The University of Iowa/Mayo Clinic Lymphoma SPORE Researchers


Risk-Adapted Therapeutic Approach with Bunki Martin

Frontline Therapy of a Multicenter Randomized Study: A Review of the Study of Bunki-EHOD R

Karen Dunkin, Andy Roth, Jeremy Abramson, Arun Lalapine, Brian Link, Sanir San, Deepak Jagadeesh, Philip Blerman, Ronald Minnaj, Barak Shoshany, David Inwards, Peter Watson, David Alto, Brandon Alveso, Nalini Chopra, Kenan Hoss, Siri Napol, Mark Reszen, Andreas Lucas, Seth Stenborg, Rahul Kall, Jonathan Fefferd, Richard Lapidus, Betsy Laplant, Michelle Fanale, Wynandd Wilson

Safety and Efficacy of Allogeneic Hematopoietic Stem Cell Transplantation (AHSCT) after Treatment with Programmed Cell Death 1 (PD-1) Inhibitors


Study of the Subclinical Mutations in Primary Diffuse Large B Cell Lymphoma

Yan Almansor, Vineshanda Shan, Chen Wang, Matthew Mayes, Ansel Feinberg, Matthew Nowakowski, Thomas Habermann, Anina Russo, Susan Slager, Brian Link, James Chenarten

Eradation of PD-1 Blockade with Pembrolizumab (MK-3475) in Relapsed/Refractory Classical Hodgkin Lymphoma: A Multicenter, Phase 1 Study

Rodrigo Aramburo, Philip Armand, John Timmerman, Mark Shipp, Shrid Gopal Bhat, Yogendra, Li Zhou, Neepa Sahu

Self-Blockade with Pembrolizumab (MK-3475) in Relapsed/Refractory Classical Hodgkin Lymphoma (RHL): Clinical Outcomes from Extended Follow-up of a Phase 1 Study (GOG-242)

Matthew Mayes, Philip Armand, John Timmerman, Mark Shipp, Shrid Gopal Bhat, Yogendra, Li Zhou, Neepa Sahu

When did you start working on the SPORE project, and what motivated you to join it? As of my knowledge cut-off date, the UI/MC SPORE was first funded in 2002. The UI/MC SPORE was first funded in 2002 and has since been renewed multiple times.

The SPORE project is a collaborative effort involving multiple researchers and institutions. It provides a platform for sharing ideas, resources, and expertise to advance our understanding of lymphoma and its treatment. As an SPORE investigator, I have had the opportunity to work on multiple research projects focused on various aspects of lymphoma research. The SPORE project is truly a multidisciplinary effort that brings together experts from different fields to tackle complex questions in lymphoma research.

What was your role in the SPORE project, and how did it contribute to your development as a scientist? As a scientist, my role in the SPORE project has been to conduct research on specific aspects of lymphoma. This has involved working on various research projects, collaborating with other researchers, and contributing to the overall goals of the SPORE project. The SPORE project has provided me with a unique opportunity to work on cutting-edge research and to develop new insights into the biology and treatment of lymphoma. It has also allowed me to establish collaborations with other researchers and to travel to different institutions to share my findings and learn from others.

What are some of the key findings or breakthroughs that you and your team have achieved through the SPORE project? Through the SPORE project, my team and I have made several key findings and breakthroughs in understanding lymphoma. For example, we have developed new methods for analyzing lymphoma samples and have made significant contributions to the field of immunotherapy for lymphoma. Our research has also led to the development of new therapeutic approaches for lymphoma patients.

What advice would you give to early-career researchers who are interested in pursuing a career in lymphoma research? For early-career researchers interested in lymphoma research, I would advise them to stay curious, be open to new ideas, and collaborate with others. It is important to have a strong foundation in the basics of biology and immunology, but it is equally important to stay up-to-date with the latest research and to be able to think creatively about how to apply these concepts to lymphoma. Additionally, I would encourage them to develop strong communication skills and to be able to effectively convey their research findings to others.

What do you see as the future of lymphoma research and treatment? As for the future of lymphoma research and treatment, I believe there is a lot of promise for new discoveries and advancements. With the increasing availability of new technologies and the growing understanding of the biology of lymphoma, we are likely to see continued progress in the development of new therapies for lymphoma. It will be important to continue to prioritize research that leads to new insights and to work collaboratively with others to translate these insights into improved patient care.

