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Highlights from FOCIS 2021

The FOCIS Annual Meeting is the focal point of the translational immunology community, the place where researchers, clinicians, trainees, industry, and others engaged in the field, gather
to share the latest advances in the understanding and treatment of immune-based diseases.

The FOCIS 2021 Virtual Annual Meeting, June 8-11, featured a rich array of high-profile sessions curated to engage participants on timely and innovative multidisciplinary content and the application of immunological discovery to the public health and other disease-related challenges facing our global community.

More than 960 attendees from over 40 countries participated at FOCIS 2021 in June. Attendees experienced five days of dynamic keynotes, cutting-edge plenary and thematic session content, presentation of exceptional papers in topical oral abstract sessions, an outstanding array of pre-conference educational courses, and sessions organized by FOCIS Member Societies, related organizational partners, and sponsors. Many of the sessions were captured for on-demand viewing for the month following the meeting.

Thank you to all who attended and contributed to the success of FOCIS 2021. We appreciate your unwavering support, and your desire to expand your knowledge and connect with the global immunology community. We look forward to seeing you in 2022!

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Thank You to All of Our FOCIS 2021 Sponsors!
We look forward to welcoming you to FOCIS 2022 in San Francisco, June 21-24. Mark your calendars and watch your inbox for additional information, announcements and registration updates.

#dedicated

**Immunotherapies Perspective: Miguel Tam, Ph.D., Director of Strategic Marketing, BioLegend**

BioLegend's Miguel Tam was interviewed on his perspective in this rapidly evolving field. Dr. Tam earned his Ph.D. in Clinical Immunology from the University of Gothenburg.

Immunotherapies are immune system-based treatments designed to fight cancer. These have shown clinical efficacy in treating various types of cancers, which has spurred both the growth of immuno-oncology research and the development of molecular therapeutics.

Cancer immunotherapies include chimeric antigen receptor (CAR) T cells engineered to recognize cancer cells, checkpoint inhibitors like anti-PD-1 and anti-CTLA-4 antibodies, cytokines like interleukins and interferons, and therapeutic vaccines that prime the immune system to attack cancer cells.
How has research in cancer immunotherapy changed in the past decade and how have the technological developments contributed to this evolution?

Ten years ago, there were only a few approved cancer immunotherapies while several conceptual approaches, backed by promising preclinical data, were in development. Most recently, there has been a wave of FDA-approved drugs that harness the immune system to eliminate cancer. With these approvals, and the accompanying demonstrable improvements in treatments, there has been a significant expansion in interest, investment, and research development in this field. These activities focused primarily on therapeutic modalities for soluble-based (e.g., checkpoint inhibition) and cell-based (e.g., cancer vaccines, CAR-T) immunotherapies. Technological developments, especially in genomics, have enabled researchers to interrogate increasingly complex biological questions to better understand and develop novel, personalized, immunotherapeutic approaches.

What are some of the biggest hurdles/challenges facing researchers in this field and do you think they are being adequately addressed?

Resources—Accessing the latest technologies at an affordable cost is a significant hurdle for many researchers. As technologies are refined and broadly adopted, the costs often drop dramatically. However, access to the newest and most powerful technologies continues to be expensive and consistent availability of high-quality clinical samples from relevant subsets of patients who have been treated for a given condition can be very difficult to obtain.

Knowledge Gaps—Our understanding of the tumor microenvironment and mechanisms of resistance is still at an early stage. Further research is needed to elucidate the underlying biological mechanisms driving the heterogeneity of responses to therapy seen among patients. Immunotherapeutic treatments can lead to sustained cures, but they are only effective in some patients. Fortunately, there are a high number of research studies across a broad spectrum of therapeutic approaches currently seeking to address these fundamental questions. These past successes, coupled with newly available technologies and daily advancements in knowledge of immune-signaling mechanisms, are fueling optimism that these knowledge gaps will be filled.

Read more of the interview, here.
How did you first get involved in immunology?
I got involved in immunology as a graduate student during my PhD. I did this at the University of Toronto with Dr. Florence Tsui, and we started working on a project on an autoimmune disease called polymyositis and dermatomyositis. I was interested in understanding the molecular mechanisms of this disease. This is an autoimmune condition that affects a number of different tissues, including the skin and the etiology of this disease is still not very clear, but one of the hallmarks is that autoantibodies bind to specific proteins that might cause tissue damage. That’s how I got started.

Tell us about the research you’re most proud of.
The research that I’m most proud of now is currently underway in my lab. I have a number of different research projects that are very interesting. In one project, we’ve identified a novel gene that’s involved in antibody diversification. To backup a bit, antibody diversification and especially secondary antibody diversification is a process initiated by this enzyme called AID activation that produces antibodies of high affinity in different classes. AID carries out these processes by deaminating deoxycytidines in immune globulin DNA to deoxyuridines. Now the problem with AID is that this lesion that it produces in DNA (i.e. deoxyuridines), cells are very well adapted to repairing these types of lesions. So AID on its own should not be able to induce these processes to induce class switch recombination. What cells need to do is therefore disable this deoxyuridine repair system. And that is what one of our projects that we currently have in submission is about; we identify a novel gene whose product disables the deoxyuridine cell repair system that allows for AID to carry out these two functions of somatic hypermutation and class switch recombination. So we’re very proud of that. That’s one project, but I can tell you of another project. We’ve also identified another novel gene when knocked out, these mice are resistant to inflammatory bowel disease and to obesity, Type 2 diabetes, and non-alcoholic fatty liver disease. We’re currently working on these stories, trying to understand the mechanism of how this gene promotes these various inflammatory diseases. And we’re also trying to identify small molecule inhibitors of this protein to be able to treat mice and ultimately humans to prevent these types of autoimmune diseases or immune inflammatory diseases.

