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**"Catch the Next Big Wave": UC San Diego Technology Transfer Symposium**  
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Thank you, Jane [Moore], and welcome all of you to this typical San Diego day. You're here about biotechnology and technology transfer, and the first person who talks to you is a physicist. I'm proud of that. I'm really pleased to welcome you here and to have the opportunity for about 10 minutes to share some thoughts about the future of biomedical innovation. And I'm delighted to precede the four speakers who are friends and colleagues of mine. We have shared at least the last 20 years at UC San Diego. They are really, really creative and very smart guys, and they are personal friends.

I want to follow up on Jane's introduction by telling you about my own history because it's relevant to what we're going to talk about and discuss this afternoon: how I moved my own ideas in technology as a technology inventor from one coast (the East Coast), and one era to another coast (the West Coast) and a totally different era.

I started my scientific career in the late '60s at the AT&T Bell Laboratories at a time when U.S. commerce achieved world dominance. The U.S. basically owned the world at the time, in my opinion, and you can debate this if you want, but you know, you'll lose.

It was the era of R&D, research & development. There were very large industrial laboratories, and I was in one of them at Bell Laboratories, which spun out an enormous amount of technological innovation. In some ways, we were too successful. Over time, as industry spread new technology around the world, the competition became global, and it became fierce. U.S. companies were no longer dominant; they became global companies, and in my view, they became too large. Industry began to shrink its research and lower its sights towards short-term goals and quarterly statements rather than decadal goals.

I realized that in the 21st century, American universities would have to fill some of that void of research that had been done in industrial laboratories in the United States in the 60s and 70s and 80s. And universities would have to take some of the responsibility for the stewardship of the nation's long-range vision and intellectual property.

So I moved. I left a declining power house – it was declining for those that remember the history, AT&T was falling off the edge of the table – and I came to an emerging powerhouse, the University of California at San Diego. This was 1990 or so, and it was completely liberating for me. At Bell Labs, we had pursued a single mission of research to contribute to the long-term health of a private telecommunications company. At UCSD and in public universities across the country, we pursued three interlocking missions: education, research, and public service to benefit the public in an array of ways and a wide variety of fields, much broader numbers of fields and interconnections of fields than I experienced at Bell Labs.

And yet, as we entered the 21st century, we still had an R&D mindset: research & development. It was all called R&D. We would pursue it and demonstrate its value, then you'd hand it off to somebody and hold your breath and hope it was successful. That was the mode; you passed it off to somebody else who was responsible for actually taking it to products that would benefit society.

That R&D era ended in my mind on September 11th, 2001. I will never forget, and a lot of you will never forget, the sight of the World Trade Center buildings collapsing, and watching

first responders trapped in the buildings. I knew as a research scientist in the telecommunications field that we had developed state-of-the-art wireless devices that could have kept the responders and people in the buildings in touch with dispatchers on the ground who could tell them how much time they had left. But those devices never made it into the hands of the responders. I remember looking on television thinking, "No! No! We know how to do that." But we didn't do it. And I'll be haunted forever by that observation.

That single day in my mind caused a transition to a new era. We transitioned from R&D to RD&D: research, development, and *delivery*. We could no longer afford the luxury of handing off those responsibilities to somebody else. We had to move discoveries from the bench to the public domain efficiently, effectively, and as quickly as possible. To do that, universities had to work more closely with companies, more closely person to person, and also with the end users whether they are first responders in a crisis or bedside healthcare professionals saving lives and responding as quickly as they can.

Those who have developed innovations need incentives for their work, of course. If they invest time and resources in their process, they should expect an opportunity – an opportunity, not a guarantee – an opportunity to get a return on their investment. Universities also need to show a return on their investments, such as their investment in research. This is true for the public universities, I know this. I've both had glorious times, and I've been beaten up seriously, as a UC president when legislators, the governor, and taxpayers insist on getting economic and societal value for what they invest in higher education.

This new era of RD&D has forced all of us in the world of science and technology to change not only how we work but also what we think about our work. It's just a different era. We can no longer afford to operate in silos, I don't like to hear people say anymore, "Oh, I just do basic research." I'm afraid I'm pretty rude to those people now. We can't put up those walls. Listening to people say, "Oh! those industry people." Or, "Oh! those academics." We're in the same room now.

This new era of generating new knowledge that will serve the public and benefit society is a team sport. Full body contact. And no one knows that better than technology transfer professionals like Jane and her staff at UC San Diego with whom I've been working -- in fact we just submitted a couple of patent proposals, and we're working with small companies. I've watched with great pride as that unit has grown over the last 20 years. Our four speakers today, Larry Goldstein, Shu Chien, Larry Smarr, and Nick Spitzer, are also long-time Tech Transfer clients. Each of them is a giant in his field, and together, they constitute an all-star team that exemplifies what I am very proud of at UC San Diego. They're world leaders in technological innovation.

Let me end with a few words about something that the four of them have in common, something that I hope that we all have in common, and something that you have to remember all the time. When you listen to the presentations today, you will undoubtedly think, "Geez, these guys are really smart." They are brilliant and ingenious. But above all else, you will sense their passion – their passion for knowledge and how they're using that knowledge.

As a physics professor who teaches graduate students, I can tell you that among the young scientists I deal with, those with the greatest potential aren't necessarily the ones with the highest measured IQ, whatever that is, and the most impressive publications. In every generation, and in every field, the people who have the greatest passion for their work will

have the biggest dreams and take the wildest risks. Passion is what drives innovation. That's why they're successful, and that's why we're here today.

Our session moderator has brought passion to his work as an intellectual property attorney, and he has fought the good fight for startup companies and universities in this region. He has an outstanding track record in patent and trademark protection, but he is, at heart, a scientist with a degree in electrical engineering. Not quite a physicist, but almost. He's dealt with patents that have been licensed, and forced, and sold. Please join me in welcoming Steve Fallon from our Symposium's gold sponsor, Greer Burns, & Crain. Thank you.