



TRI-INSTITUTIONAL
THERAPEUTICS DISCOVERY INSTITUTE

TDI Annual Report
2018

The mission of TDI

is to **encourage** our community to advance their groundbreaking biological discoveries to in vivo proof-of-concept studies. TDI provides industrial-scale technical support for academic projects, making it possible to rapidly assess the utility of specific therapeutic targets in disease-relevant contexts.

TDI **empowers** the community to translate research discoveries from bench to bedside by offering a menu of services that is unprecedented in scale and scope in an academic environment. This is accomplished through a series of highly favorable academic-industry partnerships established through TDI, as well as our Innovation & Education Initiative, which provides community-wide training and support in order to maximize the impact of these partnerships on academic drug discovery.

We achieve our mission by **leveraging** the infrastructure, staff, and intellectual capital of our academic and industry partners, as well as the generous support of philanthropists.

With the launch of key initiatives, TDI has established the first fully-funded, fully-staffed **bridge** from basic academic research discovery to human proof-of-concept demonstration.

Basic Academic Research Discovery

Tri-I Investigator identifies a new protein target implicated in human disease

TDI Early Project Initiative

Working in close association with the Investigator, TDI uses outside contractors and internal expertise to quickly assess viability of the protein as a new drug target

TDI-Takeda Drug Discovery Initiative

Tri-I Investigator collaborates with TDI and Takeda to develop lead small molecule or antibody for *in vivo* proof-of-concept studies

Bridge Medicines/Takeda Pharmaceuticals

Upon demonstration of *in vivo* efficacy, the project may advance to Bridge Medicines or Takeda as a pre-clinical candidate

New York-Based NewCo

Bridge Medicines' venture capital partners may fund a NYC-based company with appropriate resources to execute human proof-of-concept clinical trials

Letter from the Director



Under the Therapeutic Small Molecule and Therapeutic Antibody Initiatives
Tri-I scientists receive industry-level drug discovery support for their cutting-edge research projects.

2018 marked a period of transition, as the Tri-Institutional Therapeutics Discovery Institute (TDI) completed its transformation from a small organization to a mature, brick-and-mortar operation whose onsite staff of 35 is charged with executing 65 drug discovery projects across two therapeutic modalities.

Notably, 2018 saw the departure of TDI's founding Director, Dr. Michael A. Foley. Dr. Foley's impact on the Tri-Institutional (Tri-I) community has been nothing short of profound: he is a visionary leader who unleashed the Tri-I's potential for drug discovery, transforming a nascent virtual organization into a fully operational discovery engine that has already achieved significant success. Under Dr. Foley's leadership, TDI demonstrated the remarkable power of pairing creative, academic scientists with experienced drug discovery professionals; the TDI model is now being replicated in premier research institutions across America. Notably, Mr. Lewis Sanders, TDI's leading philanthropic donor, envisioned from the outset that TDI would play a key role in strengthening interactions between these three co-localized institutions. Under Dr. Foley's stewardship, this vision was realized, as multiple inter-institutional research collaborations were initiated, including several that involve members of all three institutions.

Under my leadership, TDI continues to advance scientific insights from our gifted researchers into novel therapeutics. My discovery pedigree (programs under my direct supervision produced one drug – NS5A inhibitor elbasvir for hepatitis C – plus 13 development compounds that advanced into the clinic in seven distinct therapeutic areas) is particularly well-suited to help usher TDI into its next phase and to support the diversity of research needs across our community. To this end, TDI continues to embrace new cutting-edge drug discovery technologies that allow faculty to advance basic biology insights

from concept to potential therapeutic. In 2018, TDI significantly strengthened the Small Molecule biology team; importantly, the team is now able to routinely provide highly specialized, industrial quality assay development support to our academic partners. This year, TDI further expanded its network of Contract Research Organizations. These external partners play a key role in augmenting internal research capabilities, as they conduct high quality, independent validation of Tri-I scientific discoveries. With these mechanisms in place, we can be confident that projects advance from TDI to their next development partner with rigorous, well-validated data packages that are optimized to move toward clinical settings.

Today, TDI operates four interconnected initiatives that together dramatically accelerate academic-initiated drug discovery across the Tri-I community. Under the **Therapeutic Small Molecule** and **Therapeutic Antibody Initiatives**, Tri-I scientists receive industry-level drug discovery support for cutting-edge research projects. TDI's unique organizational structure and depth of expertise allows it to remain agnostic with respect to both therapeutic area and modality. Projects are accepted into

the therapeutic portfolios solely on the basis of scientific merit and unmet medical need. A third pipeline, the **Early Project Initiative** was established in 2015 to offer targeted drug discovery support to meritorious early-stage investigations and to provide an incubator for high-quality projects for the Therapeutic Initiatives. Finally, the **Sanders Education and Innovation Initiative** aims to educate the broader Tri-I community on the process of drug discovery and development.