What role does the SPORE project play in shaping the future of lymphoma research and treatment? The SPORE project plays a crucial role in shaping the future of lymphoma research and treatment. By providing a platform for collaborative research and by supporting early-career investigators, the SPORE project helps to foster new ideas and to train the next generation of lymphoma researchers. It also provides a valuable resource for training and education, as well as a means to disseminate research findings and to educate patients and the public about lymphoma.
We continue to recruit families for our Family study of B-cell malignancies. To date, we have 1,960 participants from 472 families. We appreciate the time and effort our participants contributed to our study.

For those not familiar with factors associated with risk of chronic lymphocytic leukemia (a subtype of non-Hodgkin lymphoma), age, male sex, and Caucasian race are consistently associated with risk. However, having a family history of chronic lymphocytic leukemia (CLL) or other blood cancers is the strongest risk factor known to date. Thus, our research focus has been to identify inherited genetic variants that are associated with CLL risk.

As we shared in our last update, we participated in an international lymphoma project known as the “NHL GWAS”. A genome-wide association study, or GWAS, is when genetic variants are studied in individuals to determine if any of the variants are associated with a specific disease. The NHL GWAS project included 22 different study groups from North America, Europe, and Australia, each of whom contributed thousands of cases of non-Hodgkin lymphoma (NHL) subtypes, including CLL. A new NHL GWAS consortium paper on CLL is currently under peer-review at a journal. In that paper, we reported additional new genetic variants that are common in the general population but have modest effect on risk of CLL. These new variants along with the ~30 other variants that we and others have identified will help us understand the underlying pathobiology of CLL.

We have also started to evaluate the role that lower-frequency genetic variants have on risk of CLL. We used a technique known as next generation sequencing. We selected 93 families that had at least two members with CLL from the Family Study of B-Cell Malignancies. We sequenced all the genes from 443 family members; 160 with CLL, 73 individuals with the precursor condition, monoclonal B cell lymphocytosis, and 210 relatives without CLL. We then performed statistical analyses to find chromosomal regions that were inherited in the majority of CLL families. We have 6 regions of strong interest to us.

So, given that in the spring of 2015 I was 18 months in remission (although still suffering from some ongoing side/effects), I wanted to do something special to celebrate National Cancer Survivors Day. And since I was now able to get back in the pool 2-3 times a week, I entered three swimming events at the Quad Cities Senior Games held on June 6 at Augustana College in Illinois (about an hour from our Iowa City home – which was the furthest I had travelled since early 2013).

As I was warming up before my first swimming event, so much of the past 2½ years was running through my mind. It was nearly overwhelming to think of how sick I had been and all of the doctors, nurses, and technicians who played such a role in my treatment and recovery. So I focused solely on the opportunity I was given to again do what I love and was thinking that this first meet back was a way to honor my incredibly skilled and compassionate team at the Holden Comprehensive Cancer Center here at the University of Iowa who not only saved my life, but now helped me to swim again. Long story short: 3 gold medals and 3 Quad Cities Senior Games records (100, 200, 500 yard freestyle events)! I could not be more grateful.
Meet Our Investigators

ANDREW FELDMAN, MD
Director, Biospecimens Core

Our project is focused on a three-step approach to enhancing the ability of the immune system to reject non-Hodgkin lymphoma (NHL) tumors. The first step involves the genetic study of diffuse large B-cell lymphoma (DLBCL) patients. We have performed deep sequencing of the coding regions of the genome of DLBCL samples to identify characteristic genetic changes in patients at specific stages of the disease. The second step involves the clinical expert of her SPORE investigators, and her SPORE developmental project is aimed at translating her basic findings to human lymphoma patients. She is also very passionate about training the next generation of biomedical researchers. In addition to her classroom teaching, she has mentored >20 graduate students and authored many successful completion of the PhD degrees including MD-PhD students. Dr. Feldman has been married for 36 years to Warren Bishop, a pediatric gastroenterologist, and together they raise two sons, Eric and Ian. Outside of work, she enjoys music, hiking, cooking, and spending time with her husband and four children.

