

ANNUAL REPORT **2022**

Office of Innovation

AND INDUSTRY ALLIANCES

EXECUTIVE MESSAGE

The Office of Innovation and Industry Alliances (Innovation Office) FY2022 Annual Report highlights our directed industry professionals' efforts in supporting Moffitt's mission of contributing to the prevention and cure of cancer. Despite continued COVID-19 challenges, the Innovation Office team kept their focus on protecting and commercializing intellectual property as well as forging strategic collaborations. The Innovation Office business development team had a banner year and achieved \$47.8 million of global funding. This annual report features new high-profile partnerships with EvidenceCare, Memgen, Modulation Therapeutics and Turnstone Biologics. Additionally, it highlights the Innovation Office's annual key metrics and issued patents.

Among the partnerships consummated in the past year, the Turnstone Biologics alliance is notable. This is the first platinum level agreement under the new alliance framework rolled out in FY2022. The new alliance framework provides the opportunity for deep, strategic partnerships to advance new treatments that will yield better outcomes for patients. The five-year alliance with Turnstone Biologics spans the full spectrum of research from laboratory projects to clinical studies, and it focuses on an innovative platform for selecting tumor-infiltrating lymphocytes for treating patients with solid tumors. We are excited about the advantages of the new alliance model, which we anticipate will lead to more meaningful and productive relationships with industry partners.

The Innovation Office's achievements would not have been attainable without the countless contributions of our business development and operations teams, the Moffitt Patent Review Committee, the Commercialization Strategy Committee and Moffitt's dedicated faculty. The Innovation Office looks forward to future interactions with the faculty and industry partners to continue moving innovations forward and contributing to Moffitt's mission.

L. David de la Parte, Esq.

Executive Vice President/
General Counsel
Office of General Counsel

James J. Mulé, IPhD

Associate Center Director,
Translational Science

Jarett Rieger, Esq., MBA

Vice President,
Chief Innovation Officer
Associate General Counsel

\$47.8

MILLION
global revenue

10

license
agreements

57

original U.S. patent
applications

2022
Innovation
Index

13

active startups

93

intellectual property
disclosures

23

U.S. patents issued

Moffitt discoveries have enhanced the understanding of cancer and led to multiple licensing and collaboration opportunities within the biomedical industry. The Office of Innovation and Industry Alliances is charged with advancing the Moffitt discoveries by forging partnerships with startups and industry to bring cutting-edge ideas and discoveries to the marketplace.

23 U.S. PATENTS ISSUED FY2022

PATENT	INVENTORS
Affinity Maturated TAG72 Specific Single Chain Antibodies	Hatem Soliman
Aurora Kinase and Janus Kinase Inhibitors for Prevention of Graft Versus Host Disease	Claudio Anasetti Brian Betts Harshani Lawrence Nicholas Lawrence Joseph Pidala Saïd Sebti
Bone Fusion System	Kamran Aghayev James (JJ) Doulgeris Sabrina A. Gonzalez-Blohm Frank Vrionis
Combination Immunotherapy for Treating Cancer	Scott Antonia
Cyclic Peptide Conjugates and Methods of Use	Lori Hazlehurst Xiuling Li Mark McLaughlin Christoph Rader
Expandable Intervertebral Cage	Kamran Aghayev James (JJ) Doulgeris Sabrina Gonzalez-Blohm Frank Vrionis
Inflammasome Activation In Myelodysplastic Syndromes	Alan List
Large Data Set Negative Information Storage Model	Rodrigo Carvajal-Pelaez Guillermo Gonzalez-Calderon Ruizheng (Richard) Liu Jamie Teer
Low Dose Combination Therapy for Treatment of Myeloproliferative Neoplasms	Holly Koblisch Gary Reuther
Melanocortin 1 Receptor Ligands and Methods of Use	Natalie Barkey *Robert Gillies Victor Hruby David Morse Christian Preihs Jonathan Sessler Kevin Sill Narges Tafreshi Josef Vagner
Method and Apparatus for Use of Function-Function Surfaces and Higher-Order Structures as a Tool	Kenneth Forster Geoffrey Zhang
Method and Compositions for Orally Administered Contrast Agents for MR Imaging	Parastou Foroutan *Robert Gillies Gary Martinez Eugene Mash Jr. David Morse Suryakiran Navath

