

# Diagnostic for Lupus Nephritis

## TECHNICAL FIELD

Diagnostic—Lupus Nephritis (2007-0609)

## BACKGROUND

Lupus nephritis is an inflammation of the kidney caused by systemic lupus erythematosus (SLE), a disease of the immune system. Patients suffering from lupus nephritis may experience weight gain, high blood pressure, dark urine, or swelling around the eyes, legs, ankles, or fingers. There are 5 classes of lupus nephritis ranging from Class I, in which patients are histologically normal and show no evidence of disease, to Class V, which is known as membranous nephritis and is characterized by extreme edema and protein loss.

Traditional methods of diagnosing lupus nephritis by measuring creatinine levels or performing kidney biopsies do not provide sufficient or accurate information regarding disease onset and progression. This invention provides a protein signature for discerning lupus nephritis from lupus without kidney involvement.



## APPLICATIONS

**Diagnostic for SLE nephritis**

## ADVANTAGES

- **Distinguishes between:**
  - **SLE nephritis and SLE with no nephritis/control samples**
  - **Inactive and active SLE nephritis**
- **Correlates with renal disease activity**
- **Improved discrimination between Classes III and IV and Class V SLE nephritis**

## INVESTIGATOR

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Director, Nephrology and Hypertension  
Cincinnati Children's Hospital Medical Center

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Associate Professor, Rheumatology  
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## STATUS

Patent applications pending.

## CONTACT

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## TECHNOLOGY

Drs. Devarajan and Brunner, along with their colleagues, have identified a urinary proteomic profile for systemic lupus erythematosus (SLE) nephritis. Sample analysis identified 8 biomarker proteins that distinguished SLE nephritis from SLE with no nephritis and control samples. Additionally, these proteins strongly correlated to renal disease activity.

The inventors also discovered that one protein in the profile best discriminated inactive and active SLE nephritis. This protein was also shown to be superior to any current biomarkers used in standard clinical practice for the discrimination between Classes III and IV and Class V nephritis, a discrimination that is of particular clinical interest, given that different treatment strategies are employed for the various stages of SLE nephritis.

To further validate the technology, the inventors are interested in testing their results in a larger patient population, as well as confirming the identity of the 8 biomarkers for SLE nephritis and determining their sensitivity and specificity in predicting SLE nephritis disease activity, severity, and damage. It is likely that with additional clinical research, a panel for the early and rapid diagnosis of SLE nephritis can be developed and put into practice.

# Diagnostic for Lupus Nephritis

## THE INVENTOR

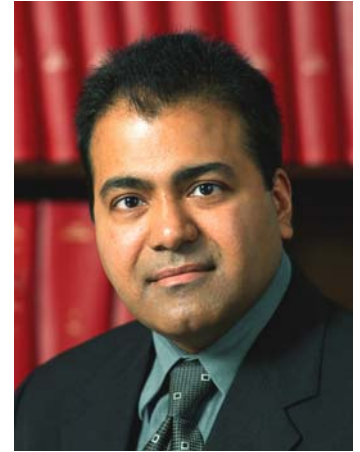
Prasad Devarajan, MD

Louise M. Williams Professor of Pediatrics and Developmental Biology  
Director of Nephrology & Hypertension

## BACKGROUND

**Premedical Studies:** Bombay University, India, 1979

**MD:** Bombay University, India, 1985



Dr. Devarajan began working at Cincinnati Children's Hospital Medical Center in 2002 as Williams Professor of Pediatrics and Developmental Biology and Director of Nephrology and Hypertension. He has previously held positions at SUNY Stony Brook, Yale University School of Medicine, and Albert Einstein College of Medicine. He was also awarded "2005 Best Doctors" by Best Doctors in America, Inc.

He is currently a reviewer for a number of journals and a member of several scientific organizations.

Dr. Devarajan's major research interest is the cellular and molecular biology involved with acute renal failure (ARF). His laboratory includes full-time technicians, post doctoral fellows, and Ph.D. research associates and is funded by several grants from NIH and other funding agencies.