MACGN

JOIN THE NETWORK

Clinicians: Become a part of our referral network
Scientists: Gain access to more research participants
Patients: Stay informed of the latest research and information

MACGN would like to say a special thanks to all of our participants for providing the necessary information to keep our records current. We appreciate your effort in completing your annual update and providing changes in contact information.

MACGN has MOVED!

MACGN's address has changed to 1620 McElderry Street, Reed Hall West, Suite 306, Baltimore, Maryland 21205-1904.

Our phone numbers have stayed the same and all mail recently sent to MACGN will be forwarded to our new location.

To subscribe to or to obtain additional copies of this newsletter, call us toll free at 1-877-880-6188

MACGN Network
1620 McElderry Street
Reed Hall West, Suite 306
Baltimore MD 21205-1904

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WINTER 2003 VOLUME 5 NUMBER 2

Cancer Genetics News

GENETICS 101—GENES AND CANCER

You may have heard that cancer is caused by genetic changes in cells. This article will explain how genetic changes are related to the development of cancer and why an individual who is born with an alteration in a gene may be more prone to developing cancer.

What is Cancer?

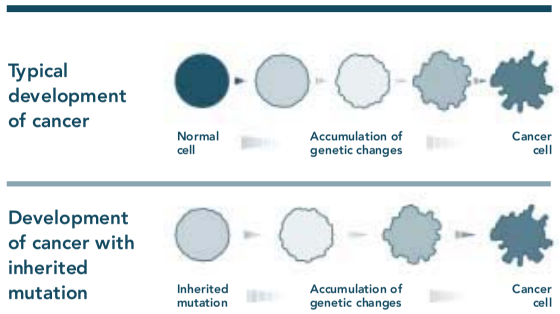
Cancer occurs when cells in the body become abnormal such that they divide and form more cells without control or order.

What Are Genes?

Each cell in your body contains a set of 46 chromosomes (23 pairs). Each chromosome consists of thousands of sections of DNA, which are called genes. There are about 30,000 genes located on our 46 chromosomes. We inherit one copy of each chromosome, and thus one copy of each gene, from each of our parents. Consequently, we are born with two copies of every gene. Genes contain instructions for how our bodies function. These instructions influence the color of our hair and eyes, how we process foods, the shape of our facial features, and our susceptibility to many diseases.

How Are Genes Involved in Cancer?

Certain genes are responsible for determining when cells divide. If such a gene has acquired an alteration causing it not to work properly, the cell may not be able to control when it divides. If the cell divides too quickly it may become cancerous. For a normal cell to become a cancer cell, several genes must acquire alterations. These changes accumulate slowly, which means that cancer is a process that develops over a period of time. Thus, cancer tends to occur more often in older individuals.



As an example, consider the development of colon cancer. Cells that have accumulated a few genetic alterations may grow into a benign growth called a polyp. If the polyp goes undetected, the polyp may acquire more genetic alterations and eventually develop into a cancer.

What Causes These Genetic Alterations that Lead to Cancer?

We know that some environmental factors, such as smoking or sunburns, can increase risk for genetic changes that can cause cancer.

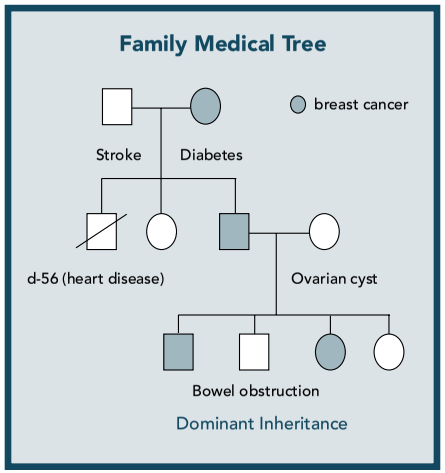
What About Individuals Who Have Inherited Genetic Alterations that Increase the Risk Of Cancer?