As 2018 came to a close, each of the three key discovery pipelines was fully operational. In 2018, the Early Project Initiative launched 17 new projects, completed 10 projects and successfully advanced 3 projects to the Therapeutic Discovery Pipelines. The Therapeutic Antibody Pipeline added 5 new projects, completed 1 project and advanced 1 project to a licensing-ready state. The more established Therapeutic Small Molecule Pipeline, started in 2014, launched 4 new projects in 2018, completed another 4 projects and moved 3 projects to licensing-readiness.

Moving projects to licensing-readiness is a key metric of TDI's success. Since its inception in 2014, TDI contributed to the launch of 2 New York City-based NewCo's (Sparian Bioscience and Quentis Therapeutics) and the licensing of 5 additional programs to industry. This level of productivity offers real evidence that this model of academic-industry collaboration can yield compelling results quickly. As I look to the year ahead, I anticipate 7 small molecule or biologics projects graduating in diverse therapeutic areas, including immunology, oncology, infectious disease, ophthalmology and reproductive health.

As TDI continues to mature and produce tangible results for its institutions, its funding structure is also evolving. Working with our parent organizations, MSKCC, WCM, and RU, we have established an "evergreening" arrangement, whereby a portion of the licensing fees from completed projects are reinvested to fund the ongoing work of TDI. Due to the lengthy timelines associated with drug development, the most impactful financial milestones from these licensing agreements remain in the future, when projects advance to clinical stages. **We therefore continue to seek philanthropic partners to join us as we continue to grow and meet the needs of our Tri-I research scientists and the patients they aim to serve.**

As we look forward to the challenges and opportunities of 2019, we gratefully acknowledge the support of Mr. Lewis Sanders, whose generous gifts made possible the establishment and continued growth of TDI. Our partner, Takeda Pharmaceutical Co. plays a critical role in our success by bringing its knowledge of drug discovery and development to every project in our Therapeutic Pipeline. We appreciate the leadership provided by our Board of Directors, whose unfailing support and vision have been crucial to our success. Finally, we are deeply fortunate to have the opportunity to partner with world-class scientists at The Rockefeller University, Weill Cornell Medicine, and Memorial Sloan Kettering on a range of incredibly exciting, potentially groundbreaking drug discovery projects.



Peter T. Meinke, PhD
Sanders Director



Our mission is to **empower our leading world-class scientists** with the training that they need to effectively advance their academic discoveries to drugs that can impact human health.



TDI provides industrial-scale technical support for academic projects, making it possible to rapidly assess the utility of specific therapeutic targets in disease-relevant contexts.

2018 Highlights

TDI Outputs

As illustrated in the table below, the promise of TDI is being fulfilled by the licensing of novel technologies to industry and by the launch of two new companies. For such a young and dynamic organization to successfully complete and license this number of programs in four years is truly extraordinary. TDI is fortunate in the richness and diversity of the science and the expertise of the scientists with whom it collaborates across the Tri-Institutional community.

Several notable projects are highlighted in the following pages.

Year	Institute	Disease Area	Modality	Status
2016	MSK	Pain	Small molecule	NewCo: Sparian Bioscience (\$17M grant)
	WCM	Oncology	Small molecule	NewCo: Quentis Therapeutics
2017	MSK	Oncology	Small molecule	PI received \$1M grant
	MSK	Oncology	Small molecule	Licensing discussions in progress
	RU	Oncology	Small molecule	Licensed to Bridge Medicines
2018	MSK	Oncology	Biologics	Licensed
	RU	Infectious disease	Biologics	Available for licensing
	RU	Inflammation	Small molecule	Licensing discussion in progress
	WCM	Inflammation, Multiple Sclerosis	Small molecule	Licensed to Bridge Medicines
	WCM	Stroke, Sepsis	Small molecule	Available for licensing
	WCM	Oncology	Small molecule	Licensed

“ Because hearing loss and balance deficits affect some 30 million Americans, there is great interest in identifying drugs that would restore the damaged sensory receptors of the inner ear. In evaluating compounds of potential utility, our group has benefited from TDI's integrated approach to the development of enzyme assays, the assessment of structure-function relationships, and medicinal chemistry. Especially for investigators without experience in pharmacology, the staff of the TDI are a remarkably valuable resource. **”**



A. James Hudspeth, MD, PhD

M. Kirby Professor

Investigator, Howard Hughes Medical Institute, The Rockefeller University

2018 TDI Pipeline: Early & Late Stage Projects



Oncology	Neuroscience	Infectious Disease	...and more
Acute myeloid leukemia Basal cell carcinoma Brain cancer Breast cancer Colorectal cancer Leukemia Liver cancer Lung cancer Lymphoma Melanoma Neuroendocrine cancers Ovarian cancer Pancreatic cancer Prostate cancer Solid tumors Squamous cell carcinoma	Alzheimer's disease Lupus Parkinson's disease	Bacterial infections Fungal infections HIV HPV Malaria Tuberculosis Zika virus	Addiction Auto-immune disease Hearing loss Imaging Non-alcoholic fatty-liver disease Ocular hypotony Osteoporosis Sickle cell anemia Type II diabetes

