

Delivered to the graduating class of Chemistry students 2010, at the May Convocation at The University of Illinois, Champaign-Urbana.

### **“Education and Beyond at The University of Illinois.”**

Elaine Fuchs

It is a particular honor for me to give this convocation address to you, the Chemistry graduates, because you will be receiving your degrees from same Department and University at which I received my BS nearly 40 years ago. I regrettably left for Europe that Spring rather than participating in the Convocation, so I'm pleased to have been invited to this one. I also know how much you will cherish this moment in years to come. Moreover, having received an honorary doctorate in the Biological Sciences from the University of Illinois in 2006, and having spent the last 30 years of my life immersed in a scientific career as a professor, first at the University of Chicago and now at The Rockefeller University, this honor for me today takes on all the more significance.

It is somehow both strange and comforting to return to the halls of Ida Noyes and Altgeld Hall and seek out my favorite sofa in the Illini Union. It was also nice to see that the Red Herring is still here, as it was when I was a student. However, the folk songs from Dan Fogelberg's guitar are now only a faint melody in the wind. It was also with fondness that I checked out the quirky main library which when I was a student had been built underground so that the shadows of its walls would not harm the 100 yr old corn field on campus. In time, each of you will bring to life your own memories as you pass through this great institution.

Over these past 143 years, The University of Illinois has maintained a long-standing tradition and reputation for outstanding science and teaching. You are here today to join the ever-growing community of men and women who now can name these quadrangles their alma mater.

You are among the privileged who will come before your family, friends and loved ones to receive your diploma. But what does this diploma mean? What does it mean to have received a University of Illinois education? Is it that you have successfully learned your thousand facts, read your hundred or more books, passed your hundred examinations? What does it mean to have achieved an education here? What I am going to say in response to these questions is not new any more than my questions are new. The things I want to say here are common knowledge in this gathering, and yet it's important, it seems to me, that these things be said today.

Your education has given you perspective, it has taught you how to think, not what to think. It has taught you how to think for yourself, to develop your own ideas, to be creative and imaginative in your thinking. You are leaving behind the world that was created for you, the confines of a life which, however admirable, was not a life created in your own image, but one in which you existed. Your education has now given you the newfound ability to sculpt your own life. The foundation of this acquisition comes from many hours of classes, lectures, reading, conducting laboratory experiments, writing papers, and lots of talking and listening, from which you have begun to orchestrate a life and a career that is distinct from that of your parents, friends, teachers or professors. In your courses at The University of Illinois, your professors have introduced you to some great chemistry, physics and mathematics, but also, hopefully, some great literature, philosophy, art, history and music as well. They have given you a taste of scholarship and genius. They have unveiled the brilliance of Rene Descartes, Benjamin Franklin, Albert Einstein, Charles Darwin, Marie Curie, Linus Pauling, Edwin Krebs, Phil Sharp and EJ Corey, the last three of whom either received their degrees or taught at your alma mater (and received Nobel Prizes).

With the degree you are receiving today, you've already got a head start on Benjamin Franklin, who was born 300 years ago, and had less than 2 years of formal education. And yet in his lifetime, Franklin became an accomplished [scientist](#), [inventor](#), [statesman](#), [printer](#), [philosopher](#), [musician](#), and [economist](#). Throughout his life, he never rested on his laurels; rather he looked ahead to how he could improve his mind, learn more from others and contribute more to the society. He was an immensely talented and original thinker, who was open to ideas and change and who was not afraid to speak out when he felt the society could also benefit from change. In his lifetime, he moved from a position of slave owner to freeing his slaves, and to urge others to do the same and to make education available to blacks as well as whites. In his lifetime, he argued that the society should learn from their hated enemies, the Iroquois Indians, who had an interactive and in some ways democratic tribe. He was a strong advocate of women and the importance of bringing them into the fold of decision-making processes in government and society. All of this was in the earliest stages of the founding of our nation.

