

# Lupus Research Program

## Strategic Plan

### INTRODUCTION

The Congressionally Directed Medical Research Programs (CDMRP) represents a unique partnership among the U.S. Congress, the military, and the public to fund innovative and impactful medical research in targeted program areas.

In 2015, an ad hoc committee of the National Academies of Sciences, Engineering, and Medicine was assembled to evaluate the CDMRP's two-tier review process and its coordination of research priorities with the National Institutes of Health (NIH) and the Department of Veterans Affairs (VA). As part of their final report,<sup>1</sup> the committee recommended that each CDMRP program "... develop a strategic plan that identifies and evaluates research foci, benchmarks for success, and investment opportunities for 3–5 years into the future," and that these strategic plans "should specify the mission of the program, coordination activities with other organizations, research priorities, how those priorities will be addressed by future award mechanisms, how research outcomes will be tracked, and how outcomes will inform future research initiatives."

In response to these recommendations, this document presents the current strategy for the CDMRP's Lupus Research Program (LRP). The LRP Strategic Plan identifies the high-impact research goals most important to its stakeholders while providing a framework that is adaptable to changes in the medical research environment to address those goals. This plan has been formulated to provide greater clarity of the program's goals over time to the public and other stakeholders. Funding for the LRP is Congressionally appropriated on an annual basis; therefore, there is no guarantee of future funding. The LRP Strategic Plan will be reviewed during the program's annual Vision Setting meeting and updated as necessary.

### LRP BACKGROUND AND OVERVIEW

The Lupus Research Program was established in fiscal year 2017 (FY17), when the efforts of lupus disease advocates led to a Congressional appropriation of \$5 million (M). The program specifically supports innovative and impactful research that addresses significant issues and gaps in lupus diagnosis and treatment.

Lupus is a heterogeneous autoimmune disease that is difficult to diagnosis and treat. There is currently no test available to diagnose lupus, and it may take months or years for a person to be correctly diagnosed. Because lupus attacks healthy cells and tissues in many parts of the body, patients can experience a wide range of symptoms such as fatigue, joint pain, skin lesions, and headaches. Lupus can also cause inflammation in the kidneys, brain, blood vessels, lungs, and heart that can result in serious complications, including organ damage. Lupus patients require a diverse team of healthcare specialists, depending on their symptoms.

Treatment options for lupus are highly dependent on an individual patient's symptoms. Some of the most commonly used drugs to treat lupus include nonsteroidal anti-inflammatory drugs, corticosteroids, and immunosuppressants. Long-term use of these treatments can result in serious side effects, including kidney problems, stomach bleeding, liver damage, increased risk of infection, decreased fertility, and increased risk of cancer. Better treatment options are a critical need for lupus patients.

During the first Vision Setting meeting in FY17, the Programmatic Panel recommended the LRP vision and mission statements listed below. The vision and mission statements will be reviewed annually and adapted as new discoveries about lupus are made.





**VISION:** To cure lupus through partnership of scientists, clinicians and consumers

**MISSION:** Fund research to understand, prevent, and diagnose lupus and to improve treatments and quality of life for patients, including Service members, Veterans, and beneficiaries

**FUNDING HISTORY**

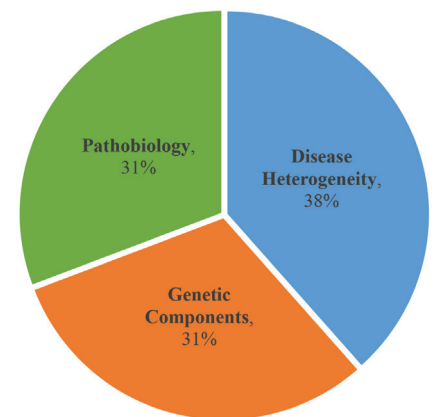
Prior to establishment of the LRP in FY17, lupus was a research topic area within the Peer Review Medical Research Program (PRMRP) from FY05-FY06 and FY08-FY16. During this time, the PRMRP funded 21 awards within the lupus topic area. These awards covered a range of research areas, including genetics and molecular biology (14%), cell biology (10%), detection and diagnosis (5%), clinical experimental therapies (14%), and immunology (57%).

Upon establishment of the LRP as a separate program, appropriations to the LRP have totaled \$10M, including \$5M in FY17 and \$5M in FY18.

**RESEARCH PORTFOLIO**

FY17 applications were required to address the following focus areas, which were recommended by the LRP Programmatic Panel at the FY17 Vision Setting meeting: Pathobiology; Disease Heterogeneity; and Genetic Components. These three key focus areas represent current gaps in the understanding of lupus disease. In the first year of the program, the LRP funded six Concept Awards and seven Impact Awards. The distribution of funding across the three focus areas is shown in **Figure 1**. Of the 13 awards funded in FY17, 4 focused on pathobiology, 5 examined disease heterogeneity, and 4 explored the genetic components of lupus.

