



PEARL



The Pancreas Education and Research Letter

20th Anniversary of the Hereditary Pancreatitis Study

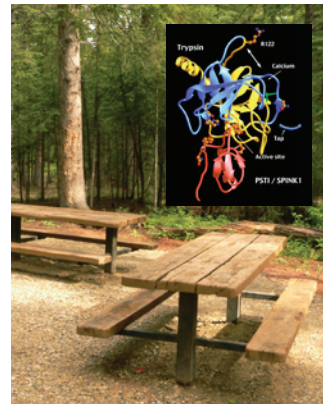
Memorial Day weekend of 1995 provided the perfect weather for a historic picnic at Breaks Interstate Park. The park, located in southeastern Kentucky and southwestern Virginia in the Jefferson National Forest near Pine Mountain, served as a gathering site for dozens of volunteers for a new study designed to find the cause of hereditary pancreatitis.

The volunteers represented two diverse interest groups. The first group included individuals who suffered greatly from hereditary pancreatitis (HP) directly or indirectly as a close family member. They contributed their own time and energy to visit the designated site on this historic day. The second group included physician-scientists, with their families and helpers, who came from three different states to evaluate and enroll families from the first group into an audacious undertaking – to use HP to unlock the mysteries of acute and chronic pancreatitis. The rest is history.

Within one year, Dr. Whitcomb's team at the University of Pittsburgh discovered that the genetic risk factor for HP was located on chromosome 7. More specifically, it was found in the cationic trypsinogen gene (*PRSS1*) and causes trypsin to be too active within the pancreas. As a result, the pancreas becomes damaged, leading to pancreatitis and its complications. This discovery of the R117H mutation (now reported as R122H), published in *Nature Genetics*¹ (PMID: 8841182) revolutionized our understanding of acute pancreatitis, chronic pancreatitis and pancreatic cancer. It has been considered one of the greatest discoveries in pancreatic diseases in a century.

But much work must still be done. The immediate result of the discovery was the ability to test for hereditary pancreatitis (see www.pancreas.org), but our understanding of why some people suffer earlier and more severely than others with the same mutation, and why some develop constant pain, and others

develop fibrosis, diabetes or even pancreatic cancer remains limited and further research is needed (see the companion articles related to hereditary pancreatitis). Furthermore, we do not yet understand why 20% of individuals



Picnic table photo courtesy of Freemages.com/JasonCheever

with the same mutation do not develop pancreatitis. At the University of Pittsburgh, these are the challenging questions that we are trying to answer through the ongoing efforts of researchers and participants in the Hereditary Pancreatitis Study. Our participants have made valuable contributions to the study through their ongoing participation, and we look forward to continuing and expanding this study in an effort to improve understanding of and care for hereditary pancreatitis. ○

¹See <http://www.ncbi.nlm.nih.gov/pubmed/8841182>

HAPPENINGS



Celeste Shelton, MS, is a genetic counselor that joined the team in June 2015. She learned about hereditary pancreatitis (HP) during her graduate training and focused on this disease for her master's degree. Celeste plans to expand our

knowledge about individual differences between patients with the same *PRSS1* gene mutations. She will evaluate multiple factors in individuals and families with HP to determine which factors affect development of specific symptoms and severity of disease, as well to understand how to improve care for HP patients in Academic Pancreas Centers of Excellence (APCOE).

Celeste recently wrote an important paper² with Dr. Whitcomb on how genetic counselors should approach complex diseases, such as pancreatitis. As opposed to simple genetic diseases caused by a single gene, complex diseases arise from multiple gene-gene and gene-environment interactions. Physicians, genetic counselors and other health care providers may obtain a better perspective of pancreatitis genetics through this publication. Understanding the role of multiple genetic variants and their interaction with environmental factors should improve the diagnosis and care of patients with HP, as well as other types of pancreatitis. ○

²*Clin Transl Gastroenterol.* 2015 (in press)

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Learn What the Pancreas Does When it is NOT Cranky!

Most people cannot tell you what the pancreas does under normal conditions. We know that it works like a gland that squirts special juices into the intestine, and other things like insulin into the blood. One example is how it blocks stomach acid from hurting the intestine.