Of course Ben Franklin always had a way with words as well, and one of his comments which bears special remembrance at today's event is

[“A learned blockhead is a greater blockhead than an ignorant one.”](#)

So mindful of Ben Franklin, let us all remember that the importance of your education and your degree received today is not to take this as an end-point, but rather as a starting point for further developing your logic, scholarship, achievement and to meet your responsibility to your Nation and this world. The great pioneers of their fields, such as Ben Franklin, serve only as examples, if not exemplary ones, of what is possible in life and what is the meaning of a career.

After four years at the University of Illinois, each of you has begun to develop your own interests and directions, your own image of your future. Perhaps the initial spark came from a special professor who conveyed to you his or her knowledge with unusual clarity and with a passion both for teaching and for the subject taught. For some of you, your education may have sparked a new interest and changed your path of inquiry. For others, your education may have strengthened your convictions about a field in which you already had an interest. For all of you, your studies here have broadened your horizons and enhanced your vision, whether this is something that you already appreciate, or whether it is something that you will come to appreciate in the years to come.

For you have been embracing here the extraordinary opportunity to learn that learning has no boundaries, and that it is always there for the taking. The University of Illinois at its best has emphasized to you that what matters more than answers are questions and how they are formulated. Hopefully, they will make the familiar strange and the strange familiar as you challenge the limits of what you can accomplish in your life.

My own profession is no longer a chemist, but a professor of biology. I study the human skin. Through elucidating the normal functions of the skin, my laboratory has been guided to the genetic bases of different types of inherited and acquired disorders of the skin, ranging from severe blistering disorders to skin cancers. We are now exploring the many possible clinical uses of skin stem cells and trying to understand more about the differences between adult and embryonic stem cells of the body. This is a far cry from solving Hamiltonian equations and NMR spectroscopy. Although I never took biology at the University of Illinois, I credit my education here for teaching me to pursue my passion, rather than what I was trained to do.

Your education now gives you the ticket to march to different drummers. You now have the knowledge to water and tend the seeds of your imagination. Indeed, when I look at my own students and postdocs, some of their most exciting results have stemmed from experiments devised as a consequence of questioning preexisting notions and challenging dogma. Such signs tell me as a professor that my students and post-graduates are moving beyond the boundaries of what I can teach them myself.

In my lifetime, I have had the wonderful opportunity not only to be a professor at two great Universities, but also to be a part of a veritable revolution in biology and chemistry. In his autobiography, The Statue Within, Nobel Laureate Francois Jacob writes about a 1953 conference he attended at Cold Spring Harbor, where he had just heard another soon-to-be Nobel laureate, James Watson, present the structure of the double helix of DNA. Jacob remarked "One of the oldest problems posed since antiquity by the living world, heredity, had just been resolved in the properties of a molecular species... By all indications, it was a turning point in the study of living things. It heralded an exciting period in biology."

Now over 50 years later, Jacob's word "exciting" seems like an understatement to describe the period in biology and chemistry that we entered. The structure of the double helix has led to an enduring revolution in our understanding of how cells function, in the bases of human diseases, and in improving human health through prevention and improved methods for disease diagnosis and treatment. It has led to dramatic advancements in agriculture, and offers new potential for saving endangered species, for protecting our ecosystem and for developing new and safer forms of energy.

But with the great advancements made in chemistry and biology over the past 50 yrs come new and justifiable fears and concerns about the potential misuse of what is being learned. Indeed, for the world of science to be a successful one, it must be a science of the world. It must be a science that embodies concern for the world of this millennium. Your education has taught you to be morally and ethically responsible, and to bring philosophical reflection into your chosen profession, your community, and your life as a whole.

Let me say a final word, in closing, on the profound impact that my University of Illinois education has had in shaping my own life as I'm sure it will also shape your own. I came to the University of Illinois in 1968, and I've

never left University life since. Rather than learning from my professors, I now learn from my students. So, just like Benjamin Franklin, enjoy the moment of today, cherish it, embrace it. But challenge yourself, pursue your passion, and treat this education as a step in the right direction to a career not just for you, but for the world around you. And continue to learn not only from those older than you, but also from those younger. I extend to you, and to your proud families and loved ones, my most heartfelt congratulations, and share with you the excitement of your next steps in life.