Office of Innovation and Industry Alliances

Annual Report 2018

MOFFITT CANCER CENTER

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Executive Message

During Fiscal Year 2018, the Innovation Office formed alliances all over the globe. In the last five years, the Innovation Office brought Moffitt $111 million in global revenue from licensing deals and partnerships, including $61 million in our year that just concluded (FY18). In addition to the financial success we enjoyed, we hosted the 12th annual Business of Biotech Conference on March 2, 2018, that attracted a record-breaking 399 attendees.

We formed new partnerships this year, and increased the value of existing partnerships. MultiVir Inc., a leading developer of cancer therapies, partnered with Moffitt to license a novel cancer vaccine and manufacture it for a clinical study at Moffitt. Hearst Corporation invested $75 million into M2Gen®, a for-profit Moffitt subsidiary. Our major partner, Celgene, remains impressed with the quality of Moffitt research faculty and has licensed several discoveries for further development. Cvergenx, a Moffitt startup, has gained traction internationally. These are a few examples of significant investments over the past year that will help accelerate the discovery of innovative cancer therapies and improve care for patients everywhere.

Many research institutions are striving to attract industry partners. We owe much of our success in this competitive landscape to the cooperative infrastructure we have built. Beyond the world-renowned Moffitt scientific researchers and clinicians, the Innovation Office staff has assembled a substantial pre- and post-contract team that works in sync to maintain and enhance industry partnerships. In this report, we highlight Moffitt's Alliance Management team, who ensure Moffitt's research collaborations are successfully implemented.

Moffitt is well positioned to capitalize on emerging technologies in digital care and immunotherapy due to its capabilities, resources, and talent. The Innovation Office will leverage its skills and experience to assist Moffitt in achieving its goal of bringing these technologies to the market. The professional team will collaborate closely with Moffitt faculty and staff to identify promising new digital and immunotherapy innovations and then pursue various routes of commercialization. These routes may include forming new ventures or establishing strategic partnerships with leading, multi-national companies.

The Innovation Office is proud to serve the mission of Moffitt Cancer Center and continues to seek ways to help cancer patients through Moffitt research and innovation.

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Executive Vice President/
General Counsel
Office of General Counsel

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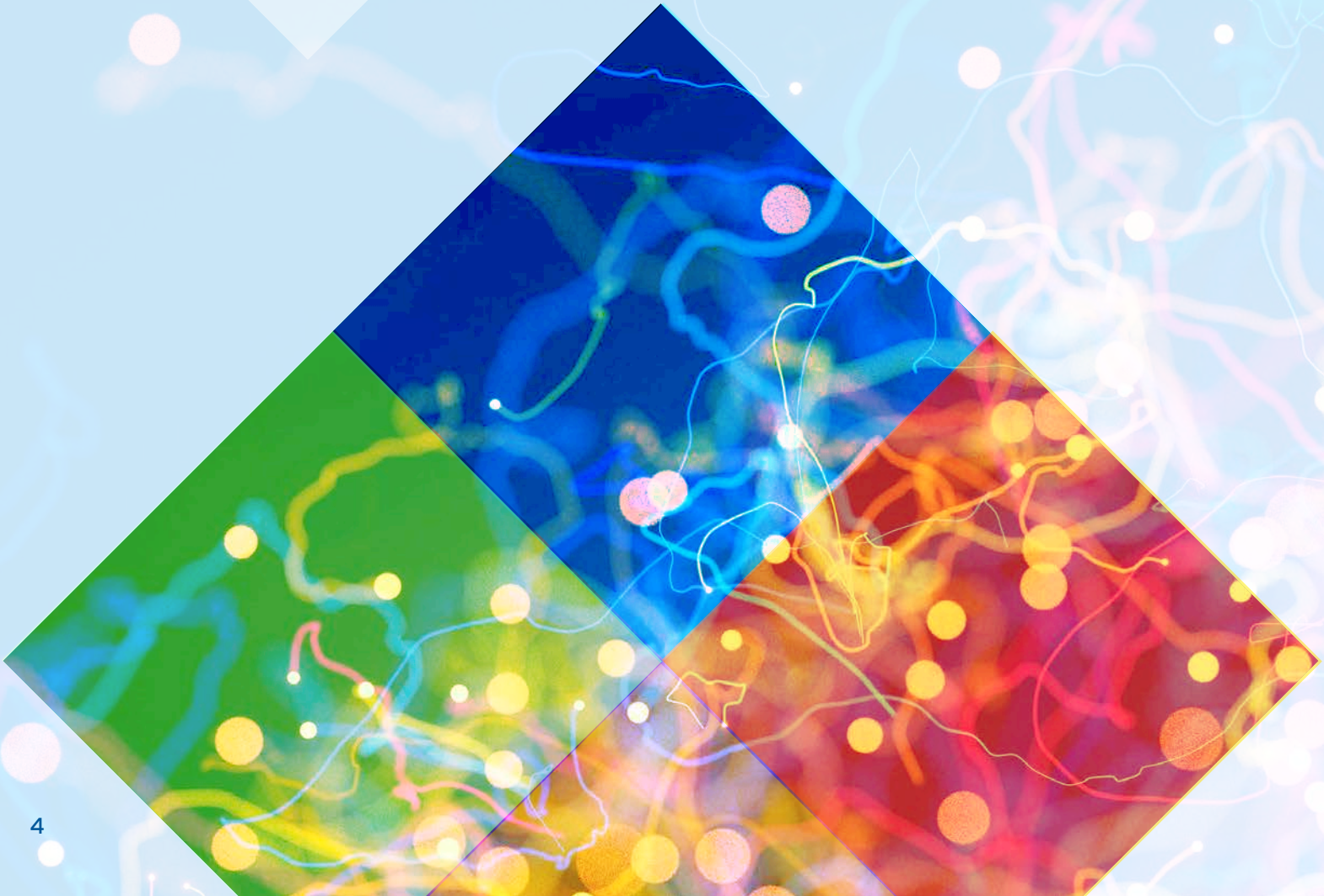
Senior Director,
Innovation & Industry Alliances

