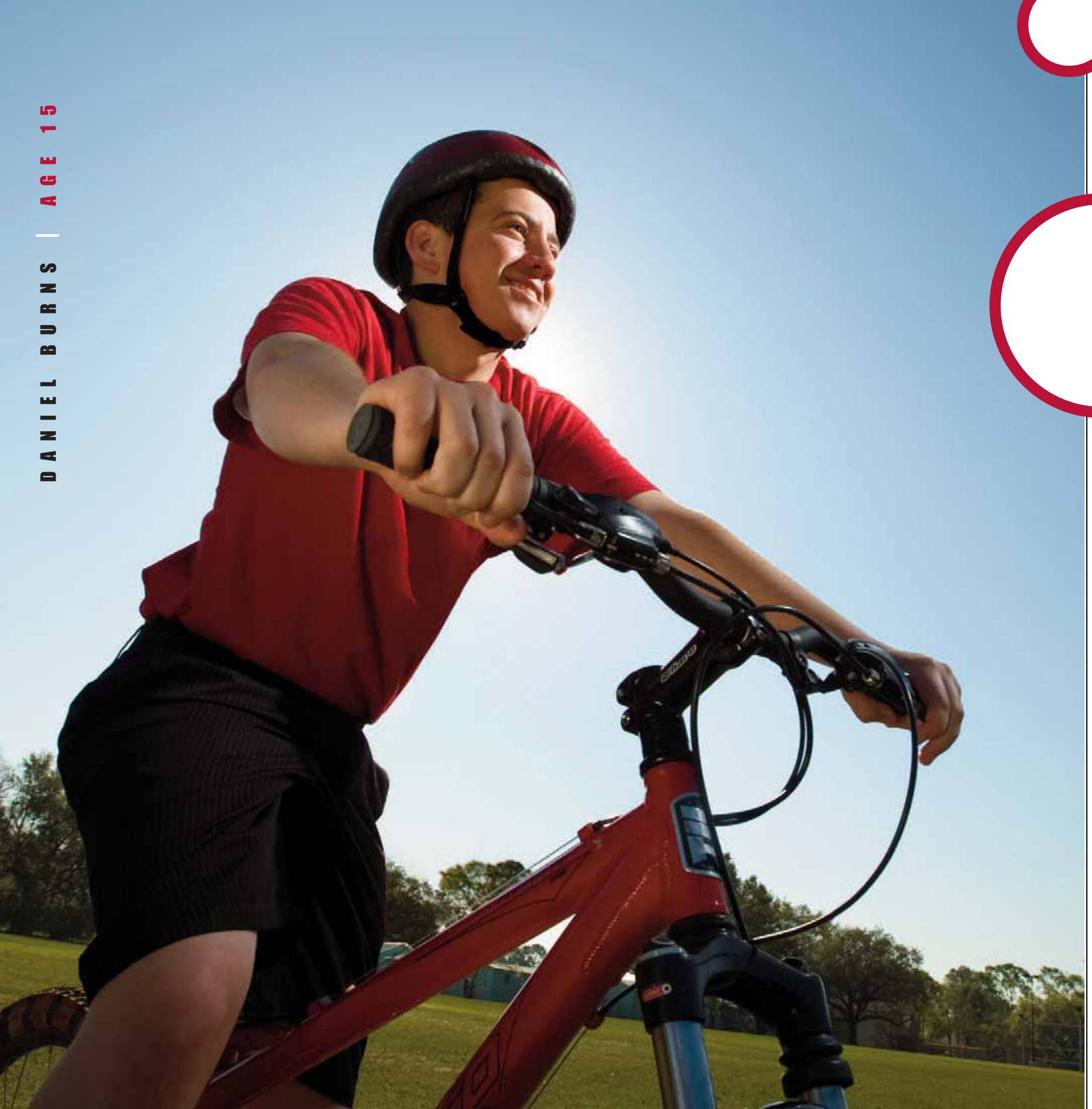

DANIEL BURNS | AGE 15

MIGHTY MICROBES

COULD SOMETHING THAT HAS UNKNOWINGLY BEEN A PART OF PEOPLE'S HEALTHY DIETS FOR CENTURIES HELP TREAT CHILDREN WITH INFLAMMATORY BOWEL DISEASES? PROBIOTICS HAVE LONG BEEN IN FOODS LIKE YOGURT AND BEEN SEEN TO BENEFIT THOSE ALREADY IN GOOD HEALTH. RESEARCHERS AT TEXAS CHILDREN'S HOSPITAL ARE UNCOVERING NEW WAYS THESE HEALTHY BACTERIUM ALSO CAN BENEFIT CHRONICALLY ILL PATIENTS.

BY HEATHER MCLEAN WIEDERHOEFT

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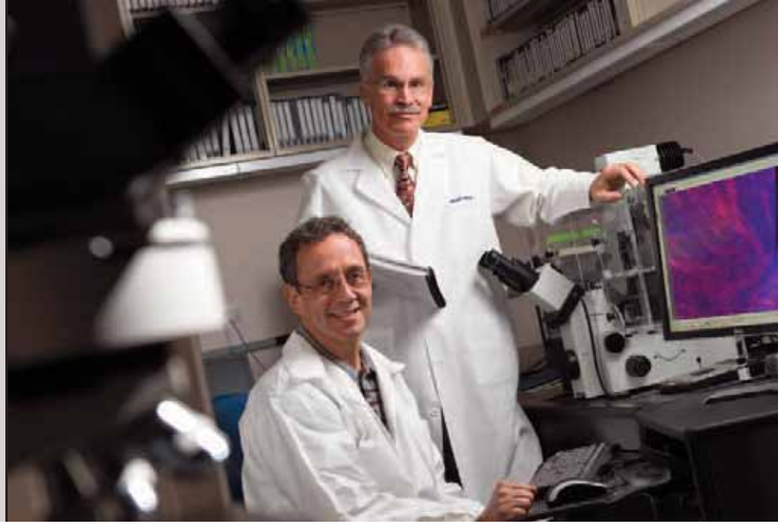

LEFT DANIEL'S FATHER AND PEDIATRIC RESEARCHER, DR. ALAN BURNS, WITH DR. MARK GILGER, CHIEF OF GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION AT TEXAS CHILDREN'S HOSPITAL **BELOW** DR. JAMES VERSALOVIC, DIRECTOR OF TEXAS CHILDREN'S MICROBIOME CENTER

FINDING THE RIGHT THERAPY

When Daniel was just 5 years old, he spent six weeks with gastrointestinal problems.

"Since he was our first child, our initial reaction was that the problems would clear up but when they didn't, we brought him to his pediatrician who referred us to Dr. Anthony Olive who specializes in gastroenterology at Texas Children's," explained Alan Burns, Ph.D., Daniel's father and a pediatric researcher at Baylor College of Medicine.

Daniel was diagnosed with indeterminate colitis, a form of pediatric inflammatory bowel disease (IBD). Between one and two million Americans live with IBD, which is a chronic, incurable condition that strikes many of the patients before they are 30 years old.

"Indeterminate colitis is diagnosed when a patient's condition has features of both Crohn's disease and ulcerative colitis, but it cannot be definitely classified as one of these two diseases," explained Mark Gilger, M.D., chief of gastroenterology, hepatology and nutrition at Texas Children's Hospital and Daniel's primary gastroenterologist for the past several years. "Indeterminate colitis requires daily, ongoing anti-inflammatory therapy which has to be individualized for each patient because there is no one proven therapy that is successful for all IBD cases."

For the first one to two years of his treatment, Daniel was on several different combinations of medications. Almost all of them would work for a while, but then he would have recurring problems. Eventually Daniel was put on a combination that included the steroid prednisone, which at first seemed to work.