What is the most important trait a researcher should possess and why?
Creativity, I think is very important. It allows you to interpret data and to creatively come up with solutions. Curiosity, I think is also very important – especially in the situation where one gets interesting and strange data, which requires one to pursue it and asks the right types of questions. Hard work is also a very important trait. I think those are three important keys: curiosity, creativity, and hard work.

Listen to the full interview or read the transcript here.
Effects of COVID-19 across organs and systems in healthy and immunocompromised individuals

Understanding the whole-system effects of COVID-19 and the immune system’s response to the virus is vital in vaccine and therapy development.

Research shows that both asymptomatic and symptomatic individuals with COVID-19 experience (single and multiple) organ impairment. In addition, some individuals experience symptoms long after initial infection. Understanding the T-cell response and how it is changing (i.e., clonally expanding, contracting, or changing repertoires) can provide a way to understand the short- and long-term effects of an infection, and how effective certain therapies may be. The immunoSEQ® T-MAP™ COVID tool provides a way to track these changes over time and across different patient populations and can help evaluate the effectiveness of different vaccines and therapies.

In our latest blog, we discuss the importance of understanding the long-term effects of COVID-19, the impact on various organ systems, and the immune system’s response to the virus, as vaccines are rolled out and new SARS-CoV-2 variants emerge. Learn about:

- Recent research on the effects of COVID-19 on different organ systems and in different patient populations
- Mapping the T-cell response to COVID-19 over time
- How a whole-systems approach can help in the development of vaccines and therapies in the long term

Read the full blog
If you’d like to speak to someone to learn more about how immunoSEQ can help you propel your research, contact us below and your designated account manager will reach out to you.

Contact Us

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Save the Date for the March 2022 U.S. Advanced Course

If you’re looking to gain a better understanding of cellular and molecular immunology with a clinical spin, taught by experts in the field, look no further. The 2022 Advanced Course in Basic and Clinical Immunology will be hosted in La Jolla (San Diego), California, USA, from March 7-9, 2022. Registration for the course will open in September 2021.

This unique course is a great fit for a variety of career levels. Past attendees include clinical fellows in immunology, fellows researching human diseases, scientists from biotechnology and pharmaceutical companies, and physicians who wanted to enhance their understanding of immunology. Over three days, this interactive program will not only provide valuable education, but will also give you many opportunities to network with renowned faculty and other attendees.

Please save the date for this course and look for a registration announcement email this September. We hope to see you there!
To improve the lives of lupus patients, the Lupus Research Alliance (LRA) supports outstanding scientists to investigate the fundamental causes and underlying mechanisms of lupus that could lead to the development of safer and more effective therapies. We fund innovative foundational and translational projects that focus on understanding disease heterogeneity to enable patient stratification by active disease mechanisms. We seek to engage diverse scientific researchers who apply novel approaches and cutting-edge technologies to identify molecular pathways or novel targets that could lead to prevention, improved diagnostics and treatments, and ultimately a cure for lupus.

The LRA encourages all qualified researchers, based in the US or abroad to consider applying for the following funding opportunities:

- **Global Team Science Award** ($3 million over 3 years) supports interdisciplinary, collaborative, and highly synergistic projects that push the boundaries of innovation and bridge research and clinical efforts in lupus. The successful Teams will focus on unraveling human lupus heterogeneity by applying cutting-edge technologies to address critical questions that could bring about breakthroughs in lupus care, research or drug development.

- **Career Development Award to Promote Diversity in Lupus Research** ($600,000 over 4 years) supports outstanding early-career underrepresented minority scientists to establish a competitive independent research program in areas that reflect strategic research priorities of the LRA which include defining lupus heterogeneity, stratifying patients by active disease mechanism to advance new therapeutics, and establishing motivated and collaborative global research/technology teams.

- **Postdoctoral Award to Promote Diversity in Lupus Research** ($170,000 over 2 years for fellows with no more than 4 years of postdoctoral training) provides qualified and promising underrepresented minority scientists sustained support to guide their transitioning to an independent researcher role in areas that reflect the strategic research priorities of the Lupus Research Alliance to advance new therapeutics for lupus patients.

Nominate a colleague:

- **Lupus Insight Prize**: The primary objective of the Lupus Insight Prize is to identify and recognize an outstanding investigator who has developed a novel research insight in...
scientific domains relevant to lupus. **The Prize is not a lifetime achievement award. Instead, the Lupus Insight Prize will be given for a specific, significant and recent (within the past five years) discovery that is relevant to lupus.** The Prize also aims to direct the talents of the Prize recipient toward further high impact research achievement and further testing of the insight in lupus. This should shift the current paradigms and significantly advance the understanding or treatment of lupus. Secondary objectives of the Prize are to: (1) raise the visibility of lupus as a significant medical condition among the public; and (2) demonstrate the determination of the LRA to surmount the challenges of this complex and debilitating disease.

For further details please visit our website: [www.lupusresearch.org](http://www.lupusresearch.org).
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