BRIGHT PROSPECTS with Celgene

2014 SAW THE BEGINNING OF A SIGNIFICANT RELATIONSHIP BETWEEN CELGENE AND MOFFITT, dubbed Celgene Research Alliance 1.0. At that time, Jarett Rieger, Senior Director of the Office of Innovation and Industry Alliances, worked closely with Moffitt faculty to introduce their discoveries to Celgene. Those conversations led the multi-billion dollar company to license MDS therapeutics from Moffitt as well as provide financial support for five Moffitt-initiated studies.

All five of the initial projects were successful, with three of the projects leading to new license agreements with Celgene. These agreements, referred to as "Celgene 2.0," are for novel technologies that target various pathways key in cancer growth and evasion of the immune system. Additionally, "Celgene 2.0" provides funding to support another four Moffitt-initiated studies, which may result in new licenses in the future. This Moffitt and Celgene partnership is a testament to how academia-industry partnerships can be a win-win relationship.

Scientific discoveries become useful in the prevention and cure of cancer when they result in therapies that treat patients. Companies, like Celgene, have the resources and expertise to move Moffitt discoveries from the lab to the clinic. This relationship benefits Moffitt, but more importantly, it benefits our patients.



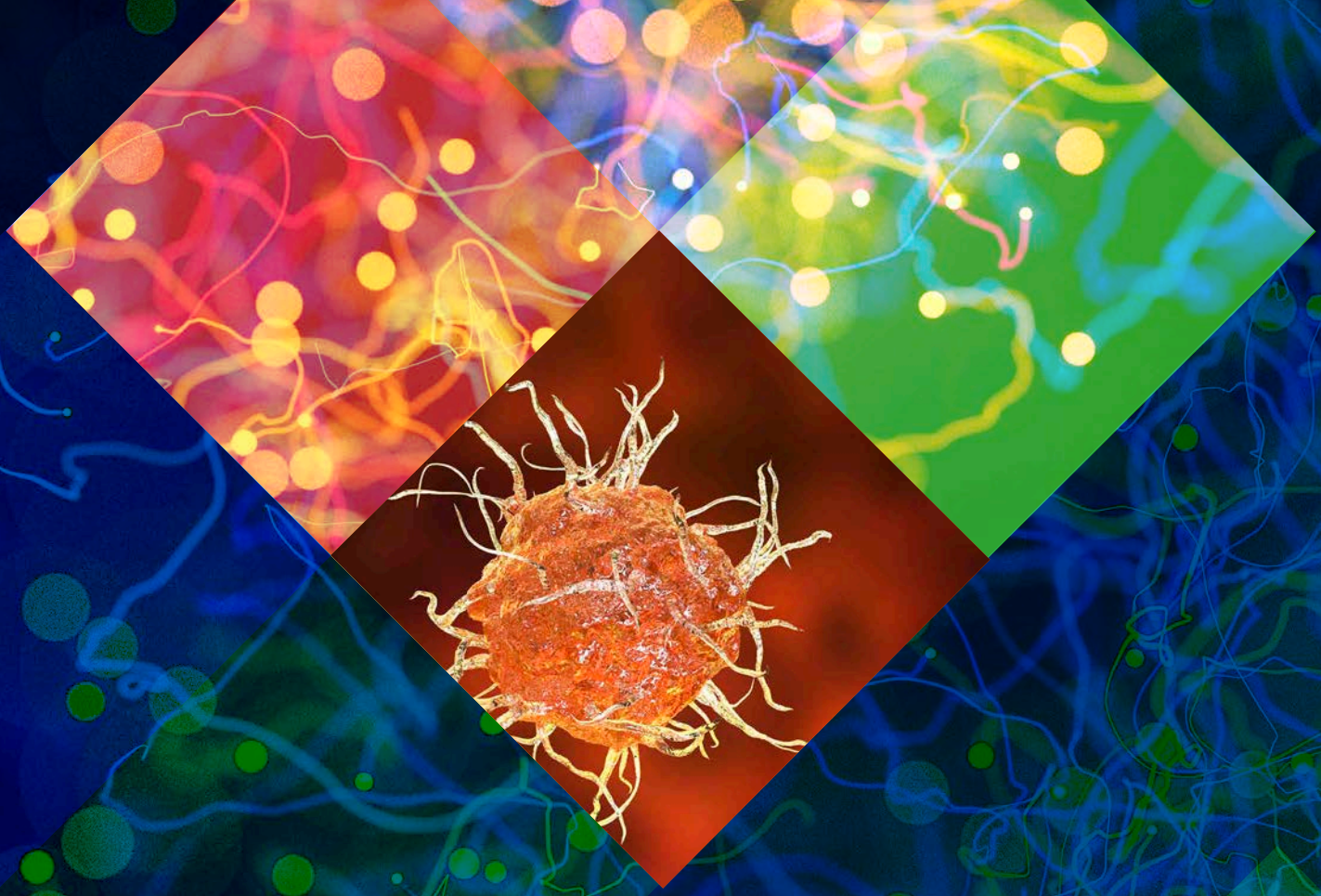
It's A Match!

HEARST + M2GEN = DEFINING THE FUTURE

ON SEPTEMBER 20, 2017, HEARST CORPORATION, a market leader in healthcare technology, announced an investment of $75 million in M2Gen, a Moffitt subsidiary. This significant investment will accelerate the discovery of innovative cancer therapies and improve patient care. Alan F. List, MD, Moffitt President and CEO, states, "This partnership with Hearst will help define the future of innovation in cancer care worldwide."

Hearst's investment will provide funding to expand the effort of the Oncology Research Information Exchange Network (ORIEN), the nation's first major data sharing network among leading cancer institutions. M2Gen's growing database is beneficial to patients and helps pharmaceutical and biotechnological companies accelerate discovery of therapies by matching cancer patients to clinical trials.

This partnership with Hearst will allow M2Gen to invest in the people, technology and cancer center partners throughout ORIEN that will improve quality, safety and efficiency within the healthcare system and increase patient engagement.



Immunotherapy Advancement
AND MANUFACTURING

MULTIVIR, A LEADING DEVELOPER OF CANCER THERAPIES, IS PARTNERING WITH MOFFITT TO CONDUCT A CLINICAL TRIAL AT MOFFITT.

The collaboration agreement engages Moffitt to manufacture personalized dendritic cell-derived vaccines, a type of immunotherapy, for use in a Moffitt clinical study focused on patients with relapsed/recurrent small cell lung cancer. MultiVir will provide financial support for the manufacturing of the dendritic cell vaccine and Bristol-Myers Squibb will provide Opdivo and Yervoy as well as funding for the Moffitt investigator-initiated phase 2 trial.

