

Familial Pancreatic Cancer Research News

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Gloria Petersen, Ph.D.
Principal Investigator

Thank You . . .

On behalf of all the study teams at Mayo Clinic and at our study sites in the U.S. and Canada, I would like to thank you for taking part in our research projects. Our goal is to improve the outlook for people who are diagnosed with pancreatic cancer and those who are at risk for developing it. We hope to see any discoveries that we make turn into useful tests and knowledge for patients and the public. You play a key role in our research, and we are immensely grateful to you for your help.

Pancreatic Cancer Genetic Epidemiology (PACGENE) Consortium



PACGENE includes seven medical centers across the U.S. and Canada that are gathering information and blood samples from families with a history of pancreatic cancer:

- Dana-Farber Cancer Institute (Boston, Mass.)
- Karmanos Cancer Institute – Wayne State University (Detroit, Mich.)
- Mayo Clinic (Rochester, Minn.)
- M.D. Anderson Cancer Center (Houston, Texas)
- The Sol Goldman Pancreatic Cancer Research Center at Johns Hopkins University (Baltimore, Maryland)
- Creighton University (Omaha, Neb.)
- Mount Sinai Hospital – University of Toronto (Ontario, Canada)

Doctors and scientists from all of these centers are working together to help understand why pancreatic cancer seems to run in some families. They are looking for new genes that increase the risk of developing this disease. They are also interested

in possible links between pancreatic cancer and melanoma.

People who wish to join the family registry must be 18 years of age or over and meet one of the following criteria:

- At least two family members who ever had pancreatic cancer, or
- At least one family member who ever had pancreatic cancer and at least one family member who ever had melanoma.

Participants are asked to complete surveys about their medical and family history and their opinions about cancer, to donate blood, and to give permission for researchers to use their medical records.

If you or someone you know might be interested in participating, please contact the Pancreas Research Team at 1-800-914-7962.

This study is funded by a grant from the National Cancer Institute. The following technical paper provides more detail: Petersen GM, de Andrade M, Goggins M, Hruban RH, Bondy M, Korczak JF, Gallinger S, Lynch HT, Syngal S, Rabe KG, Seminara D, Klein AP. Pancreatic Cancer Genetic Epidemiology Consortium. Cancer Epidemiol Biomarkers and Prev. 2006 Apr;15(4):704-10.

Research News from the PACGENE Consortium

The Pancreatic Cancer Genetic Epidemiology (PACGENE) Consortium has screened over 19,000 patients' family histories and discovered 1,600 families containing two or more relatives who had pancreatic cancer. Over 9,800 patients and their family members are in the study. This is what we have found so far:

- We have shown that pancreatic cancer in families seems to occur around 5 to 6 years younger than the average age (69 years) of the non-familial patients.
- We have found that some families with pancreatic cancer are at risk due to genes already

connected to inherited cancer, such as BRCA2 and p16. These genes account for a small fraction of familial pancreatic cancer. The basis in the rest of the families remains unknown.

- Family X, which was reported to be due to the palladin gene on chromosome #4, appears to be a unique family. Pancreatic cancer in other families is not explained by this gene.

We are analyzing 5 million DNA results on 1,000 members of 109 families. We hope to have some findings to share with you in the next issue. In the meantime, we are still interested in enrolling families! Please contact us for details.

Mayo Clinic Pancreas Registry

The Pancreas Registry at Mayo Clinic was organized in 2000 with generous funding from Mayo Clinic and the Lustgarten Foundation for Pancreatic Cancer Research. The registry exists to gather data and blood or tissue samples from patients with various pancreatic conditions, such as pancreatitis, pancreatic cysts or pancreatic cancer. It is an important resource for doctors and scientists to study pancreatic diseases and find new ways to diagnose,

prevent or treat them. Patients who agree to join the Mayo registry are asked to: 1) complete two surveys about diet, and medical and family history, 2) donate blood, and 3) give permission for researchers to use their medical records. Since 2003, the registry has been supported by a National Cancer Institute grant as part of a Specialized Program of Research Excellence (SPORE) in Pancreatic Cancer.

Pancreatic Cancer Research Update

BRCA2 and Familial Pancreatic Cancer

BRCA2 is a gene that was discovered in families with breast cancer. Doctors at Mayo Clinic, Johns Hopkins University and Mount Sinai Hospital studied whether BRCA2 also is related to pancreatic cancer. They found that mutations in the BRCA2 gene account for 6 percent of families with at least two close family members who ever had pancreatic cancer.

Reference:

Couch FJ, Johnson MR, Rabe KG, Brune K, de Andrade M, Goggins M, Rothenmund H, Gallinger S, Klein A, Petersen GM, Hruban RH. The prevalence of BRCA2 mutations in familial pancreatic cancer. *Cancer Epidemiol Biomarkers Prev.* 2007 Feb;16(2):342-6.

Cystic Fibrosis Gene Is a Risk Factor for Young-onset Pancreatic Cancer

Cystic fibrosis is an inherited condition that causes mucus in the body to become thick and sticky,

causing problems in many organs, especially the lung and the pancreas. People with cystic fibrosis often have difficulty breathing and have problems with nutrition, digestion, and growth. Some of these people also develop chronic pancreatitis.

Doctors at Mayo Clinic searched for mutations in the cystic fibrosis gene (CFTR) in patients with pancreatic cancer. They found that twice as many people who were diagnosed with pancreatic cancer before age 60 carry mutations in the CFTR gene compared to the general population.