PROJECT 1
The Role of Monocytosis in Non-Hodgkin Lymphoma

Project Leaders: Andrew Feldman, MD (Mayo), Mamta Gupta, PhD (Ohio State), Dr. Wei Ding, Dr. Allan Dietz, Dr. Brian Link

PROJECT 3
Targeting JAK/STAT Kinase in Lymphoma

Project Leaders: George Beller, MD (Mayo), Brian Link, Mamta Gupta, PhD (Mayo), and Arlene Salem, PhD (Mayo)

Dr. Brian Link Dr. Mamta Gupta Dr. Wei Ding Dr. Allan Dietz Dr. Andrew Feldman

Research has focused on molecular profiling of T-cell lymphoma, with the aim of discovering and developing clinical biomarkers that refine the pathologic classification of lymphomas and help stratify patients for individualized therapy. Andy has enjoyed working with the University of Iowa’s Mayo Clinic SPORE research team since starting at Mayo. He is grateful to have received funding early in his career through the SPORE Career Development Program and the Damon Runyon Cancer Research Foundation, both of which allowed him the opportunity to gain critical skills and develop long-lasting collaborative relationships with members of the SPORE. Andy became Director of the Biospecimens Core in 2013. Outside of work, he enjoys music, hiking, cooking, and spending time with his wife Daisy and daughter Alma.

PROJECT 2
In Situ Immunoabusing Using Nanoparticles

Project Leaders: George Beller, MD (Mayo), Mamta Gupta, PhD (Mayo), and Arlene Salem, PhD (Mayo)

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Dr. Mamta Gupta Andri M. Egan, Thomas Witzig, MD, PhD

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PROJECT 4
Genetic Epidemiology and Function of Germline and Somatic Variants in DLBCL

Project Leaders: James Carrat, MD, PhD (Mayo) and Akila Nova, MD

Co-Investigators: Ian Amen, MD (Mayo) and Jesse Starer, PhD (Mayo)

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**Administrative Core**

The Administrative Core is the organizational hub of the SPORE. Drs. George Weiner and Thomas Witaj are Co-Principal Investigators of the SPORE and cooperate to provide leadership and direction. The Administrative Core provides the organizational structure to coordinate the activities of the research projects, scientific cores and developmental programs at both institutions. The infrastructure to support collaboration, financial management, and procedures for review of research projects and project growth and coordinating communication between Iowa and Mayo, patient advocates and NCI is provided through this Core. The Administrative Core also coordinates the publicity and the selection process for the Developmental Research and Career Development Awards.

**Biospecimen Core**

The Biospecimen Core is responsible for the collection, processing and storage of all blood samples that are collected from participants. In addition, tumor samples are processed and stored. Another function of the Biospecimen Core is to build tissue microarrays (TMAs). A TMA is a paraffin (wax) block where cores of tumor blocks are placed together on one block, so multiple samples are processed. In addition, tumor samples are processed and stored. Another function of the Biospecimen Core is to build tissue microarrays (TMAs). A TMA is a paraffin (wax) block where cores of tumor blocks are placed together on one block, so multiple samples are processed at one time. The Biospecimen Core also devotes time to developing new lab methods. The members of the Biospecimen Core and the number of samples currently managed by the Biospecimen Core can be found in the tables below.

**Biospecimens Samples managed by the Core:**

<table>
<thead>
<tr>
<th>Subtype</th>
<th>Peripheral Blood DNA</th>
<th>DNA from tumor</th>
<th>Serum</th>
<th>Plasma</th>
<th>Cells from tumors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite Histology</td>
<td>281</td>
<td>39</td>
<td>207</td>
<td>194</td>
<td>32</td>
</tr>
<tr>
<td>Diffuse large B-Cell lymphoma (DLBCL)</td>
<td>1299</td>
<td>209</td>
<td>1008</td>
<td>934</td>
<td>46</td>
</tr>
<tr>
<td>Follicular lymphoma</td>
<td>1079</td>
<td>32</td>
<td>854</td>
<td>848</td>
<td>92</td>
</tr>
<tr>
<td>T-cell lymphoma</td>
<td>397</td>
<td>0</td>
<td>299</td>
<td>280</td>
<td>25</td>
</tr>
<tr>
<td>Hodgkin lymphoma</td>
<td>524</td>
<td>0</td>
<td>396</td>
<td>345</td>
<td>31</td>
</tr>
<tr>
<td>MCL</td>
<td>315</td>
<td>0</td>
<td>270</td>
<td>261</td>
<td>34</td>
</tr>
<tr>
<td>MZL</td>
<td>493</td>
<td>14</td>
<td>371</td>
<td>367</td>
<td>69</td>
</tr>
<tr>
<td>Other B-cell lymphomas</td>
<td>593</td>
<td>2</td>
<td>459</td>
<td>448</td>
<td>34</td>
</tr>
<tr>
<td>Chronic lymphocytic leukemia (CLL)</td>
<td>1311</td>
<td>10</td>
<td>153</td>
<td>119</td>
<td>44</td>
</tr>
<tr>
<td>Other Non-Hodgkin lymphoma</td>
<td>186</td>
<td>1</td>
<td>145</td>
<td>137</td>
<td>7</td>
</tr>
</tbody>
</table>

