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# UC grad students drive innovation, merit state aid

Students will lobby in Sacramento for more state support

Graduate students do groundbreaking research, help create jobs

They are unbound by the need to produce quick profits or results

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President Barack Obama joins students and faculty giving the UC Irvine anteater sign at commencement in June 2014. BRUCE CHAMBERS, Associated Press file

By Julius Edson

On Wednesday, I'm taking a break my from chemical engineering research to join other UC graduate students in Sacramento. Our message to lawmakers: Graduate students are the engines that drive California innovation – think Tesla, but a whole lot cheaper.



California's investment in University of California graduate students is a bargain and merits more state support. We create roughly 500 new inventions annually and launch startups that support 3,500 California jobs and create \$520 million in annual revenue. The hours of blood, sweat and tears (and there are always tears) involved in creating these inventions and startups would not be possible without us.

Julius Edson Photo by JILL CONNELLY

I chose to do my Ph.D. specifically with the hope that I might be able to create something that will help people around the world. A lot of people think of doctoral research as a long slog toward a dissertation. I saw it as the fastest way to make the biggest impact I could.

My research focuses on creating new antibiotics that can treat drug-resistant bacteria such as MRSA and tuberculosis. I have developed a therapy that uses tiny particles of ground shrimp shells to destroy the bacteria, together with a dose of gene therapy to disrupt its production of proteins responsible for drug resistance. The approach has other benefits. Unlike antibiotics, which have to be taken for more than a week, this is one and you're done. And you don't have to do two months of yoga to get your immune system back in order.

This is just the kind of crazy approach that would appeal to a lifelong sci-fi nerd like me – and would not have been possible without the creative freedom that an academic research setting provides. Graduate students are unbound by the need to produce quick profits or results.

Grad school offered me the opportunity to try out an idea that seemed far-fetched. It also gave me access to state-of-the-art technology and the help of leading scientists to catapult my idea into reality. I have filed a patent on my technology, and hope to eventually commercialize my work.

But perhaps the most rewarding aspect of my time as a graduate student is not those specific accomplishments, but how I've been able to help bring along others. As a graduate student, one cycles between student and teacher daily. I teach, mentor and inspire undergrads, while being mentored and inspired in return by my faculty advisers and others.

If you agree that inspiring undergrads to think big about their future is a worthwhile cause, and if you value out-of-the-box problem solving, then I hope you will join me in telling state legislators that graduate research is an investment well worth making.

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