You may have heard of individuals with a strong family history of cancer who are born with an inherited "susceptibility" to developing cancer. This means that a person may carry an inherited alteration in a certain type of gene that controls the growth of cells. Although the development of cancer requires alterations in several genes, a person who is born with such an alteration is one step closer to developing cancer than the average person. ■

Cancer Genetics News **is the newsletter of the Mid-Atlantic Cancer Genetics Network, funded by a grant from the National Cancer Institute, National Institutes of Health.**

DISCOVERING YOUR FAMILY'S MEDICAL TREE

By finding out about your family's medical history you can help guard your own health and well-being. Having this knowledge may allow you to take steps to stay as healthy as possible. If you ever do become ill, you and your doctor may be able to diagnose problems earlier, when treatment is often more effective. This can be done by constructing a family medical tree.



Collecting Your Knowledge

First, create a "family medical tree" (see drawing) where you can write down the information you will collect. You can design your own family tree, or you can check your local bookstore, software store, or the Internet for creative ideas.

Then, fill in your family tree with family members whom you already know. Include the basics such as: name, birth date, current age, names of children, any medical conditions, and the age when the condition began. If you do not know the name of the medical condition, you should write down the symptoms that your relative had—you may be able to find out more details later. If your relative is no longer living, include the relative's cause and date of death.

Interview your blood relatives who are closest to you, such as your parents, siblings, grandparents, aunts, or uncles to add their information to your family tree. See if they can help you add information on other relatives. Be sure to ask about any lifestyle factors that may influence your relatives' health, such as diet, physical activity, smoking, alcohol use, and workplace hazards. These other factors, rather than their genes, may have been the cause of some health problems or could have even prevented some health problems.

Include the ethnic background of your family members, since certain medical conditions may be more common in specific populations.

After gathering your family history, you may find gaps in the information. It may be necessary to try to find medical records or death certificates to sort out the information. Death certificates, which are available at county courthouses, can be useful, but unfortunately they only list the immediate cause of death, and do not include information on underlying medical problems that a person had. Your health care provider can help you determine if getting the information is important, and can help you track down the medical records you need.

Using Your Knowledge

Once you've gathered your family health history, look for patterns. In general, the more relatives who have had a particular condition, the greater the chances that it could be genetic in your family. Also, look at the ages when your relatives were diagnosed to see if they developed the condition at younger ages than typical for that condition. Such a trend could indicate that your relatives were more genetically susceptible to developing the condition. Keep in mind that the health history of your close relatives, such as your siblings and parents, is more relevant to you than the health history of more distant relatives, such as your cousins or great-grandparents.

After identifying health patterns in your family history, it will be helpful to share them with your health care provider to get a qualified medical opinion. You may be able to get some advice on routine medical tests, genetic counseling options, and changes to your lifestyle that could help you stay healthy.

Although cancer can be inherited in families, usually it is not. In fact, only 5-10% of all cancers are thought to be caused by inherited genes. Most of the time, having a family member with cancer does not mean others are at significantly increased risk. However, if several blood relatives have had the same type of cancer or they have been diagnosed at young ages, you or other family members may wish to ask a health care provider about early-detection strategies that can help find cancer when its most treatable. ■

A PROMISING FUTURE: THE IMPORTANCE OF GENES RELATED TO CANCER

Genetic research has led to a change in the perception of cancer through the discovery of genes that may predispose people to develop certain forms of cancer.

Genes and Cancer

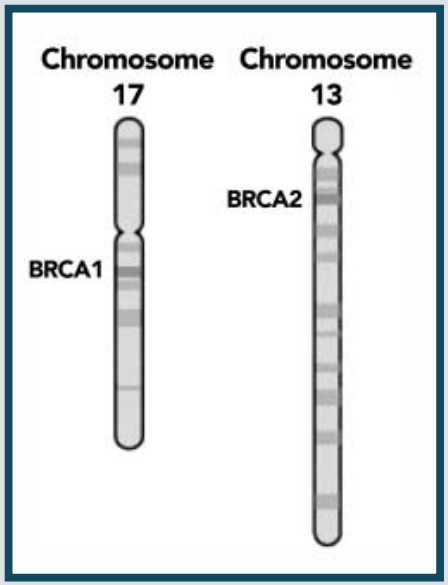
The study of genetics has piloted the exploration of cancer on a cellular level. Two types of genes have been implicated in the transformation of normal cells into malignant ones, the first of which is called an oncogene. Cancer occurs when the growth and differentiation of cells within tissue become uncontrolled. An *oncogene* develops when a gene that stimulates cell growth is altered to become hyperactive. Cancers result from only one mutant allele in a gene, examples of which include growth factors or receptors for growth factors, cytoplasmic relays in stimulatory signaling pathways, and transcription factors that activate growth-promoting genes. Unlike the oncogene, *tumor suppressor genes* play a protective role that normally limits the growth of cancer. Mutations in a tumor suppressor gene require both alleles to be altered if they are going to permit cancerous growth. Examples include BRCA1 and BRCA2, two genes known to be associated with increased risk of breast cancer.

