UM School of Medicine receives $45 million private donation for celiac research

EurekAlert

With a new $45 million private gift from the family of a grateful patient, the University of Maryland School of Medicine is planning to establish the nation's only major research enterprise devoted to the study of autoimmune and inflammatory diseases such as celiac disease, multiple sclerosis, chronic obstructive pulmonary disease, asthma and Type 1 diabetes. The gift, from Indiana couple Ken and Shelia Cafferty, is the largest private donation in the history of the University System of Maryland.

The planned research enterprise will be a full-fledged, multidisciplinary academic organization that includes and expands upon two of the school's outstanding research centers, the Mucosal Biology Research Center and the Center for Celiac Research. Alessio Fasano, M.D., a world renowned celiac disease researcher and professor of pediatrics, medicine and physiology at the School of Medicine, will direct the new research enterprise. Dr. Fasano is director of the Mucosal Biology Research Center and the Center for Celiac Research.

"For years, my wife struggled with severe symptoms, with no diagnosis and no treatment for her condition," says Ken Cafferty, a businessman from Carmel, Indiana, who is making the gift with his wife, Shelia, a registered nurse. "I endured this struggle with her, until Dr. Fasano and his staff at the Center for Celiac Research finally found answers for us, diagnosing Shelia with gluten sensitivity. We are making this gift with the hope that this new enterprise will help provide answers for other families in the same position, and hopefully make strides toward a cure to provide permanent relief for patients like Shelia."

The planned enterprise will have three divisions: one focused on celiac disease, the second on mucosal biology and a third focused on microbe/host interaction. The third division, the newest of the three, will examine the intersection between the human body and the microbes that inhabit the body. Its faculty will work closely with faculty at the University of Maryland Institute for Genome Sciences, located in the University of Maryland BioPark in West Baltimore. The Institute for Genome Sciences faculty members are world leaders in the study of the human microbiome the genomics of the microbes on and in the human body and how it interacts with the human genome to affect human health.

"As an academic medical institution, we are reliant on funding from private donors and grants in order to develop scientific discoveries that will impact human health," says E. Albert Reece, M.D., Ph.D., M.B.A., vice president for medical affairs at the University of Maryland and John Z. and Akiko K. Bowers Distinguished Professor and dean of the University of Maryland School of Medicine. "The research enterprise we hope to build using the Caffertys' funds will enhance and expand the outstanding

research Dr. Fasano and his colleagues are doing. I am confident this intensive, multidisciplinary approach will enable research to result in real solutions for patients and their families."

Dr. Fasano's previous studies have found that 1 in 133 Americans suffers from celiac disease, and that the condition does not always begin early in life. In fact, his most recent study found that celiac disease is most common in older people.

"This gift is a momentous accomplishment for the University of Maryland School of Medicine and the entire University System of Maryland, as the largest gift in the system's history," says William E. "Brit" Kirwan, Ph.D., chancellor of the University System of Maryland. "Donations such as this are necessary in keeping our academic institutions thriving and innovating. We are honored to have been chosen as the recipients of the Caffertys' gift, and I am certain they have placed their hope in the right hands with Dr. Fasano and his team."

Forty million dollars of the donation is coming from a private foundation in which the Caffertys are key stakeholders. The remaining $5 million comes to the School of Medicine directly from the Caffertys, and will fund an endowed distinguished professorship that supports a director position in perpetuity for the research enterprise. Dr. Fasano will be the first recipient of that endowed professorship and the director position. The enterprise will initially include 13 faculty members, with more to be recruited in the future. Dr. Fasano envisions it employing as many as 200 people once it is up and running.

"One of the keys to the success of this campus is our partnerships across the schools and the researchers in those schools," says Jay Perman, M.D., president of the University of Maryland. "Collaboration will be a key goal of this new enterprise. The University is immensely grateful for the generosity and the vision of the Caffertys."