PATENT	INVENTORS
Method for Measuring MRE11 in Tissues to Predict Cystectomy or Bladder Sparing Surgery Plus Chemoradiation Therapy	Anthony Magliocco
Methods and Systems for Performing Segmentation and Registration of Images Using Neutrosophic Similarity Scores	Segundo Jaime Gonzalez Yanhui Guo
Molecular Imaging of Cancer Cells in Vivo	Marilyn Yuanxin Ma Bui W. Bradford Carter Steven Alan Enkemann *Robert Gillies David Morse Narges Tafreshi
Mutant KRAS Inhibitors	Richard Houghten Yangmei Li Saïd Sebti
Pathways for Treating Patients	Alan List Mark Schippits
PD1 and PDL-1 Expression During Progression from Myelodysplastic Syndrome to Acute Myelogenous Leukemia	Alan List Sheng Wei
TAG-72-Binding Chimeric Antigen Receptors	Marco Davila Hatem Soliman
TLR9 Targeted Therapeutics	Alan List Mark McLaughlin Sheng Wei
TLR9-Binding Chimeric Antigen Receptors	Daniel Abate-Daga Alan List Sheng Wei
Transdiscal Screw	Kamran Aghayev James (JJ) Doulgeris Sabrina Gonzalez-Blohm Frank Vrionis
Variant Survivin Vaccine for Treatment of Myeloma	Dario Altieri Claudio Anasetti Scott Antonia Dmitry Gabrilovich Frederick Locke

* Dr. Robert Gillies passed away in June 2022.

Evolution of an Alliance

TURNSTONE PARTNERSHIP
BRIGHTENS FUTURE FOR TIL THERAPIES

“OUR LANDMARK STRATEGIC ALLIANCE WITH TURNSTONE UNDERSCORES MOFFITT’S COMMITMENT TO BOLD RESEARCH INITIATIVES AND GROUNDBREAKING CLINICAL STUDIES FOR THE BENEFIT OF CANCER PATIENTS WHO HAVE LIMITED OR NO EFFECTIVE TREATMENT OPTIONS.”

– Dr. Patrick Hwu
President and CEO

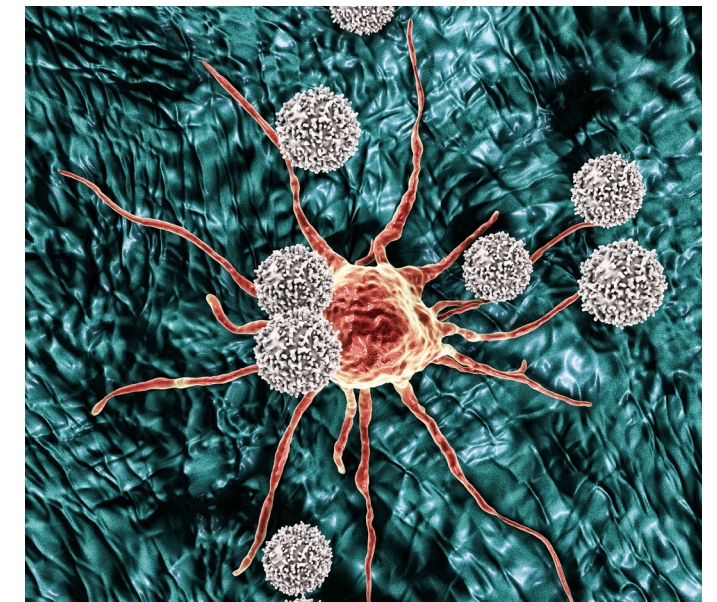
In 2019, Moffitt and a young company Myst Therapeutics, founded and led by TJ Langer, entered into a research collaboration to study and develop novel tumor-infiltrating lymphocyte (TIL) therapies.