A number of genes have been discovered that, when subject to mutation, increase a person's risk or getting certain cancers. Research involving all twenty-three chromosomes lead to the identification of roughly thirty recessive oncogenes and more than a hundred dominant oncogenes.

Most cancers arise from a complex interplay between many genetic changes that occur over time or from repeated exposure to certain environmental factors. Nevertheless, approximately 5–10% of cancers are believed to be hereditary insofar as they are caused by an inherited gene mutation. Although only a small percentage of all cancers are hereditary, their identification and study will have important implications for the prevention, screening, and treatment of this disease.

Inherited Genetic Alterations

Genetic testing is available for a few of the known gene mutations. As technology improves, testing for more such genes will be possible. Individuals whose test results are positive have a specific gene mutation that puts them at increased risk for developing certain cancers, but it does not ensure that they will get the disease. This finding can warn families to take preventative measures and thus reduce the risk of getting cancer. A negative test result (no mutation found) does not mean that a person will remain cancer-free—particularly in connection with the development of cancers that are independent of inherited mutation. Genetic tests cannot detect all mutations, and they fail to measure the impact of environmental and lifestyle factors. ■



Location of two breast-cancer genes

By Elizabeth Godshall and Vanessa Oddo
MACGN Summer Interns through the Washington Internship Program

IN THE SPOTLIGHT
KATHRYN T. MALVERN, PHD

Chairman,
National Educational Foundation (NEF)
Director of Human Genome Project Conferences
Zeta Phi Beta Sorority, Inc.
http://www.zphib1920.org/signature_programs/genome.shtml


Kathryn T. Malvern, Ph.D.

Dr. Malvern has worked tirelessly with members of the National Educational Foundation Board and members of Zeta Phi Beta Sorority, Inc. to bring information from the Human Genome Project to minorities. In fact, she says "no other minority organization has gone to the lengths that the National Educational Foundation has to provide national and local awareness conferences and presentations on genetics to minority communities." Since 1997, the NEF has presented six national genomics conferences in collaboration with national leaders from the Department of Energy; National Human Genome Research Institute, National Institutes of Health; the March of Dimes; Kaiser Permanente and the Consumer Health Foundation; National Human Genome Center at Howard University, College of Medicine; and Shiloh Baptist Church of Washington, D.C.

The NEF is a non-profit organization and is the scholarship arm of Zeta Phi Beta Sorority, Inc., an organization of over 100,000 university women worldwide. Grant writing is an important part of Dr. Malvern's job description. "Our community is now beginning to ask a lot of questions about genetics and the research currently taking place," says Dr. Malvern, "and through small grant funding we have been able to help Zeta members sponsor some 50 smaller local conferences for its members and the minority communities they serve. It's through these grassroots efforts that genetic information and issues are taken deeper into the community."

The Zeta Phi Beta Sorority National Educational Foundation not only takes information to the community but asks the community to help draft public comment and policy recommendations concerning the genetics issues that most concern African American and other minority communities. "In the Fall of 2001," notes Dr. Malvern, "we published a series of 16 recommendations from more than 1500 people of color who attended these conferences. These recommendations address a wide breadth of concerns including: developing national policy to protect the privacy of personal genetic information, ensuring minorities and the underserved have access to genetic technology and culturally sensitive genetic counseling, as well as advocacy for a Research Subjects Bill of Rights." The recommendations and concerns were presented to the Pennsylvania Legislative Black Caucus as one way of bringing these issues to national attention.

