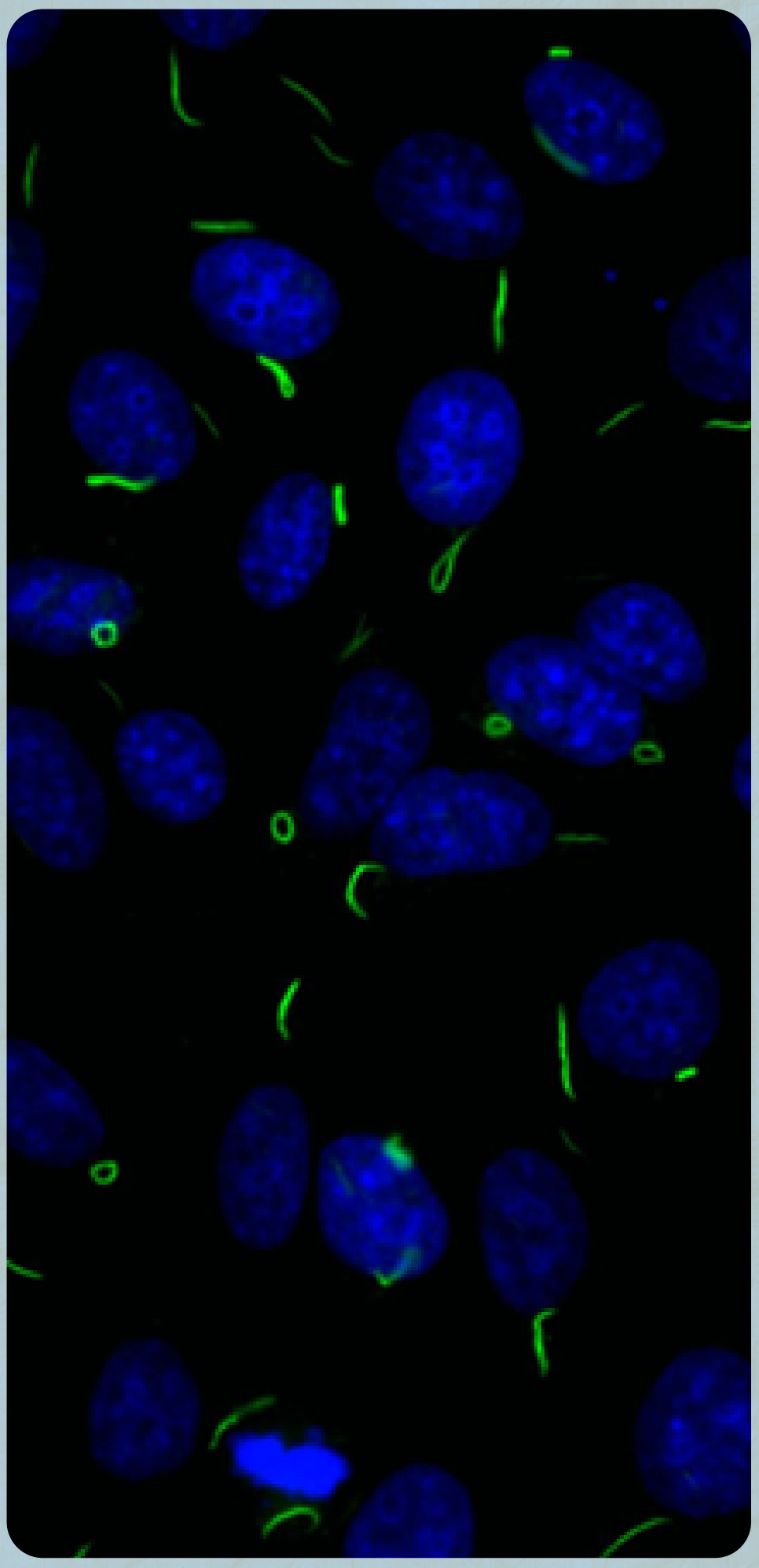

Picture: Courtesy of ARUP Laboratories

A YEAR IN REVIEW

AMLI Insider 2025

In this issue:

- Updates from AMLI
- Highlights from the AMLI 2025 annual conference
- Award winners
- Emerging talents in AMLI
- Incoming leadership

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AMLI the Association of Medical Laboratory Immunologists

A Note From the Editors

Dear Readers,

Welcome to the 1st issue of *AMLI Insider,* the official newsletter for the Association of Medical Laboratory Immunologists (AMLI). AMLI is a volunteer society dedicated to advancing clinical immunology and laboratory testing.

We are pleased to announce the 2026 Annual AMLI conference will take place in beautiful Salt Lake City, UT! The call for abstract submissions will open in February. If you are interested in sharing your latest research with the diagnostic immunology community, be on the lookout for the upcoming call for submissions.

In this issue, we highlight several recent developments at AMLI, including the incoming 2026 AMLI Council, initiatives to modernize and strengthen AMLI's infrastructure, and important updates from the Abstract Committee.

We also revisit key themes from the AMLI 2025 meeting, including evolving paradigms in diagnostic immunology, the emerging role of cell-based therapies in autoimmune disease, and the growing impact of artificial intelligence in laboratory medicine.