Over the next couple of years, the relationship grew to incorporate several cancer indications that may benefit from this type of therapy. As the translational science advanced toward clinical investigations, Myst brought Turnstone Biologics into the fold and merged with the company, becoming a wholly owned subsidiary of Turnstone in 2021.

During this same time, spurred by the energy of new leadership in Patrick Hwu, MD, Moffitt president and CEO, the cancer center mapped out a blueprint for developing meaningful alliances with industry collaborators. These alliances are intended to forge deep connections and engraft unified strategies to bring novel therapeutic options to patients faster and accelerate innovation in cancer care. Moffitt’s Office of Innovation and Industry Alliances worked with stakeholders across the organization to map out the alliance framework, arraying the collective strengths Moffitt brings in the translational, clinical, data science and cell therapy manufacturing arenas that would be leveraged with the industry partners’ supporting resources for a win-win outcome.

Turnstone was the first industry collaborator to appreciate the value of this alliance landscape, and in June 2022 after a year of discussions and negotiations with Turnstone CEO Sammy Farah, PhD, the company entered into a platinum alliance with Moffitt. This collaboration aims to enhance the clinical efficacy of tumor-infiltrating lymphocyte therapies and overcome the limitations of current treatments. With this

agreement, Moffitt grants Turnstone prioritized clinical trial activation, better patient screening and data distribution, full access to Moffitt’s cellular therapies facilities, and data and specimens for research. “We believe Moffitt’s translational insights and clinical execution capabilities coupled with our next-generation Selected TIL technology will accelerate the development of our differentiated TIL therapies and increase our opportunity to create curative outcomes for patients with solid tumors,” Farah said. Over the next five years, Moffitt and Turnstone aim to develop novel next-generation TILs for solid tumors, including melanoma.



Moffitt and Turnstone are working together to develop novel tumor-infiltrating lymphocyte therapies for solid tumors, including melanoma.

EvidenceCare Partnership

PRODUCES CLINICAL PATHWAY TOOL
AIMED AT IMPROVING CANCER CARE WORLDWIDE



As the landscape of cancer care quickly evolves, clinical pathway tools are becoming increasingly vital to guide evidence-based health care.

These tools give clinicians easy access to clinical flow diagrams relating to diagnostics, risk stratification, clinical decision-making, associated evidence and the spectrum of therapies for specific cancer disease states. All of these elements play a crucial role in patient outcomes.

Moffitt Cancer Center has developed over 50 oncology-based pathways for specific cancer diseases. To help implement and deliver these clinical pathways, Moffitt has teamed up with EvidenceCare, a company focused on developing tools to optimize clinician workflows. Together, Moffitt and EvidenceCare created OncologyCare, a product aimed at sharing Moffitt's world-class cancer research, knowledge and expertise with others. Memorial Healthcare System has tested the viability of this new platform and its integration into electronic health record systems. While this pilot program is ongoing, there is potential for a much larger, long-term partnership

"WE BELIEVE DIGITAL TOOLS LIKE ONCOLOGYCARE ARE THE FUTURE OF HEALTH CARE DELIVERY."

– Dr. Edmondo Robinson
Senior Vice President and Chief Digital Officer

between Moffitt and EvidenceCare. This partnership could include revenue sharing resulting from sales of Moffitt clinical pathways to EvidenceCare clients and consulting services for these clients. Moffitt would directly provide the consulting services.

The goal of this technology is to improve cancer care around the world, regardless of where a person is being treated. The ability to continually modify and update these clinical pathways creates an opportunity to increase the standard of care worldwide, as Moffitt continues to refine and redefine the fight against cancer.

Memgen Collaboration

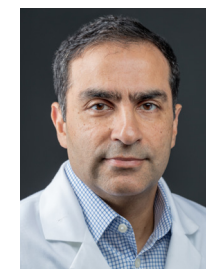
EXPANDS AS MEM-288 ONCOLYTIC VIRUS
MOVES TOWARD CLINICAL TRIALS

Moffitt's commitment to recruiting world-class doctors and researchers has led to an explosion of new technologies and therapies for the treatment of various diseases.

