

EDITORIAL

Secrets Behind a Successful Career

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"Today, now co-responsible for the new generations of scientists, I often wonder whether the way in which science is organized sufficiently encourages young researchers to pursue unusual research topics."

I would like to give a lesson about something important, a reflection of a few moments about my career, about my life and about my attitude. My request is that young people ask me questions, and by this we showed that we are all somehow connected.

The first question was "Was he expected to win the Nobel Prize"? I said "Ok, how can you be so sure?" This was cleared out with time. In the field of normal microscopes, the wavelength of light, unfortunately, sets a limit to the level of the possible details. This limitation can be circumvented by other methods that make use of the fluorescence phenomenon in which certain substances become luminous after having been exposed to light. In 1994, I developed a new method in which one light pulse causes fluorescent molecules to glow, while another causes all molecules except those in a very narrow area to become dark. The image will be created by sweeping light along the sample. Because of this method it is possible to track the processes occurring inside living cells. And therefore, I held, many times, presentations in Sweden and so on and so far, but I never expected to win a Nobel Prize because the competition is so tough. Internationally is so tough. Many are scrutinized by the Sweden Academy, but only very, very few in the end get the prize. Despite the fact that I said that I knew I was the single potential candidate,

when I picked up the phone on October the 8th, 2014, I was still surprised. I won the prize together with two American colleagues, who were not my collaborators, they were my competitors, very fierce competitors and it was very wonderful. So I can say that I was very, very pleased about that. The next thing after the first call was another in which a Swedish woman asked: "so professor we have to verify a few facts before we announce the facts. Is it true that you were born in Arad, Romania?" I said proudly "Yes, it's true". That was the last fact that they had to clarify and so, as you may have seen this from the announcement, and it is true that all of a sudden Romania, Arad was on the map of the scientific world so I was very pleased about that. I was born in Arad, and I am a German ethnic Romanian from Santana. I said that most people at that time from Santana were German ethnics and I have my cultural roots in Arad, Romania for 250 years. I mentioned that I am also very proud about this fact. When I wrote my biography, I described that the winner of the Nobel Prize, has to write an autobiography about his life and that will be published with the Nobel Foundation. In this biography I wrote about Arad, about the fact that Arad was one of the places in Europe that, over the centuries, were several ethnicities, Romanian, Hungarian, Jews, but as far as I can recall, there were no fascists. People lived together quite nicely.

Another question is: "Was there a trick to winning the prize"? Who ask this type of question? Especially people from the Far East, who write emails like that

* On 26 of May 2016 at "Vasile Goldiș" Western University of Arad, Romania, Prof. Dr. H. C. Stefan Hell had an exceptional lecture. The lecture was in the Aula Magna Universitaria, and was dedicated to students and young researchers, who were present in large number.

and ask “could you give me an advice to win a Nobel Prize”. The answer explain that it’s a kind of weird question but when you reflect about this you can say that it’s a quite normal question. Very often people anticipate some advice on how to behave and what is the right way of guidance. It’s very hard to give a recommendation. Of course there’s no recipe to winning a Nobel Prize. From my point of view, the most important aspect, or the most important ingredient is, from the personal side, to love what you do, you have to be passionate about what you do, you have to really love it, and if you feel that you’re passionate about something you should go and do it, because the passion and the fascination gives you the energy to work hard it makes it worth it. So the most important ingredient is to really love something, and you must be ready to do more for it, to sacrifice more time for it. In a few moments, I will present the second most important ingredient, from my point of view, and it is to be mentioned that this is not just my personal experience, and please notice that actually from many Nobel laureates, said that we must know that many Nobel laureates usually meet sometimes in June in the little town of Lindau in Germany and they share their experiences. That second most important ingredient to becoming successful professionally, were the teachers. At what level? At high school level and then at the university level. So it’s very important to have good teachers that are capable of stimulating passion. Teaches who take their job seriously. I have to mention that I was lucky that I had very good teachers in Santana, where I went to school for the first 8 grades and after that in Timisoara. In conclusion there were many people who were really motivated and they gave young people this idea of “you should do something that is interesting, especially science can be interesting”. From my view, the 60’s, 70’s and the 80’s, as far as I can remember, the education system in Romania was very good, and especially in high schools, the level was at a world level, and that’s clearly a level that’s very desirable. The education system in Romania was clearly capable of doing that, there’s no reason why it wouldn’t be possible.

Also I have to mention “there’s also something else” and so we can say that another ingredient is the ability, the inclination of not taking everything for granted.

If we look at the biographies of prize winners, we will find that many of them have challenged and accepted wisdom.

After that, I emphasis briefly that we must fight for our believes. I said that I wanted to submit my findings to a conference and, of course they didn’t accept it. I submitted it as a poster and they replied “I’m sorry we

can’t accept your poster presentation because we have only 150 or so places”. After many events as such I build up a lot of skepticism and so I have to admit that it was very difficult to survive, even financially and socially, and so I had to fight very hard.

I think “you must think about it”. Maybe some people will think “ok... this would never work so why do we support him”. After I faced this type of problems for many years, another important thing was revealed: “you make your own judgment whether you continue or you drop it”. Often people ask me “Why do you continue? Why didn’t you give up? You could have given up.” So my answer was that I tried to be honest about what I was doing or what I was trying to do. After that I analyzed the reasons from physics point of view and presented these two types of reason. The first one is a fundamental one, if a problem is fundamental, it doesn’t work because there are fundamental obstacles that are part of it. If the idea is a flaw, it’s very important to distinguish between technical problems and conceptual problems because the technical problems can overcome concepts. At that time the problems were just technical and the reason was because people said that they would cure my ideas. There were not conceptual flaws. At some point they even said literally that this concept is conceptually flawed. But I realized that it was not conceptually flawed. It was conceptually correct. This was a very important thing that most of the laureates did. Technical problems usually solve themselves over time.

In a short conclusion I said that “we have to be down with our feet on the ground”, we must have passion for what we do and we must have a solid education and excellent teachers to win the Nobel Prize, and it doesn’t matter where we come from.

Another question that I’m very often asked is about being at the right place at the right time. I remark that’s a good question. Clearly it is a factor, but not in terms of the connections that you make. It definitely helps working with people who are very good and ambitious, although competition is something nobody likes and it’s really painful in the end, but competition it’s sometimes very important because it pushes you. In my case I hadn’t worked with strange people. The danger is that: “if you work with famous people these people very often, have a clear idea what they want to do and this may help you, but it could keep you from making real changes because you are kind of pushed into going into the same direction that the famous person has already designated for you”. I have his ideas, knew exactly what wanted and the advantage was that when the discovery was made it was him who got the credit for it.

Now I downsized my lab because I want to work just in some few directions. Currently I'm not taking on new people, but in a general point of view I will try to find out if the person is really passionate towards, and this is the condition that actually decides. I clarified that education and Curriculum Vitae helps becau-

se it shows that you took care of yourself, but education alone is not enough. I want to find those people that are really interested in doing science. He wants to work with those people that make a difference.

In the end I concluded "It's about science and not just for a career".