What is your area of research here at Stanford?
I came to Stanford to see if I wanted to be a professor, and I started a post doc in physics, which was my graduate training in quantum optics. As soon as I came to Stanford I decided to make the most of my time here. I started taking courses in the Design School, and in the Business School. I was inspired by the idea of creating a product and selling it, the idea of changing and improving the world as opposed to just writing about physical laws. I switched post doc research, and currently I'm working in BIO-X program which encourages much more multidisciplinary research in which they try to match up people from different disciplines, so that they could work together on new ways of solving the problems.

Personally, I was very interested in entrepreneurship and doing start-ups. What I found is that there are almost 2000 post doc researchers at Stanford of which 2/3 are in bio disciplines in the School of Medicine, but there was no community such as for postdocs to come together and share their aspirations and their ideas, or information on how to do a start-up? Where to start? What courses to take? What information is critical? A lot of people who were coming into the field wanted to make a change, but they were not really sure how to get started. That process didn’t exist at Stanford. But at the end of their 2 to 5 years term at Stanford less than 20 percent are going to faculty positions. They are not preparing for alternative career paths. I was lucky because when I came I knew what I wanted to do, and at the end of last summer I got together with a few post docs. We created a group or a community for postdocs to help them network with each other, to share information, and to invite industry leaders and entrepreneur leaders who would just give motivation, or inspiration, or education in order to try to kick start to the post doc entrepreneurship movement.

A Culture of Gadget Gigs

What are the specifics of the US innovation system?
It can be a very short or a very long answer. I’ll try to keep it short. There are several things that exist in the US that support innovation. I think I’ll bring them up in no specific order. First, it would be patents — the ability to have your idea and protect your IP. That gives you enough confidence to experiment with various technologies, with the knowledge that if you go and open something new, you’ll be able to take it to market without someone stealing that from you.

The second thing would be an appreciation for new technologies. In America there is a culture of, I guess, gadget gigs. In other words, Americans love gadgets. If you go with a new iPhone or a new iPad, you already have a customer base for it. Whereas there are other countries in which such technology focused innovation might not be of much interest to the population. But again, part of the entrepreneurship is finding an area that you are interested in, understanding how that relates to the needs or desires of your market, understanding the market. You need to be really brave and try to change people’s habits in that market. This is where the most exciting disruptive technologies come from.

The third thing that America has, which is very unique, especially in the Silicon Valley, is the funding system that supports, encourages, incentivizes innovation. Luckily for us laws were made and tax policy was changed in order to encourage venture capital funding without which there arguably wouldn’t have been the sort of the innovation that drives the American economy. There would have been no innovation economy.

And finally, the last thing that comes to mind is culture. There is tolerance; not just tolerance for failure, but a celebration of failure, specifically in the Bay Area, where if you go out, try something new and fail — people understand that it was just your first time. People aren’t looking at your first or second venture as an indication whether you are good or not. It’s not pass/fail, its more organic, it’s more natural, it’s a process. There is a lot more encouragement. People would celebrate your courage because they know how difficult that is.

To you mind, how did this culture evolve? Why?
That’s a very tricky question to answer. I mean, we are in the West coast, it was kind of a Wild West, there were interesting things happening in the history. It’s a difficult question to say how and why, but specifically in the West coast, and specifically in Northern California, there is a tendency for enjoying the process of understanding people’s emotions.

What are the major participants of the innovation process in the US? What agencies are responsible for innovation policy?
For innovation policy itself you have, of course, the US Patent and Trademark Office. Second agency, if you want to do medical devices, for example, is the FDA. You need to get FDA or governmental approval in order to gain a larger market with clinical trials. That’s a very tricky process. We understand the safety regulations but, again, that tends to suck away incentives from bio entrepreneurs or medical
entrepreneurs. The third agency would be insurance companies and hospitals. If you want to make a clinical device — what the hospital’s reception is going to be? What doctor’s interests are? What the patients’ interests are? Do you get reimburse from insurance or do you get it directly from the patients? It’s customer specific. The universities, I think, play a large role in how you educate your upcoming entrepreneurs. And, of course, US taxation plays a big role in incentivizing. It influences people’s decisions whether to take the risk or not. And, I guess, on the top of my head the last thing has to do with the culture. Is there a support system at least of some sort for fail start-ups?