In 2002 the NEF and the Mid Atlantic Cancer Genetics Network collaborated to bring cancer genetics information to minority communities (see related article, p. 7). The NEF is furthering its genetics education and research collaborations with Harvard University Medical School, Brigham and Women's Hospital, and the University of Pennsylvania. Finally, the NEF plans to provide for more mini-grants throughout the country via Zeta chapters. There are plans to expand its venue by providing genetics information and awareness programs to rural areas of the country. And, the Foundation is in the planning stages of providing Human Genome Project research information and relevant concerns to ministers and the religious community. As Dr. Malvern says, "Churches are the grassroots of our communities; ministers provide much leadership in our communities. When ministers become educated advocates for this healthcare program, the populace becomes educated advocates and benefactors of this healthcare program." ■

Check out the new additions to the MACGN website!

Now listed is a description of the Zeta Phi Beta initiative, an update on the ovarian screening research study, new MACGN staff, and upcoming cancer-related events in the Mid-Atlantic Region.

Go to **www.macgn.org** to find out more information.

Have you had colon or rectal cancer?

Do you have a brother or sister who has had colon or rectal cancer?

If you answered YES to both of these questions you may be eligible for a research study designed to identify new genes that cause inherited colon cancer.

For more information or to see if this research study is right for you, call Miriam Tillery at the Mid-Atlantic Cancer Genetics Network at (410) 614-6334 or toll free at 1-877-880-6188.

JOHNS HOPKINS MEDICINE

GREETINGS FROM THE NATIONAL CANCER INSTITUTE!

As coordinator of the Cancer Genetics Network (CGN) at the National Cancer Institute, I am delighted to have this opportunity to express my appreciation for your participation in this important research effort, and to update you on some of the studies underway.

The CGN was created because of concern that important cancer research might not be possible, or might take a very long time to complete, because the necessary study populations could not be assembled. Today thanks to you, over 20,000 individuals across the nation have joined the CGN!

With your help, this unique cancer research program is contributing now to our understanding of the causes of cancer. Some of the studies underway include:

• Early detection of ovarian cancer in high-risk women—Women who have advanced ovarian cancer have higher levels of a chemical called CA125 in their blood. This study examines whether periodic testing of CA125 levels in high-risk women could help with the early detection of ovarian cancer. Early detection can help with more effective treatment of cancer and possibly even the prevention of cancer.

• Understanding prostate cancer—Families with two or more relatives with prostate cancer and who were diagnosed at age 65 years or younger are being recruited into this study. Through this study we hope to learn about hereditary and environmental factors that may increase a man's risk for prostate cancer. As a physician and geneticist I know how powerful the impact of cancer can be on a family, particularly if the cancer could be caused by a genetic change. Through the support and participation of individuals like you, we are making important progress towards improving the understanding, screening, diagnosis, and treatment of cancer with the ultimate aim of preventing the disease.

Thank you.

Carol Kasten-Sportès, MD
Coordinator, Cancer Genetics Network
National Cancer Institute, National Institutes of Health

KUDOS

1. Congratulations to the MACGN crew who walked 5 kilometers in the Susan G. Komen Cancer Foundation's Race for the Cure on October 4, 2003. These four ladies were a part of the largest group, The Johns Hopkins Breast Center, registered to walk in this breast cancer fundraising event.

2. Congratulations to members of our program for walking in the 44 mile 2 Day Colon Cancer March from Leesburg, Virginia to Washington, D.C. The four ladies pictured at the right raised a combined total of over $5,000 for the Colon Cancer Alliance.
3. Welcome to the new MACGN staff members including: Cheryl Pendergrass, MS, Genetic Counselor and Research Program Coordinator, Ginny Deise, B.S., Research Data Manager/Programmer, and Miriam Tillery, B.A., Project Coordinator.
4. Good work to the following individuals for their hard work and dedication to research in the field of cancer genetics.