“ The drug discovery expertise and resources from TDI have proven invaluable to our lab. With TDI’s medicinal chemistry help, we successfully advanced our lead compounds, and we are currently leveraging their drug discovery expertise to turn these improved inhibitors into the first-of-its-kind treatment for a rare, but potentially blinding, orphan disease. While this experience has been incredibly gratifying in its own right, this was not the most surprising or fruitful aspect of our collaboration with TDI. The TDI-developed inhibitors were so greatly improved over previously existing compounds (i.e., they were more potent, selective and safer) they revealed a previously unappreciated therapeutic potential. Taking advantage of these compounds, we have been able to secure additional grant funding for the laboratory, and our collaboration with TDI has expanded to include efforts to realize this potentially transformative therapeutic opportunity. **”**



Jochen Buck, PhD
Professor of Pharmacology
Weill Cornell Medicine



Lonny R. Levin, PhD
Professor of Pharmacology
Weill Cornell Medicine

Combating Auto-Immune Disease: A program conducted with Professor Thomas Tuschl of The Rockefeller University

Our DNA resides primarily in the nucleus of the cell, but may sometimes be found in the broader cell environment of the cytosol. The presence of cytosolic DNA can be attributed to a number of causes, such as microbial infection, damage to the nucleus, and the presence of tumors. Inside the cell, an enzyme acts as a sensor for cytosolic DNA. Activation of this enzyme leads to the activation of inflammatory genes, triggering an immune response. A small molecule that could inhibit this enzyme could potentially be used to treat a number of diseases, including auto-inflammatory conditions, neurodegenerative disorders, and metastatic cancer.

Professor Thomas Tuschl and his research group at The Rockefeller University have been studying this enzyme with the goal of identifying small molecule inhibitors. When the academic researchers joined the TDI Small Molecule Therapeutic Initiative in 2016, the group had already identified several modestly active hit compounds. The goal of the TDI partnership was to conduct a medicinal chemistry campaign to identify molecules with substantially enhanced activity and improved drug-like properties.

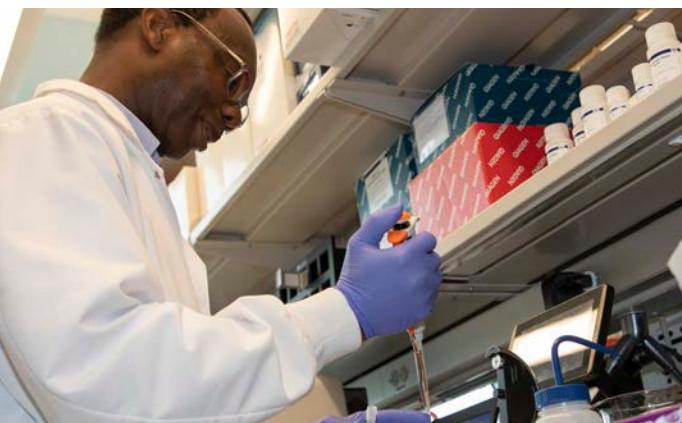
Through multiple rounds of iterative compound design, the Medicinal Chemistry team, led by Dr. Daisuke Tomita, developed several advanced compounds with activity, stability, and safety profiles that render them suitable for evaluation in animal proof-of-concept studies. One of these advanced compounds has shown success in a viral infection model study, providing the basis for the Tuschl group to move forward with licensing to a partner organization for advanced preclinical development.



The Medicinal Chemistry team **developed compounds with activity, stability, and safety profiles** that render them suitable for animal proof-of-concept studies.

New Treatments for Malaria Infections: A Collaborative Effort with the Nathan Lab at Weill Cornell Medicine

Each year, malaria infects over 200 million people and kills over 400,000 worldwide – the majority of these victims are children. Since 2016, TDI has worked with Drs. Carl Nathan, Gang Lin and Laura Kirkman of Weill Cornell Medicine to develop small molecule anti-malarial drugs that act by selectively inhibiting the malaria proteasome. The proteasome is an essential complex of proteins that breaks down proteins marked for destruction. Inhibition of the proteasome complex can be lethal for a cell.



Successful candidates must be highly potent, operate with high selectivity, and possess drug-like properties.

A key aim of this research partnership has been to leverage subtle structural differences between the human and malaria proteasomes in order to identify small molecules that selectively inhibit the malaria proteasome while leaving the human proteasomes untouched. Successful candidates must be highly potent, operate with high selectivity, and possess drug-like properties. A TDI Medicinal Chemistry team led by Dr. John Ginn identified several promising candidates toward this goal: the lead molecules are highly potent against the malaria proteasome, showing greater than 1000-fold selectivity over the human host proteasomes. Animal proof-of-concept studies with the most advanced candidates are underway at GlaxoSmithKline.

