

Investigating kidney biomarkers to track lupus

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Credit: University of Michigan Health System

Lupus, a chronic autoimmune disease, can wreak havoc on an affected individual's body through inflammation, pain and even damage of the skin, joints and organs.

To try to better understand how the disease begins and progresses, researchers at the University of Michigan investigated whether kidney

biomarkers would signal lupus progression and signs of complications.

"Lupus patients have a high risk of kidney involvement, which can lead to end-stage renal disease requiring dialysis or transplant," says Emily Somers, Ph.D., Sc.M., an associate professor of internal medicine (rheumatology), environmental health sciences and obstetrics and gynecology at U-M and a member of the U-M Institute for Healthcare Policy and Innovation. "In addition, there is a great need for biomarkers to detect early kidney involvement and to monitor progression."

Somers studies lupus outcomes and directs the Michigan Lupus Epidemiology and Surveillance (MILES) Program, which includes a cohort and biorepository registry of more than 650 lupus patients and controls from southeast Michigan.

"Lupus is a disease that predominantly affects women, often striking at the prime of life," Somers says. "Through the MILES Program, we [previously showed](#) that for black women, who are disproportionately affected by lupus, their risk of lupus is highest in their 20s. Forty percent of black females with lupus have kidney involvement, and 15 percent have end-stage renal disease."

In a new study, [presented](#) at the [American Society of Nephrology's Kidney Week 2016](#) meeting in November, Somers teamed up with U-M colleagues Wenjun Ju, Ph.D., associate research scientist, and Matthias Kretzler, M.D., professor of nephrology, to measure the urinary epidermal growth factor in patients with lupus. Ju and Kretzler previously showed this protein to be a promising, noninvasive biomarker of kidney disease progression. Their team found a decrease in urinary epidermal growth factor protein was an indication of diminishing kidney function in people with [chronic kidney disease](#).

In the study, the researchers extended these findings to show that levels

of epidermal growth factor in the urine of 394 lupus patients provided improved ability over standard markers, such as protein-to-creatinine ratio, to distinguish those with kidney involvement from those without.

Moreover, they found that urinary [epidermal growth](#) factor, but not the standard markers, was associated with a global score representing lupus damage accumulated across all organ systems. This suggests that epidermal [growth factor](#) might play a role in overall lupus outcomes.

"Validating this biomarker as a way to monitor lupus severity and progression is an exciting step in piecing together the complexity of lupus," Somers says. "Ultimately we aim to enhance our ability to identify and treat those affected sooner, before the disease has caused even more complications."

In September, Somers was awarded a three-year, [\\$3 million grant](#) to continue the MILES Program, to further this research on risk factors for lupus and its progression.

Provided by University of Michigan Health System

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