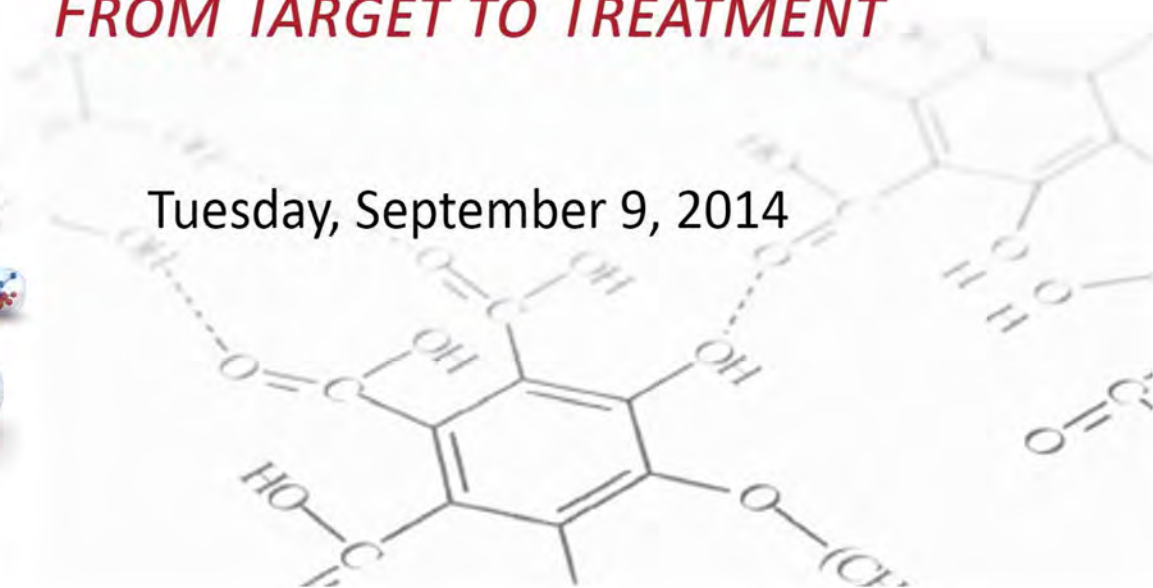




Weill Cornell Medical College

**MILSTEIN PROGRAM IN  
MEDICINAL CHEMISTRY SYMPOSIUM:  
*FROM TARGET TO TREATMENT***

Tuesday, September 9, 2014



Laurie H. Glimcher, M.D. | *Stephen and Suzanne Weiss Dean*

cordially invites you to the

**MILSTEIN PROGRAM IN MEDICINAL CHEMISTRY SYMPOSIUM:**  
***FROM TARGET TO TREATMENT***

KEYNOTE ADDRESS **Tadataka Yamada, M.D.**

PRESENTERS **Laurie H. Glimcher, M.D.** | **Mark A. Murcko, Ph.D.** | **Nancy A. Thornberry**

MODERATOR **Michael A. Foley, Ph.D.**



Tuesday, September 9, 2014

12:30 p.m. Registration | 1:00 - 4:30 p.m. Symposium

*Reception to follow, hosted by Abby and Howard P. Milstein*

Belfer Research Building

The Starr Foundation-Maurice R. Greenberg Conference Center, 3rd Floor

413 East 69th Street (between First and York Avenues) | New York City

## A Remarkable Day of Science and Achievement

***From Target to Treatment*** was the first-of-its-kind symposium that highlighted the remarkable efforts and discoveries of the **Milstein Program in Medicinal Chemistry**. Weill Cornell Medical College hosted the symposium on September 9, 2014 which focused on the power of collaboration in realizing medical breakthroughs particularly the role of public-private partnerships.

Philanthropy plays a pivotal role in ensuring the collaborative success between innovative laboratories and private entities like pharmaceutical companies. Abby and Overseer Howard Milstein have been leaders in spurring this path to discovery through their early support of Weill Cornell's work in chemical biology—through the work of renowned researcher Dr. Carl Nathan—and then further articulated through the establishment of the Milstein Program in Medicinal Chemistry. Mr. Milstein's foresight has allowed Weill Cornell to spearhead the efforts of the Tri-Institutional Therapeutics Discovery Institute (Tri-I TDI), the unique collaboration between Weill Cornell, Memorial Sloan-Kettering Cancer Center, The Rockefeller University, and Takeda, a global research-based pharmaceutical company.

The day's program exemplified the tremendous benefits that partnerships like the Milstein Program in Medicinal Chemistry will have on the future of science and medicine. As Dean Glimcher stressed, the Milstein family has been instrumental to making this all possible: "Abby and Howard have made critical investments in core programs at the Medical College, pivotal to our ability to advance science and medicine. These significant contributions allowed for key investments in infrastructure and personnel to expedite the discovery of new drug targets and treatments to combat an array of serious and difficult illnesses."

The symposium concluded with a celebratory reception that allowed participants to further discuss the presentations, but also allowed Mr. Milstein to highlight how meaningful the Milstein family's longstanding support and collaboration has been with Dr. Carl Nathan. At the root of this partnership has been a vision for better therapies that has now become the guiding principle for a multi-institutional effort for a healthier tomorrow.



(left to right): Michael A. Foley, Ph.D.; Nancy A. Thornberry; Abby and Howard Milstein; Laurie H. Glimcher, M.D.; Tadataka Yamada, M.D.; Mark A. Murcko, Ph.D.