The purpose of the clinical study is to identify the effects that dendritic cell-based p53 vaccine immunotherapy in conjunction with the immune checkpoint inhibitors Opdivo and Yervoy have on small cell lung cancer, one of the deadliest forms of lung cancer. "We hope this combination therapy will spark the immune system to attack the cancer with minimal side effects for the patient," said Scott Antonia, MD, PhD, co-inventor of the vaccine and chair of the Thoracic Oncology Department at Moffitt.

The study ultimately will assess the disease control rate which is the total number of cancer patients who have achieved complete responses, partial response or maintained a stable disease with no tumor growth after receiving the treatment. "If there is success in small cell lung cancer, there could be an opportunity to expand the vaccine's use for other cancers," said Albert A. Chiappori, MD, co-principal investigator of the clinical trial and senior member of the Thoracic Oncology Department at Moffitt.

CVERGENX ADDS GARD TO ITS ARSENAL...
And Goes International

CVERGENX, INC. HAS LICENSED A NEW TECHNOLOGY FROM MOFFITT known as the Genomic Adjusted Radiation Dose (GARD) that will be used in Cvergenx's proprietary Precision Genomic Radiation Therapy (pGRT) platform. The startup company was co-founded by Moffitt inventors Javier Torres-Roca, MD, Associate Member and Director for Research in the Department of Radiation Oncology, and Steven A. Eschrich, PhD, Senior Member, Department of Biostatistics & Bioinformatics.

An estimated 1,688,780 new cases of cancer were diagnosed in the United States in 2017, and about half of these cancer patients received some type of radiation therapy. GARD utilizes a tumor-specific genomic signature for radiosensitivity that allows doctors to determine the appropriate radiation dose needed to get a better patient response. Physicians are enthusiastic about this new tool as it will help determine more effective dosing regimens for cancer radiation therapy. This is the second license between Moffitt and Cvergenx, as GARD builds on a previously licensed Moffitt technology.

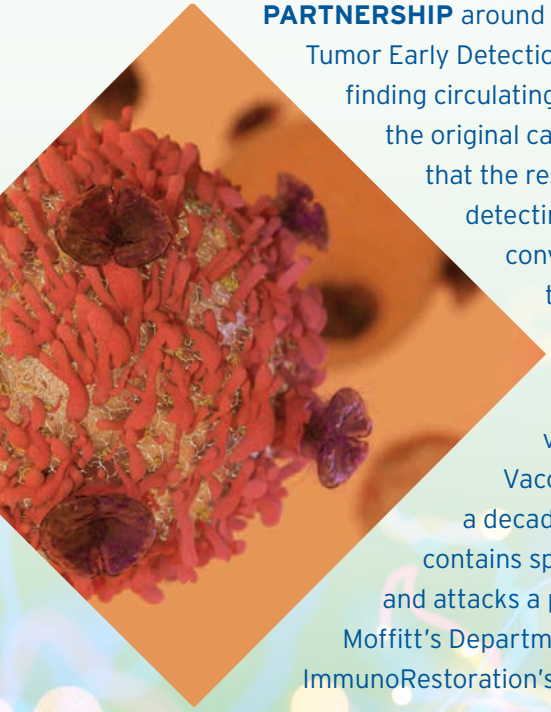
Cvergenx's commercialization efforts are beginning to pay off, as earlier this year, Cvergenx, Inc. and Shenzen INDA announced a new joint venture Guangzhou INDA to launch the first commercial initiative to introduce Cvergenx's pGRT platform into clinical practice in China. This technology is the first clinically confirmed mechanism to accurately guide personalized radiation dosing based on the tumor radiation sensitivity index of individual patients. The initiative will begin in Guangzhou and expand to other areas in China.

L-R: Raymond Vennare, Cvergenx Chairman and CEO, and Yijing He, MD, PhD, CEO of Shenzen INDA

Dr. Yijing He, Raymond Vennare and other key players tour BIO Island in Guangzhou, China, the future home of Guangzhou INDA.

