



## Family History

### It's not Nature VS. Nurture - it's Nature AND Nurture



We now know that BOTH nature (your genes) and nurture (your environment) play an important role in health and disease. This is very much due to the fact that the definition of *environment* has changed. The environment, at one time, was thought to be a minor factor in health and included radiation, man-made chemicals and industrial waste. The definition of *environment* now includes those exposures **plus** diet, behavior, and other cultural and social factors.<sup>1</sup>

Recent studies have shown that no more than one-third of the cancer burden, only 15% of Parkinson's cases and about one-third of autoimmune diseases can be attributed to genes alone.<sup>1</sup> Most of the time, it is the complicated interaction between a person's genes and his/her environment that determines health.

Genes can play different roles in different environments. Some genes can be helpful in one environment but harmful in another. For example, scientists have discovered a version of a gene that increases the risk of developing asthma in a rural (country) environment, but decreases the risk in an urban (city) environment. A different version of the same gene does the opposite, increasing the risk of developing asthma in an urban setting but decreasing the risk in a rural environment.<sup>2</sup>

For more information on genes and the environment, go to the National Institute of Environmental Health Sciences website at [www.niehs.nih.gov/](http://www.niehs.nih.gov/)



1. Olden K. *Genomics in Environmental Health Research- Opportunities and Challenges*. Toxicology 198:19-24 (2004).  
2. Kuiper S., et al. *Interactive effect of family history and environmental factors on respiratory tract-related morbidity in infancy*. Journal of Allergy and Clinical Immunology. 120:2, 388-395 (2007)



April 4 through April 13, 2008 has been designated National Public Health Week. This initiative was launched in 1996 by the American Public Health Association as a way to educate the public, policy makers and public health workers about issues important to improving the public's health. This year's theme is "Climate Change: Our Health in the Balance". For more information on this initiative, resources and activities planned visit: [www.nphw.org](http://www.nphw.org).



**Climate Change:**  
**Our Health in the Balance**

### Heredity and the Flu?

**People may inherit a genetic predisposition to dying from influenza virus, according to an analysis of genealogy records linked to death certificates in Utah over a period of 100 years. Using the Utah database, Dr. Frederick S. Albright of the University of Utah College of Pharmacy and colleagues estimated the relative risks of death due to influenza for the relatives of 4,855 individuals who died of influenza in the past 100 years. They found that first-degree relatives of individuals who died of influenza had a 54 percent higher risk of dying from influenza. The risk of death from influenza in second-degree relatives of individuals who died of influenza was 22 percent and in more distant third-degree relatives it was 16 percent higher.**

For more information visit:

[www.journals.uchicago.edu/doi/pdf/10.1086/524067](http://www.journals.uchicago.edu/doi/pdf/10.1086/524067)

## Family History and Environment: What to look for

Your genes are with you from the time of conception, but your environment can change— depending on where you live, what you choose to eat, and your exposure to things like second-hand tobacco smoke. Some birth defects may be influenced by a combination of genetic and environmental factors.



One of the most well documented environmental factors that should be noted on a family health history is exposure to tobacco smoke. On a family health history, note if the person was a smoker or had regular exposure to tobacco smoke. Exposure to tobacco smoke not only affects your health personally, it may also interact with *your genome* to affect the health of *your child*. A study of children in England found that mothers with a certain genetic variation who smoked during their pregnancy increased the risk of asthma in their children four times the normal risk.<sup>3</sup>

While your genetic makeup can make you more or less likely to develop a common chronic disease, like heart disease, the chance of maintaining good health gets better with healthy lifestyle choices. If you have a family history of disease, healthy lifestyle choices become even more important.



### On the Web.....

**Michigan's Genetics Resource Center**  
[www.migeneticsconnection.org/genes.shtml](http://www.migeneticsconnection.org/genes.shtml)

**National Center for Environmental Health**  
[www.cdc.gov/nceh/](http://www.cdc.gov/nceh/)

**National Office of Public Health Genomics**  
[www.cdc.gov/genomics/](http://www.cdc.gov/genomics/)

**Environmental Health**  
[www.cdc.gov/Environmental/](http://www.cdc.gov/Environmental/)

3. Ramads RA, et al. Interleukin-1R antagonist gene and pre-natal smoke exposure are associated with childhood asthma. *European Respiratory Journal*. 29:3, 502-508 (2007).

A key to success in the future is to define broader environmental health goals that call for better linking of environmental and public health.

~ Samuel Wilson (also known as 'Uncle Sam', 1766-1854)

### If you are pregnant environmental exposures to avoid include:

- ☆ **Lead**
- ☆ **Smoking or second hand smoke**
- ☆ **Alcohol and other recreational drugs**
- ☆ **Certain foods such as swordfish, shark, medium or rare meat, hot dogs or deli meat, and unpasteurized dairy products. For more information go to: [www.marchofdimes.com/pnhec/159\\_823.asp](http://www.marchofdimes.com/pnhec/159_823.asp)**
- ☆ **Changing the kitty litter box (soiled litter can cause toxoplasmosis, a disease that can cause serious problems for baby)**
- ☆ **Certain over-the-counter and prescription medications (again, talk to your health care provider)**

To learn more about birth defects prevention visit:  
[www.migeneticsconnection.org/birthdefects.shtml](http://www.migeneticsconnection.org/birthdefects.shtml)  
or the Organization of Teratology Information Specialists at  
[http://otispregnancy.org/otis\\_fact\\_sheets.asp](http://otispregnancy.org/otis_fact_sheets.asp)

## What Can You Do?



- ☆ **Document risk factors for disease as well as the disease itself on your family health history. Risk factors such as:**
- ☆ **Exposure to second-hand tobacco smoke or if the family member smoked**
- ☆ **Overweight and obesity**
- ☆ **Did/do they live in a rural or urban environment?**
- ☆ **The family member's activity level (did they lead an active or sedentary lifestyle?)**
- ☆ **Talk to your family about what the information means to their health and ways everyone can be involved in keeping the family healthy.**
- ☆ **Encourage your family to get plenty of exercise and eat nutritious foods.**

For help and tips for recording your family health history go to:



**My Family Health Portrait**

A tool from the U.S. Surgeon General

[www.hhs.gov/familyhistory](http://www.hhs.gov/familyhistory)