

To: Professor T. Michael Duncan  
From: Adrienne Scott  
Date: March 3, 2014  
Subject: Dr. Todd Zion

Dr. Todd Zion ~~received-earned~~ his B.S in Chemical Engineering from Cornell University in 1997. After graduating, he worked as a polymer development engineer at Eastman Kodak Company and developed many patents for polymer particles used for imaging applications. In 1999, Zion pursued a PhD in Chemical Engineering at M.I.T. As a graduate student, he focused his research on ~~once-once-a-a-day~~ glucose regulated injectable insulin. Using this research as a starting point, Zion cofounded SmartCells Inc. and worked as President and CEO of the company. In December of 2010, Merck bought SmartCells for over 500 million dollars.

Dr. Zion began by introducing the fundamental idea and development process of SmartCells Inc. After his research at M.I.T, Zion assembled a small, focused team that worked together with the specific goal of creating SmartInsulin. The technology of this insulin can be traced back to the fundamentals of chemical engineering, such as kinetics and process control. The key to the SmartInsulin is the designed sugar molecules that are attached to the insulin. Because proteins, called lectins, bind to glucose in the blood, they can also bind to this designed sugar molecule and ~~cause <weak verb> deactivate~~ the insulin ~~to become inactive~~. When the glucose concentration is high, the glucose displaces the insulin from the lectin molecules and therefore allows the insulin to control the high glucose level. Essentially, SmartCells created new insulin that can be injected normally, but will not cause hypoglycemia. The important development stages for the creation of the insulin were filing patents to protect the technology and animal testing. However, to sell the drug ten years of FDA approval and over a billion dollars would be needed. Knowing this, Zion invented the technology to sell to a pharmaceutical company and Merck was the highest bidder.

After explaining the development of SmartCells, Dr. Zion shared his perspective on ~~the-his~~ choices ~~he made~~ and offered advice for current undergraduates. There were three main reasons he worked in industry after his education at Cornell: there was a robust job market, he needed practical experience, and he needed a break from school due to “educational fatigue”. In industry, researchers with doctorate degrees inspired him to pursue a PhD because he admired the way they approached problems and their technical self-reliance. For students considering graduate school, he recommended involvement in undergraduate research, developing relationships with faculty, and taking the GRE before leaving Cornell. Zion also noted that undergraduates should not to stay more that two to three years in industry after college if they want to return to graduate school.

For students interested in a more ~~business-business~~-oriented career path, Zion shared the challenges and benefits of his business career. The challenges included making payroll, raising money, hiring and firing employees and catering to shareholders and grant agencies. However, there are also many benefits of being a CEO. Zion can quickly test ideas with minimal restraint, ~~make <weak verb> his own decisions~~ ~~decide independently~~, and have the chance of sharing the profits of his success. He also emphasized modesty and not being afraid of making mistakes. Dr. Zion closed his speech explaining that college is only four years of a career that will probably span more that 45 years. The time and decisions made at Cornell are important, but if necessary, there is always time to make adjustments.

Overall, I found Dr. Zion’s talk both informative and inspiring. The details of his decisions and the advice given convinced me that working a few years in industry is valuable experience before attending graduate school for a PhD. I now feel that gaining the experience working in industry can create a focus that I might not possess right after my undergraduate education. I felt that Zion organized his talk well and highlighted relevant advice that will be extremely useful for me in the future.

Reviewed by Jennifer Castor

Excellent memo!