As a result, collaborations with industry partners are coalescing to bridge the innovative work being done at Moffitt with the expertise and capabilities of industry. Among these industry partnerships, Memgen has begun to emerge as one of Moffitt's key relationships.

Memgen, led by Chief Executive Officer Gregory Brown, has focused on developing cancer immunotherapies based on the next generation of viruses. Memgen's lead oncolytic virus, an adenovirus that selectively targets cancerous cells, is called MEM-288 and is being developed in collaboration with Moffitt. Researchers have shown

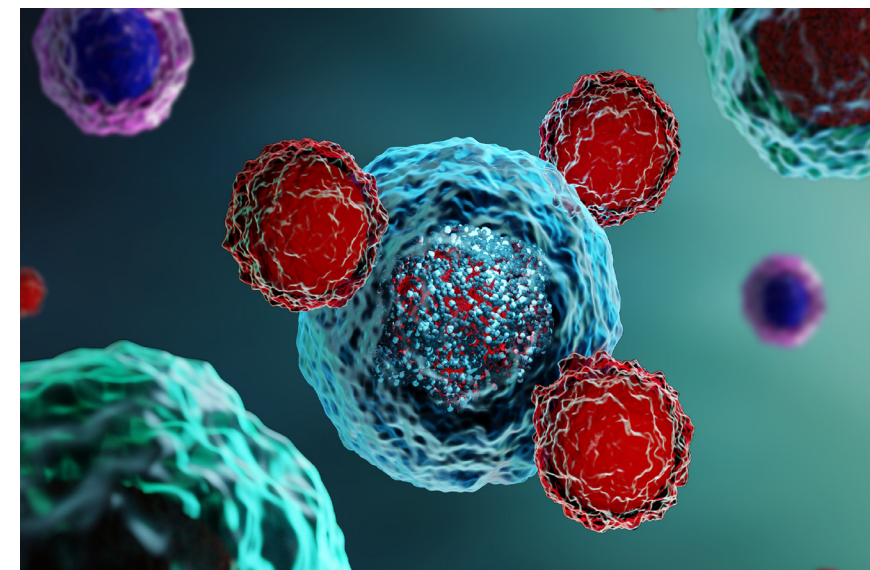
this virus could have significant anti-tumor effects in a wide variety of tumor types, including breast, prostate and non-small cell lung cancers. In July 2021, MEM-288 received investigational new drug approval from the U.S. Food and Drug Administration, allowing the company to start a clinical trial. Moffitt and Duke Cancer Institute are launching the MEM-288 trial this year (2022).



Dr. Amer Beg

While this work is ongoing, new technologies and innovations are still being developed. Recently, Amer Beg, PhD, from Moffitt's Immunology Department and Mark Cantwell, PhD, from Memgen have applied to patent

