OKC lab refines test to predict future lupus flares

By Jim Stafford
For The Oklahoman

Five patients are waiting to see their doctor, each displaying different symptoms. One has a bright rash on her face. Another is suffering from arthritis. Still another has kidney failure, while the fourth patient suffers from heart problems and the fifth is fatigued all the time.

Turns out, they all suffer from lupus, which afflicts as many as 1.5 million Americans and 5 million worldwide. Lupus is an autoimmune disease in which the body's immune system attacks its own tissue and organs.

“You could have five lupus patients sitting in a waiting room talking about their disease and they would have no idea they have the same disease because it presents differently with different patients,” said Melissa Munroe, with the Oklahoma Medical Research Foundation, and Mohan Purushothaman, CEO of Progentec Diagnostics Inc., are helping bridge the care gap between clinicians and people battling lupus.

See LUPUS, D10
Melissa Munroe, M.D., Ph.D., a researcher with the Oklahoma Medical Research Foundation (OMRF).

Research developed by Munroe and her collaborator, fellow OMRF scientist Judith James, M.D., Ph.D., chair of the Arthritis and Clinical Immunology Research Program and OMRF vice president of clinical affairs, led them to develop an algorithm that can predict lupus disease flares up to three months in advance. The pair examined immune proteins in the blood of hundreds of lupus patients with support from the National Institutes of Health’s Autoimmunity Centers of Excellence.

"Because different patients have different proteins that are changing right before a disease flare, we looked at a lot of different proteins and came up with an equation that added up the contribution of each protein we measured," Munroe said.

Their research led to a collaboration between OMRF and Progentec Diagnostics Inc., which licensed the technology and is advancing a suite of commercial diagnostic tests for lupus.

Progentec established a CLIA (Clinical Laboratory Improvement Amendments administered by the Centers for Medicare & Medicaid Services) certified laboratory on OMRF’s campus in Oklahoma City and is aggressively working toward a release of the lupus test.

Mohan Purushothaman, Ph.D., president & CEO, and Sanjiv Sharma, chairman, lead the Progentec development team. The company has four different tests in the pipeline, Purushothaman said.

“We are ready to roll out these tests,” he said. “Our hope is that some time in about three or four months we should have a flare prediction test, at least a beta version, out to NIH Centers of Excellence and a few selected users.”

In addition to its work developing the lupus tests, Progentec has taken a big step into the world of digital medicine with the acquisition of an online domain and mobile app known as LupusCorner.

The LupusCorner app features in-depth information on diagnosis and symptoms as well as living with lupus.

Users can even chat with a nurse practitioner about the disease.

“That has been a major point of entry for us in terms of connecting with patients, educating them and making them aware of what we are doing,” Purushothaman said.

Both Munroe and Purushothaman cite financial support from the Oklahoma Center for the Advancement of Science and Technology (OCAST) and its partner, i2E Inc., for helping the researchers develop the data and the company to advance the technology toward the market.

An OCAST Oklahoma Applied Research Support (OARS) grant, in conjunction with matching funds by other investors, including i2E, OCA Ventures and Mayo Clinic Ventures, has allowed for further testing and refinement of the lupus flare prediction test.

Of course, success will depend on how well the tests predict which lupus patients are at increased risk of imminent clinical disease flares. Information provided by the lupus flare prediction test would allow physicians to intervene earlier.

“I think the science we have here is extremely promising,” Purushothaman said. “When you compare to what’s out there today, we are orders of magnitude better than them in terms of accuracy and sensitivity.”

Jim Stafford writes about Oklahoma innovation and research and development topics on behalf of the Oklahoma Center for the Advancement of Science & Technology (OCAST).