"We are assembling a critical mass of multidisciplinary expertise, building the best infrastructure that we can in order to investigate inflammation and autoimmunity from every possible medical and scientific perspective," says Dr. Fasano. "Our effort will involve both basic and clinical scientists and will capitalize on the complementary expertise of our institutes and organized research centers on campus. This thorough, multidisciplinary approach will help us find answers to our questions as quickly and efficiently as possible. There is simply no other way to do it, and this incredibly generous gift makes it possible. We are grateful to the Caffertys for recognizing the potential of this science and putting their faith in our world-class researchers."

The institute's scientists will use celiac disease as a model for research into autoimmune disorders such as multiple sclerosis and diabetes. Autoimmune disorders occur when the body is triggered to misdirect its immune response and attack itself. Celiac disease is of particular value for the investigation of autoimmunity and inflammatory disease because it is the only autoimmune disorder for which scientists have identified a trigger ? in this case, gluten, a protein found in wheat that is nearly ubiquitous in the contemporary human diet. Gluten penetrates

the intestinal barrier of the celiac patient and triggers the body to attack itself, causing symptoms such as anemia, gastrointestinal problems, skin rashes and fatigue.

"There are three key ingredients of inflammation and autoimmunity," says Dr. Fasano. "First, you are born with certain genes that predispose you. Second, there is an environmental trigger that causes your body to develop inflammation and eventually attack itself. Third, you have a 'leaky gut,' that is, your intestinal barrier does not keep antigens out of your body. That barrier is permeable and allows some antigens to penetrate. Celiac disease is the only autoimmune disorder for which we know the trigger ? gluten. Because we know that trigger, one of our questions about autoimmunity already is answered in celiac disease. It minimizes the unknown variables we have to work with and makes celiac disease an ideal model for other inflammatory and autoimmune disorders."

Celiac disease can be diagnosed with a blood test once a patient shows symptoms. The only treatment for celiac disease is to remove the trigger, gluten, by prescribing a gluten-free diet. Dr. Fasano hopes the new research enterprise will change that.

"Our goal is personalized medicine. We hope to identify biomarkers to develop diagnostics for autoimmunity that can assist us to develop preventive strategies in the pre-clinical phase as well as to customize treatment for individuals based on their genetics and their microbiome," he says.

Much of the research into the intersection of the human genome and the microbiome centers around the gut, which is laden with bacteria, most of it beneficial and necessary for healthy function. Examining the genetics of an individual and the genetics of that patient's microbiome could one day guide doctors in developing treatment and prevention programs for celiac disease and other autoimmune disorders. Researchers at the Institute for Genome Sciences, led by Claire Fraser-Liggett, Ph.D., are world leaders in this field of research.

Shelia Cafferty, who now manages her gluten sensitivity with a gluten-free diet, says she knew immediately upon meeting Dr. Fasano that he would be the one to help her. "I could see how passionate he and his colleagues are about the research they do," she says. "I saw how amazing Alessio is and how amazing the research at the Center for Celiac research is. I stand in awe of what he is doing."

Though her symptoms were as simple as hives and gastrointestinal distress, they made a significant impact on her life, Mrs. Cafferty says. "When you don't feel good, when you don't feel up to par, you don't feel like doing the activities you'd normally do. It affects every aspect of your life," she says.
Finding a diagnosis for his wife, says Mr. Cafferty, was life-changing. "It's comforting," he says. "I couldn't stand to see her suffer."

Awareness of celiac disease and the complicated issues surrounding gluten intolerance is growing, Mrs. Cafferty says, but there is more work to be done: "A few years ago, the gluten-free diet was a lot more difficult than it is now. With increasing awareness of celiac disease and gluten sensitivity, it's much easier now

to find great products that help me adhere to my prescribed diet. We have that awareness due to the University of Maryland Center for Celiac Research."

"We hope our donation will help the center grow and keep raising the public consciousness about celiac disease and gluten intolerance," Mrs. Cafferty adds. "We want people to get diagnosed and prevent further damage to their bodies from consuming gluten. We want to get to the root of celiac disease, to find out what causes it and if it can be prevented. That makes so much more sense than just continuing to treat the symptoms. Dr. Fasano and his colleagues now are going to be able to take their research to the next level. So many people are going to benefit from this. Knowledge is power."

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