



READ MORE  
@TEPPER  
DIGITAL  
MAGAZINE

BY NICHOLAS DUCASSI

# A PRECISE ODYSSEY

**“I WANT THE COUNTRY THAT ELIMINATED POLIO AND MAPPED THE HUMAN GENOME TO LEAD A NEW ERA OF MEDICINE ... TO BRING THE COUNTRY CLOSER TO CURING DISEASES LIKE CANCER AND DIABETES,” PROCLAIMED PRESIDENT OBAMA IN HIS 2015 STATE OF THE UNION ADDRESS.** As Obama announced the launch of a new precision medicine initiative, the Capitol building erupted in applause. 27-year-old cystic fibrosis patient Bill Elder, a guest that night of First Lady Michelle Obama, listened live as the president explained the catalyst: “In some patients with cystic fibrosis,” a rare, life-threatening genetic lung disease, “this approach has reversed a disease once thought unstoppable.”

That approach is *Kalydeco*, a breakthrough treatment developed by Vertex Pharmaceuticals that targets the genetic roots of the disease, earning it the distinction from *Forbes* as “The Most Important New Drug Of 2012” and winning the First Annual Forbes Breakthrough Drug Award for “dramatically improving the lives of patients and conquering a scientific challenge that had vexed researchers for decades.”

“I’m so lucky to be a living, breathing example of how precision medicine can work,” Elder told the Cystic Fibrosis Foundation shortly after the State of the Union. “I started taking a breakthrough treatment for cystic fibrosis a few years ago, and it has changed my life. This new treatment is allowing me to pursue my dreams. Without *Kalydeco*, I know I would get sick a lot more often, but since taking the drug, I haven’t had a flare-up.”

For Tepper alumnus and current Vertex EVP and Chief Patient Officer **Amit Sachdev**, the State of the Union represented a highlight of nearly a decade of tireless work. Having helped shepherd the Boston-based company to multiple breakthrough medical treatments, ten-fold growth, and R&D sites and offices across four continents, the presidential mention further validated his decision to join Vertex when the company had just one office, no commercial operations, and no profit.

“Precision medicine,” also known as “personalized medicine,” targets a disease’s genetic roots to modify the course of a disease or even prevent it. “That’s what Vertex does,” says Sachdev. “We use different approaches — small molecules, cell therapies, gene therapies — to create innovative, transformative medicine for serious diseases.”

But the journey from research to market can be decades-long, laden with setbacks, and require serial rounds of massive financial investment. Sachdev’s odyssey from finance and data analysis classes at Carnegie Mellon to helping bring hepatitis C, cystic fibrosis, and hopefully Type 1 diabetes and sickle cell disease treatments to the world was similarly winding, carrying him over a million miles across numerous international borders with stopovers at law school, Wall Street, and Capitol Hill. Over the last two years, this has led to the creation of a new MBA track in health care at the Tepper School of Business.



“**I REALIZED PRETTY QUICKLY I WANTED TO DO SOMETHING THAT I FELT MORE PURPOSEFUL ABOUT — SOMETHING LESS ABOUT INVESTING AND MORE ABOUT PUBLIC POLICY AND HELPING IN OTHER WAYS.**”

Amit Sachdev (BSIM 1990)  
EVP and Chief Patient Officer  
Vertex Pharmaceuticals

**NATURE MEETS NURTURE**

As a child, Sachdev spent countless hours inside the science labs at Louisiana State University, where his parents conducted research as chemistry and botany professors. His genetic predisposition to scientific curiosity met a love of computers, which he nurtured in his teens when he began programming in Basic, Cobalt, and Fortran.

Drawn to Carnegie Mellon for its prowess in technology, he had two predominant career goals in mind as he chose his major: purposeful work and entrepreneurship. He decided to major in business: “Tepper’s curriculum gave me skills and capabilities that I’ve applied throughout my whole career,” says Sachdev.

After graduating, he became an investment advisor for a large Wall Street brokerage house. It was short-lived: “I realized pretty quickly I wanted to do something that I felt more purposeful about — something less about investing and more about public policy and helping in other ways.”