   The following research projects were awarded a poster presentation at the American Society of Human Genetics (ASHG)

   a. ***Assessment of Patient Response to Genetic Counseling for Hereditary Pancreas Cancer***, authors: *J.E. Axilbund, K.A. Brune, M.I. Canto, B.C. Brehon, L.D. Wroblewski and C.A. Griffin*

   b. ***Use of Video for Patient Education: A Survey of Cancer Genetic Counselors***, authors: *L. A. Hamby, J. E. Axilbund, D. B. Thompson, S. J. Olsen and C. A. Griffin*

RECOGNIZING AND KEEPING THE BOUNDARIES BETWEEN CLINICAL GENETICS AND GENETIC RESEARCH:

HELPFUL HINTS FOR PATIENTS

Patients seeking genetic testing and counseling often find they are also eligible to participate in research. For example, if you visit a genetic testing clinic because of a strong family history of colon cancer, you may also learn that you are eligible to participate in a colon cancer research study. If you decide to participate in both clinical testing and the research study, it is important to know that there is the potential for a blurring of responsibilities between the clinic and the research project, particularly if this relationship continues for a long time. Since this can be confusing, knowing the differences between the goals and functions of genetic research and clinical practice can maximize your control and involvement in each.

Purpose/Commitment- The purpose of a research study is to test a hypothesis (a question) through structured protocols and procedures. The design of a research study is set and cannot be altered for individual patients. The purpose of a clinic visit is to enhance well-being. The focus is on the patient, and health care providers have the flexibility to make recommendations based on what is best for the patient.

- **Cost-** The cost of medical tests often vary whether they are part of a clinic visit or part of a research study. For example, genetic testing costs which vary from hundreds to thousands of dollars may be no cost or reduced cost in a research study but fully charged to the patient or their insurance in a clinic visit.
- **Confidentiality-**Confidentiality is critically important to both clinics and research. The availablility of genetic test results can vary. In a research study, test results are kept in separate research files and are not considered part of the patient's medical records. This makes test results less likely to be accessed by insurance companies. Also, when research studies obtain Certificates of Confidentiality research data cannot be subpoenaed by a court of law. In contrast, clinics generally keep test results in the patient's medical record. They do not obtain Certificates of Confidentiality.

Consent- Patients are always required to sign a consent form to participate in genetic testing. However, in the clinical setting, the patient consents only for testing. In the research environment, a patient may consent to complete surveys, participate in a study that may or may not include genetic testing, or to share personal health information with other research groups. Thoroughly reading a consent form and keeping a copy for yourself is very important.

- **Disclosure (reporting) of Test Results-** When genetic testing is ordered in clinical practice, patients can always expect to learn about the results. However, in some research studies, test results may not be disclosed—often this is because researchers do not yet know what the test actually means—that's why the study is being done.
- **Time Constraints-** It generally takes less time to get genetic testing reports back when they are done in the clinical setting because you or your insurance company pays for this. In a research study, results are processed on a research study timeline, which can take years in some instances.
- **Social Contribution-** In some research studies, it is hard to immediately see any personal benefits however, you may be contributing to the future health care of cancer patients or high risk family members by providing small biologic samples (like blood) or information. Throughout the history of medicine, health care has frequently been improved by what we learned in research. The support of the public is critical to improving health care.

Patients are encouraged to take a proactive role when participating in both clinical and research programs. Here are some tips to follow:

Helpful Hints:

- Always read any consent form thoroughly. Ask questions if you don't understand or want more information. This is your right and health care professionals want you to be fully informed.
- Always keep a copy of any consent form you sign in your personal health records. You can refer back to it in order to understand why the study is being done, what exactly will be done and who you can contact if you have questions.
- Always ask whether you are providing a blood sample, having a medical test or completing a survey, etc. for clinic purposes or for a research study.
- When participating in research, take time to have an open conversation with the research staff about what you are going to be expected to do. Know how many visits, questionnaires, phone calls, blood samples, or whatever is required.
- Remember to take a business card from the clinic and/or from the research study staff. This will enable you to call someone directly if you have questions.