Moreover, because many parasitic pathogens rely on proteasome activity for survival, validation of the proteasome inhibition strategy in the context of malaria could also have broader implications for the treatment of tuberculosis and other tropical diseases. The small-molecule inhibitors developed in the context of the malaria program have the potential to be adopted as broad-spectrum anti-parasitic agents.

“Working with the TDI has been a fantastic experience and learning opportunity for us. The remarkable progress achieved to date in our antibody project is the best testament to the efficacy and collegiality of the TDI Team. **”**

Joan Massagué, PhD
Director, Sloan Kettering Institute



Developing New Vaccines Against Zika Virus Infections: A Collaboration with Profs. Michel Nussenzweig and Davide Robbiani of The Rockefeller University

Infection by Zika virus typically produces mild symptoms of fever, rash, and joint pain that resolve rapidly. However, when infection occurs during pregnancy, transmission from the mother to the developing fetus can lead to a spectrum of devastating neurodevelopmental aberrations collectively referred to as Congenital Zika Syndrome. Infants born to mothers infected with Zika during pregnancy carry up to 42% risk of developing overt clinical or neuroimaging abnormalities. There is currently no way to prevent or cure Zika virus infection.

Professor Michel Nussenzweig and his colleague, Professor Davide Robbiani, at The Rockefeller University have been exploring the development of human anti-Zika antibodies, with the goal of developing a therapeutic combination consisting of two broadly neutralizing anti-Zika monoclonal antibodies recognizing distinct portions of the Zika virus. This combination therapy could be used both prophylactically and for treatment of infected individuals. The goal of combination therapy is to substantially reduce the occurrence of “escape mutations” often seen with RNA viruses such as Zika. Toward this goal, the Nussenzweig laboratory identified two human antibodies that potently neutralize Zika infection in both mouse and monkey models. These antibodies recognize a portion of the viral envelope protein that mediates viral attachment to target cells.

When the project joined the TDI Therapeutic Antibody Initiative in 2017, the goals were to optimize the sequences of the two parent antibodies and to conduct a manufacturability assessment for these resulting lead molecules. The TDI project team, led by Paul Balderes, identified and addressed liabilities in the parent antibodies that were anticipated to pose a challenge for manufacturing and preclinical development efforts. Each molecule was further engineered to increase its stability and to mitigate the risk of antibody-dependent enhancement of infection. These two optimized candidates are suitable for preclinical development.



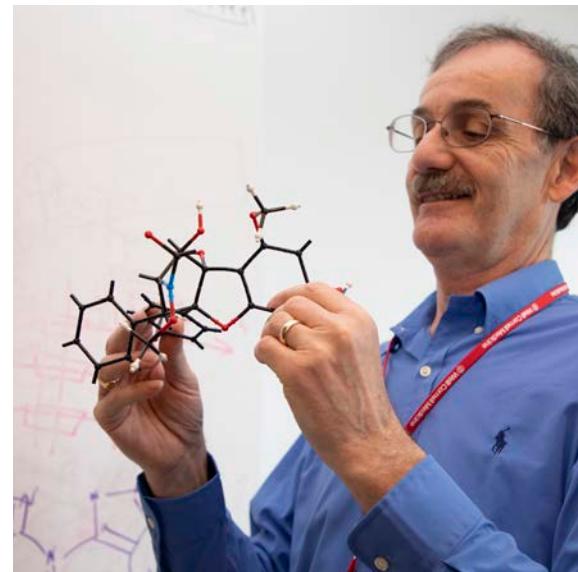
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TDI Leadership Profiles

In 2018 TDI welcomed two new leaders: Dr. Nigel Liverton, VP of Medicinal Chemistry for the Small Molecule Team, and Dr. David Andrew, Director of Lead Identification for the Antibody Team. TDI is fortunate in its ability to attract innovative and highly experienced leaders.

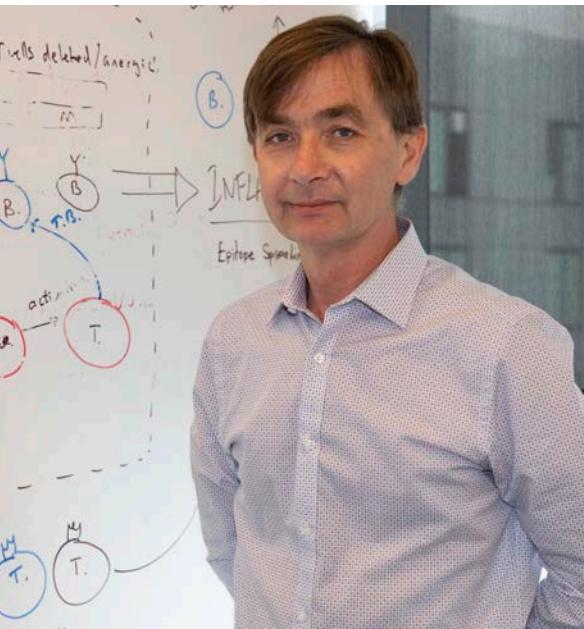
Dr. Nigel Liverton, Vice President of Medicinal Chemistry