SHAKING HANDS WITH
ImmunoRestoration

MOFFITT CANCER CENTER AND IMMUNORESTORATION HAVE ENTERED INTO A RESEARCH PARTNERSHIP around a project entitled "Developing Anti-Oncodriver Th1 Responses for Solid Tumor Early Detection and Prognosis." Traditionally, early detection of cancer has focused on finding circulating tumor cells or tumor DNA in the bloodstream that have been shed from the original cancerous mass. This particular project aims to explore a novel hypothesis that the responsiveness of the immune system is actually a superior means for detecting cancer and can do so earlier than could be previously achieved with conventional methods. Earlier cancer detection means patients might be treated sooner and at less-aggressive stages where the likelihood of success and patient survival is higher.



ImmunoRestoration, a leading developer of cancer immunotherapy vaccines, is known for their flagship technology, the Syringe-Ready Vaccine (SR-Vax), the result of ongoing research that was started more than a decade ago by Brian Czerniecki, MD, PhD, and Gary Koski, PhD. This vaccine contains specialized cells designed to support the immune system as it seeks out and attacks a patient's breast cancer. Now at Moffitt Cancer Center, Dr. Czerniecki is Moffitt's Department Chair for Breast Oncology and he also serves in a voluntary capacity as ImmunoRestoration's Chief Medical and Research Consultant.

FY 2018 Innovation Index

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Intellectual Property Disclosures

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Active Startups

134
Worldwide Patent Applications

$61M
Global Funding

14
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37
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26
U.S. Patents Issued

ALLIANCE MANAGEMENT
Runs With The Ball

Moffitt is successful in obtaining, maintaining and expanding relationships with industry partners. These relationships are beneficial because they enrich Moffitt's research and technologies, generate funding streams to Moffitt, and create licensing opportunities. A key success driver is the Alliance Management Team that leads post-contract signing activities to ensure successful implementation of each collaboration and focuses on providing excellent customer service to our industry partners. The Innovation Office starts the ball rolling by initiating the project and Alliance Management guides the process, keeping the ball on track.

