UC San Diego
UC San Diego News Center

By Judy Piercey Nov 15, 2012

UC San Diego's Innovative Researchers to Explain Why They Do What They Do at Founders' Symposium

As part of UC San Diego's Founders' Day celebration, the Founders' Symposium on Friday, Nov. 16 will feature six innovative faculty members offering brief talks about the world-changing research happening on our campus. The event is sold out, but overflow seating will be available on a first come, first served basis. A standby line will begin forming at 4 p.m. and previously registered attendees will be given seating priority.

This is the third in a three-part *ThisWeek@UCSanDiego* series that features each speaker and their work, passions and personal insights that will give you a hint of what you will learn at the Symposium. More information is available at founders.ucsd.edu.

Todd P. Coleman, Professor, Department of Bioengineering

Can you tell us a bit about your background?
I'm from Dallas, Texas, and I attended the University of Michigan - Ann Arbor, where I earned a B.S. in both electrical engineering and computer engineering. I was interested in wireless communications and continued my graduate studies at MIT, where I received a Ph.D. in electrical engineering. I then worked as a neuroscience post doc at MIT and Massachusetts General Hospital, conducting research on the intersections of neuroscience and applied mathematics. I then built upon this interest as an assistant professor position at the University Illinois, where I developed new methods to use signal analysis and neuroscience for brain computer interfaces. This led to collaborations with material scientists to build a new type of minimally obtrusive sensing technology, the tattoo electronics. I've now been here at UC San Diego in the department of bioengineering for a little over a year.

What's something people don't know about you?

I love to exercise and play sports, and I enjoy music — for example, jazz, R & B, and hip hop. When I was a postdoc, I was aspiring to be a DJ on the side, with a set of turntables and all.

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What will your 10-minute discussion be about?

"Wireless Tattoo Electronics" is the title of my talk. We have developed a sensor that is virtually invisible to the observer or user. You don't feel it on you, and it doesn't impede your natural daily actions. Yet this wireless sensor, embedded in a temporary tattoo, can pick up relevant information for a range of applications from monitoring premature babies in the ICU to monitoring brain signals for mind-reading applications that facilitate self-expression, education and productivity in society.

Why do you do what you do?

I like the idea of making what we thought was science fiction yesterday a reality tomorrow. I also really enjoy solving problems that require perspectives from the intersection of many disciplines, especially when it provides fundamentally new capabilities that we could have never imagined. For example, our research on tattoo electronics is blurring the distinction between what is biological and what is not. I envision making technology intimately connected to us—so that it essentially becomes an appendage.

What is fun about your work?

I really enjoy the creativity that is needed to solve some of these problems, and how we have to re-think how we were trained, to merge understandings from seemingly different disciplines and implement them to come up with a design that is integrated with biology, yet still works from an electronics perspective. UCSD is very unique—there is an incredible engineering and wireless technology infrastructure, our bioengineering department is No. 1 in the country, our core biology and core neuroscience programs are cutting edge, and on top of that, we have a first-rate med school. I work closely with all areas. There are not too many places in the world where you have one environment with strengths in all these areas—where in addition, you can walk in shorts to all these different facilities within 15 minutes.

What is exciting about your work?

The immediate, practical use of our research is exciting. For example, our campus is home to one of only 10 neonatal neuro-intensive care units in the country. By collaborating with Mary J. Harbert, the director of neonatal neurology at UC San Diego, we gained insight into the importance of baby monitoring and are working on making neonatal brain monitoring more accurate and efficient. We believe this project will transform the state of care of neonate brain monitoring, not only in the hospital but perhaps also at home. The medical information will be much easier to acquire, and it will be yielded in a more continuous, richer and useful manner.

Why does your work matter?
This will allow people to basically put a computer in a tattoo. Its capabilities of sensing and relative invisibility and wireless functioning can contribute towards a healthier body and life. The possibilities are endless.

Why should people come to see you on November 16?
It will be fun and entertaining. Things that we thought were impossible or could only exist in science fiction are actually happening right here and now. It's mind-blowing!

Valerie A. Ramey, Chair, Department of Economics

Valerie A. Ramey

Can you tell us a bit about your background?

I grew up in the Panama Canal Zone, where my father worked for the Panama Canal Company and my mother worked for Naval Intelligence (before I was born). We moved to Tucson, Arizona when my father retired and I went to high school and college there. I came to California when I started the Ph.D. program at Stanford and have lived in California ever since. My husband and I met when I had just graduated from high school and we were married a few years later. We did our undergraduate work together at the University of Arizona and went to Stanford together to earn our Ph.Ds. Today, I'm professor and chair of the department of economics at UC San Diego and a research associate of the National Bureau of Economic Research.

What will your 10-minute discussion be about?

“Can the Government Spend Us to Prosperity?” is the title of my discussion. Governments in many industrialized nations are facing the difficult choice of either adopting more stimulus programs, which will add to their already high deficits, or reducing their deficits by raising taxes and cutting spending, potentially throwing their already weak economies into another recession. I will discuss what we can learn from history and why there is so much uncertainty about the potential effects of these two paths.

Why do you do what you do?

I love gathering and analyzing data to try to answer questions about how the economy works. I particularly like constructing new data sets and new data series so that I can be the first to analyze them. So much macroeconomic research re-analyzes the same old data over and over again in the hopes that it will reveal something new. Being the first to analyze a newly constructed data series is like being the first explorer to step foot on a new land.

What is fun about your work?

Much of my work involves research on historical documents. In my research for “A Century of Work and Leisure,” I spent a lot of time reading various dissertations and studies from the early part of the 20th century that used time diaries of farm housewives, school children and others so that I could understand how time use changed. When I read about their daily routines, I really felt like I was peering into the private lives of ordinary people a hundred years ago. For my government spending research, which covered 1939 through the present, I read weekly periodicals and newspapers to create new statistical series on what businesses and ordinary people were expecting to happen after major military events. It was enormously time consuming but reading the news of the time as it played out week after week made me feel like I was living through World War II, the Korean War, the Vietnam War and 9/11. Of course, I knew how things would turn out, so I felt very prescient.

What is exciting about your work?

The most exciting thing about my work is its relevance to current policy-making debates. I receive many calls from reporters asking me about my work; I have also served on a number of panels discussing fiscal policy.

Why does your work matter?

My work matters because it increases our understanding of how the macroeconomy works. This understanding is crucial for forecasting where the economy is going, as well as for making good policy recommendations. A year ago, I served on a special panel of the Congressional Budget Office and presented my work on government spending. The director of the Congressional Budget Office told me that they changed their forecasts based in part on my work.

Why should people come to see you on November 16?

People will learn a little about the ingredients that go into the quotes they see by policy-makers and journalists on “what economists think” about particularly fiscal policies. They will also learn how much uncertainty there is about the effects and that glib columnists are over-simplifying the debate.