The FY17 LRP funded studies representing a range of research types, including basic/discovery (46%), applied (23%), epidemiology/public health (8%), and translational research (23%).



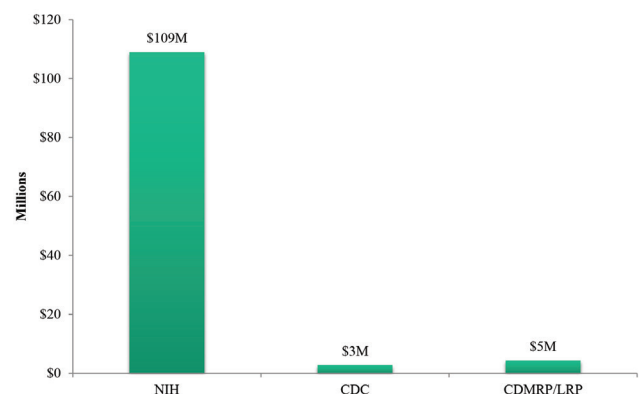
**Figure 1. FY17 LRP Investment by Focus Area**

**RESEARCH AND FUNDING ENVIRONMENT**

Today’s medical research environment is dynamic. New research datasets are being created and made available to researchers at an ever-faster rate, and new technologies are emerging that will enable research that is impossible today. Funding for lupus research comes from a variety of sources through a number of different programs. Many are funded by the Federal Government through the National Institutes of Health (NIH), CDMRP, and Centers for Disease Control and Prevention. **Figure 2** shows federal funding for lupus research in 2017. Funding also comes from a wide range of non-governmental Organizations, including the Lupus Foundation of America (LFA) and Lupus Research Alliance (LRA). The LRP must fit within this environment and effectively respond to changes in it to maximize the value and impact of LRP-funded research.

In January 2016, the NIH released the Action Plan for Lupus Research in response to the Congressional Lupus Caucus’s request to develop a new coordinated action plan for lupus research. This effort was led by the National Institutes of Arthritis and Musculoskeletal and Skin Diseases, and this action plan describes promising future directions in lupus research. The strategic direction and goals of the LRP have been designed to align with the current efforts of other lupus research funding agencies to coordinate advance research discovery projects and outcomes. To support this effort, the LRP’s Programmatic Panel includes members who are experts in the field and communicate with other lupus experts from leading academic research programs, other national agencies supporting lupus research, and consumer advocacy organizations.

In developing this strategic plan, the LRP reviewed the current research and funding environment for lupus, including consideration of existing research portfolios and emerging technologies that offer the potential to transform understanding, diagnosis, and treatment of lupus and potentially provide a cure. Congressional funding for the LRP continued into FY18, and as the program develops its own research portfolio, its leadership will remain mindful of the research efforts of other similarly focused organizations such as the NIH, the LRA, the Accelerating Medicines Partnership in rheumatoid arthritis and systemic lupus



**Figure 2. Funding for Lupus Research by Federal Agency (FY17)**



erythematosus, the LFA, the Childhood Arthritis and Rheumatology Research Alliance Lupus Research Focus Group, the Systemic Lupus Erythematosus International Collaborating Clinics Group, and the Lupus Clinical Investigator Network. In the coming years, if Congressional funding continues, the LRP is especially interested in supporting research that leverages existing datasets and biobanks developed by industry and academia as part of other lupus research efforts to enable the study of larger patient cohorts and increase the power of research results.

The LRP continually monitors the technology landscape for potential advances that could impact future research, including new technologies that can provide better understanding of lupus and its diagnosis and heterogeneity, as well as the most effective interventions for helping individuals with lupus. Given the rapid and prolific pace of new technology introduction, it is not possible to list all pertinent technologies here, nor can we fully anticipate the technology progress that may be achieved over the 5-year planning horizon for this strategic plan. A core component of the LRP's ongoing strategic planning efforts is an ongoing evaluation of the external environment to identify and leverage new technology developments and advances in the research field.

## STRATEGIC DIRECTION

As noted above, the questions facing the lupus research community are both pressing and broad. There continues to be significant need for a multi-pronged effort, encompassing a broad array of lupus research funding sources, to advance understanding of lupus disease, its detection and diagnosis, and its treatment and cure. The LRP will work to fund high-impact lupus research and coordinate with other lupus research funding entities.