The world of health care is very complex today. We recognize this and hope that these recommendations will help you to feel better equipped to participate as an active, motivated and fully informed clinic patient and/or research study participant. ■

NEW CANCER GENETICS INITIATIVE

The National Educational Foundation (NEF) feels strongly that "all minority communities should be informed about our country's exploration into genomic research". The NEF is the 501©3 scholarship arm of the Zeta Phi Beta Sorority, Inc. The Sorority promotes scholarship and community service and has a membership of over 100,000 well educated women in the U.S., Africa, and Korea. Sorority members have been instrumental in educating their local communities about ways to promote health and prevent diseases like diabetes, heart disease and cancer.

The mission of the Mid Atlantic Cancer Genetic Network (MACGN) is to help communities, families and doctors learn more about genes and cancer. Because the Sorority has been a leader in disseminating information about the Human Genome Project, collaboration was a natural fit. So, in late 2002, on a cold but sunny winter morning we all met at Issie Jenkins' house to explore the possibilities. Mrs Jenkins, a lawyer, is the immediate past NEF chairperson. Dr Kathryn Malvern is the current chairperson. We drafted and approved a Collaborative Agreement, formulated a proposal, and obtained Human Subjects approval from the Johns Hopkins Institutional Review Board.

Our goal was to pilot an educational and recruitment study. MACGN personnel would present an educational seminar on cancer and genetics to members of the Zeta Phi Beta Sorority, Inc. during annual leadership conferences in each of four states, Maryland, Pennsylvania, New Jersey and Delaware. MACGN also provided a small educational grant to help support conference activities. Since March 2003, we have reached almost 1300 African American women of all ages.

Our educational mission has been to increase awareness of the problem of breast cancer in African American women. Based on recent statistics, only 73% of African American women survive breast cancer compared with 88% of white women. Younger African American women (less than age 45) experience an even poorer overall survival rate, 65.9%. In a paper published in the Journal of the National Cancer Institute, Dr Fume Olopade and her colleagues drew comparisons between what we know about breast cancer in young African American women and what we know about breast cancer due to the inheritance of a mutated

BRCA1 gene. Commonalities included: early age of onset and rapidly dividing and poorly differentiated tumors. The researchers concluded that "These facts suggest that BRCA1 mutations may contribute to breast cancer in a significant proportion of African American women, but limited data are available from this population to evaluate this possibility". Clearly much more research regarding breast cancer in African American women is needed. It is the hope of MACGN and the National Educational Foundation that together we can spread the word about this problem in an effort to encourage more women of color to join research programs like MACGN so we can learn more about this problem and how to effectively prevent it. ■

Ovarian Cancer Screening

Concerned about your risk of ovarian cancer?

The Ovarian Cancer Screening Research Study, **ROCA**, is looking for high-risk women to participate.

Call or check our website to learn if you or someone you care about is eligible.

Mid Atlantic Cancer Genetics Network
1-877-880-6188 (toll-free)
410-502-7660 (Baltimore area)
www.macgn.org

UPDATE! OVARIAN CANCER SCREENING RESEARCH STUDY REOPENS ENROLLMENT

As the second year of the Risk of Ovarian Cancer Screening Algorithm (ROCA) study ended, we received the good news that we could follow the women already participating in the research study for a third year of screening and *re-open* enrollment for an additional 40 high-risk women.

The research study was developed for women at high risk of developing ovarian cancer. Participants include women who are 30 years of age or older with a strong family history of ovarian cancer and/or breast cancer, as well as those with a mutation in the BRCA1 or BRCA2 genes, and who have at least one ovary.

We have enrolled over 160 women from MACGN alone. More than 2050 women are taking part in this important research nationally.

Current enrollees have joined for various reasons. One of our youngest participants (age 32) said that her interest was very personal, "Both my mother and aunt died of ovarian cancer. My mother also had breast cancer." Another high-risk woman said that though her gynecologist wants her to have a CA-125 level drawn regularly, "My insurance will not pay for screening tests, and I'm afraid of developing ovarian cancer."

If think you may be interested in taking part in this research study, please call **Judy Bacon** at **410-502-7660** or **toll-free** at **877-880-6188** or check our website for more details. ■