**Research Support**

As patient advocates for the UI/MC Lymphoma SPORE, we have seen personally how the SPORE team is contributing to progress against lymphoma. We, and the other members of the UI/MC Lymphoma SPORE team, are grateful to the National Cancer Institute for ongoing federal support of our collaborative research program. However, cancer research funding by the government is under considerable budgetary stress and is not adequate to support all of the lymphoma research being conducted and planned by the SPORE team. Without private support, some promising lymphoma research projects cannot be pursued. To learn more about how private support helps strengthen the research being conducted through the SPORE, please go to www.uifoundation.org or contact Sarah Russett from the University of Iowa Foundation at sarah.russett@uiowa.edu.

Thank you—Ben Haines, Lorraine Dorfman, and Bob Paschke: Patient Advocates University of Iowa/Mayo Clinic SPORE

**Meet Your Patient Advocates!**

**Ben Haines**

In March of 1997, when my wife and I were 31, she was diagnosed with ‘incurable’ stage IVb lymphoma. Devastating news, but thanks to the lymphoma doctors in this very Lymphoma SPORE she is alive and well today. That is all the motivation I need to give back with advocacy. My favorite part of being an advocate is working alongside the doctors; before it always seemed like a ‘black box’ but now I know they are working tirelessly with the NCI, each other, and other hematologists around the world, collaborating, saving lives, and working for better treatments in the future. We reside in Minneapolis, Minnesota, and adopted a girl from Ukraine, now 12, and have two dogs. Lymphoma is a word, not a sentence.

**Bob Paschke**

I am a 5 time survivor of Hodgkin’s Lymphoma. After my Hodgkin’s returned shortly after my bone marrow transplant, I was given a pretty grim prognosis. However, thanks to new breakthrough drugs on clinical trials, the support of others, and God’s Amazing Grace, I have been having a great life with lasting remissions with minimal side-effects.

I have been involved in the Cancer Community since my diagnosis and have been very involved in the Lymphoma Research Foundation. I got involved in SPORE just recently in 2015. I think it is very important to support the core research that will inspire the next generation of breakthrough treatments. I have found that the best way to fight this terrible disease is to get involved and help others.

Personally, I love spending time with my three kids and wife. We enjoy traveling and going to lots of soccer and football games.

**Lorraine Dorfman**

I have been the University of Iowa patient advocate since the inception of the SPORE grant, which began shortly after my husband Donald died of the disease after a 14 year battle. Although I knew that I could no longer help Don, I hoped I could help others with lymphoma. I have enjoyed my association with the SPORE for many reasons: the feeling that I am part of the lymphoma effort; the rewards of learning about the many accomplishments of the researchers and clinicians participating in the project; and helping the SPORE in any way that I can. If you or your family members would like to contact me personally, please feel free to do so at lorraine-dorfman@uiowa.edu. In terms of my personal background, I am professor emeritus in the School of Social Work and interdisciplinary Aging Studies Program at the University of Iowa, where for many years I specialized in teaching and research in the field of aging. I have two grown children and two grandchildren, who are a great joy to me. I enjoy travel, reading, gardening, community activities, and am a yoga enthusiast.

**Meet Your Patient Advocates!**

Meet Your Patient Advocates!
Building from the great success of the Molecular Epidemiology Resource (MER) of the SPORE, we decided to apply for a grant from the National Cancer Institute to expand the MER cohort to more regions in the United States. In May, we heard that we will be funded to expand to six new centers over the next 5 years, which will increase the size of the cohort from 5,000 to over 12,000 lymphoma patients. The new cohort will be called “LEO” which stands for Lymphoma Epidemiology of Outcomes. The goal of the cohort study will be to identify factors that improve lymphoma survivors’ length of life and quality-of-life.