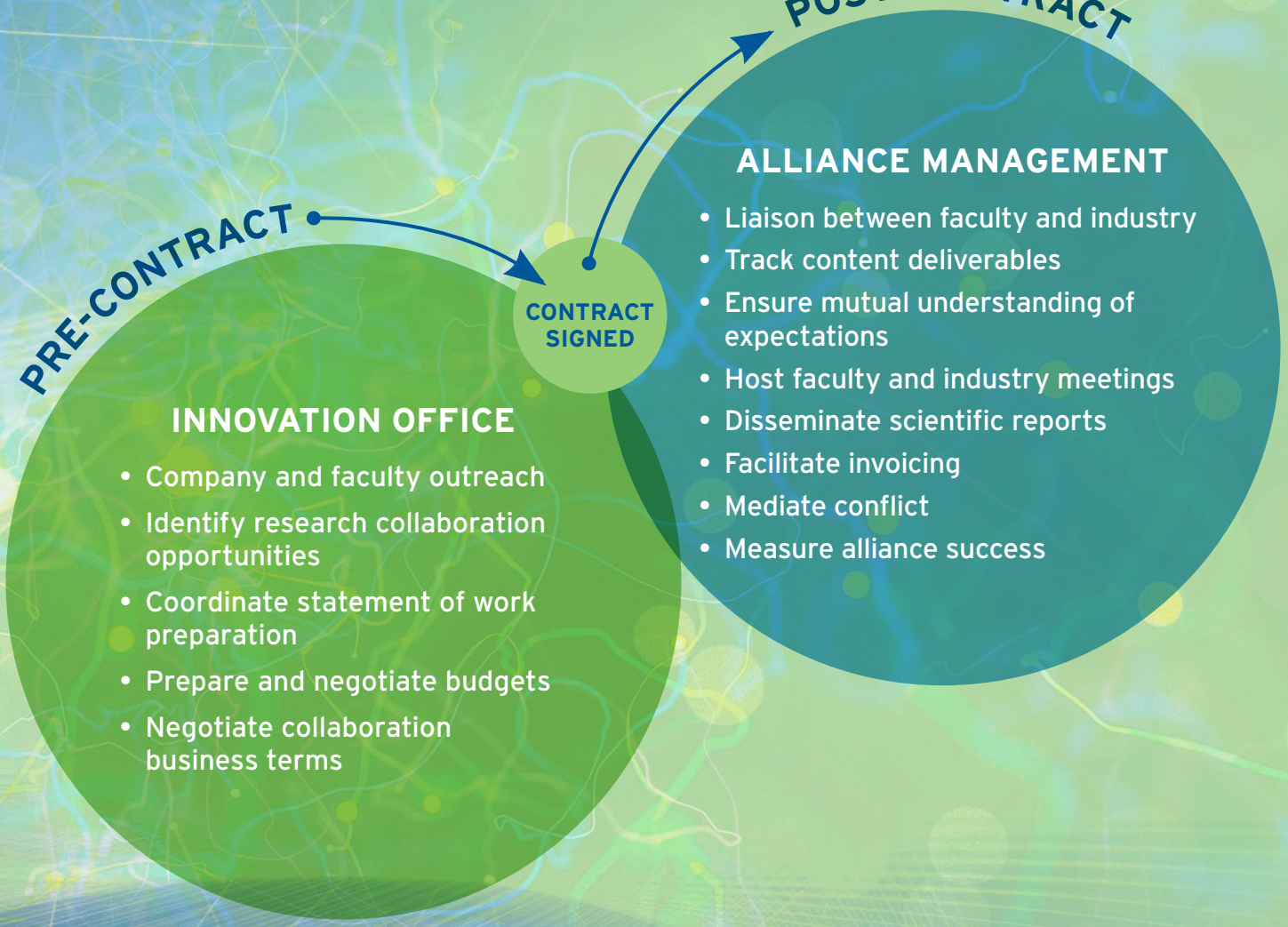
ALLIANCE MANAGEMENT TEAM

Lowell Smith
Senior Director, Business & Communications

Rae Reuille
Alliance Relations Manager

Keri Erb
Coordinator of Alliance Relations

Jon Hendricks
Industry Alliance Specialist


PRE-CONTRACT
CONTRACT SIGNED
POST-CONTRACT
INNOVATION OFFICE
• Company and faculty outreach
• Identify research collaboration opportunities
• Coordinate statement of work preparation
• Prepare and negotiate budgets
• Negotiate collaboration business terms
ALLIANCE MANAGEMENT
• Liaison between faculty and industry
• Track content deliverables
• Ensure mutual understanding of expectations
• Host faculty and industry meetings
• Disseminate scientific reports
• Facilitate invoicing
• Mediate conflict
• Measure alliance success

RECORD-BREAKING ATTENDANCE AT THE 12TH ANNUAL BUSINESS OF BIOTECH CONFERENCE

MOFFITT CANCER CENTER HELD ITS 12TH ANNUAL BUSINESS OF BIOTECH CONFERENCE MARCH 2, 2018, DRAWING A RECORD-BREAKING 399 ATTENDEES FROM AROUND THE GLOBE. THE CONFERENCE IS THE LARGEST EVENT OF ITS TYPE IN THE STATE OF FLORIDA.

With a captivating keynote interview, four information-packed education sessions, and many networking opportunities, guests discussed innovation and collaboration in biotechnology. Florida Senator Marco Rubio prepared a conference welcoming video that was shown during the opening session. The keynote