LYMPHOMA RESEARCH • FOUNDATION

BIDEN CANCER COMMUNITY SUMMIT

SUPPORTING THE NEXT GENERATION OF LYMPHOMA SCIENTISTS

Proceedings from the

2018 Lymphoma Research Foundation Biden Cancer Community Summit

On September 21, 2018, Vice President Joe Biden and Dr. Jill Biden hosted a national Biden Cancer Summit to focus on every facet of cancer research, from prevention through a cancer diagnosis, treatment, and survivorship.

This included an event in Washington, D.C., where the program highlighted and discussed stories of heartache and triumph from the patient and caregiver communities, the latest and most promising cancer research and technology developments, transformative community-driven initiatives, and public and private sector partnerships. But a conversation on the national stage is not enough.

The Biden Cancer Initiative aims to make this Summit relevant to the concerns of patients, families, and communities. It should resonate with scientists and entrepreneurs and health care providers. The aim is to make a difference in all communities—our community. That is why the Lymphoma Research Foundation answered the call to host a Biden Cancer Community Summit.

Dear Colleague:

Heeding the call of the Biden Cancer Initiative and its founders, Vice President Joe Biden and Dr. Jill Biden, the Lymphoma Research Foundation hosted a Cancer Community Summit in New York City this fall to discuss the future of cancer research. We were honored to serve as the Co-Chairs of this meeting.

The Cancer Community Summit program represented more than 400 meetings which took place across the United States on September 21, 2018. The only requirement for participation was to focus on an element of scientific discovery that the convening body felt was critical to the future of cancer research. In exploring possible themes for the Foundation's summit, we determined that discussing the challenges faced by the next generation of scientists and clinicians was most important to our field.

The Lymphoma Research Foundation Summit convened an expert group of lymphoma researchers, including both Foundation Scientific Advisory Board Members and grantees. The meeting explored how best to advance early career investigator programs which train laboratory and clinical researchers, foster collaboration and advance medical breakthroughs.

The Summit consisted of a roundtable discussion divided into two sessions: "Understanding the Experience and Value of Early Career Scientists," and "Closing the Gap and Supporting the Next Generation of Lymphoma Clinicians and Researchers." The panel engaged in robust discussion as they considered the challenges that impede greater investment in training programs as well as opportunities to diversify and expand such programming, so they are able to keep pace with the evolving scientific landscape. The Summit proceedings and specific recommendations derived from the roundtable discussion are documented within this monograph.

We are grateful to the program participants for their expert testimony and willingness to take part in the Summit, as well as the Biden Cancer Initiative for supporting the event. Motivated by our shared mission to eradicate lymphoma and serve those touched by this disease, we look forward to pursuing the Summit recommendations with the lymphoma and greater cancer communities.

Sincerely,

Andrew D. Zelenetz, MD, PhD Memorial Sloan Kettering Cancer Center
Chair-Elect, Scientific Advisory Board
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Meghan E. Gutierrez
Chief Executive Officer
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Andrew D. Zelenetz , MD


Meghan E. Gutierrez

UNDERSTANDING THE EXPERIENCE AND VALUE OF EARLY CAREER SCIENTISTS

Biomedical research holds the promise of discovering new treatments and someday curing many life-threatening diseases, including cancers like lymphoma. Such research includes basic research, which helps scientists better understand these diseases, as well as clinical research, which seeks to develop new, more effective therapies. The National Institutes of Health (NIH) funds the majority of early stage and translational research in the United States while pharmaceutical and biotechnology companies typically fund the late stage research that develops new treatments, and then seek the treatments' approval by the U.S. Food and Drug Administration. In addition to serving as the hub of the nation's scientific discovery, the NIH is also responsible for supporting scientists in the early stages of their career, thereby ensuring that the next generation of investigators are well trained and able to pursue a career in the field of cancer research.

Unfortunately, only a fraction of the grants submitted to the NIH receive funding, and obtaining a research grant from the NIH is more challenging than ever. Only 2 percent of researchers ages 35 or younger currently receive independent research grants from the NIH, compared with 21 percent in 1980, according to the American Association for Cancer Research. Today, the average age for receiving this level of independent funding is age 45 or older. The percent of grant applications that the NIH funds dropped by nearly half over the past decade, from 20.1 percent in 2007 to 11.7 percent in 2017.[1]

This gap in funding affects the field far beyond individual early career investigators. These grants often fund mentoring programs and opportunities to learn from experienced expert cancer researchers; without this support, there is little opportunity for young investigators to coordinate research with other laboratories and scientists. As a result, early career scientists may be unable to find a platform to study rare diseases like lymphoma. It also can impact the quality of their work: clinical research mentoring programs support a mastery of the scientific method, help solidify disease-specific project goals, and guide the direction of a scientist's research for the rest of their career. In addition, "high risk – high reward" science, the hallmark of translational research, is almost never funded by corporations and is most often pursued by early career scientists and proves difficult – if not impossible – to pursue mid-career or later. A lack of funding for early career scientists risks losing this vital sector of research contributions.

