

# Doctor's Notes

From the Desk of David B. Agus, MD

Lawrence J. Ellison Institute for Transformative Medicine of USC  
 USC Center for Applied Molecular Medicine  
 USC Norris Westside Cancer Center



On behalf of the entire team at the Ellison Institute, I wish you and your loved ones a very happy and healthy New Year! As this holiday season approaches, I am excited to share the new developments happening here at the Ellison Institute.

Over the last year, many people have asked me, “When will the Ellison Institute open.” The answer is we are already open and working on solutions for cancer and other illnesses. Our team may be in multiple locations now, but eventually, we will all be housed under one roof. Until that time, we are working with our incredible team of scientists and clinicians, faculty from across USC, and collaboration partners from around the world. We are actively recruiting team members from across the globe who are excited to join forces with the Ellison Institute in our quest to help patients attain longer, healthier, and more fulfilling lives.

One of the most exciting aspects of our work at the Ellison Institute is our focus on convergent science, where diverse experts join to tackle a common problem. I love learning how different disciplines approach problems. Although convergent science is gaining popularity, it remains relatively uncommon. I believe it is one of the things that truly sets the Ellison Institute apart from other institutions.

By incorporating perspectives from diverse disciplines, we can develop ideas and solutions that are completely novel. For example, this summer I had the opportunity to work with Dr. Dana Goldman, the Leonard D. Schaeffer Chair and

director of the USC Leonard D. Schaeffer Center for Health Policy & Economics, on a piece for Fortune Magazine to explore outcome-based pricing for cancer treatments. This is an outstanding example of a non-traditional partnership that has brought about new and unusual solutions.

“*I am thankful to you, my patients, friends, and supporters who continue to believe in the vital work we do at the Ellison Institute.*”

David B. Agus, MD

Our innovation partnerships are another remarkable example of our work in convergent science. By joining up with technology partners who see the value of incorporating diverse perspectives to find new ideas and impactful solutions, our research can move forward more quickly than ever before.

This month, I am happy to announce our new partnership with global technology and imaging leader, Olympus. Together with the USC Translational Imaging Center, we are launching a multi-level collaboration. By bringing together three separate areas of expertise and knowledge, we hope to develop groundbreaking solutions for patients, physicians, and researchers.

I am thankful to our partners and contributors for adding their expertise to further our cause. I am thankful to the many USC scientists and faculty who have dedicated themselves to pushing the limits of medicine and research. But most of all, I am thankful to you, my patients, friends, and supporters, who continue to believe in the vital work we do. Because of your support, the Lawrence J. Ellison Institute for Transformative Medicine can truly transform lives.

# *The Resolution Revolution: The Ellison Institute Announces a New Collaboration with the USC Translational Imaging Center and Olympus*

Two leading USC research groups, the Ellison Institute and the Translational Imaging Center (TIC), are joining forces to launch an exciting new partnership with global technology leader Olympus to advance cancer research and improve patient care. Under the scientific leadership of Dr. David Agus and Dr. Scott Fraser, the new USC-Olympus Innovation Partnership in biological imaging will work to find novel solutions by leveraging their combined expertise and technology. This partnership will be Olympus's first collaboration with USC and represents a multiscale investigation to better understand, prevent, diagnose, and treat cancer. In this venture, Olympus will provide their technology, the Ellison Institute will pose crucial biological questions, and the TIC will modify the technology to fit those questions. The impressive level of expertise each partner brings to the collaboration promises to make their venture very powerful.

## **About the TIC**

The TIC is led by Dr. Scott Fraser, the Elizabeth Garrett Chair in Convergent Bioscience and Provost Professor of Biological Science and Biomedical Engineering. A biophysicist by training, Fraser is world-renowned in imaging the molecular signals, cell motions, and tissue changes involved in embryogenesis and other complex biological events. Fraser is also widely recognized for the development of specialized light and MRI microscopy techniques.