Because lupus is a complex disease that impacts multiple facets of a patient's life, the LRP will retain a broad research scope to ensure funding opportunities for any promising avenues of research with the potential to lead toward improvements in patient quality of life, including improving treatments, decreasing time to diagnosis, and lessening the severity of symptoms. Additionally, the LRP emphasizes discovery research that is high-risk and high-reward and offers the opportunity to shift current paradigms to novel avenues of research that may significantly impact the lives of patients.

The LRP has three overall goals representing broad aspirations that, if achieved, will measurably support achievement of the LRP vision.

### STRATEGIC PRIORITIES

The overarching, long-term priorities of the LRP are listed below. The program's priorities were intentionally left broad to ensure that investigators from a range of backgrounds, disciplines, and expertise levels can apply for funding through the LRP if they have the ability to address the program's mission of improving lupus prevention, diagnosis, treatments, and patient quality of life. The LRP encourages investigators to propose their best ideas and is primarily focused on funding high-impact research that will ultimately improve the lives of lupus patients.

*Advance understanding of subsets of lupus patients, biologically or genetically, to improve appropriate treatment of these patients.*

*Gain insight into disease mechanisms and heterogeneity by understanding responses to novel and existing interventions.*

*Improve quality of life of patients by predicting and preventing lupus flares.*

### NEAR-TERM FOCUS – FY18 FOCUS AREAS

For near-term priorities, the LRP has identified three focus areas that cover a wide range of topics within lupus research. All applications submitted to the LRP must address at least one of the focus areas.

#### Heterogeneity

Understand lupus disease heterogeneity including, but not limited to, progressive stages of lupus over time, strategies and technologies to subtype patients, understanding lupus disease mechanisms, biopsychosocial studies, personalized medicine, variation in treatment and its effect on patient outcomes, socioeconomic studies, environmental studies, and epidemiological studies.

#### Genetic Components

Understand how the underlying genetic components and gene environment interactions of lupus relate to clinical disease characteristics using functional genomic studies.

#### Disease Pathobiology

Determine the pathobiology of lupus disease in target human tissues, including, but not limited to, imaging studies, genomics of lupus in particular tissues, and metabolomics.



## INVESTMENT STRATEGY

### NEAR-TERM INVESTMENT STRATEGY (1-3 YEARS)

The LRP seeks to invest in research through award mechanisms that emphasize high-impact projects that have the potential to make significant progress in the lupus research field. The Concept Award and Impact Award mechanisms are summarized below.

- Concept Award
  - o Provides funding for highly innovative new concepts or untested theories that address important problems relevant to lupus.
  - o Emphasis is on high-risk, high-reward studies that may result in entirely new avenues for investigation in lupus research.
  - o Research may introduce a new paradigm, look at an existing problem from a new perspective, or exhibit other highly creative qualities.
- Impact Award
  - o Provides funding for projects that represent the full spectrum of research projects or ideas that specifically focus on scientific and clinical lupus disease issues.
  - o If the project is successful, it will have a major impact on the lupus research field.
  - o Based on a well-formulated, testable hypothesis with a strong scientific rationale.

### MEDIUM- TO LONGER-TERM INVESTMENT STRATEGY (4-5 YEARS)

Over this planning horizon, the LRP will consider projects across the research continuum and may consider offering a Consortium Development Award in future funding years if Congressional funding is available. The Consortium Development Award would provide funding to support and establish the preliminary infrastructure required to develop a multi-institutional research effort focusing on key aspects of lupus disease. The LRP envisions this award as a potential catalyst to foster collaboration among industry, academia, and other research organizations.

The LRP will remain open to a wide range of award mechanisms to support both its strategic goals and its interest in funding high-impact projects across the research continuum.

## MEASURING PROGRESS

The LRP will measure its success in the near term based on successful investments in the focus areas that have been identified as being important to the LRP's strategy, as well as the outcomes of the funded research. Longer-term success will be similarly evaluated based on the contributions of LRP-funded projects to the scientific community, follow-up research linked to LRP-funded projects, and the impacts of LRP funded projects on clinical treatments and interventions.

### MEASURES OF SUCCESS

- Number of applications received and funded within each of the LRP focus areas
- Aggregate information about completion of research aims for funded research
- Contributions to the scientific community, including the following:
  - o Publications
  - o Abstracts
  - o Presentations
- Significant conceptual or technological advances (big discoveries) resulting from funded research
- Subsequent downstream funding of ideas or concepts funded by the LRP
- Development of tools or methodologies from research funded by the LRP

## REFERENCES

1. *Evaluation of the Congressionally Directed Medical Research Programs Review Process*. 2016. The National Academies of Sciences, Engineering, and Medicine. The National Academies Press. Washington, DC.