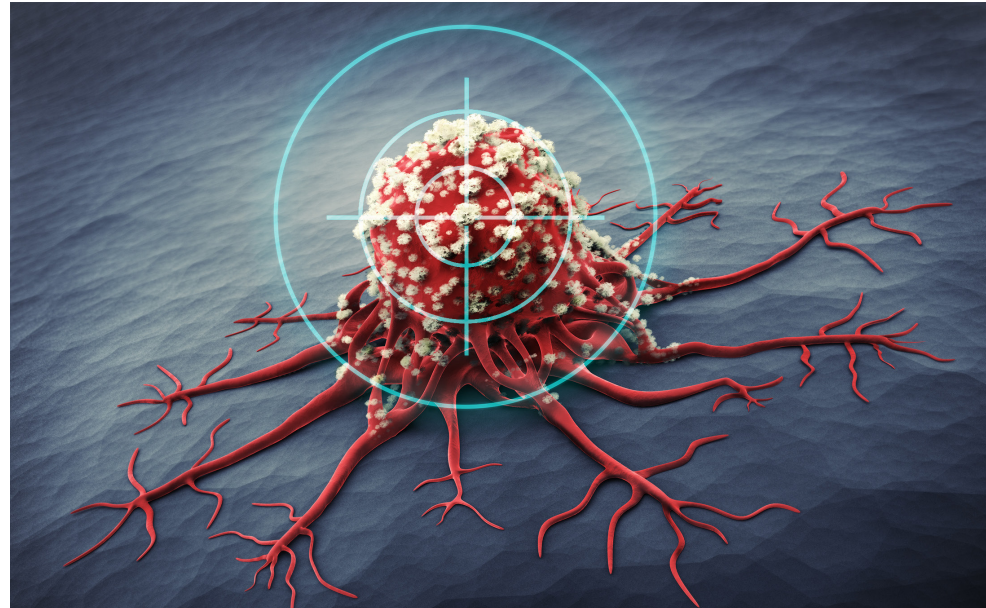
a new technology demonstrating that oncolytic viruses boost T cell response for effective tumor-infiltrating lymphocyte therapy. This work stems from observations that MEM-288 increased the number of T cells in tumors. An ongoing sponsored research collaboration between Moffitt and Memgen is studying the potential efficacy of this unique combination therapy designed to eradicate cancer and prevent its recurrence. Marking the third technology license between Moffitt and Memgen, this is only the beginning of a consequential partnership.



MARKING THE THIRD TECHNOLOGY LICENSE BETWEEN MOFFITT AND MEMGEN, THIS IS ONLY THE BEGINNING OF A CONSEQUENTIAL PARTNERSHIP.

Modulation Therapeutics Breakthrough

TARGETS DIFFICULT-TO-TREAT TUMORS



Modulation Therapeutics Inc. is dedicated to creating novel ways to target difficult-to-treat tumors. Modulation's three leading compounds are MTI-101, MTI-201 and MTI-301. MTI-101 is a novel first-in-class cyclized peptide that increases intracellular Ca²⁺ levels inducing necrotic cell death across multiple cancer types, including myeloma, lung and prostate cancers. MTI-201 is an Actinium-225 labeled targeting peptide for the treatment of melanoma. MTI-301 targets metabolic pathways and may help treat triple-negative breast cancer, refractory melanoma and renal carcinoma.

While all of these are exciting, MTI-201 is the result of the collaborative efforts of Moffitt and University of Texas inventors. Co-owned by Moffitt, University of Texas at Austin, University of Arizona and Intezyne Technologies Inc., MTI-201 is a melanocortin 1 receptor (MC1R) targeted alpha emitting radiotherapeutic. This molecule uses targeted alpha particle therapy to cause death of cells expressing MC1R, a receptor that is not expressed on normal tissues.

Because MTI-201 targets MC1R, the chance for toxicity in healthy cells is very low.

MC1R is expressed on 94% of uveal and 90% of cutaneous metastatic melanomas. As of now, there are no effective therapies for uveal melanoma, with more than half of patients dying within one year. The current standard of care treatment involves multiple rounds of systemic or liver-targeted chemotherapeutic agents, which begin to develop resistance to therapies. MTI-201 offers hope for both cancers. In preclinical studies, this drug resulted in no overt toxicity and a significantly extended life span of animals with either uveal or cutaneous melanoma.

This drug is not only unique, but also a breakthrough. If studies continue to demonstrate substantial improvement over currently available therapies, it could lead to FDA Breakthrough Therapy designation and, in turn, fast track FDA approval of MTI-201, filling a critical unmet need for patients with uveal and cutaneous metastatic melanoma.

IN APPRECIATION

The following committee members are recognized for their invaluable support with advancing and exploiting Moffitt's intellectual assets.

