Urine Biomarkers for Endoplasmic Reticulum Stress-Related Kidney Diseases

**Background:** It is estimated that currently over 20 million adults in the U.S. suffer from chronic kidney disease. Endoplasmic Reticulum (ER) stress plays a significant role in the pathogenesis of various kidney diseases including membranous nephropathy, diabetic nephropathy, acute kidney injury, medullary cystic kidney disease, congenital nephrotic syndrome (CNS), and focal segmental glomerulosclerosis (FSGS). Ultimately, these diseases can result in kidney failure with the latter being the leading cause of kidney failure in adults. Diagnosis of ER stress-related kidney disease early in the disease stage, when kidney biopsy is not yet clinically indicated, would greatly benefit from a simple-to-use non-invasive test. To this end, researchers from Washington University in St. Louis have identified three independent non-invasive urine biomarkers for early detection of ER stress-related kidney disease.

**Technology Description:** Using mouse models and clinical samples, Washington University in St. Louis physician Dr. Ying Chen has shown that each of the three biomarkers are detected in urine well before proteinuria, thus demonstrating their use as early indicators of ER stress-related kidney diseases. Each of these biomarkers, independently, have important clinical utility and can be incorporated into simple diagnostic tests for the early identification of patients with high risk for development of renal function deterioration and for monitoring disease progression or the response to treatment.

**Key Advantages:**
- Early diagnosis of ER stress-related kidney disease
- Easy non-invasive testing only requires a urine sample
- Clinical use to identify patients and monitor treatment
- Mouse and human data


**Patent:** Patent-pending

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