expression profiles of normal children and children with asthma. Also contrasted were children with stable asthma and those with an asthma exacerbation. The results provide characteristic expression profiles that can help clinicians understand disease status and treatment response for asthma patients.



TECHNOLOGY

Dr. Gurjit Hershey and her colleagues at Cincinnati Children's Hospital Medical Center have identified distinct gene expression profiles of children with stable asthma and children experiencing an asthma exacerbation. Exacerbated asthma had a unique and consistent signature consisting of 161 genes that was distinct from stable asthma.

The signature could be used to determine response to treatment and disease status. This discovery has significant therapeutic potential for arming physicians with the knowledge to provide patients with an individualized treatment plan for asthma sufferers.

Our goal is to find a collaborator interested in developing this technology into a diagnostic test to identify disease status and treatment response in asthma patients.

APPLICATIONS

1. Diagnostic
2. Indicator of treatment response

ADVANTAGES

- Distinguishes patients without asthma, patients with stable asthma, and patients with exacerbated asthma

INVESTIGATOR

Gurjit Hershey, MD, PhD
Director, Institute for Personalized and Predictive Medicine
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STATUS

Patent applications pending.

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THE INVENTOR

Gurjit Khurana Hershey, MD, PhD
Director, Institute for Personalized and Predictive Medicine

BACKGROUND

Dr. Khurana Hershey is the Director of the Translational Research Program in Allergy and Asthma and Professor of Pediatrics at Cincinnati Children's Hospital Medical Center and the University of Cincinnati College of Medicine.



As part of her role as Director of Center for Translational Research in Asthma and Allergy, Dr. Hershey has developed a comprehensive database of allergic children seen in allergy and asthma clinics at CCHMC. Extensive phenotypic information including clinical, demographic, and quality of life data is available for nearly 2000 children and has been entered into a comprehensive database. DNA samples are available on over 98% of these children. This registry serves as a basis for multiple projects and grants.

Dr. Hershey is an elected member of the Society for Pediatric Research and a Diplomat of the American Academy of Allergy, Asthma and Immunology. She is a recognized leader in the allergy field and serves on the Editorial Board of the Journal of Allergy and Clinical Immunology and has been asked to serve on several NIH study sections and focus groups. She is the Principal Investigator of an NIH Asthma and Allergic Diseases Cooperative Research Center. She was recently named one of the Five Leading Women in Healthcare in the Greater Cincinnati Metropolitan Area by Women's Business Cincinnati Magazine, and nominated Outstanding Woman at Cincinnati Children's Hospital Medical Center. Her other honors include being awarded the Basil O'Connor Starter Scholar Award and the Asthma and Allergy Foundation of American Investigator Award. Her research has been supported by numerous sources including the National Institutes of Health, March of Dimes and the American Heart Association.