As an experiment, you can test another gland that works in ways that are similar to the pancreas, but is located near your mouth. This is the salivary gland.

Experiment: Take a slice of lemon and bite into it. The lemon has acid in it (citric acid). When acid is in your mouth the salivary gland becomes active and squirts juice into the mouth to neutralize the acid from the lemon. This is exactly how the pancreas works to neutralize gastric acid coming into the intestine.

The pancreas has other functions as well — and it works quietly in most people. But if something goes wrong it becomes angry and painful — a cranky pancreas!

We picked two internet resources to help you to learn more about the pancreas. The words to the Pancreas Song, by Haywood Banks, are given at right — with the song sung on YouTube (<https://www.youtube.com/watch?v=3dTIjEtSfP8>). We recommend a more "educational" resource for older children and adults (<https://www.youtube.com/watch?v=NZ4zcrTzUjA>).

Whole-grain Mixed Berry Muffins

By Julia Greer, MD, MPH

These muffins contain the whole-grain goodness of wheat, wheat germ, and flaxseed as well as powerful berry antioxidant polyphenols. They are also low in calories and fat and contain virtually no saturated fat. These muffins store and travel nicely for the lunchbox or snacks.

Ingredients:

Nonstick cooking spray
1-3/4 cups whole-wheat pastry flour
3/4 cup rolled oats (not quick oats)
1/4 cup wheat germ
1/4 cup ground flaxseed
1/4 cup sugar
1 teaspoon baking powder
1 teaspoon salt
2 eggs
2 tablespoons canola oil

The Pancreas Song

By Heywood Banks

Let us all raise our glasses to the pancreas,
It has never been an organ of distinction --
Though it functions day by day,
In a most convenient way,
It has never had the glory that the liver gets.

Let us all raise our glasses to the pancreas,
Just secretin alkaline digestive juices,
Into the intestine

Just to neutralize the stomach acid
That could be remaining on the food

Hey pancreas, hey pancreas,
You are my favorite organ,
Hey pancreas, hey pancreas,
I cant think of anything that rhymes with organ

Pumpin' out from the lovely Isles of Langerhans
Comes the insulin that regulates the sugar in the blood
And that's why so high I rank it
And I'll drop a note to thank it
May you never have a cranky pancreas!

Hey pancreas, hey pancreas, have a nice day!

2 tablespoons orange juice
1/4 cup nonfat (skim) milk
1/2 cup plain low-fat yogurt
1/2 cup fresh strawberries,
hulled and chopped
1/2 cup fresh raspberries
1/2 cup fresh blueberries



Preparation: Preheat oven to 350°F. Spray two regular muffin tins with nonstick spray or line with paper liners. In a large bowl, combine whole-wheat flour, oats, wheat germ, ground flaxseed, sugar, baking powder, and salt. In a separate bowl, combine oil, orange juice, milk, and yogurt. Pour wet ingredients into dry ingredients and stir until moistened. Gently fold in berries. You may add more milk or yogurt if batter does not appear to be moist. Divide batter among muffin cups, filling each cup about 2/3 full. If batter doesn't fill every muffin cup, put a few tablespoons of water in empty cups. Bake 18 to 22 minutes or until a toothpick inserted in muffins comes out clean. Makes about 18 muffins. ○

PancreasFest 2015

Pittsburgh, PA, USA – July 22-24, 2015. (From www.pancreas.org) PancreasFest 2015 (PF15) united more than 200 physicians, scientists and trainees on the campus of the University of Pittsburgh in July 2015. The program highlighted pancreatic cancer research, with a presentation by Professor Peter O'Dwyer, MD from the University of Pennsylvania as the winner of the 2015 Ruth C Brufsky Award for Excellence in Research in Pancreatic Cancer. Other sessions focused on chronic pancreatitis, pancreatic cancer diagnosis, minimizing suffering during pancreatic cancer treatment and the role of pancreatic lipases in pancreatic diseases. There were multiple panel discussions which enabled the the audience and speakers to interact in lively and highly informative debates.

The **I**nternational **S**tudy group of **P**ediatric **P**ancreatitis **I**n **S**earch of a **cuRE** (INSPIRE) sponsored a special meeting at Children's Hospital of Pittsburgh of UPMC for pediatric pancreatologists. This meeting featured multiple American and international expert speakers discussing special problems of pancreatic disease in children, followed by a targeted case discussion session to address difficult pediatric pancreatitis issues.