He pivoted from business to Emory University’s law school and soon landed an internship at the Department of Justice in Environmental Litigation and Defense. He eventually found his way to writing laws, running hearings, and negotiating bills in cybersecurity and critical infrastructure as Senior Counsel for a senior congressional committee.

Law school helped him get to Capitol Hill, but Sachdev says the business negotiation skills he learned in his undergraduate Mergers and Acquisitions class helped him excel there: “I learned how to work with other people and how to negotiate. Whether I was negotiating legislation in a bipartisan way or in a business negotiation — the skills I learned at Tepper really applied forward in my career.”

Before long, he became Deputy Commissioner of the Food and Drug Administration (FDA), which oversees nearly 25 percent of the U.S. consumer economy. The breadth and diversity of his workload from implementing key elements of the Medicare Modernization Act to ensuring the efficacy and safety of HIV

medicines sent to Africa, further sharpened his skills. “I was problem-solving from the time I walked in to the time I left,” says Sachdev. “Problem solving, data analysis, and assessing and managing risk are what I most took away from Tepper, and what I come back to every time.”

**A BLOSSOMING IN BIOTECH**

By 2004, a D.C. colleague called to gauge his interest in joining BIO, the life sciences trade association that represents large companies like Celgene (\$15B) and smaller venture-backed, innovative biotech companies. “I wanted to experience the private sector. I had done almost a decade in public service, which I found really meaningful, but I didn’t know which part to enter — hospitals, insurance, innovation. I thought going to BIO would give me a taste of that.”

At BIO, Sachdev met Joshua Boger, a doctor of organic chemistry who founded Vertex in 1989 to pioneer work in structure-based drug design to treat serious diseases. By 2007, nearly twenty years into its existence, the company had no commercial wing and no profit. It had devoted all of its resources to its founding mission. But it was on the verge of making history.

Its antiviral treatment for hepatitis C, a disease that killed more U.S. citizens in 2007 than HIV, was in clinical trials. Using a technique called protease-inhibition, Vertex’s treatment, called *Incivek*, showed promise to stop the replication of the virus that caused the disease. “If we succeeded, it would essentially be a cure. You would treat each patient once, and you would move on,” says Sachdev.

But bringing that dream to fruition would require help from someone with vast experience in multiple sectors, including business, government, and policy — someone like Sachdev. The opportunity to simultaneously do good and help shape a company was the perfect marriage of the career goals that pushed him to study at Tepper.

Sachdev came on as Vertex’s SVP of Corporate Affairs and Public Policy. He led its market shaping, including raising awareness of hepatitis C and increasing the

number of patients who were diagnosed. Within two years, Sachdev also led the opening of Vertex’s first ex-U.S. offices, including its commercial operations, sales, and marketing, in Canada.

But as *Incivek* advanced through clinical trials and awareness of hepatitis C increased, so did the pressure on Vertex. “Leading up to *Incivek*’s approval, we had raised \$4.5 billion in public markets without generating a return for our shareholders. It took us four years of working with the government, philanthropy, foundation, and peer companies to set up a framework to enable the funding for treatment.”

After 15 years of development, *Incivek* hit the market in 2011, and by 2012, for the first time in its 23-year history, Vertex was profitable. “It was the fastest drug in the industry to reach a billion dollars in revenue,” says Sachdev.

It didn’t last. “It was also the fastest drug off the market. Within two years, it was replaced by a competitive product. After Vertex went through a major investment over many years to be the pioneer in hepatitis C treatment — to not win in the strategy game of making sure you didn’t just have the first treatment, but also the best ... was tough.”

**THE VERTEX VORTEX**

“We had to pivot to a different disease area. We had cystic fibrosis in mind, but the research was in an earlier stage, so we had to figure out how to stay alive through the ‘divot’ period.”

While rare — only around 35,000 Americans are affected — cystic fibrosis is brutal to those it afflicts: The life-threatening genetic disease causes persistent lung infections and limits the ability to breathe over time. Vertex’s personalized treatment, known as *Kalydeco*, was the first medicine to treat the underlying cause of the disease.