Intellectual Property Commercialization Strategy

INTERNAL MEMBERS

HASKELL T. ADLER, PhD MBA
Senior Licensing Manager,
Registered Patent Agent,
Office of Innovation and Industry Alliances

JOSÉ R. CONEJO-GARCIA, MD, PhD
Senior Member, Department of Immunology
Senior Member, Departments of Malignant Hematology
and Gynecologic Oncology

L. DAVID DE LA PARTE, ESQ.
Executive Vice President/General Counsel

DEREK DUCKETT, PhD
Professor and Chair, Department of Drug Discovery
Program Co-Leader, Molecular Medicine

JASON B. FLEMING, MD
Chair, Department of Gastrointestinal Oncology

ERIC B. HAURA, MD
Associate Center Director of Clinical Science
Director, Lung Cancer Center of Excellence

ERIC LAU, PhD
Assistant Member, Department of Tumor Biology

NICHOLAS J. LAWRENCE, PhD
Professor, Medicinal Chemistry
Cancer Center Senior Member

JAMES J. MULÉ, IPHD
Associate Center Director,
Translational Science
Michael McGillicuddy Endowed Chair,
Melanoma Research and Treatment

JARETT RIEGER, ESQ., MBA
Vice President, Chief Innovation Officer
Associate General Counsel

EDMONDO ROBINSON, MD
Senior Vice President/Chief Digital Officer,
Center for Digital Health

CHARLIE SHAW, PhD
Associate Director, Patents and Licensing,
Office of Innovation and Industry Alliances

LATANYA M. SCOTT, PhD
Associate Director, Industry Alliances,
Office of Innovation and Industry Alliances

KENNETH Y. TSAI, MD, PhD
Vice Chair, Research,
Department of Anatomic Pathology
Senior Member, Departments of Anatomic
Pathology and Tumor Biology

MICHAEL A. VOGELBAUM MD, PhD
Program Leader, NeuroOncology
Chief of Neurosurgery
Professor, Oncological Sciences

EXTERNAL MEMBERS

NATHAN CALI
Managing Director, Head of Healthcare Investment
and Merchant Banking,
Noble Capital Markets

ARTHUR KUAN
Chief Executive Officer,
CG Oncology

Patent Review

HASKELL T. ADLER, PhD, MBA
Senior Licensing Manager,
Registered Patent Agent,
Office of Innovation and Industry Alliances

SRIKUMAR CHELLAPPAN, PhD
Chair, Department of Tumor Biology

BROOKE FRIDLEY, PhD
Chair, Department of Biostatistics
and Bioinformatics
Scientific Director, Bioinformatics
Shared Resources

ERIC B. HAURA, MD
Associate Center Director of Clinical Science
Director, Lung Cancer Center of Excellence

PATSY McDONALD, PhD
Associate Member, Cancer Physiology

JAMES J. MULÉ, IPHD
Associate Center Director,
Translational Science
Michael McGillicuddy Endowed Chair,
Melanoma Research and Treatment

JARETT RIEGER, ESQ., MBA
Vice President, Chief Innovation Officer
Associate General Counsel

LATANYA M. SCOTT, PhD
Associate Director, Industry Alliances,
Office of Innovation and Industry Alliances

CHARLIE SHAW, PhD
Associate Director, Patents and Licensing,
Office of Innovation and Industry Alliances

**FOR BUSINESS DEVELOPMENT
OPPORTUNITIES, PLEASE CONTACT:**

Jarett Rieger, Esq., MBA

Vice President, Chief Innovation Officer
Associate General Counsel
Jarett.Rieger@Moffitt.org
813-745-6828

Latanya M. Scott, PhD

Associate Director, Industry Alliances
Latanya.Scott@Moffitt.org
813-745-6902

Jessie Bwanali, PhD, MBA

Senior Industry Alliance
Development Manager
Jessie.Bwanali@Moffitt.org
813-745-1385

Namrata Bora Singhal, PhD

Industry Alliance Development Manager
Namrata.BoraSinghal@Moffitt.org
813-745-4128

Veronika Fedorchuk, PhD

Industry Alliance Development Specialist
Veronika.Fedorchuk@Moffitt.org
813-745-2887

Sayantana Purkayastha, MS

Industry Alliance Development Specialist
Sayantan.Purkayastha@Moffitt.org
813-745-0724

Praba Soundararajan, PhD

Intellectual Property Manager
Praba.Soundararajan@Moffitt.org
813-745-6776

MoffittIP.com