address was conducted as a fireside chat between Cokie Roberts, ABC News Political Commentator, NPR Contributing Senior News Analyst and member of Moffitt's National Board of Advisors, and Dr. Francis Cuss, former Chief Scientific Officer of Bristol-Myers Squibb. The interview covered the brief history of immunotherapy, including the exploration of other viable treatment options, pricing, which patients will actually benefit, potential of new treatments such as CAR T-cell therapy and more.

FOUR EDUCATION SESSIONS:

- **Real World Data: Mining Gold from a Mountain of Straw**
- **It's a Win-Win: Academia & Industry**
- **Follow the Money: Funding Emerging Companies**
- **Immunotherapy: A New Weapon Against Cancer**

SAVE THE DATE:

February 22, 2019
13th Business of Biotech Conference

Visit MoffittIP.com to register.
To find out more, email
INNOVATION@Moffitt.org
or call 813-745-6828

ACCOMPLISHMENTS:

- **REGISTRANTS: Record attendance 399**
  42 Biotech Companies; 36 Economic Development Groups/Investors; 15 associated with Colleges and Universities; and 7 Science Institutions
- **PARTNERING FORUM: 51 partnering meetings with 20 companies**
- **PARTNERING DINNERS: 9 dinners**
- **MEDIA COVERAGE: Moffitt Press Release distributed to 125 journalists**
- **SOCIAL MEDIA COVERAGE: 112 posts of #MoffittBOB; 3 LinkedIn articles**
- **SPONSORSHIPS: $54,000 raised - 18 sponsors**

