Baylor Leads Autoimmune Disorder Research

Finding the genetic link in lupus, psoriasis and rheumatoid arthritis

BY CYNTHIA KINCAID

∧ Microarray technology creates colored patterns that help physicians determine how a patient's autoimmune disorder will progress.

WITH THE USE OF MICROARRAY TECHNOLOGY, the Baylor Institute for Immunology Research has begun an unprecedented investigation into the causes of and treatments for lupus, psoriasis and rheumatoid arthritis.

The groundbreaking research, led by physician-researchers Alan Menter, M.D., Virginia Pascual, M.D., and Jack Cush, M.D., works to understand more about these autoimmune diseases, which occur when the body's immune system attacks its own cells, tissues and organs. The research also will attempt to identify potential new treatments and preventive therapies.

Using blood droplets from a patient, microarray technology scans 43,000 different genes. These create colored bars with patterns, or "signatures," that correspond to specific diseases and symptoms, and these color patterns make it possible to predict the onset and even the course of disease.

"We are confident this technology will find a signature within these patients," says Dr. Menter, lead investigator for psoriasis and director of psoriasis research at Baylor Research Institute and president of the International Psoriasis Council. These signals, says Dr. Menter, may lead to the discovery of genetic variations in our psoriasis population with potential for better treatments for specific subtypes of psoriasis.
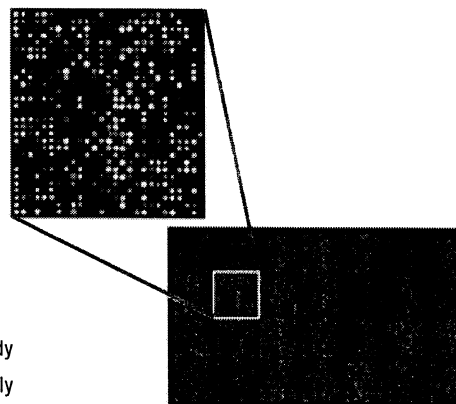
Dr. Pascual leads the efforts in the study and treatment of lupus. She was recently awarded a $6.2 million grant from the National Institutes of Health to establish a center for lupus research at Baylor. Dr. Cush, director of clinical rheumatology, focuses on research for rheumatoid arthritis, a disease that causes the body's immune system to attack its own joints, resulting in inflammation and, in some cases, crippling pain.

It is expected that this team will take the advanced microarray technology, with its broad applications for all kinds of autoimmune disorders, from the laboratory to the patient.

"All of these disorders are linked in genetic ways and fit into the category of immune-mediated diseases," says Dr. Menter. Researchers hope that microarray technology will allow them to predict the type of disease a patient may develop, as well as finding the best therapy for the patient by creating unique "pharmacogenomic" drugs.

"Pharmacogenomics is going to be the single most important advance in medicine," says Dr. Menter. "By virtue of this technology, we may be able to find a pattern and signature of disease, tailor therapy to individuals and then create new drugs."

Dr. Menter estimates some 6 million Americans have psoriasis. More than 2 million people in the United States have rheumatoid arthritis, which affects more women than men. The Lupus Foundation of America estimates that 1.5 to 2 million Americans – 90 percent of whom are women – have a form of lupus.

The research developed by the team at Baylor could provide hope for millions. "We started the world's first gene bank for psoriasis at Baylor in 1994, which led to major International collaborations, and subsequent discovery of eight known genes in psoriasis" says Dr. Menter. "So the genetics are being worked out, the immunology is being worked out, and now this technology hopefully is going to lead to better and better treatments." ::

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