The Collaborative Alliance for Pancreatic Education and Research (CAPER) sponsored a young investigators' meeting to highlight up and coming physician researchers. A poster session included 40 presentations, plus four oral presentations from Enrique de-Madaria, MD, PhD, from Alicante, Spain, Venkata Akshintala, MD, from UPMC in Pittsburgh, Katherine Morgan, MD, FACS, from the Medical University of South Carolina, and Walter Park, MD, MS, from Stanford University. Georgios Papachristou, MD, PhD, from the University of Pittsburgh presented an update on the



Professor Randall Brand MD (far right) from the University of Pittsburgh and UPMC discusses issues related to evaluation of pancreatic cysts. Other panelists in the picture include Amuer Zureikat MD, William Brugge MD and Anne Marie Lennon MD PhD.

APPRENTICE Study – a well-organized international working group of over 30 centers focused on solving problems related to acute pancreatitis. CAPER also honored Professor David C. Whitcomb, MD, PhD, with the CAPER Lifetime Achievement and Mentoring Award.

Two special sessions highlighted the effort of ad hoc working groups designed to establish guidelines for Academic Pancreatic Centers of Excellence (APCOE). The goal is to provide guidance for best practice approaches for pancreatic care throughout the United States. The APCOE work is in parallel to the efforts of the National Pancreas Foundation, which is evaluating both academic and non-academic centers to make sure that the patients are directed to high-quality care. Darwin Conwell, MD, MPH, chief of gastroenterology and hepatology at The Ohio State University, noted that APCOEs have the added responsibility of conducting research to continually improve care, evaluating new and existing tests and their optimal use, and educating the next generation of physician scientists.

This year the National Institutes of Health again choose to link an important workshop to PancreasFest. The NIDDK and NCI held a one-day workshop to discuss "Advances in Biomedical Imaging, Bioengineering, and Related Technologies of the Development of Biomarkers of Pancreatic Diseases: Gaps, Needs and Opportunities."

Clinic-based physicians were able to describe the types of information that is needed for them to evaluate problems impacting patient care to an audience of scientists who have the skill and desire to invent new methods and techniques. The structured presentations and interactions resulted in a very successful meeting. It is hoped that the recommendations of these communities will lead to targeted funding to fill these gaps and needs. ○



Professor Julia Mayerle, MD for Ernst-Moritz-Arndt Universität Greifswald, Greifswald, Germany discussing the use of animal models of pancreatitis during a panel discussion as Jeffrey Easler MD, Indiana University, takes notes in the foreground.



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Summer 2015

Get Involved – The Hereditary Pancreatitis Study

The Hereditary Pancreatitis Study is an ongoing study at the University of Pittsburgh. We are continuing this study to gain more information on the genetic of pancreatitis, the attitudes and concerns of families with pancreatitis, and its association with pancreatic cancer. This is a very important study, and the goal is to gather information that may be used, in the future, to improve treatment and help doctors make better clinical decisions. We have developed a new health survey to answer these questions and to inform genetic counselors. We are asking past participants, as well as individuals with a personal or family history of pancreatitis or pancreatic cancer, to help us by completing this survey. It can be completed in 15 minutes. The survey can be accessed at: <http://tinyurl.com/PittHP>

More instructions and information are available at this link. We are also asking participants if they are willing to provide updates to their personal and family medical information in a 10 minute phone conversation. For additional information or questions, please contact **Celeste Shelton, MS** by calling **412-864-2826** or our toll-free number at **1-888 PITT-DNA/1-888-748-8362**,

or by email at cas186@pitt.edu. Participation in this study is completely voluntary.

To receive an electronic version of future newsletters, please email your name and email address to askpearl@pitt.edu ○

HIGHLIGHTS

20 th Anniversary of the Hereditary Pancreatitis Study	1
Happenings	1
Kids' Corner – Learn What The Pancreas Does When It Is Not Cranky!	2
Recipe – Whole-Grain Mixed Berry Muffins.....	2
PancreasFest 2015 Highlights	3