Finally, we showcase our AMLI 2025 awardees, and spotlight a few of the rising stars in the field of diagnostic immunology.

Thank you all for a fantastic 2025. We can't wait to see what 2026 has in store!

Warm Regards,
Arevik Ghazaryan, Alexis Dadelahi, Issue Editors

Alexis Dadelahi
PhD
DMLI(ASCP)^{CM}

Arevik
Ghazaryan
PhD

WHAT'S NEW AT AMLI?

Modernization with Meaning

Meet our new AMLI Administrator, Ms. Ciara Mokeme

Hi, I'm Ciara Mokeme, AMLI Administrator.
My role lives behind the scenes—refining systems, strengthening operations, and making small but purposeful adjustments that ultimately create a smoother, more intuitive experience for both leadership and members. Here are a few of the initiatives that I've had the pleasure of implementing:

Modernized Event Experience
A more cohesive digital experience was a priority bringing program details, abstracts, speaker information, and CEU guidance into a centralized location for attendees.

This year also marked meaningful growth in the creation of the AMLI Meeting App
The app became a central hub for attendees, allowing them to access the full program, track their CEUs in real time, and navigate the meeting with greater ease. Streamlining these features into one platform significantly reduced administrative burden and created a more polished and user-friendly experience for members and exhibitors alike. As well as significantly reduced costs of printing and production of paper materials.

Looking ahead
The goal is to continue modernizing AMLI's operational infrastructure by:

- Further simplifying and automating administrative workflows
- Enhancing communication design and information clarity
- Strengthening sponsorship and exhibitor value through structured, repeatable processes
- Building an even more cohesive Annual Meeting experience
- Ensuring members experience transparency, consistency, and ease at every touchpoint

These improvements collectively position AMLI for long-term growth, sustainability, and elevated member engagement.
If you have suggestions or would like to provide feedback, feel free to reach out at admin@amli.org.

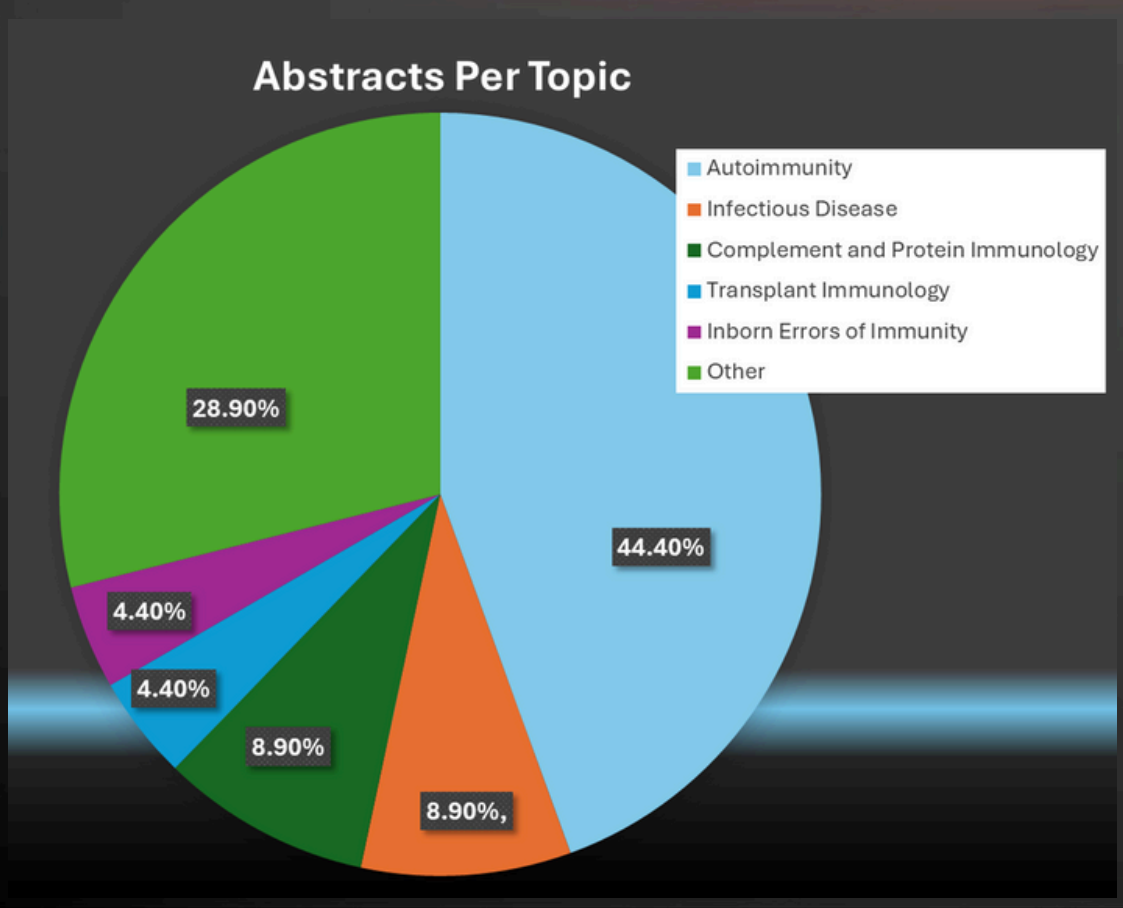
AMLI ANNUAL MEETING ABSTRACTS HAVE BEEN PUBLISHED

By Gabriella Lakos, MFD, PhD, D(ABMLI)

The AMLI 2025 Annual Meeting abstracts have been published in the November issue of the Journal of Immunological Methods (JIM), the official journal of AMLI! This achievement marks a significant milestone for the organization, and there is a strong commitment to continuing this practice in the upcoming years.