*“This is an astounding new venture which I am proud to be a part of. Olympus gets it - they understand our vision to have a meaningful impact on lives.”*

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The TIC focuses on both adapting existing and developing new instrumentation for the imaging of biological structure and function. These innovations allow scientists and physicians to observe dynamic events as they take place within intact specimens. For example, the TIC has worked extensively to image the changes that take place within a developing embryo. It has now expanded this research to include capturing complex interactions within disease models, such as cancer.

## **A Natural Fit: The Ellison Institute and the TIC**

The Ellison Institute and the TIC began collaborating in 2013. The partnership was a natural fit from the start, each group offering the other fresh perspectives and ideas. The Ellison Institute's research, geared toward understanding complex biological processes that take place within a tumor

and patient, aligned beautifully with the TIC's command of biological imaging. Both teams are highly interdisciplinary and innovative, valuing the power of convergent sciences. After initial success with the collaboration between their laboratories, Agus and Fraser began looking for ways to scale their partnership, bring in new technologies, and build a more efficient path for translating their work to outside laboratories and clinical applications.

*“We are excited to partner in the co-development of technology with the hope of translating these innovations to healthier, safer, and more fulfilling lives for people around the world.”*

Fabrice Cancre, President

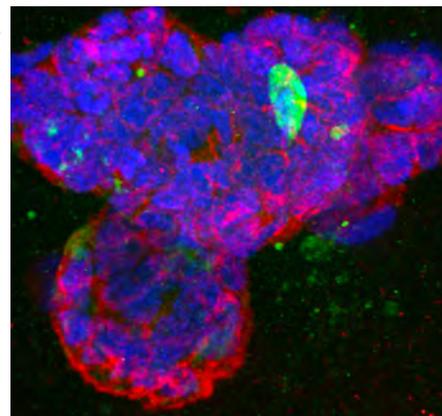
Olympus Corporation of Americas Scientific Solutions Group

## **An Incredible New Partnership**

On a trip to Tokyo, Agus had the opportunity to meet with key leadership at Olympus headquarters, where he shared his vision for a one-of-a-kind partnership. This pivotal meeting launched a long discussion to find the best path to bring together these three visionary groups.

Since 1919, Olympus has been creating new imaging technologies, leading the world in innovation as well as health care solutions for patients. They focus on developing new medical technologies to meet the needs of physicians and researchers with expertise in patient care. Their world-leading technology will empower our research to be truly multifaceted, from examining single-cells, to understanding tumor systems, to examining the whole patient. This project, alongside Olympus' Discovery Center program for core facilities at leading universities, supports the Olympus mission to enhance the safety, security, quality of life, and productivity of the people they serve while furthering scientific research.

Fabrice Cancre, President of Olympus Corporation of Americas Scientific Solutions Group, shares his enthusiasm for the new partnership. “Olympus is passionate about helping to lead the charge in the fight against cancer. We are excited to partner in the co-development of technology with the hope of translating these innovations to



## Spotlight on Innovation Partnerships

At the Ellison Institute, innovation and collaboration are integral to our mission. They are at the core of our mission to reimagine and redefine cancer treatment, enhance health and transform lives. Our success in advancing translational, patient-centered research is, in large part, due to the strength of innovation partnerships. We proactively seek the world's best research partners, large and small, from academia and industry, because we know these partnerships are vital to our bold vision for precision cancer medicine.

To this end, we are pleased to announce a newly created leadership role and the addition of Michael Horvat to our team. Michael serves as the inaugural director of strategic partnerships at Ellison Institute. In this key role, he guides and supports our strategic alliances with major corporations and foundations, manages academic-industry partnerships, and helps to advance our strategic development efforts.

Michael came to the Ellison Institute from USC Health Sciences Advancement, where he led development programming for Keck Discovery Sciences for the past two years. Prior to joining USC, he served as a key development leader in global health sciences at UCSF and in biosciences at UC San Diego for more than a decade. Michael possesses both passion and talent for developing innovation partnerships. We are greatly expanding our partnerships in key areas, ranging from computer-vision pathology and 3D tissue live-imaging to advanced proteogenomics and "organs-on-chips" systems building for high throughput biology and drug-screening.