26 | U.S. Patents Issued FY 2018

PATENT	INVENTORS
Automated Percentage of Breast Density Measurements for Full Field Digital Mammography	Sellers, Thomas Heine, John Vachon, Celine Fowler, Erin E.
Bone Fusion System	Vrionis, Frank Gonzalez Blohm, Sabrina Doulgeris, James Aghayev, Kamran
Gamma-AA-Peptide STAT3/DNA Inhibitors and Methods of Use	Sebti, Saïd Cai, Jianfeng
Gene Signature for the Prediction of Radiation Therapy Response	Torres-Roca, Javier Eschrich, Steven
Histology Recognition to Automatically Score and Quantify Cancer Grades and Individual User Digital Whole Histological Imaging Device	Bui, Marilyn Lloyd, Mark
Histone Deacetylase as a Modulator of PDL1 Expression and Activity	Sotomayor, Eduardo Villagra, Alejandro
Inhibitors of ACK1/TNK2 Tyrosine Kinase	Mahajan, Nupam Lawrence, Nicholas Lawrence, Harshani Mahajan, Kiran
Inhibitors of Rho Associated Protein Kinases (Rock) and Methods of Use	Sebti, Saïd Schonbrunn, Ernst Li, Rongshi
Marinopyrrole Derivatives and Methods of Making and Using Same	Li, Rongshi Sebti, Saïd Liu, Yan Qin, Yong Cheng, Chunwei Song, Hao
Method of Developing a Vaccine Using Peptide-Poly IC Complexes	Celis, Esteban
Method of Diagnosing, Treating and Determining Progression and Survival of Cancer Cells Using BCL-2 Antagonist of Cell Death (BAD) Pathway Gene Signature	Lancaster, Johnathan Marchion, Douglas Xiong, Yin
Multi-Segmented Inflatable Brachytherapy Devices, Systems, and Methods of Using the Same	Biagioli, Matthew Forster, Kenneth
O-glycan Pathway Ovarian Cancer Signature	Lancaster, Johnathan Marchion, Douglas Xiong, Yin

PATENT	INVENTORS
Platinum Compounds that Inhibit Constitutive STAT3 Signaling and Induce Cell Cycle Arrest and Apoptosis of Malignant Cells	Lawrence, Nicholas Sebti, Saïd Turkson, James
Predictive Biomarkers for CTLA-4 Blockade Therapy and for PD-1 Blockade Therapy	Weber, Jeffrey Yu, Bin Wang, Wenshi
Proteasome Chymotrypsin-Like Inhibition Using PI-1833 Analogs	Sebti, Saïd Lawrence, Harshani Ozcan, Sevil
Protein-Protein Interaction as Biomarkers	Haura, Eric
Radiotherapy Targeted to Promote a Systemic Abscopal Effect	Enderling, Heiko Moros, Eduardo Poleszczuk, Jan Luddy, Kimberly
RNF41 as a Biomarker Predicting Response to Lenalidomide in Non-del(5q) MDS	List, Alan
Selective Histone Deactylase 6 Inhibitors (2 patents)	Sotomayor, Eduardo Bergman, Joel Kozikowski, Alan Villagra, Alejandro Woan, Karrune
STAT3 Dimerization Inhibitors	Sebti, Saïd Lawrence, Nicholas Lawrence, Harshani
Symmetrical Marinopyrrole Derivatives as Potential Antibiotic Agents	Li, Rongshi Qin, Yong Liu, Yan Song, Hao Cheng, Chunwei
Systems and Methods for Diagnosing Tumors in a Subject by Performing a Quantitative Analysis of Texture-Based Features of a Tumor Object in a Radiological Image	Gillies, Robert Hall, Lawrence Goldgof, Dmitry
Systems, Methods and Devices for Analyzing Quantitative Information Obtained from Radiological Images	Gillies, Robert Gatenby, Robert Eschrich, Steven Napel, Sandy Plevritis, Sylvia Rubin, Daniel Lambin, Philippe Dekker, Andreas
Targeted Sensitization of non-del(5q) Malignant Cells	List, Alan Wei, Sheng

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