Researchers at the University of South Florida have developed a sensitive biomarker and effective therapeutic target for inflammatory diseases using lipopolysaccharide (LPS)-responsive beige-like anchor (LRBA). This protein can serve as a convenient noninvasive tool for diagnosis, prognosis, and treatment of inflammatory diseases such as asthma exacerbation, rheumatoid arthritis, ulcerative colitis and sepsis.

Inflammation is the most common cause of numerous chronic diseases, many of which have no cure. The condition involves a large number of cytokines with similar biological actions. Current therapeutic approaches are based on treating single cytokine targets to curtail specific inflammatory diseases. However, this treatment strategy has proven to be largely inefficient and has led to a search for a common regulator of these multiple inflammatory effectors. Through targeting a critical converging node for various pathways, a more effective therapy could be developed to treat a number of inflammatory diseases.

USF inventors have determined that LRBA is a master regulator for many important genes involved in immune disorders such as autoimmunity, immunodeficiency, and other inflammatory diseases. Since LRBA levels in healthy controls and patients with controlled symptoms are virtually undetectable, LRBA serves as a convenient biomarker. LRBA is also important for cell growth, and a knockout of LRBA was shown to inhibit cell growth in mouse embryo stem cells. Furthermore, LRBA may be used as a therapeutic target via intravenous injections to replenish LRBA in patients who lack functional LRBA. Conversely, in the event of LRBA over-expression, LRBA antibodies, LRBA dominant negative mutants (DNM), or small interference RNA may be used to block LRBA function to treat inflammatory diseases such as cardiovascular disease. The versatility of this master regulator offers numerous applications for understanding and counteracting many destructive conditions.

**ADVANTAGES:**
- Safe and efficient therapy
- Applicable to multiple inflammatory diseases

**Pro-Inflammatory Marker and Therapeutic Strategy**

**Colony-Forming Assay (CFA) of HEK293 Cells Transfected with LRBA Dominant**

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