"Each of these relationships has incredible potential to advance today's knowledge," says Horvat. "Taken together, they have the capacity to create a new paradigm for tomorrow's precision medicine where every patient benefits from personalized medicine – receiving the right treatment at the right time – to ultimately attain the best possible outcome"



Michael Horvat

Originally from Canada, Michael Horvat earned his Master of Arts in Organizational Development from Chapman University and Bachelor of Arts in Political Science and Communications from the University of Calgary. When he's not working, Michael enjoys hiking, cycling, travel, photography, and creative writing. He was also proud to serve on the board of SUSHI Performance & Visual Art, an organization which presented today's acclaimed performance artists, including Whoopi Goldberg, Guillermo Gómez-Peña, and Eric Bogosian.

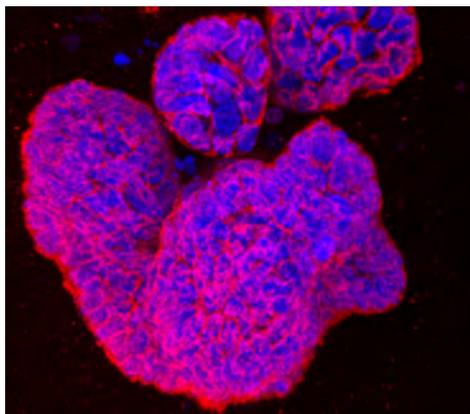
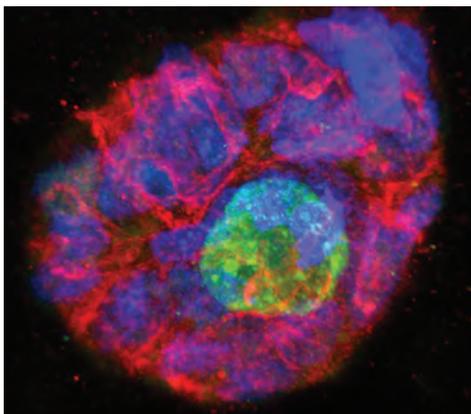
### *The Resolution Revolution* (continued from page 2)

healthier, safer, and more fulfilling lives for people around the world."

Agus agrees. "This is an astounding new venture which I am proud to be a part of. Olympus gets it-- they understand our vision to make a meaningful impact on lives."

"Our collaboration with Olympus will accelerate our ability to develop and advance technologies, helping us create the tools needed to move research forward, benefiting patients sooner, and widening the horizons of possibility in our current work," adds Fraser.

Agus concludes, "And now, Scott and I have this tremendous opportunity to explore their technology and find new ways to make a difference. It's going to be an incredible partnership."



*Seungil Kim, PhD, captured these stunning images (left) at the Ellison Institute. Dr. Kim helps manage our rapidly expanding imaging program. Shown here are colon cancer "organoids" (three-dimensional cell colonies) grown in our laboratory for research. Cell nuclei are blue, cell-cell interactions are magenta, and dead cells are green. Our scientists are better able to study and explore cancer's growth and response to therapy or environmental changes because of images like these. Biomedical imaging has changed the course of our research, and it is constantly revealing new insights into this complex disease.*

## CAMM Junior Fellows: High School Students Join the Fight Against Cancer



2017 CAMM Jr. Fellows from left to right: Joaquin Garcia (Windward School), Jennifer Nguyen (Alhambra High School), Will Biederman (Wildwood School), David B. Agus, MD, Skylar Long (Saugus High School), Mia Moreno (Palisades Charter), Kelly Bartlett (Santa Monica High School)

course proves to be very challenging for students, who quickly learn that they will need to synthesize knowledge, develop hypotheses, and carry out experiments in the laboratory.