Besides Mayo Clinic and the University of Iowa, new institutions include Emory University/Grady Health System in Atlanta, Georgia; MD Anderson Cancer Center in Houston, Texas; Cornell University in New York; New York; the University of Miami Health System/Jackson Memorial Hospital in Miami, Florida; University of Rochester Medical Center in Rochester, New York; and Washington University in St Louis, Missouri. Drs. James Cerhan (Mayo) and Chris Flowers (Emory) are Co-Principal Investigators and Drs. Brian Link (Iowa) and Thomas Habermann (Mayo) are co-Leaders of the Clinical Core. Dr. Andrew Feldman (Mayo) will lead the Pathology Core, and Dr. Susan Slager (Mayo) will lead the Biostatistics and Bioinformatics Core. The Biostatistics and Bioinformatics Core is directed by Drs. Andrew Feldman (Iowa) and Tom Habermann (Mayo). The Core also includes custom development of algorithms, software, machine learning, databases, interfaces, and web-based programs. Recent activities include: i) the development and execution of a next-generation sequencing pipeline to analyze DNA samples from cancer patients, ii) the development of web-based forms for the entry of clinical and diagnostic data to support clinical and molecular studies, and iii) integrating PET and CT imaging data with clinical and treatment data to help predict clinical outcomes.

Clinical Research Core
The Clinical Research Core, co-chaired by Drs. Thomas Habermann and Brian Link, is important because it has the dual function of partnering with the Molecular Epidemiology Research (MER) project which follows patients for outcomes and the Clinical Research Core coordinates the clinical trial programs for the SPORE. There are now 6,952 patients enrolled and in follow-up. Since the last grant cycle, new collaborations in the United States with institutions such as the University of Arizona, Roswell Park and other institutions have been established to complement previous collaborations such as the Dana Farber Cancer Institute and The Broad Institute. New international collaborations have been established with institutions in France, Sweden, and Italy. In addition, the MER has contributed to genome wide association studies through other study groups such as InterLymph which includes institutions world-wide. The breadth of these collaborations in the field is unprecedented and moves observations forward at a very rapid pace.

A unique aspect of this program is that patients are followed after their initial clinical evaluation and consent to provide a peripheral blood sample, utilize tissue for research and responses to multiple questions in a booklet are used to study multiple patient background issues that often include the use of the samples from the peripheral blood. Multiple genetic studies have helped advance the science of lymphoma, by contributing to large genome wide association studies (GWAS) in Hodgkin lymphoma, diffuse large B-cell lymphoma (DLBCL), chronic lymphocytic leukemia, and other lymphoproliferative disorders.

Variations in genes in several pathways in lymphoma have been reported and are under further evaluation. The Clinical Research Core’s extensive patient data base has allowed for new and unique clinical observations and a number of studies not otherwise possible, which directly helps patients. Over 87 papers have been published over the last four years. For example, a personalized risk prediction model for DLBCL patients alive and disease free after 24 months; the QxCalculate clinical calculator & phone app which is available free (www.qxmd.com) which predicts the chances of being alive and event free at the time of the initial presentation. The many investigators in the SPORE grant are most grateful to our patients for participating.
Many participants have several questions about this project throughout the consent process and during the follow-up interviews. Below, you will find some of the most frequently asked questions. Answers have been provided by the research team.

**If I get my care done at another hospital can I still participate?**
Yes! There are many participants who are a part of the registry who do not return consistently to the University of Iowa or Mayo Clinic for their care. We have practices in place to assure your continued participation in the study. One example of how distant participation occurs is our follow-up questionnaire. Completion of follow-up forms not only strengthens our data, it also allows us to keep in contact with you if you receive care at an outside hospital or clinic. The information collected in the follow-up questionnaires is critical to the research we are conducting.

**Can I receive the mailed follow-up questionnaires electronically?**
Unfortunately, at this time we cannot send the follow-up questionnaires electronically. We are beginning the process to discover electronic forms and programs that could be used to send follow-ups via email or through medical record communication (i.e. MyChart or Patient Portal). It is our hope that in the near future we can offer enrolled participants the ability to receive the follow-up questionnaires electronically. Follow-up questionnaires are sent twice a year to participants during the first three years of enrollment, then annually thereafter.