"Encouraging and supporting the next generation of researchers is where LRF takes the lead. The time I spent with my mentor has been invaluable. More so than any grant I received."

—Jonathon Cohen, MD
LRF Clinical Research Grantee

1. Fawcett, Nichole. Tight Federal Funding a Challenge and Opportunity for Cancer Research (March 30, 2018). Retrieved from https://labblog.uofmhealth.org/industry-dx/tight-federal-funding-a-challenge-and-opportunity-for-cancer-research

"Understanding the path to success as a young researcher can be challenging. You need a mentor to see how you can really make a difference."

— Anita Kumar, MD
LRF Clinical Research Grantee

CLOSING THE GAP AND SUPPORTING THE NEXT GENERATION OF LYMPHOMA CLINICIANS AND RESEARCHERS

Post-graduate medical students typically match with a residency program in their area of interest for two to four years. After this training is completed, those looking to work in specialized fields like lymphoma enter into a fellowship that can last from one to three years. It is imperative that early career researchers, in fellowships or the first few years of a faculty position, have the opportunity to foster their professional development as independent researchers in lymphoma and chronic lymphocytic leukemia (CLL) to ensure continued research in the field. Initial funding allows a researcher the invaluable experience of acting as the lead, or principal, investigator on a project, and provides crucial mentoring and protected time for their own research. This funding also enables early career researchers to focus on a specific disease state, such as lymphoma, establishing their expertise and commitment to studying this disease, thereby supporting a new generation of clinicians and scientists who will pursue research in this area for the remainder of their careers.

Early career awards and grants targeting scientists who are launching their careers are an integral component of this training. For those who will pursue a career in clinical research, there is significant, independent evidence of the impact of such awards outside of the direct grant monies, including the fact that institutions and departments value a record of prior funding, as well as the fact that such grants provide independent endorsement, support, and mentorship to the grantee.

While it is acknowledged across industries that collaboration is a key ingredient of success, all too often scientific research is conducted in a vacuum. Specifically in regards to research, there has been positive correlation shown between the number of authors on a publication and the impact of the study. The average number of authors per cited article by MEDLINE and PubMed has increased from 1.5 in 1950 to 5.5 per publication in 2015.[2] Where previously researchers with an expertise in an area may have been able to write a focused study independently, now researchers are increasingly looking for expertise in multiple areas to fully address an issue. This requires a new culture of collaboration across various disciplines.

With many researchers possessing niche knowledge, it becomes even more important to convene those people who might not otherwise have an opportunity to discuss their ideas among one another on a larger scale. Supporting early career investigators can help broaden collaboration by encouraging this type of work at a pivotal time in a researcher's career, establishing it as a staple of how they conduct research moving forward. Additionally, the pairing of an early career researcher with an established mentor is conducive to this culture of collaboration. Consortia and workshops that convene scientific experts from around the world, including these early career investigators, to share research findings and work together are a key mechanism in realizing the goal of advancing the most promising lymphoma and CLL research.

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2. Number of Authors per MEDLINE®/PubMed® Citation (June 8, 2018) Retrieved from https://www.nlm.nih.gov/bsd/authors1.html

"Through their paradigm of funding young investigators and their unique ability to convene the best researchers in the field around a single focus, LRF has the capacity to reengineer science."

— Ari Melnick, MD
LRF Scientific Advisory Board Member

HOW LRF FUNDS RESEARCH

LYMPHOMA CLINICAL RESEARCH MENTORING PROGRAM

The Lymphoma Clinical Research Mentoring Program (LCRMP) is an education and mentoring program for fellows and junior faculty with a focus in clinical lymphoma and CLL research. The goals of the LCRMP include:

- Provide mentoring and education to hematology/oncology fellows and junior faculty. The program emphasizes training in clinical research methods and design, statistical analysis, pathology, incorporating and interpreting correlative studies into clinical trials, and grant submission and funding. The program also aims to foster mentorship and research collaboration among experts and trainees in the field.
- Assist in the development of a specific clinical trial in patients with lymphoma and/or CLL and to set the foundation for grant development to support the trial. Study design and implementation is discussed in a small group setting consisting of experts in the field, statisticians, and other trainees in the program, where information, ideas, guidance, support and connections are shared, and where mentoring relationships can be developed.
- Provide continuing training, career development advice, and mentorship among trainees and experts in the field and foster future participation and collaboration within the LRF through follow-up programming and activities.

379
Total number of grants awarded

$60.2 million
Total research funds awarded to date

20%
of the current LRF Scientific Advisory Board received an early career grant from LRF at the beginning of their careers.