Updates to Abstract Submission and Review

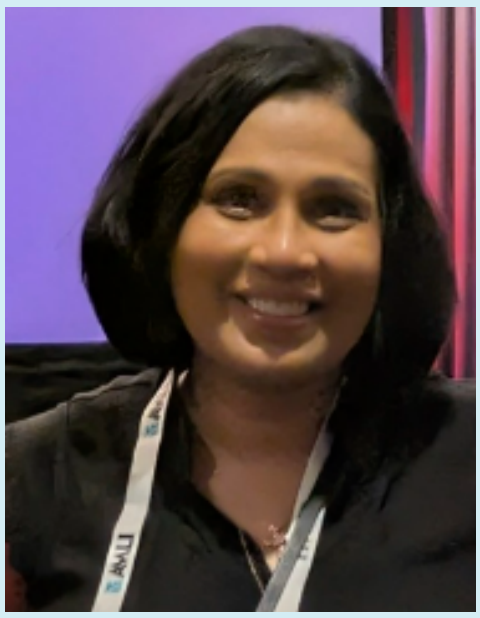
2025 marks the second anniversary of AMLI's use of Oxford Abstracts, an online platform dedicated to abstract submission, review, and decision-making. Feedback from the membership has been overwhelmingly positive, highlighting the convenience and efficiency of this web-based system. Additionally, this marks the second year of utilizing a systematic and objective review and scoring process for abstracts. This approach has promoted consistency, transparency, fairness, and quality in the selection process.



Building on this momentum, AMLI is focused on further improving the abstract handling process. Key goals include enhancing submission planning, aligning abstract submission deadlines with critical conference dates such as registration, and ensuring timely and comprehensive communication. We also aim to provide clear guidance regarding the inclusion of tables and figures and to establish a formal process for abstract withdrawal. The improvements are intended to increase the scientific diversity and quality of the submissions, with the objective of selecting abstracts that are ready for publication and offer substantial scientific and educational value.

Please share your experiences with the abstract submission process and send us your feedback or suggestions to help drive further enhancements!

AMLI 2025 Highlights



RE-THINKING THE DIAGNOSTIC PARADIGM FOR COMPLEX DISORDERS OF IMMUNITY

by Roshini S. Abraham, PhD, D(ABMLI), FAAAAI, FCIS

The primary immune disorders (aka. inborn errors of immunity/IEIs) are an expanding group of diseases that include monogenic (and oligogenic) disorders of the immune system, somatic variants in genes associated with immunological disease and phenocopies of IEIs, which can include autoantibodies to immunologically relevant proteins. The IEIs currently number close to 600 genetic disorders of immune system, and in the past 20 years, we have evolved from a unidimensional, simplistic version of genotype-phenotype correlations to a highly complex and nuanced understanding of the myriads of interactions that influence and regulate the genotype and the phenotype. In this new paradigm, these disorders are associated with both immunodeficiency and immune dysregulation, the latter representing a "catch-all" term that encompasses autoimmunity, autoinflammation, lymphoproliferation, susceptibility to neoplasia etc., and the former including not just an increased risk of infection or recurrent infection, but also infection with specific groups or types of pathogens. Similarly, we have evolved from the one gene- one phenotype model to the one gene-multiple phenotypes and multiple genes- one phenotype model and beyond. The rapid evolution of the field necessitates a nimble yet sophisticated and thoughtful approach to immuno-diagnostics, and the concept of disruptive innovation summarizes where we currently are and where we need to be. Disruptive innovation often starts small with existing technologies or concepts, and introduces small refinements that target specific areas, and then gradually expands and modifies the process till it displaces the less agile, the less flexible, the less innovative mindset, workflow, strategy or model.

"If you always do what you always did, you will always get what you always got." – Albert Einstein.