"Even though the prednisone kept his symptoms from flaring, within a few weeks of starting this medication combination, Daniel's body weight went from 40 pounds to 55 pounds and his face became really puffy," said Burns. "Daniel was an athletic kid who so badly wanted to be just like everyone else. When some kids started saying he was fat, he took it hard and combining this experience with some of the harsh long-term effects of prednisone, we knew we had to find another way."

Burns began doing even more of his own research. A colleague of his at Baylor College of Medicine, C. Wayne Smith, M.D., suggested he look into probiotics. Though all he read was anecdotal evidence about probiotics and IBD, he decided to bring them up with Gilger.

POWER OF PROBIOTICS

Found in yogurt and other popular foods, probiotics have become a part of the mainstream media during the past few years. But while such probiotics have been shown to benefit already healthy people, explained James Versalovic, M.D., Ph.D., chief of pathology and director of Texas Children's Microbiome Center, they are not the same probiotics he and his team have been studying for almost 10 years to help treat serious pediatric diseases.

"Our research is focused on the ability of probiotics, or beneficial microbes as we call them more broadly, to affect the immune system. One possible treatment is to use them to suppress or control the hyperactive immune response, in this case, in the intestines," said Versalovic, associate professor of pediatrics, molecular virology and microbiology, and molecular and human genetics, as well as head of pathology at Baylor College of Medicine.

Many people don't realize that the human body is full of beneficial bacteria.

"There's actually more bacteria in the intestines than cells in our body, and it appears that the normal functioning of the beneficial bacteria may be disrupted in IBD," explained Gilger, also professor of pediatrics at Baylor College of Medicine. "The human body is like a living hybrid, and we're hosting a type of parasite in our gut bacteria that we can't live without. Texas Children's research is showing us that an alteration of the normal gut bacteria may lead to IBD and inflammation of the lining of the intestines. Using probiotics in the treatment of indeterminate colitis may be rebalancing the bacteria, thus recreating a favorable gut environment."

Daniel's father approached Gilger with the topic of probiotics at the perfect time. Because of the close working relationship between Texas Children's pediatric gastroenterologists and pathology researchers, Gilger knew that Versalovic was beginning a trial using probiotics as part of a treatment protocol for IBD. They agreed to add Daniel to the trial.

"It's always challenging to say how well a probiotic is going to work until it is taken and we see how the patient reacts; in Daniel's case, he did very well," said Versalovic. "We have been able to control his inflammation by adding the probiotic to his course of treatment, which has kept him from returning to using steroids and has helped him to have an overall better quality of life."

TREATMENT BUILT ON RESEARCH

Within a relatively short time of joining the probiotic trial, Daniel's weight returned to normal and his IBD seemed under control.

"Daniel has been on the medications plus probiotics for almost eight years now, and it really does work for him," said Burns. "His doctors had temporarily eliminated probiotics from his medications, but this exacerbated his condition. So we returned to the regimen including the probiotics, and his symptoms evaporated."

Today, Daniel is growing like a normal 15-year-old. A freshman at St. Thomas High School, he is a member of the lacrosse team and spends his free time riding the bike trails in the park, seeing movies and hanging out with his friends.

"The care has been great at Texas Children's, and I have always felt that I'm kept in the loop and know what is going on for my treatment," Daniel said.

"I really like how Texas Children's combines research with clinical treatment of their patients," added Burns. "Even if Daniel or another IBD patient isn't involved with other clinical trials on probiotics, his doctors still will have insight into the trial and can advise families on the research."

Though Versalovic's probiotics research has made amazing strides in the past 10 years, he still envisions even greater possibilities. "Our next step is to take the potential hundreds of probiotics we have and determine which ones could be the most effective in patient treatment," he said. "My vision for the future is that we'll have as many probiotics as antibiotics, and we'll be able to individualize treatments using probiotics to treat various diseases in children."

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