Dr. Nigel Liverton provides scientific leadership across the portfolio of small molecule drug discovery projects. Dr. Liverton obtained his bachelor's degree and PhD from Southampton University in the UK. Following a postdoctoral fellowship at the University of Pennsylvania, he joined the Merck Neuroscience Research Centre in the UK. During his 28-year career at Merck, Dr. Liverton worked across a broad range of therapeutic areas including CNS, cardiovascular, immunology and infectious diseases. His team advanced multiple compounds into the clinic, including MK-0657, an NR2B selective NMDA antagonist that was later licensed to Cerecor and is currently in clinical trials. Dr. Liverton led the chemistry team on the Merck HCV protease program, which advanced several candidates into the clinic, culminating in two approved drugs, vaniprevir and grazoprevir. His contributions to the discovery of grazoprevir were recognized with a "Heroes of Chemistry" award presented by the American Chemical Society. Prior to joining TDI, Dr. Liverton served as Executive Director of the International Discovery Service Unit at WuXi AppTec, where he worked with a wide range of clients, including academic groups, industry and foundations to advance their small molecule discovery efforts. His contributions are documented in 64 publications and 129 patent applications.



Dr. David Andrew, Director of Lead Identification, Antibody Team

Dr. David Andrew earned his PhD in Immunology at University College London and went on to complete a Postdoctoral Fellowship at Stanford University. His postdoctoral work led to the discovery of etrolizumab, a humanized monoclonal antibody that is currently being developed for the treatment of inflammatory bowel disease (IBD). Prior to joining TDI, David was Vice President of Research at ImmuNext, where he coordinated the validation and IND filing of anti-VISTA, a monoclonal antibody in clinical trials for the treatment of cancer. Dr. Andrew has 20 years of biotech experience leading Antibody Discovery Groups from discovery to IND filing stages. He previously worked at Amgen, PDL BioPharma, Millenium Pharmaceuticals and GSK, where he contributed to the development of two commercially approved monoclonal antibodies in the oncology and autoimmune areas.



Innovation and Education Initiative

TDI continues to expand the scope and impact of the Sanders Education & Innovation Initiative. Its mission is to empower the Tri-I's world-class scientists with the training they need to effectively advance their academic discoveries to drugs in a way that can impact human health. Under the Sanders Initiative, TDI offers community-wide courses, seminars, and mentorship. In collaboration with the Genentech Foundation (formerly the Roche Foundation), TDI established a Postdoctoral Research Program that allows embedded postdoctoral fellows to work with PIs on their TDI-affiliated projects. These efforts further strengthen connections between TDI and its parent institutions. On the following pages, a new spin-off organization is described. This organization was launched in collaboration with Schrödinger, Inc. and aims to bring together computational and informatics specialists across the greater New York City area.



Innovation and Education Initiative

NY-AGIM

In October 2018, Dr. David Huggins and Dr. Mayako Michino of TDI teamed up with Dr. Jeremie Vendome and Dr. Jennifer Chambers from Schrödinger, Inc., to establish the New York Area Group for Informatics and Modeling (NY-AGIM). NY-AGIM is an active community of New York-based scientists that connects researchers across the diverse fields of molecular modeling, informatics and drug design, with the ultimate goal of advancing scientific research and impacting human health. By the end of 2018, NY-AGIM had a membership of nearly 200 NYC-based scientists. Members include a mix of researchers from industry and academia representing a diversity of perspectives that facilitates the types of discussions and collaborations for which NY-AGIM was intended.

NY-AGIM hosts scientific discussions on a wide range of topics, including computational chemistry, drug discovery, structure-based drug design, chemoinformatics, molecular modeling, structural biology, data mining, artificial intelligence and software tools. The aim is to provide high-quality talks in emerging and provocative areas in order to encourage vibrant discussion.



The inaugural event took place on Oct 30, 2018, in the Belfer Research Building on the Tri-Institutional campus and featured Dr. Jon Mason from Heptares, who spoke on "Four decades of CADD in Pharma: A personal perspective of critical lessons learned from each decade that will enhance our ability to succeed in the future." Dr. Mark Murcko of Relay Therapeutics spoke at a second event on Dec 13, 2018, on "The good, the bad and the fake news: How to combine experiments and theory in drug discovery." Social hours following each talk allowed attendees to network and share ideas. Four events are planned for 2019.

Sponsors for the 2018 events included the ACS Computers in Chemistry Division, TDI, and Schrödinger, Inc.



The aim is to provide high-quality talks in emerging and provocative areas in order to **encourage vibrant discussion.**



Education and Innovation: TDI proudly provides a wide range of educational opportunities to the Tri-I community

Schrödinger Software Access and Training

A key accomplishment of TDI's Sanders Innovation and Education Initiative is the formation of a close relationship with Schrödinger, Inc., a leader in *in silico* chemical simulations for drug discovery research. Under this unique partnership arrangement, nearly all of Schrödinger's computational tools are *freely available* to all researchers in the Tri-I community. TDI hosts regular training sessions throughout the year to ensure that researchers are able to use this powerful software to maximal benefit.