In this year's AMLI meeting keynote talk, the emphasis was on disruptive innovation in diagnostic immunology with a focus on improving our ability to functionally evaluate variants of uncertain significance (VUS) in immune-related genes or developing rapid new assays to interrogate type I and II interferon signatures as examples of DI in DI (disruptive innovation in diagnostic immunology). The keynote also provided examples of DI in identifying T cell immune dysregulation as the basis for a secondary immune disorder, which for a considerable time was defined as idiopathic pediatric acute liver failure (iPALF), and then re-christened as indeterminate PALF (IND-PALF), and which the presenter re-named again, as immune PALF (iPALF with "i" now representing immune rather than idiopathic or indeterminate). This disorder is characterized by acute liver failure secondary to a dysregulated immune response, likely secondary to a viral infection. These patients have a significant accumulation of circulating activated T cells, largely CD8+ but also in more severe cases, CD4+ T cells, expressing HLA-DR+ and CD38++/+++ as well as tissue-resident memory T cells (TRM) identified by CD8+CD103+ (TRM marker) and perforin in liver biopsies. These activated T cells produce a surfeit of interferon-gamma (IFNg) and can be regulated by treatment with emapalumab (an IFNg neutralizing monoclonal antibody) or ruxolitinib, a JAK inhibitor that blocks the JAK-STAT pathway regulating the IFNg signal. Notably, these effector T cells can also be controlled through modulating regulatory T cell (Treg) function by measuring upregulation of CTLA4 on activated Tregs, and using abatacept to provide exogenous Treg function, in patients where CTLA4 is not effectively upregulated. Treatment with abatacept can prevent terminal liver failure and requirement for a liver transplant in these patients, and also prevent secondary aplastic anemia, and the need for a hematopoietic cell transplant. Abatacept is effective not only at controlling florid effector T cell activation, but it also drives naïve T cell differentiation, and the drug can be weaned without recurrence of symptoms over a period of time. The ultimate objective of DI in DI is to develop and implement precision medicine paradigms in immunology, which requires a systems approach in the clinical diagnostic laboratory.

"Innovation is seeing what everybody has seen and thinking what nobody has thought." –Albert Szent-Györgyi

EMERGING HORIZONS IN LUPUS: THE DAWN OF CELL BASED THERAPY IN AUTOIMMUNITY

Lupus remains a challenging autoimmune disorder to manage, particularly in cases in which patients are refractory to first and second line treatment options. As a result, mitigating damage associated with disease flares often requires a highly individualized approach to treatment. Managing this condition typically involves multiple therapies, each with its own set of benefits, risks, and potential side effects.

This complexity demands close collaboration among patients, their care teams, families, and physicians to ensure optimal outcomes. This year, AMLI 2025 showcased what's possible when this type of holistic approach is taken in the journey to improve patient care.

Dr. Parastoo Fazeli is an associate professor of medicine and practicing Rheumatologist at the University of Minnesota, where she also directs the lupus clinic. It's here that Dr. Fazeli is pioneering the new frontier in lupus treatment--cell-based therapy. Specifically, Dr. Fazeli and others are investigating the potential for chimeric antigen receptor T-cell (CAR-T) therapy in severely refractory cases of lupus.

Writing and interview by Alexis S. Dadelahi

EMERGING HORIZONS IN LUPUS: THE DAWN OF CELL BASED THERAPY IN AUTOIMMUNITY

Though recent years have brought encouraging advances, including FDA approval of several biologic agents, a significant subset of patients continue to experience uncontrolled disease activity, frequent flares, and progressive organ damage. For these individuals, innovative strategies are urgently needed.

This is the care gap that Dr. Fazeli hopes to address using CAR-T therapy. Early research in both the cancer and autoimmune space suggest that CAR-T could offer transformative benefits to patients refractory to conventional therapy approaches. Additionally, cell-based therapies are particularly attractive for their potential in conferring long-term remission and/or a functional cure in some cases. However, this therapeutic option comes with serious considerations. CAR-T therapy carries risks such as neurotoxicity, cytokine release syndrome (CRS), cytopenias, and heightened infection susceptibility, which pose a much more profound threat to patients than most conventional treatments. The financial burden associated with treatment is also substantial, encompassing both the cost of therapy generation and the intensive post-treatment care required.

Looking ahead, the development of allogeneic, or “off-the-shelf,” CAR-T products could broaden access and applicability, not only for lupus but for a range of autoimmune diseases. This evolution, however, raises a critical question: Should healthcare systems invest in one high-cost, high-risk, but potentially curative intervention, or continue with a lifetime of moderately expensive maintenance therapies? Or perhaps scientific advances will obviate the need to choose one course over the other.

In an effort to better understand the full potential and pitfalls of this novel cell-therapy application, we followed up with Dr. Fazeli to get her opinion on some key questions.

EMERGING HORIZONS IN LUPUS: THE DAWN OF CELL BASED THERAPY IN AUTOIMMUNITY

Dr. Parastoo Fazeli at AMLI 2025

One of the major concerns regarding CAR-T therapy is the risks associated with using self-reactive T cells, and their unchecked cytotoxic effects. What role could the laboratory play to facilitate safer induction and/or monitoring for cell therapy candidates?

Dr. Fazeli: More accurate lupus serology for autoantibodies like anti-dsDNA with the lowest false positive/negative rates.

What do you think is the greatest barrier for the success of cell-based therapies like CAR-T, and where do you hope to see these therapies advance over the next 20 years?

Dr. Fazeli: The greatest barrier is the small number of patients enrolled and the fact that we do not know what the perfect product, target, or dose would be. I hope one of these CAR-T cell therapies lead to cure or long remission of lupus.

