

TURNING LUPUS RESEARCH UPSIDE DOWN

LRI 2013: Novel Research — Real-Life Results

The Lupus Research Institute is not about a building with labs and microscopes. It's about people — our patients, our scientists, our advocates, the pharmaceutical and biotech companies, the NIH — the lupus community — thinking outside the box and working together for Life Without Lupus.

As LRI Scientists Turn Patient Lives Around

This year, your support helped deliver astonishing discoveries in preventing heart disease, organ damage, flares and anemia. And major breakthroughs to speed the development of new treatments. Here are just a few 2013 stand-outs:



Preventing Heart Disease

Young women with lupus are at highest risk for premature cardiovascular disease — atherosclerosis, heart attack and stroke. Two breakthroughs this year move us closer to preventing these life threatening complications. How HDL, the **good** cholesterol, turns **bad** in lupus is at the “heart” of both discoveries.

Drs. Bevra Hahn and Maureen McMahon, University of California, Los Angeles, first discovered the damaging effects of HDL in lupus. Their newest findings show that a new combination of blood tests can predict risk for heart disease. Now they are working to bring this test combination to the clinic to identify patients who should receive treatments to prevent heart attacks and strokes.



Dr. Hahn



Dr. McMahon

Dr. Mariana Kaplan at the NIH discovered *how* HDL turns from good to bad in lupus — chemicals unleashed by over-active immune cells. Her discovery points to new ways to prevent premature heart disease in lupus by removing or deactivating these immune cells.



Dr. Kaplan



Dr. Reeves

Preventing Anemia

Anemia affects up to 75 percent of people with lupus, causing weakness, shortness of breath, and headaches as well as severe fatigue. **Dr. Westley Reeves** and his team at University of Florida discovered a cause of anemia in lupus and are looking at TNF inhibitors, already used to treat rheumatoid arthritis, as a potential treatment.

Breakthroughs Leading to New Treatments

LRI researchers continue to rapidly advance understanding of how the lupus immune system works. As a result, safer new treatments are now in the works to better manage the immune system and prevent further harm. LRI researchers at Yale University have made particularly stellar progress this year discovering new targets for drug development and a revolutionary drug delivery system:



Dr. Rothlin

Dr. Carla Rothlin and colleagues found a way to calm down the immune system to prevent it from over-reacting. Immune responses are controlled by specialized cells known as dendritic cells. Dr. Rothlin's team found that a protein called protein-S, which lupus patients don't have enough of, acts as a signal to turn off these cells. Next step is to develop therapies that can supplement protein-S.

Dr. Mark Shlomchik and other Yale colleagues provided new insight on the role of proteins called toll-like receptors in lupus. Several drugs that inhibit these receptors are now in lupus clinical trials. The findings provide new clues as to which patients are most likely to benefit from these drugs.



Dr. Shlomchik



Dr. Fahmy

Dr. Tarek Fahmy developed 'magic bullet' capsules called nanogels that deliver tiny doses of conventional lupus drugs directly to immune cells, successfully preventing lupus kidney disease in mice and sidestepping toxic side effects. Dr. Fahmy now plans to test the nanogels in lupus patients.

Can't Stop Now – With Your Help, We're Going Further and Faster

Despite the extraordinary advances of the past 13 years, much about lupus is still unknown. And better treatments are too slow in coming. As NIH funding of biomedical research lags, it's up to us. We cannot let the flow of discoveries stop, or enormous progress will be tragically lost.

In 2014, we will pick up the pace of clinical research and drug development. Stay tuned. There's an exciting new year ahead.