**What is being done with my blood that is collected and stored?**
The samples collected are being used to study new tumor/disease markers that might shed light on why one gets lymphoma, why someone responds or does not respond to a specific treatment and predictions on how one will react to their disease, including how the lymphoma might shed light on why one gets lymphoma. The samples collected are being used to study new tumor/disease markers that could be used to flexibly with blood collections and coordinate the draw with your normal clinic appointments at the University of Iowa or Mayo Clinic in Rochester whenever possible.

**Do I need to come back to Mayo Clinic or The University of Iowa for research appointments?**
No. This is an observational study, and for being willing to share your information to you for participating in this study, we appreciate your willingness to provide the samples.

**I recently had blood drawn at another facility, can I have them send you some of that blood for your project?**
We cannot use any samples that are drawn as routine care from other hospitals or clinics. The blood and tissue that is collected for this study needs to be pristine and pure to assure that future testing will be done accurately. We also need the blood to be blood typed in specific research tubes. It is important in research to use consistent standard procedures throughout the span of the study. We try to be flexible with blood collections and coordinate the draw with your normal clinic appointments at the University of Iowa or Mayo Clinic in Rochester whenever possible.

**Who is we/the research team?**
The lymphoma SPORE/MER research team consists of investigators, study coordinators, lab technicians, pathologists, statisticians, clinicians, patient advocates and students who all work together to collect, store, and analyze data and specimens. The University of Iowa and Mayo Clinic research teams work closely together to assure the continued success of the MER.

**Thank you for your participation**
We want to express our sincere appreciation to you for participating in this study, and for being willing to share your information and samples of your blood. It is only through your generosity that we are able to study new aspects of these diseases and publish our results, such as in the examples below. We realize that at the time we approach you in the clinic/hospital to participate in the study, you may have just learned about your diagnosis, and you may have many questions. Please feel free to contact us at any time and we would be happy to answer any question you may have. University of Iowa: 800-237-1225; Mayo Clinic: 800-610-7093.

**MER Publication Spotlight**
Carrie Thompson, MD, et al published an article in the journal Blood titled “Quality of life at diagnosis independently predicts survival in patients with aggressive lymphoma.” A description of the findings from this study follows. Watch Dr. Thompson discussing these results on YouTube: [https://www.youtube.com/watch?v=A95oSi2Dj50#t=125](https://www.youtube.com/watch?v=A95oSi2Dj50#t=125)

The purpose of this study was to observe whether quality of life (QOL) measured at diagnosis of lymphoma, through completed questionnaires, can predict survival among patients with aggressive lymphoma enrolled in MER. QOL is a broad term that includes physical, social/family, emotional, and functional well-being. We measured QOL at time of enrollment in MER. We considered “aggressive lymphoma” to include the subtypes diffuse large B-cell lymphoma (DLBCL), follicular lymphoma (FL) grade III, mantle cell lymphoma, T-cell and other high grade lymphomas. There were 701 patients with aggressive lymphoma who completed a quality of life questionnaire at enrollment into the study from 2002-2011. We found that baseline QOL can predict overall survival and event-free survival. Patients with a lower QOL score had a shorter overall survival time than those who reported better quality of life based on the questionnaire.

This project provided evidence that measuring quality of life at diagnosis independently predicts survival in patients with aggressive lymphoma.

**A few recent MER publications**

**UIHC MER group**
Back row (left to right): Brian Link, Ashley McCarthy, Jennifer Larson
Front Row (left to right): Janice Cook-Grahanth, Susan Butcher, Umar Farooq

**Mayo MER group**
Back row (left to right): Brian Link, Ashley McCarthy, Jennifer Larson
Front Row (left to right): Janice Cook-Grahanth, Susan Butcher, Umar Farooq

**SPORE Registry Update & FAQ**
This study provided evidence that measuring quality of life at diagnosis independently predicts survival in patients with aggressive lymphoma. The lymphoma SPORE/MER research team consists of investigators, study coordinators, lab technicians, pathologists, statisticians, clinicians, patient advocates and students who all work together to collect, store, and analyze data and specimens. The University of Iowa and Mayo Clinic research teams work closely together to assure the continued success of the MER.

Thank you for your participation.