EMERGING HORIZONS IN LUPUS: THE DAWN OF CELL BASED THERAPY IN AUTOIMMUNITY

The field of Rheumatology seems poised to change rapidly in the near future. What's one paradigm in Rheumatology you think might be overturned in the next two decades?

Dr. Fazeli: Personalized medicine, to predict which type of patients respond to which type of treatment the best, like what they currently do in cancer treatment.

Success in the field of Rheumatology seemingly requires the same skill set as a good detective. Do you have any hobbies outside of work that let you exercise those investigative instincts?

Dr. Fazeli: I love following successful people's journey/pathway/biography, I love reading their tips to success. They might not be physicians but hearing their stories fascinate me.

What was the most memorable part of attending AMLI 2025?

Dr. Fazeli: Having my patient present her experience and share her journey of dealing with lupus. Also attending the lupus expert talk, she (Dr. May Choi) was from Canada and provided great points about AI and lupus prevention.

From Flares to Freedom

A First Hand Account of Life with Lupus, and the Transformative Impact of Cell-Based Therapy

Michelle Koehnen-pre-treatment (upper left), sharing her experience with lupus and CAR-T therapy at AMLI 2025 (lower left), advocating for lupus awareness (right).

At this year's conference, attendees were given a rare and powerful opportunity to hear from a perspective not often featured at scientific meetings, that of the patient. We were delighted to welcome Ms. Michelle Koehnen who has lived with severe lupus since childhood and recently became one of the first patients to undergo CAR-T cell therapy to treat this condition. A dedicated patient advocate, Ms. Koehnen has committed herself to advancing understanding of lupus and emerging therapies through education and shared experience. As part of that mission, she graciously agreed to speak with our community, offering a candid and deeply personal account of life with a chronic autoimmune illness, her decision to pursue CAR-T cell therapy, and the transformative impact it has had on her journey as a patient. Her presentation provided a compelling reminder of the human side of diagnostic immunology, illustrating how the work performed at the laboratory bench ultimately translates to lives shaped by disease, innovation, and hope. By bridging the gap between scientific advancement and lived experience, Ms. Koehnen's remarks underscored the importance of patient-centered perspectives as novel therapies continue to reshape the future of autoimmune care.

The State of AI in Laboratory Immunology: From Flow Cytometry to Language Models

By Patrick Vanderboom, PhD

A Review of the 2025 AMLI Conference Presentations

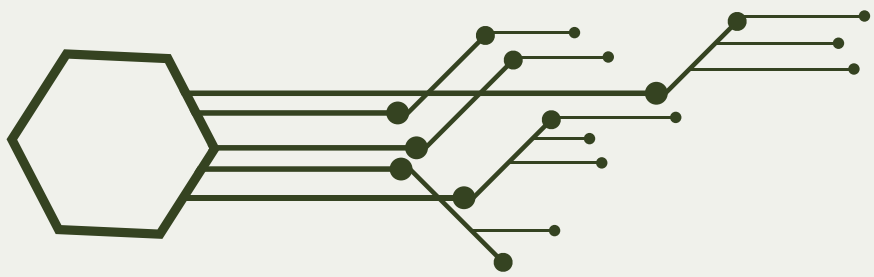
Artificial intelligence (AI) is permeating all facets of our lives, and at this year's AMLI conference, several practitioners and laboratorians provided insight into how AI is being utilized in clinical immunology. Early in the meeting, Dr. May Choi highlighted the potential of large language models (LLMs) in rheumatology by demonstrating that ChatGPT performed as effectively as rheumatology fellows when responding to complex case questions. Later that day, Dr. Roshini Abraham delivered the keynote address, emphasizing her group's pioneering efforts to use LLMs to analyze patient records for phenotypic patterns suggestive of specific diseases. These early talks established a unifying theme: AI systems are rapidly becoming collaborators in clinical reasoning rather than abstract research tools.

Two presentations during the conference focused specifically on the application of AI in laboratory medicine. Dr. Jansen Seheult discussed the regulatory and analytical challenges of evaluating machine learning systems in diagnostic laboratory medicine, while Dr. Patrick Vanderboom presented results on how LLMs can assist in generating interpretive reports for immunologic assays.

Dr. Seheult framed artificial intelligence as a diagnostic tool that naturally belongs within the existing regulatory architecture of clinical laboratories. Laboratory testing already operates in a safety-critical environment governed by the Clinical Laboratory Improvement Amendments (CLIA) in the United States and equivalent quality frameworks internationally. These systems, he argued, can be extended to govern AI-driven diagnostics by applying the same

evidence-based standards used for any new analytical system introduced into the clinical workflow. Supplemental FDA mechanisms, such as Software-as-a-Medical-Device classification or Predetermined Change Control Plans, may complement this approach but are not prerequisites for implementation within a robust CLIA-compliant quality management system. Dr. Seheult illustrated this principle with a case study of a deep neural network designed to classify flow-cytometric events in minimal residual disease (MRD) testing. When compared to expert manual gating, the AI system achieved comparable results while reducing human analysis time by more than half. Implemented in a human-in-the-loop configuration, it preserved the CLIA mandate that qualified personnel remain responsible for interpretation and final verification, integrating automation without sacrificing professional oversight.