LYMPHOMA FELLOWSHIP

- The LRF Postdoctoral Fellowship Grant is designed to support investigators at the level of advanced fellow or postdoctoral researcher in laboratory or clinic-based research.
- This research must be clearly relevant to the treatment, diagnosis, or prevention of lymphoma. Areas of research may include, but are not limited to, etiology, immunology, genetics, therapies, and transplantation.
- LRF Fellows must spend 80 percent of their time in research during the award period.

CAREER DEVELOPMENT AWARD

- The LRF Clinical Investigator Career Development Award (CDA) Program is designed to support physician investigators at the level of advanced fellow or junior faculty member who will contribute to the development of new lymphoma therapies and diagnostic tools.
- The goal of the program is to prepare physician investigators to design and administer clinical research studies in lymphoma and assume primary responsibilities for clinical research with the potential to have significant impact on patients.

More than
750
grantee papers have collectively been cited over
36,000
times in other academic publications, a better measure of their impact on the research community than number of publications alone.

"It is a direct benefit to patients to have enthusiastic, intelligent people drawn to a field where they can make progress. Having that intellectual capital focused on a combination of rare diseases makes all the difference."

— Sonali Smith, MD
LRF Scientific Advisory Board Member

SUMMIT OUTCOMES AND RECOMMENDATIONS

The 2018 Lymphoma Research Foundation Summit explored numerous themes relevant to the crisis facing early career scientists. Mentoring and grant programs that exist to support the next generation of lymphoma scientists require adequate and consistent levels of funding to ensure the brightest minds in oncology research are drawn to the field. In addition, collaborative programming that integrates early career scientists with the professional lymphoma community are critical.

Summit attendees concurred that programs like those supported by the Lymphoma Research Foundation (LRF) are necessary to recruit talented investigators early on to pursue a career in lymphoma research and patient care. Mentoring in particular was highlighted as fundamental to tracking early careers for success; Dr. Jonathon Cohen, LRF Scholar and CDA grant recipient, credits a mentorship in his first year of fellowship for changing the entire course of his career by assisting in research and helping him to recognize how exciting a career in research can be. Programs like the Foundation's Lymphoma Clinical Research Mentoring Program and Postdoctoral Fellowship Program not only provide this one-on-one support to early career investigators, but they also provide a full network of proven experts and potential research leaders for collaborative learning, disease-specific knowledge, and professional support for specialized research. In the absence of these programs, many scientists would be unable to establish themselves as lymphoma specialists and it is unlikely that an opportunity would ever again present itself to recruit them to the field.

In clinical research too, early career grant programs are critical to not only identifying promising clinical scientists, but also to pursuing the high risk-high reward research that is often the hallmark of the studies supported by such grants. Additionally, the influence of a mentor is hard to overstate. The panelists all agreed that finding someone who can act in that role can not only enhance someone's early career but also provide lifelong value through continued collaboration and support. The programs that provide this require significant resources for the grant, related studies, and the mentoring required for each grantee.

Summit participants arrived at a consensus that the specific approach of the LRF's early career grants, an approach that frames potential in terms of future careers with endless possible contributions to the field, rather than focusing on potential findings of single projects, is what has ensured the programs' tremendous impact thus far. Cementing collaboration and learning from peers and mentors as foundational practices early in an investigator's career, and modeling for them the fulfillment that a career in specialized research can bring, can have an exponential impact. Early career grants prepare investigators to bring their approaches to the broader scientific community while diving into specialized subjects with a deeply-seeded commitment to advancing knowledge of particular diseases.

Summit attendees concurred that programs like those supported by the Lymphoma Research Foundation are necessary to recruit talented investigators early on to pursue a career in lymphoma research and patient care.

While the approach is successful, the barrier of funding such programs prohibits the extent of impact that the panel would hope to see from these grants. Additional public support through philanthropic contributions to early career grant programs was identified as a key component to expanding their already impressive impact.

At current funding levels, only a small number of the highest quality applicants can receive grants, meaning that several individuals with the potential to make significant impact in the field of disease-specific research may be falling away from the field due to insufficient support and direction. LRF Scientific

Advisory Board (SAB) member Dr. Sonali Smith noted that given proper funding, the SAB would award 50-60% of the grants submitted for consideration. At current funding levels, the SAB can fund only 30%, meaning they are forced to turn away high quality research with feasible aims. She worried that these investigators leave the field due to a lack of available alternatives, to the detriment of the entire research community. Increasing funding would help to ensure that all the brightest minds can continue to pursue careers in research.

Addressing career retention for mid- and late-career researchers, through further funding mechanisms or other innovative means of support, would ensure more mentors are available to support young investigators as they navigate the path into a research career.