Drew University Medicinal Chemistry Course

In June 2018, TDI again brought the Drew University Residential Course in Chemistry and Biology in Drug Discovery (ResMed) to NYC for the benefit of the Tri-I community. The Drew course is a weeklong, graduate level, accelerated program that covers the fundamentals of drug discovery from initial target validation through clinical development. Class sessions are taught by leaders from major pharmaceutical companies. Since June 2015, TDI has provided access to this course, via live-streaming, to the Tri-Institutional community. The class is an extraordinary educational resource, allowing students to gain a clearer appreciation for the processes and methods relevant to drug discovery through clinical development.

"From Molecule to Prescription" Drug Development Class

TDI partnered with personnel from Roche to develop a drug development course, titled "From Molecule to Prescription." In 2018, members of the Roche Innovation Center, along with faculty from WCM and MSK, taught this class to Tri-Institutional graduate students with an interest in pursuing drug development and translational research in an academic or industry setting. The course provides a foundation of integrated knowledge of the multi-disciplined process of developing a new medication. Moving beyond theory, the class examines real-world challenges that can arise in the discovery, development, manufacture, approval, and commercialization of new medicines.

Chem Bio Summer Program

TDI is a proud supporter of the Tri-Institutional Chemical Biology Summer Program. In this 10-week program, outstanding undergraduate students with an interest in pursuing a career at the intersection of chemistry and biomedicine gain valuable research experience with faculty across the WCM, MSKCC, and RU campuses.

Postdoctoral Fellowship Program

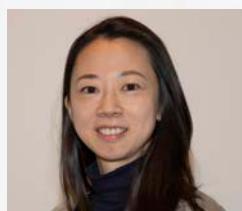
TDI and the Roche Foundation established a Postdoctoral Program, funded by Roche, that provides training for postdoctoral researchers who are planning to pursue careers in the biological sciences. These postdocs are embedded in TDI and receive hands-on, intensive training in drug discovery and development from those knowledgeable in the field. These opportunities provide trainees with an experience that represents the "best of both worlds", melding the rigor of industry-quality scientific development with the innovation of leading academic discovery. The current Roche post-doctoral fellows are pictured below:



Efrat Finkin-Groner, PhD

Applying industrial level assay development techniques to academic discovery.

Advisor: Prof. Peter Meinke, PhD, WCM and TDI



Shan Sun, PhD

Delivering new drug design paradigms using molecular dynamics simulations

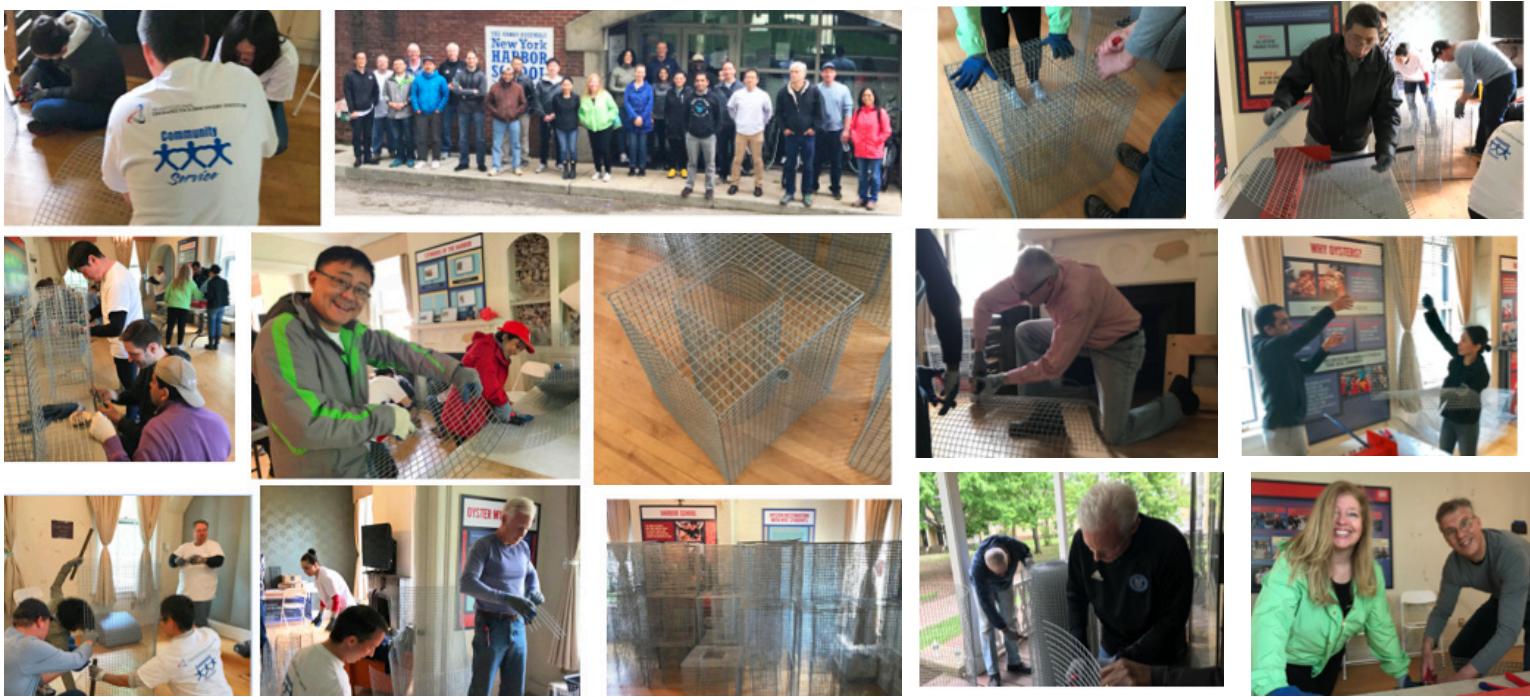
Advisor: Prof. David Huggins, PhD, WCM and TDI