How important are innovation parks and business incubators?

Personally, I think they are very important. They provide a space in which the community can be built, which, again, fosters the culture we were talking about, culture of experimenting. At the same time it gives people the access to tools, they would allow them to do things even if they don’t have the capital. So incubators are very important. They allow people to see things that they wouldn’t have seen otherwise. They just give access to that sort of a community, environment, and atmosphere. I’ve often heard of people who are sort of lost in life, they would go in one part, where they are not happy, and then in this whole region you can do something differently. You can have an idea and then play with it, and look for people and make friends.

What are the latest trends in innovation policy?

I do know that the immigration is becoming easier. In the Bay Area, I think, over 20 percent of the founders of start-ups are of a foreign nationality. That’s been a large incentive.

In what way it became easier?

They are trying to put into law this new start-up visa in which if you have a business idea, then you can apply for a residency or something of that sort. It’s not been approved yet; hopefully it will be because it sounds like a really good idea. If you have a start-up idea, there are two possibilities: either you already are in the US on H1, or you are not in the US. In either case if you have a start-up idea, if you can show that in a certain amount of years the company can potentially earn over 1 million dollars in revenue and hire between 5 to 10 employees, and that you can get at least 20 thousand dollars investment, then you are eligible to apply for this visa.

But what if the project fails? Failures happen all the time...

That’s why I believe it will be more of a permanent residency track. In that case if you fail then they won’t kick you out because, at least, you were good enough to get in in the first time, and then you will try again and again. So, I think, once you get this visa you are secure; you are good to move forward and try again and again.

What helps and what hinders the development of the US innovation system?

Right now I want to do bio entrepreneurship innovation. I have a background in physics, and I wanted to do something that was more applied, which in some way touched upon my technical background. For me personally, clinical trials and the FDA is a very complicated procedure, it’s a very intimidating procedure. There’s a lot of evidence showing that it could make a lot more sense to do these trials in other countries and to try to look for markets outside the US. In that sense, unless America maintains competitive policies, bio entrepreneurship might fall behind. That is one of the hindrances.

The other hindrance would be patent applications. Applying for patents is a bit of a complicated process and it’s expensive. The process needs to be streamlined, and there should be more collaboration in trying to get reasonable new patents in place.

If a research takes place in a university, the IP rights would belong to the university, right?

Right, if you do have an idea that you come up with at the university, then it’s the university’s responsibility or privilege of owning that patent. But at the same time at Stanford, and other universities as well, universities are reasonable about it. So you did your research in a university, the university will own the patent but on the flip side the university will deal with the patent office and not you. You don’t have to worry about it. At the same time they understand how much money they can get from you. They understand that if they take all of it, no one would ever do a start-up, because there is no money in there for entrepreneurs. So they will be very reasonable about doing that. What I was talking about previously is that if you are an employee, if you create something at your own time, then you will have to deal directly with the patent office. And that might be challenging.

In what areas the results of innovation were the most impressive?

I guess in the last 15 years it would be digital and online — the whole web space. For me, I think, it would be communication. Innovations in web space allowed for communication I don’t think ever existed before. Its easy to communicate, you can transfer ideas, sometimes emotions, across boundaries.

What is your forecast for the development of the innovation system in the US?

Currently America is in a recession. Its a very tricky period. There’s a very large deficit. The government is trying to push through an increase in the credit limit in order to continue with the stimulus packages, which are created in order to encourage buying and investment, in order to encourage the economy to continue to grow. It’s very tricky because if the economy slows down then innovation is useless because nobody is buying new products. As I said, Americans love gadgets, perhaps, not as much as Japanese, but people need to go out and buy products. If people suddenly stop buying then it could be a little scary. Personally, I don’t think that’s going to be an issue. The American economy has been very robust. People continue to buy mac books, iPads, and iPods whatever happens. I think, and hope, that there will be significant thrust and increase in innovation and entrepreneurship in the bio sector — in ways that we cannot quite foresee at the moment. But it will, probably, be of the same impact and surprise that we had with optic fibers, followed by computers, followed the Internet bubble in 2000. So the next big thing is going to be bio. Also, there needs to be a solution for the growing energy needs, so I see a lot of innovation in energy as well.