Looking to past examples of philanthropic impact on the world of cancer research, Dr. Ari Melnick, also a member of the SAB, described at the summit how a single donor influenced the trajectory of mantle cell lymphoma (MCL) research by providing adequate funding. "It reengineered the science world to think about MCL because there were resources to study it," Melnick stated. He asserted that when equipped with the right resources, LRF has the capacity to similarly reengineer science, lending a sense of optimism to the panel and summit attendees of the potential for private investment in grant programs to truly address the issues faced by young investigators.

Additionally, further program growth within a similar framework of increasing interaction between potential researchers and leading experts was suggested as a way to maintain a talent pipeline in the field. Early exposure to the field can foster interest at crucial junctures of professional discernment for young people, even in high school. Dr. Lorena Fontan, LRF Postdoctoral Fellowship grant recipient, has worked with several bright high school students in the lab in the last several years. "Their experience in the lab certainly influenced their decisions when planning their college career and hopefully will inspire them to become great researchers," said Dr. Fontan. It was noted that currently, physicians are often the individuals most interfacing with the public regarding lymphoma treatment, as in programs like LRF's "Ask the Doctor About Lymphoma." Dr. Andrew Evens, SAB member and chair of the LCRMP, suggested placing researchers in similar public-facing roles, allowing them to not only provide a wealth of knowledge to the public at large, but also to inspire support of the often behind-the-scenes work that makes treatments and patient care possible.

Further, efforts could be developed to better support those already considering a career in research. Access to information about grant opportunities and programs specifically aimed at early career investigators can help ensure that the maximum number of promising professionals reach the entry point of grant applications for such programs. One suggestion, offered by LRF Scholar Dr. Shalin Kothari, involved the creation of a central repository of information about available early career grant mechanisms, allowing individuals associated with smaller institutions to more easily gain knowledge of potential funding sources.

Ensuring that sufficient mentors are available to support young investigators with both time and energy once they have entered the field also arose as a potential roadblock. Dr. Justine Kahn, LRF Scholar and recipient of an LRF Adolescent/Young Adult Lymphoma Correlative Grant, explained, "For a junior investigator at the beginning of his or her research career, there is nothing more critical than having strong mentorship. We rely heavily on our mentors not only to introduce us to the clinical practice and science, but also to help us navigate the world of academic medicine. A good mentor devotes countless hours to teaching, advising, guiding, and encouraging a mentee. Ensuring that our mentors have protected time and adequate support—both to conduct their own research, and to help us build ours—is an under-appreciated but absolutely critical part of advancing lymphoma research."

Given additional funding for existing program models, panelists considered how the grants could best maximize impact. Summit moderator Dr. Andrew Zelenetz, chair-elect of the SAB, noted the use of telecommunications for mentoring in similar programs, and suggested that adopting a similar approach would allow LRF to expand mentorships across the country. Meghan Gutierrez, Chief Executive Officer of LRF, observed that part of what makes mentorships so powerful is the small size of the cohort gathered at existing program events. To maintain this advantage while increasing the number of individuals funded, Gutierrez suggested introducing multiple cohorts to the programming rather than expanding the size of the single cohorts that now exist.

"Pediatric oncology—all of oncology, really—is a field built entirely on a foundation of clinical and translational research with decades of clinical trials informing everything we do today. It is this commitment to research that allows me to look at parents and tell them that we know how to treat their child's lymphoma. For me personally, this means everything—it feels impossible to be a part of this field without actively taking part in moving it forward."

— Justine Kahn, MD
LRF Clinical Research Grantee

When grant programs are expanded, LRF Scholar and CDA grant recipient Dr. Anita Kumar recommended that they include a focus on engaging patients in the design of trials to ensure treatments can be conducted for patients throughout the communities in which they live. Trials for treatments that are limited to a select few centers result in missed opportunities for patients to access novel therapeutics.

Increased overall funding for expansion of the early career investigator program is paramount to providing better outcomes for those dealing with a lymphoma diagnosis. In addition, broadening funding to include mid-career investigators, focusing on creating a more public-facing role for researchers, facilitating access to grant opportunities, and increasing engagement of the public in the design of clinical trials are all areas of potential focus.

The Lymphoma Research Foundation is excited to grapple with these challenges and continue to provide innovative programs that foster successful careers in cancer and lymphoma-specific research. As we saw in this one-morning summit that produced invaluable insight into the field and feasible ideas for addressing issues faced by young investigators, collaboration and an opportunity for discussion and ideas is vital for advancing in any field. LRF will continue to seek ways to expand existing programs and incorporate the recommendations of our esteemed panelists so that, together, we can improve the lives of individuals facing lymphoma and other diseases.

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The Lymphoma Research Foundation's mission is to eradicate lymphoma and serve those touched by this disease.

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