Zoe Mbambo, PhD

Application of new technologies to determine the levels and fates of chemical compounds in bacteria.

Advisor: Prof. Kyu Rhee, PhD, WCM



Community Service

In order to promote team unity and forge connections with the broader New York City community, TDI participates in service-oriented activities throughout the year.

In February 2018, TDI staff volunteered in the God's Love We Deliver kitchen, helping to prepare medically tailored meals for delivery to people living with severe illness in the New York City metropolitan area. In May 2018, the TDI team completed a community service event with the Billion Oyster Project, an ecosystem restoration and education movement aimed at restoring one billion live oysters to New York Harbor by 2035. In this enjoyable team-building activity, the team worked together to make cages to be submerged into the harbor to rebuild the oyster reef. In October 2018, a day was devoted to clearing weeds and protecting tree roots with the Friends of Governors Island, an independent nonprofit that works to ensure the Island's continued growth and accessibility as a vibrant public resource.

“Our collaboration with TDI on the generation of antibodies against novel B-cell lymphoma targets has been extremely productive. We look forward to working with them on other projects in the future. **”**

Olivier Elemento, PhD

Professor of Physiology and Biophysics
Associate Director of the Institute for Computational Biomedicine
Weill Cornell Medicine



TDI's Strategic Partners



Preclinical drug discovery and drug development services

Absorption Systems
Crystal Pharmatech
Eurofins
Frontage Labs
Ora
Particle Science
Pharmaron
Zyleris PharmaTech



Antibody discovery & development

Ablexis
Abzena
Cell Essentials
ChemPartner
Covance
DiscoverX
GenScript
LakePharma
Taconic
WuXi



Biochemical and cell-based assays

EpiCypher
Eurofins
Evotec
HD Bioscience
Horizon
Multispan
Pharmaron
Reaction Biology
Xenobiotic



Computational chemistry, biology & virtual screening

Schrödinger Inc.
Atomwise



Chemical synthesis

Robertson Microlit
Syngene
TGC Life Sciences
WuXi



Structural biology, protein expression & purification

CEPTER
Structural Genomics Consortium
TropIQ
XTAL Biostructures
R&D Systems



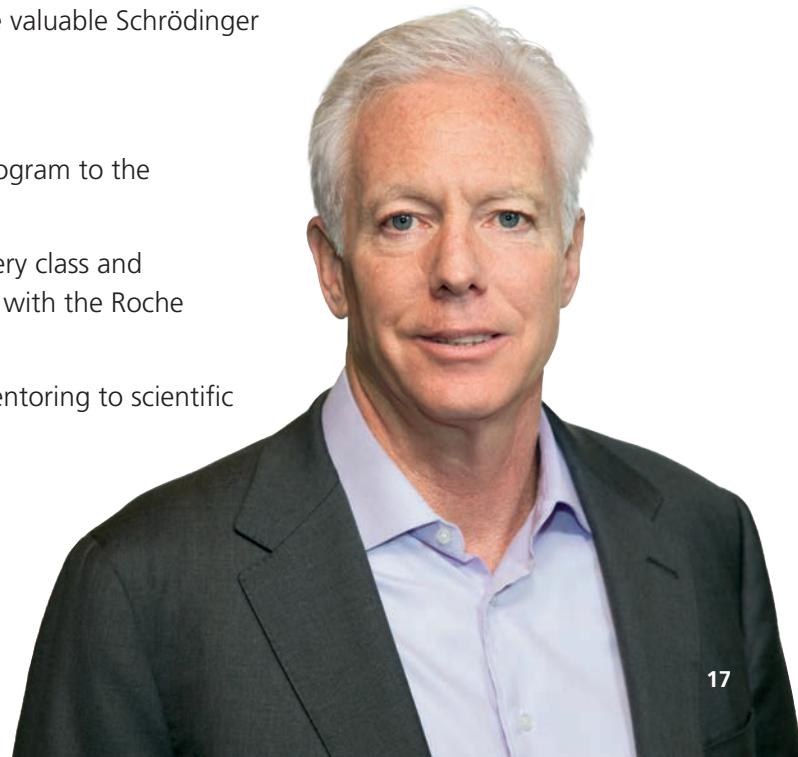
Innovative screening technologies & unique libraries