*Kalydeco* exceeded expectations in its clinical trials. “We were surprised. Not only could you get a modification in the slope of the decline in lung function,” recalls Sachdev, “we also began to see improvement in lung function as well.”

While it was initially approved to treat around 4 percent of CF patients, Vertex has continued to develop *Kalydeco* since its 2012 introduction to bring it to more eligible patients around the globe, including its 2020 approval to treat babies as young as 4 months old. Today, Vertex has four approved medicines that have the potential to treat up to 90 percent of CF patients in the future. “We’re not done; there’s still 10 percent of patients that probably need some sort of gene therapy or cell therapy that we’re working on,” cautions Sachdev. “But we feel good about what we’ve done.”

**A DEEP COMMITMENT TO ITS PATIENTS**

But Vertex’s and its Chief Patient Officer’s missions have always been about more than just treating the disease: “We’re deeply committed to the patients we serve, and our responsibility goes beyond medicine. We spend a lot of time thinking about what kind of outcomes patients have in terms of quality of life and how we can engage with them to ensure we’re meeting their needs to make sure their voice is heard.”

That work also includes philanthropy — Sachdev oversees The Vertex Foundation — to running programs that help patients connect directly with the company. “We have patients who show up on their vacations and want to come meet our scientists,” so Sachdev built a program that allows patients to tour Vertex’s Boston labs, not unlike how Sachdev himself toured his parents’ labs when he was a child.

Sachdev says he’s gained an extended family in the CF community. “When you have a rare disease, it’s a very small number of people, unlike the larger systemic diseases that affect large swaths of the population. I know them by name, know their family members, know their communities ... that’s a privilege that we have doing this work.”

On the horizon, Vertex has therapies in various stages of research and development, including potential treatments for Type 1 diabetes, beta thalassemia, and sickle cell disease. Issues are sure to arise as they work to introduce them to the world, but Sachdev says his journey has equipped him to tackle any hiccups: “My career path — and it was definitely a winding road, just gave me

exposure to different types of problems and risks, but I still apply the same set of skills I learned at Tepper to develop solutions to those problems.”

And while Sachdev is working on bringing those medical therapies to the greater population, he’s also working hard on bringing a special segment of the population to Vertex: Tepper alumni. “We have as much need, want, and capability in innovative life sciences as the Silicon Valley companies or Wall Street banks for those with analytical capabilities, data scientists, and the other skills that make Tepper graduates so special.”

To that end, he’s worked closely with Tepper faculty and staff, including former Dean **Robert Dammon**, to design and develop a new MBA Health Care track in data analytics that will include artificial intelligence for life sciences.

The partnership between the Tepper School of Business Health Care Initiative and Vertex will create an MBA curriculum for health care analytics and support the related research of the faculty and doctoral students.

“Our vision is to offer a comprehensive deep dive into the study of health care analytics,” says **Soo-Haeng Cho**, Professor of Operations Management and Strategy at Tepper. The curriculum will draw from Tepper School’s health care analytics courses and related courses in health care policies and AI applications to health care from the Heinz School and the School of Computer Science. Touching on everything from hospital management, insurance policies, and patient records to medicine, diagnoses, and treatment, the track will culminate in a capstone project course that exposes students to a real business problem in the health care and life science industry. “The potential is limitless,” says Professor Cho.

While the program is currently in development — like a cutting-edge personalized medicine in a clinical trial — the fall 2020 semester featured the first-ever Health Care concentration to build up momentum and excitement for the track. “There’s no reason we shouldn’t connect these dots and help recruit more Tepper graduates to life sciences,” says Sachdev. —

“**TEPPER’S CURRICULUM GAVE ME SKILLS AND CAPABILITIES THAT I’VE APPLIED THROUGHOUT MY WHOLE CAREER.**”



Tepper School of Business | Carnegie Mellon University

FALL / WINTER 2020

# TEPPER

M Z I N E



Isabelle  
Bajoux-Besnainou

—  
**10th Dean** of the  
Tepper School of Business

Carnegie  
Mellon  
University