Dr. Patrick Vanderboom's presentation explored the interpretive and linguistic frontier: the use of LLMs for generating narrative pathology reports. The project focused on the B-cell phenotyping profile used in evaluating immune competence and diagnosing conditions such as common variable immunodeficiency and hyper-IgM syndromes. These tests generate complex, multi-parametric results that traditionally require significant amounts of pathologist time for each interpretative report. To address this inefficiency, his team fine-tuned a general-purpose model (Llama3) using laboratory-specific data, transforming a generalist AI into a specialized clinical assistant. The model's output closely matched human interpretive patterns, particularly for lymphocyte subset counts and B-cell subset distributions. However, the LLM struggled with rare findings, requiring approximately forty examples per abnormality during training to achieve an 80% likelihood of commenting.

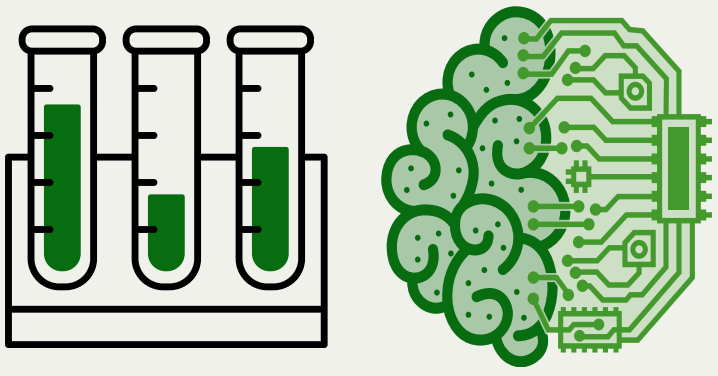


The State of AI in Laboratory Immunology

Despite these limitations, pathologists reviewing AI-assisted templates experienced a mean time reduction of 29%, with nearly half of cases showing more than 50% savings. Hallucinations were minor and infrequent, and pathologists rated the AI as “helpful” or “excellent” in most instances. These findings support the role of LLMs as collaborative tools rather than autonomous report authors, providing first drafts that expedite but do not replace expert interpretation.

Although Seheult and Vanderboom approached different domains, one quantitative and the other narrative, their conclusions converged on a common philosophy of augmented intelligence. Both underscored that AI should enhance, not supplant, human expertise. Each project achieved substantial efficiency improvements, without compromising quality or safety. Both presentations also illustrated that the tools of laboratory science, from calibration verification to proficiency testing, can be adapted seamlessly to AI systems when guided by thoughtful design and robust oversight.

For immunologists, the broader implication is that AI integration need not replace established laboratory principles but can instead reinforce them. Deep neural networks can quantify cellular phenotypes with unprecedented consistency and throughput, while language models can transform complex numeric data into readable, clinically meaningful text. These examples offer a glimpse into the future of clinical immunology, where AI enabled workflows result in increased accuracy and efficiency while their implementation can be managed within existing quality frameworks.



Abstract awards

Doctorate Award

Umida Ganieva, PhD is the current first-year fellow in the CPEP Clinical Immunology Fellowship Program at Rosalind Franklin University of Medicine and Science and Lurie Children's Hospital of Chicago.

If you weren't a laboratorian, what completely different career would you choose and why?

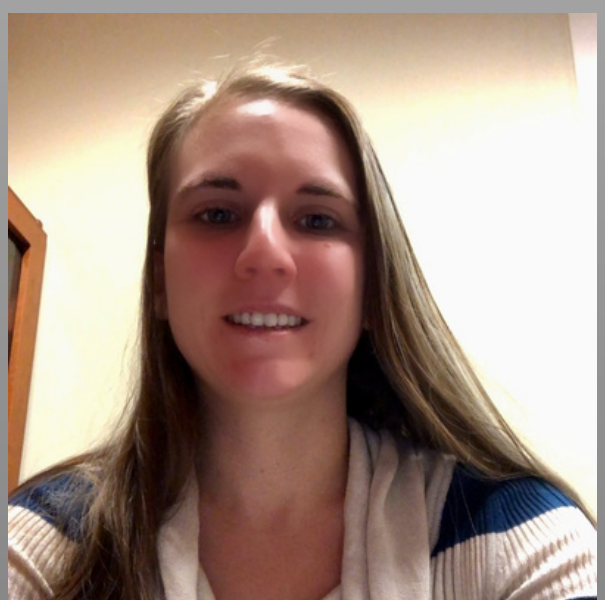
"I'd be a pianist traveling the world with my concerts—just me, a piano, and a suitcase. Music has always been my favorite escape, and performing across different countries sounds like the perfect mix of creativity, adventure, and jet lag."

Young investigator award

Conlan Tran, MS is Lead Medical Scientist in the Clinical Immunology Laboratory at The Johns Hopkins Hospital.

If you had an entire free weekend with no responsibilities, how would you spend it?

"If I had a completely free weekend, I'd spend it relaxing at the beach soaking in the sun. Long walks along the shoreline shell collecting and looking for sea critters, followed by watching the sunset melt into the horizon. It'd be the perfect reset before the week begins again."