Reference:

McWilliams R, Highsmith WE, Rabe KG, de Andrade M, Tordsen LA, Holtegaard LM, Petersen GM. Cystic fibrosis transmembrane regulator gene carrier status is a risk factor for young onset pancreatic adenocarcinoma. *Gut.* 2005 Nov;54(11):1661-2.

Message from the Study Coordinators



Jodie Cogswell and Cindy Chan
Study Coordinators

Since we joined the study team at Mayo Clinic in 2006, we have enjoyed working directly with you and your families on this important cancer research. Thank you all for your time and dedication to provide us with information and blood samples. Without your help, our research would not be possible. We are excited to be a part of the effort to learn more about pancreatic cancer and to improve its medical care. We look forward to continuing our work with you! If you have any questions, please do not hesitate to contact us at 1-800-914-7962 or pancreas@mayo.edu.

New Research Opportunity



Mark Topazian, M.D.
Principal Investigator

Cancer of the Pancreas Screening (CAPS 3) Study

Cancer of the Pancreas Screening (CAPS 3) is a new study that aims to find the best way to screen for pancreatic cancer. Five medical centers across the U.S. are working together on this study:

- Johns Hopkins University (Baltimore, Maryland)
- Mayo Clinic (Rochester, Minn.)
- M.D. Anderson Cancer Center (Houston, Texas)
- University of Alabama (Birmingham, Ala.)
- University of California, Los Angeles

The screening includes a genetic counseling session, blood tests, an MRI, a CT scan and an endoscopic ultrasound (EUS). The cost of these procedures will be covered by the study, but the cost of travel to one of the medical centers will not be covered.

People who are interested in taking part in the CAPS 3 study must meet one of the following criteria:

- At least two close family members (parent, sibling or child) who ever had pancreatic cancer, or
- Diagnosis of Peutz-Jeghers syndrome, or
- BRCA2 or FAMMM (p16/CDKN2A) gene mutation and at least one family member who ever had pancreatic cancer.

The study has been enrolling participants at Johns Hopkins University since early 2007. Enrollment for the study at Mayo Clinic also is starting.

For more information about the CAPS 3 study at Mayo Clinic, please contact:

Jodie Cogswell, Study Coordinator
1-800-914-7962, extension 3
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Glossary

Computerized tomography (CT) scan: A procedure using X-rays to produce detailed cross-sectional images of organs in the body.

Endoscopic ultrasound (EUS): A procedure using ultrasound waves to produce detailed images of organs in the body. An ultrasound probe is attached to an endoscope, which is a fiber optic tube used to look inside the intestinal tract.

Familial atypical mole-malignant melanoma (FAMMM)

syndrome: An inherited condition that includes having at least one family member who ever had melanoma and having more than 50 moles. FAMMM syndrome increases the risk of developing melanoma. Mutations in the p16 and CDKN2A genes were discovered in families with this syndrome.

Magnetic resonance imaging (MRI): A procedure using radio waves and strong magnets to produce detailed cross-sectional images of the body.

Peutz-Jeghers syndrome (PJS): An inherited condition that causes many polyps in the small intestine and colon. PJS increases the risk of developing intestinal and other cancers.

Pancreatic Cancer Facts

- Pancreatic cancer is a serious disease for which little is known.
- An estimated 37,170 Americans will be diagnosed with pancreatic cancer in 2007.
- The risk of developing pancreatic cancer is about the same for both men and women.
- Pancreatic cancer seems to run in some families. Five to ten percent of pancreatic cancers may be related to inherited gene mutations. These mutations often increase the risk for certain other cancers as well.

Prevention

Suggested lifestyle changes to help reduce the risk of pancreatic cancer:

- **Quit smoking.** Smokers are two to three times more likely to develop pancreatic cancer than non-smokers.
- **Maintain a healthy weight and exercise regularly.** People who are very overweight or physically inactive may have a greater risk of developing pancreatic cancer than people who are not.
- **Eat a healthy diet.** A diet high in animal fat and low in fruits and vegetables may increase the risk of pancreatic cancer.

Source:

American Cancer Society <<http://www.cancer.org>>

Resources

Pancreatic Cancer Action Network, Inc. (PanCAN)

<http://www.pancan.org>

National advocacy and patient support organization for pancreatic cancer.

The Lustgarten Foundation for Pancreatic Cancer Research

<http://www.lustgarten.org>

Non-profit organization for supporting pancreatic cancer research and education.



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What are Family Registries?

Family registries are a way for researchers to discover the causes of familial cancer. Researchers from a variety of fields (epidemiology, gastroenterology, pathology, oncology, genetics, and surgery) try to find the unifying genetic and non-genetic features. The participation of patients and family members is vital to further the understanding of pancreatic cancer.

A pancreatic cancer registry collects information from patients and their blood relatives with a strong family history of pancreatic cancer. Registries examine lifestyle, environmental, and genetic factors in addition to family history of pancreatic cancer. Taking part in a registry usually requires completing questionnaires on individual and family medical history, family history of cancer, exposure to environmental agents, and information about age, ethnicity, education, and occupational history. Participants may be asked to provide blood or tissue samples.

Registries need approval by their respective institutions for safety and privacy to participants. To ensure privacy, unique study numbers are assigned to the registry participants. Registries are often protected by a Certificate of Confidentiality from the federal government. With this certificate, researchers cannot be forced by court order to disclose any protected health information which may identify registry participants.

Reprinted with permission from the Pancreatic Cancer Action Network, Inc.: "Family Registries." Outreach July 2006: 9.

How to Contact Us

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