



Solving the 'Impossible' with Science

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After spending almost a decade as CEO of Dendreon developing the world's first immunotherapy, and shepherding Provenge through FDA approval, I wanted to tackle a bigger scientific challenge. Provenge helps a patient's own body recognize and fight their individual prostate cancer. Its approval opened the door to an immunotherapy market potentially worth more than \$35 billion, and dramatically changed the way we think about treating cancer.

While Provenge was transformative, I was hoping to find something new to change medicine in ways that only seemed possible in science fiction. Something advancing the idea of "Singularity," a phrase coined by Futurist Ray Kurzweil to describe the point when genetics, nanotechnology, and robotics exceed biology and human ability. To do that, I started a new company called Alpine BioSciences in August of 2012.

After months of searching, I found the right technology at the University of New Mexico and Sandia National Laboratories. (Sandia is run by the U.S. Department of Energy and makes a majority of the componentry of our nuclear weapons.) There, Jeff Brinker, a professor of chemical and nuclear engineering, molecular genetics, and microbiology, was developing a nanotechnology platform called "protocells".

These protocells were elegantly designed to do something not yet accomplished in the field of science: deliver not just small molecule medicines to a specific target, but all forms of nucleic acids (DNA, siRNA, mRNA), proteins, and peptides.

While other nanoparticles could carry some of these elements to targets in the body, they suffered from various faults: off-target toxicities, leakage, and immunogenicity. When I saw the data from Jeff's early experiments I was blown away – Brinker's protocells didn't seem to have any of these problems. If developed properly, and

paired with the right medicines and pharma partners, these protocells could truly change how we treat cancer, genetic diseases, and other health issues. As a potential biotech partner described it to me, "While it's early Mitch, you may have found the Rosetta Stone of our industry."

No matter how exciting the science was, however, we still faced the challenge all great medical discoveries do: the need for lots of cash. Industry estimates put the cost to bring a therapy from the lab to approval at \$1 billion, while taking more than a decade to develop. Given my success with developing Provenge, and raising more than \$2 billion for Dendreon, Brinker and the team at the University of New Mexico trusted I could get the job done, and licensed the technology to my company in 2013. Alpine Biosciences was off and running with a potentially transformative technology in hand.

Still, I couldn't accomplish all I set out for on my own. To help me with the undertaking, I called an old contact, Jay Venkatesan. In his career, Jay had managed multibillion dollar hedge funds for Ayer Capital Management and Brookside Capital Partners, a fund affiliated with Bain Capital. Like me, Jay had been taking time off to search for new projects and came across Brinker's protocells as well. He saw their potential and broad applicability, and Jay had phenomenal ideas on how to apply them. In January of 2014, we decided to combine forces, and merged our companies together under the Alpine Biosciences name. Jay and I had provided all the seed funding to Alpine, so our next goal was to find the right company and team who understood, like us, the transformative potential of this technology.

After speaking with many venture capitalists, cross over funds, and pharmaceutical and biotechnology companies, I called up another old acquaintance, Christopher Henney, chairman of the board of Oncothyreon and co-founder of Dendreon. He and Robert Kirkman, president and CEO of Oncothyreon, immediately understood how protocells could enhance both their pipeline, as well as open up valuable partnerships with other drugmakers.

Because of the great synergies we saw between our two companies, we are announcing today that Oncothyreon will acquire Alpine Biosciences. With the combination of Alpine's protocell technology and Oncothyreon's expertise and promising clinical stage products, I believe together we are poised to revolutionize medicine in ways that may seem far fetched today, but just like immunotherapy, will become a reality.

This is just the first step in devising true "next generation medicines" -- medicines designed and deployed using protocells to attack any health problem, no matter how difficult, at the genetic level. It's thrilling to be part of the beginning of this process, and just like with immunotherapy and Provenge, we are starting down the road toward devising many new, "impossible" ways to help patients.

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