Peter Maxim Memorial Clinical Laboratory Scientist Award

Kirsten Fagan MLS(ASCP)CM is medical laboratory technologist at the UConn Medical Center in the core, special chemistry, and cystic fibrosis laboratories

Future Leaders in Medical Laboratory Immunology Award

Alexis Dadelahi, PhD, DMLI(ASCP) is the Medical Director for Immunology and Preanalytics at TriCore Reference Laboratories in Albuquerque, NM.

What are your future aspirations in this field?

"First and foremost, I'm committed to being a good steward of laboratory medicine in general, but obviously I'm particularly passionate about maintaining excellence in the field of diagnostic immunology. I love consulting with clinicians and other laboratorians who aren't as familiar with our testing and being a resource to help them and their patients is one of the most rewarding aspects of the job. In the future, I hope to improve the clinic-lab connection."

Travel Allowance Scholarship

Dharmendra Jain, PhD is Associate Director of the Histocompatibility and Immunogenetics Laboratory and Medical Director of Immunology at University of Utah.

What do you enjoy doing outside of work?

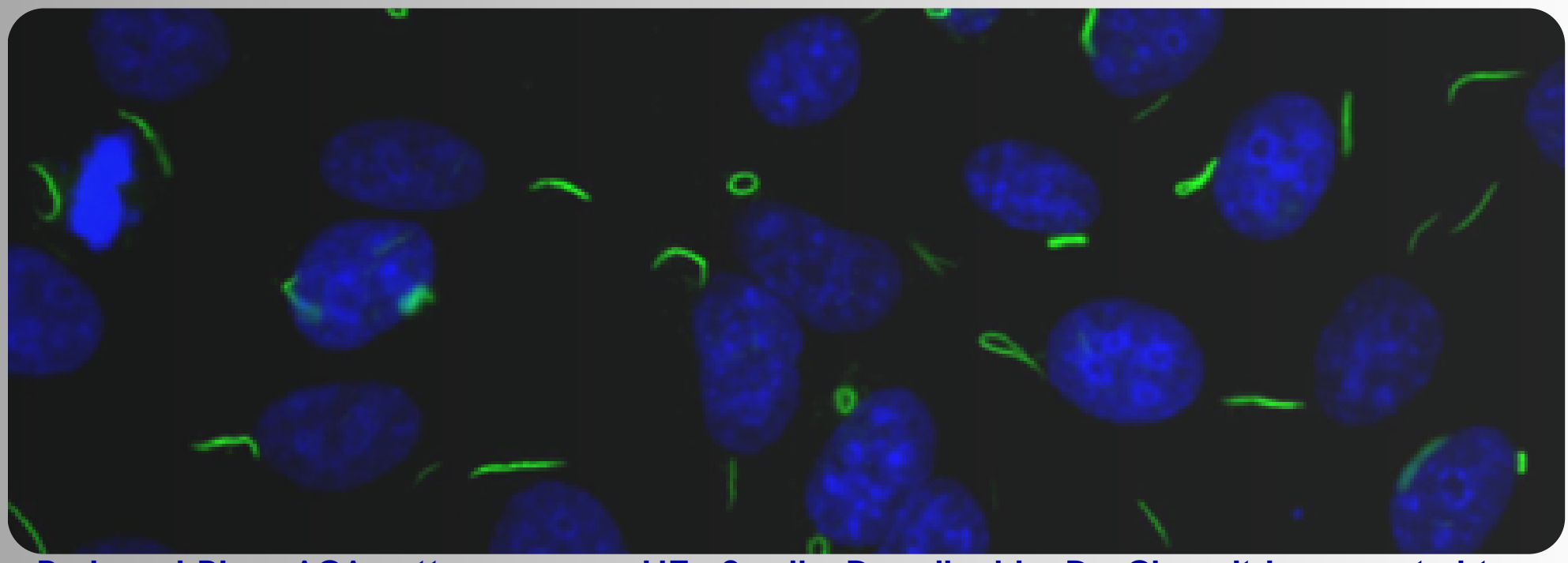
"Outside of work, I enjoy listening to Bollywood music. It helps me relax and stay connected to my cultural roots while providing a refreshing balance to my professional life."

Distinguished Service Award

Susan S. Copple, M.S., MT(ASCP)SI

Please join us in honoring Susan S. Copple, M.S., MT(ASCP)SI, as the recipient of AMLI's 2025 Distinguished Service Award. Susan has played an integral role in advancing the field of immunology through her continual dedication to education, research, and global leadership. Over the course of her remarkable career, she has lectured in more than 30 countries, published extensively, and contributed her expertise through key roles with the IUIS/WHO/AF/CDC and the IHCLR.

In addition to her service to AMLI, serving both on the AMLI Council and as Treasurer, Susan has advanced the field by serving as an invaluable partner to industry, culminating in her retirement as Senior Clinical Science Manager at Werfen in 2025. While her professional accomplishments speak volumes, her greatest impact is reflected in the many lives she has touched over more than 30 years. Known throughout the field as a mentor, coach, and role model, Susan has consistently inspired colleagues and students alike to strive for excellence.