## Speaker Contact Information

Tadataka Yamada, M.D.; *Chief Medical and Scientific Officer, Takeda Pharmaceuticals International, Inc.*  
 tachi.yamada@gmail.com  
 224-554-3900

Nancy A. Thornberry; *Independent Consultant to Biotechnology and Pharmaceutical Companies*  
 thornberrynancy@gmail.com  
 908-377-6454

Mark A. Murcko, Ph.D., *Senior Lecturer in the Department of Biological Engineering, MIT; Founder, Disruptive Biomedical, LLC; Senior Vice President of Long-Term Strategy, Schrodinger, Inc.*  
 mark.murcko@gmail.com  
 508-282-6797

Laurie H. Glimcher, M.D.; *Stephen and Suzanne Weiss Dean, Weill Cornell Medical College*  
 dean@med.cornell.edu  
 212-746-5900

Michael A. Foley, Ph.D.; *Sanders Director, Director, Sanders Innovation and Education Initiative; Tri-Institutional Therapeutics Discovery Institute*  
 mfoley@tritdi.org  
 646-962-6127



Howard P. Milstein

*Overseer, Weill Cornell Medical College*

*Chairman, President, and Chief Executive Officer, New York Private Bank & Trust, and Emigrant Bank*

### **Opening Remarks**

This symposium marks the official introduction of medicinal chemistry into the academic life of Weill Cornell Medical College through the Tri-Institutional Therapeutics Discovery Institute, a collaboration of Weill Cornell Medical College, Memorial Sloan-Kettering Cancer Center, and The Rockefeller University, and the alliance of Takeda Pharmaceuticals. Tri-I TDI eliminates the divide between academic research and Big Pharma, addressing lack of funding and lack of industrial access to get drugs to market quickly and affordably. Translational Medicine and Medicinal Chemistry are productive investments that are the keys to advancing medical research. Weill Cornell Medical College and our neighbors now have access to medicinal chemistry at its best, thanks to director Dr. Michael Foley, the outstanding Takeda Pharmaceuticals team, and Tri-I TDI's dedicated external advisors. Takeda Pharmaceuticals' participation is not only a successful example of partnership between institutions but also among nations. The Milstein Medical Asian American Partnership Foundation, in the same spirit of the Tri-I TDI, partners with China and greater Asia to improve world health. We believe that people in a position to help must lead, and if great nations work together toward common objectives, daunting problems can be solved. The Tri-I TDI, as well as the Milstein Medical Asian American Partnership Foundation demonstrate values, build relationships, and through initiatives, advance medical research and harmony around the world.





Tadataka Yamada, M.D.,  
*Chief Medical and Scientific Officer, Takeda Pharmaceuticals International, Inc.*

**Keynote:**

**Re-shaping the Pharma Landscape**

Over the past decade there has been increasing concern over the perceived fall in R&D productivity across the pharmaceutical industry. At the same time, rising economic challenges have resulted in substantial cuts in spending in R&D. These dual trends have had huge impacts on where pharmaceutical R&D is done, how investment decisions are made and how the effort to make new medicines is conducted. In the end, success is framed by smart decision making and sound clinical judgment. The challenge for the industry remains to provide access to the fruits of R&D to those who need them the most.



Michael A. Foley, Ph.D.  
*Sanders Director*  
*Director, Sanders Innovation and Education Initiative*  
*Tri-Institutional Therapeutics Discovery Institute*

**Scientific Presentation Overview**



Nancy A. Thornberry  
*Independent Consultant to Biotechnology and Pharmaceutical Companies*

**Discovery of DPP-4 Inhibitors for the Treatment of Type 2 Diabetes**

The incidence of type 2 diabetes (T2DM) has reached epidemic proportions, driven largely by an increased prevalence of obesity. There are approximately 370 million people with T2DM, and this number is expected to increase to 550 million by 2030. DPP-4 inhibitors have emerged as an important new treatment option for patients, having demonstrated effective glucose control with low risk of hypoglycemia and no weight gain. Januvia<sup>TM</sup>, approved in 2006, is the 1st approved DPP-4 inhibitor and is currently the #1 branded oral agent in diabetes. Omarigliptin is a once-weekly DPP-4 inhibitor that is currently in Phase III and has the potential to become the 1st once-weekly oral therapy for the treatment of T2DM.

Mark A. Murcko, Ph.D.

*Senior Lecturer in the Department of Biological Engineering, Massachusetts Institute of Technology*

*Founder, Disruptive Biomedical, LLC*

*Senior Vice President of Long-Term Strategy, Schrodinger, Inc.*

### **The Accurate Prediction of Ligand Binding Free Energies**

In the past decade, we have witnessed an explosion in the availability of high-resolution structural information that sheds light on the binding of diverse classes of ligands to both soluble proteins and integral membrane receptors. From orthosterics to allosterics, from tiny fragments to enormous rule-breakers, we know more than ever about how ligands bind. However, the ability to accurately *predict* binding free energies has lagged behind, significantly limiting the utility of this structural information. The good news is that in the past few years there has been a breakthrough in ligand binding free energy prediction. I will summarize the evidence and suggest ways to effectively deploy this new capability.



Laurie H. Glimcher, M.D.

*Stephen and Suzanne Weiss Dean, Weill Cornell Medical College*

### **Close to the Bone: Shn3, a novel gene that remodels the skeleton**

An estimated 10 million Americans over age 50 have osteoporosis, and osteoporosis-related fractures occur in approximately 1.5 million individuals per year with serious health consequences. Currently, there are few therapeutic options for osteoporosis and most of these rely on inhibiting bone resorption by osteoclasts (“catabolics”) rather than increasing bone formation through augmenting osteoblast activity (“anabolics”). We have identified the adaptor protein Schnurri-3 as a critical regulator of adult bone mass. Mice lacking Shn3 display profoundly increased bone mass and are completely protected from age-related bone loss. We have recently partnered with UCB Pharmaceutical Company to identify compounds that exploit the Shn3 pathway to increase bone mass.





































