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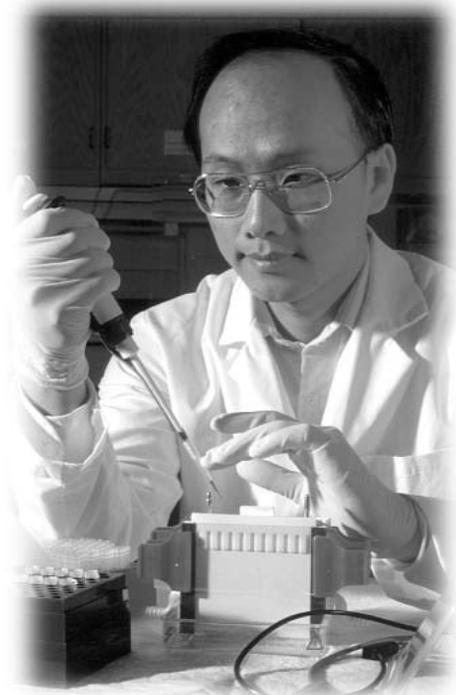
THE GENETICS OF ASTHMA by Susan Ewart DVM, PhD

We have known for years that asthma runs in families, but how and why it does has been a puzzle for just as long. Starting in the 1980s, family and twin studies began to shed light on asthma as an inherited disease. With advances in technology over the last 20 years, and recent intense research on the human genome, the picture is becoming clearer.

Genetic research of asthma is challenging for many reasons. Asthma is not a simple, easy-to-define disease. It can be mild to severe, have varied symptoms, and start at any age. It is already apparent that there is no single "asthma gene" that causes the disease. Scientists have had to search for many genes, and specific DNA variation within genes, that play a part in the development of asthma.

Allergic asthma is characterized by airway hyper-responsiveness, excessive airway mucus production, airway inflammation and increased serum immunoglobulin E (IgE) levels. Nine candidate genes (genes that may be involved with asthma symptoms) have been identified based on this current knowledge of disease mechanisms. These genes can influence certain aspects of a cell's work. For example, a certain gene could make the mast cell, which plays a central role in inflammatory and allergic reactions, overreact and release too much histamine, causing swelling in the tissue and leading to shortness of breath.

Along with cellular research, longitudinal cohort studies, which track characteristics of a group of people over a period of time, continue to provide information about how the disease changes over time, and help to assess the diverse nature of asthma. The Isle of Wight 1989-1990 birth cohort is one such study that followed children from birth through the age of 10 years. Results of this study have helped researchers see how asthma has progressed through childhood in this population and linked disease susceptibility with genetic makeup.



Future genetic studies of asthma will be important. Recent results may shed new light on genetic mechanisms of asthma. Identification of asthma susceptibility genes may allow for prediction of people at risk of developing disease. These studies are a necessary prelude to understanding gene-environment interactions, and may also help future researchers design interventions to truly modify the disease's course. Exploration of genes that are shared among complex immune disorders will probably be a fertile area of research, and should yield important new insights into the rising prevalence of these disorders.

If the genetics of asthma is a puzzle, the corner and border pieces are firmly in place, and future research should complete it. 🧐

Susan Ewart is an asthma researcher with the Department of Large Animal Clinical Sciences at Michigan State University.

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- 🧐 In general, children who have a parent or sibling with asthma are 2 to 4 times as likely to develop asthma as those without this type of family history.
- 🧐 Identifying children with a family history of asthma does not identify the majority of children at risk of developing asthma. The probability that a child will develop asthma if they are found to have a family history is less than 50%.

Source: Burke W, Fesinmeyer M, Reed K, Hampson L, and Carlsten C. Family History as a Predictor or Asthma Risk. *American Journal of Preventive Medicine* 2003; 24(2): 160-169.

ASTHMA COALITION COLUMN



Summit Report: Asthma Education Reimbursement

Asthma education reimbursement was the focus for the September 2004 Summit of Asthma Coalitions. About 60 people attended the Summit, held at the Henry Center in Lansing, and videoconferenced to Traverse City, Alpena and Sault Ste. Marie.

Susan Blonshine, a local Respiratory Therapist who chairs the executive committee for the National Asthma Educator Certification Board, started off the discussion with an update on the certification of asthma educators. "There are over 800 certified asthma educators in the U.S., and more than 40 of them are in Michigan," she said. "It's a real accomplishment, but we still have a long way to go to adequately cover the need."

The group also heard how diabetes educators obtained legislated reimbursement. Coalition members were encouraged to prepare the infrastructure for reimbursement, i.e. having enough certified asthma educators where they are needed, before attempting it.

For several years the Pediatric and Adult Asthma Network of West Michigan has been reimbursed for asthma education by Priority Health and other insurers. PAANWM and Priority shared their experiences with the group, including outcomes of fewer hospitalizations and reduced use of the emergency department, among clients who had received asthma education.

Obtaining reimbursement may be a mountain, but small important steps were taken during the recent Summit.

For more on asthma coalitions, visit www.GetAsthmaHelp.org and click on Coalitions. 🐾

Please direct questions and comments about this newsletter to:

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FALL ASTHMA TIP: Nebulized Asthma Meds

You may think that it's better to use a nebulizer than an inhaler when asthma symptoms strike. However, the Global Initiative for Asthma (GINA) guidelines state that using an MDI and spacer is as effective as a nebulizer, if done correctly. In fact, MDIs and spacers are used almost exclusively in Europe.



Consider this: the 2002 Annual Report of Asthma Deaths in Michigan states that 100% of the children and 75% of adults who died from asthma had a nebulizer, and some even died while taking a nebulizer treatment at home.

Talk to your doctor about how you take your asthma medications, and how often. It could save your life! 🐾

Go to www.ginasthma.org for more on the GINA guidelines. Visit www.getastmahelp.org/reports to see the 2002 Annual Report of Asthma Deaths in Michigan.

Visit www.GetAsthmaHelp.org for more information about asthma events & trainings in your area.



MI ASTHMA CALENDAR

October

- 9 **Blow the Whistle on Asthma Walk**
Detroit Zoo, Fundraiser for the American Lung Assoc. of Michigan, 8 to 10 a.m.,
For more info: 248-784-2000
- 20 **Great Expectations: Managing Asthma in Pregnancy & Early Childhood**
Prince Conference Center at Calvin College, Grand Rapids, 5:30 to 8:45 p.m.,
For more info: 616-732-8984
- 26 **Improving Outcomes in Asthma Management: Biotechnology Breakthroughs**
Hagerty Center, Great Lakes Maritime Academy, Traverse City, 5 to 8 p.m.,
For more info: 231-946-1344
- 27- **Community Asthma & COPD Coalition Symposium**
- 28 American College of Chest Physicians Conference, Seattle, Washington, For more info: www.chestnet.org

November

- 5 **Asthma Information Review (AIR) Course**
Location TBD, Ann Arbor, 7:45 a.m. to 5 p.m., For more info: 734-677-6772

December

- 2- **Asthma Disease Management/Asthma Certification Preparation Course**
- 3 AARC International Conference, New Orleans, Louisiana, For more info: www.aarc.org