HitGen
Torrey Pines
WuXi
XTAL Biostructures

In Appreciation

In 2018 TDI bid farewell to its founding CEO, Dr. Michael A. Foley. Dr. Foley joined TDI at its inauguration and led the organization from its launch through its shift from a virtual operation to a brick-and-mortar organization, from a one-modality, small molecule discovery organization to an organization that works across modalities. TDI and the Tri-I Community are grateful for Dr. Foley's leadership and vision. His dedication and acute scientific and business savvy made possible the mature organization that TDI became by the end of 2018. Some of Dr. Foley's many accomplishments as CEO are noted below.

- In 2014, oversaw the launch of the TDI Small Molecule Therapeutic Initiative. Under Mike's leadership, the size and scope of the pipeline expanded rapidly from the first 7 projects to 20 projects in 2016. By the end of this year, 8 projects were made ready for licensing, 5 were licensed for further development and one was the basis for a New York City-based NewCo, Sparian Bioscience, Inc.
- In 2015, launched the Early Stage Project Initiative. Under this initiative, TDI conducts early-stage drug discovery activities on a portfolio of 40 small molecule and antibody projects. Seven completed programs advanced to the Small Molecule and Antibody Therapeutic Pipelines and an eighth served as the basis for a New York City-based NewCo, Quentis Therapeutics, Inc.
- In 2016, launched the TDI Antibody Initiative with TDI's industrial partner, Takeda Pharmaceuticals and formed the collaboration with Ablexis, Inc. as a partner for human antibody generation.
- Played a key role in the 2016 launch of TDI's for-profit sister organization, Bridge Medicines, Inc.
- Beginning in 2016, led the transition of TDI from a virtual organization to a brick-and-mortar operation. Oversaw the hiring of over 30 new employees and established a completely new management staff and operational structure.
- Through the Sanders Education and Innovation Initiative, implemented an expansive vision for educating the Tri-Institutional community on the development of new therapeutics.
 - Obtained community-wide access to the valuable Schrödinger Software suite
 - Established the Sanders Seminar Series
 - Brought the Drew University ResMed program to the Tri-I community
 - Developed a graduate-level drug discovery class and a postdoctoral program in collaboration with the Roche Foundation.
 - Provided countless hours of personal mentoring to scientific researchers across the Tri-I community.

A handwritten signature in black ink, appearing to read "Michael Foley".

Leadership Team: Dedicated to Bringing Value to the TRI-I Community

Board of Directors

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EMERITI

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Paul J. Maddon, MD, PhD

Founder,
Progenics Pharmaceuticals, Inc.

Matthew Moyle, PhD

Co-Founder and CSO,
Fleet Therapeutics

**** Board chair**

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Sanders Director / CEO

James Lapple

TDI Treasurer,
Vice President for Finance and Treasurer,
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Patti M. Aha, PMP

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Stacia Kargman

Vice President, Biology

Nigel Liverton, PhD

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Vice President, Finance

Ivo Lorenz, PhD

Vice President, Biologics



Brilliant work by TDI provided the missing pieces of a jigsaw puzzle that when assembled revealed the answer – “Yes!” – to a question my lab has long asked: whether a species-selective inhibitor of the proteasome in the most virulent species of malaria can clear the parasite from the blood of mice. Dr. Gang Lin, a chemist in my lab in the Department of Microbiology and Immunology at Weill Cornell, teamed up with Dr. Laura Kirkman, an infectious disease clinician and malaria researcher in the Department of Medicine, to advance this idea. As powerful a combination as those two represented, the project was stalled until we formed an alliance with the TDI team. The team meetings of this interdisciplinary group were a textbook example of the power of bringing discovery scientists and drug development scientists together, rather than keeping them at arms’ length because of secrecy concerns, differing institutional goals, physical distance, or different technical precepts and terminologies. TDI is a spectacular resource for faculty in the Tri-I community who want to work with compounds of the requisite selectivity, potency, safety and biodistribution to allow definitive tests of hypotheses in settings as rigorous as an animal model. It’s proof of concept with quality compounds that opens the door to clinical development.



Carl F. Nathan, MD

Dean, Weill Cornell Graduate School of Medical Sciences



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TDI brings together some of the finest minds in the world from Memorial Sloan Kettering Cancer Center, The Rockefeller University, and Weill Cornell Medicine with collaborators across the globe to remove the barriers that impede drug discovery in academic settings. Together with our partner, Takeda Pharmaceutical Company, Ltd., we are enabling the discovery of next-generation drugs by empowering the Tri-Institutional faculty with tools, technology, and expertise.

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