Rods and Rings ACA pattern seen on HEp-2 cells. Described by Dr. Chan, it is connected to INF-α and ribavirin treatment in chronic Hepatitis C.

AMLI Erwin Neter Laureate Award for Lifetime Achievement

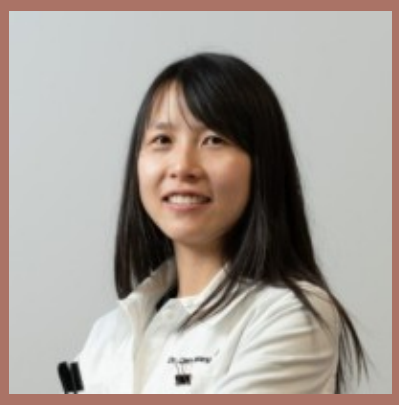
Congratulations to Dr. Edward K.L. Chan, Ph.D for being recognized and honored by AMLI for his significant contributions to the field of medical laboratory immunology. We are proud to honor Dr. Chan with our highest scientific award, recognizing his pioneering research and lifelong dedication to the field of autoimmunity and immunodiagnostics.

With over four decades of distinguished academic and scientific leadership including professorships at the University of Florida and the Scripps Research Institute, Dr. Chan's work has led to the discovery of critical autoantigens and subcellular structures such as GW bodies and Rods & Rings. His research has focused on characterizing proteins involved in microRNA biogenesis, their effector functions and the role of specific microRNAs as tumor suppressors or oncogenes. In addition, his laboratory made significant discoveries in the field of oral, head and neck cancer. His role in global standardization efforts through IUIS AutoAb.org and ICAP has helped shape best practices in autoimmune diagnostics worldwide.

Emerging talents in Clinical Immunology
Early Career Lab Directors

Caleb Cornaby, PhD

Lab Director:
Children's Hospital Los Angeles; USC Keck School of Merdicine



Qian Wang, PhD

Lab Director:
Alberta Precision Laboratory, Calgary, Canada

Ty Chiaro, PhD

Director-in-Training :
UNC, Chapel Hill
Soon to be Lab Director:
Vanderbilt University

How did you get into Laboratory medicine?

Caleb: When I was a graduate student at Brigham Young University, I was asked to teach the didactic and laboratory portion for the molecular diagnostic course of the departments clinical laboratory science program. Like many CLS programs, this block had didactics and lab work every day for the 4 to 6 weeks. I had only had peripheral exposure to laboratory prior to that point. In the process of updating course content and laboratory procedures to teach our CLS students, I was able to meet several laboratory directors, diagnostic vendors, and CLS professionals. This exposure allowed me future opportunities to shadow at clinical laboratories and engage more with medical laboratory professionals, which really piqued my interest and led to me investigating and finding out more about laboratory medicine as a career path.

Qian: A wonderful friend. My interest in laboratory medicine grew from a desire to translate basic science into tools that directly impact patient care. During the final year of my PhD, a close friend training in clinical chemistry introduced me to the field. I also had the opportunity to collaborate with a clinical chemist, which allowed me to learn more about the field and ultimately drew me to laboratory medicine.

Ty: More or less by happenstance. I was completely ignorant to laboratory medicine/clinical diagnostics coming out of college. Coincidentally enough, I ended up at ARUP Laboratories where again a whole other world was opened up to me.

A quarter of the way into the 21st century, how do you see the field of clinical immunology evolving as we prepare for the 22nd century?

Caleb: I am typically a glass half-full type of person, so my view of the field is rather optimistic. We are extremely fortunate in our field of clinical laboratory immunology to have many talented and capable professionals that will be crucial in surmounting current barriers for providing improved diagnostic and post-therapy monitoring challenges for our patients while working in tandem with our physician colleagues to improve patient care in the United States and throughout the world.

Qian: Great question….tough one indeed. I think Clinical immunology will continue to evolve from single-analyte testing toward integrated, data-driven diagnostics that combine antibody profiles with clinical context. Advances in assay standardization and harmonization, laboratory informatics, and artificial intelligence will improve result interpretation and reduce diagnostic uncertainty. Longitudinal outcome studies will help assess patient risk based on antibody profiles, and ongoing discovery of novel antibodies will help address current diagnostic gaps and improve patient care.

Ty: I believe we are witnessing a major inflection point in the evolution of diagnostics with the emergence of artificial intelligence and large language models. It has long been recognized that autoimmune diseases are complex, and that the presence or absence of a single gene rarely determines disease on its own. What remains incompletely understood is the intricate interplay between genetic susceptibility and the environmental contexts in which individuals live.
Over the coming decades, as sequencing technologies become more accessible, as increasingly comprehensive and diverse metabolic and immunologic profiling platforms are developed, and as AI systems become more capable of integrating complex, human-centered data, we are likely to see the emergence of predictive models that synthesize genetic information, immune status, environmental exposures, diet, and family history. Such approaches have the potential not only to refine diagnosis, but also to enable earlier intervention, risk stratification, and, in some cases, prevention of autoimmune disease.

Interview conducted by Ty Chiaro, PhD, DMLI(ASCP)