Jr. Fellow Skylar Long shared her experience. “(The program) redefined my understanding of research and researchers. It was a totally different way of thinking. We were not being taught; we were being advised.”

Kian Kani, PhD, lead advisor for the Jr. Fellows program, and Assistant Professor of Research Medicine, shares Long’s sentiment. “The Jr. Fellows get to learn a lot about cancer, but more importantly, they are exposed to a new way of thinking and integrating information,” says Kani. “The students learn how to become comfortable with uncertainty, how to challenge their own thinking and how to work well as a team.”

Alumni of the program have gone on to become students at some of the nation’s top universities to pursue careers in science and medicine. The Ellison Institute is proud to be a part of the educational journey for these talented and driven young scientists.

Because the Ellison Institute is passionate about encouraging young people to consider careers in science, our team was thrilled to host our seventh-annual CAMM Jr. Fellows program this summer. This course was created to foster scientific achievement for rising high school seniors interested in clinical or research oncology by challenging them to think critically in a hands-on laboratory environment.

“We need new human capital to fight disease,” says Dr. Agus. “This one-of-a-kind program was designed to inspire students to join the fight against cancer and illness.”

Six outstanding students with a wide variety of backgrounds from local high schools were selected to join the program based on a combination of factors, including GPA, letters of recommendation, and essays about their personal career goals. These students dedicated three weeks to the program, which introduced them to a broad range of career paths in cancer research. The

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## The USC Westside Cancer Center Welcomes Marie Polito, RN

**Q:** Where are you from?

**A:** I am from Orange County, California, but I lived in Arizona for several years and consider it my second home.

**Q:** Tell us about yourself.

**A:** I love change and innovation. Moving to Los Angeles and working for a healthcare provider that values research and technology is very exciting to me.

**Q:** What brought you to the Westside Cancer Center (WCC)?

**A:** A very close family member of mine was diagnosed with a life-threatening illness. He was treated by an amazing USC Cardiologist, Dr. Rahul Doshi. I will never forget the care and skill provided by Dr. Doshi and the Keck team of doctors and nurses. I wanted to join the USC team, and I was thrilled to get the opportunity to join them in delivering exceptional, compassionate patient care.

**Q:** Why did you choose oncology?

**A:** I had been working as an emergency room nurse and was looking for a new challenge. Once I began working in this environment, I recognized how special oncology nurses and our patients truly are.

**Q:** What do you like to do in your free time?

**A:** I am currently enrolled in an RN-to-Master’s program with an emphasis on nursing education. Travel is my absolute favorite hobby. When I’m at home (and on a break from studying), I enjoy creating things with my sewing machine.

**Q:** What inspires you on difficult days?

**A:** Our patients keep me motivated. In many cases, cancer is becoming a chronic illness, and patients can live longer than ever before. Although this is good news, people are still understandably frightened when they receive a cancer diagnosis. It is humbling to help them through this process.

Oncology is constantly changing, but my passion for our patients drives me to keep up with the latest and best methods to help them on their journey. Their strength, courage, and kindness continually inspire me. I am honored to be a part of the WCC team!



Marie Polito, RN

### ARE YOU READY TO JOIN OUR FIGHT AGAINST CANCER AND DISEASE?

EVERY GIFT MATTERS IN THE FIGHT AGAINST CANCER. BY SUPPORTING OUR DISRUPTIVE, MULTI-DISCIPLINARY RESEARCH, YOU WILL HELP CHANGE THE FACE OF CANCER TREATMENT AND SIGNIFICANTLY BENEFIT THE LIVES OF THOSE BATTLING CANCER TODAY. SIMPLY FILL OUT THE ENCLOSED ENVELOPE TO DONATE TO THE LAWRENCE J. ELLISON INSTITUTE FOR TRANSFORMATIVE MEDICINE OF USC OR VISIT OUR WEBSITE NOW! [ELLISON.USC.EDU/DONATE](http://ELLISON.USC.EDU/DONATE)

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