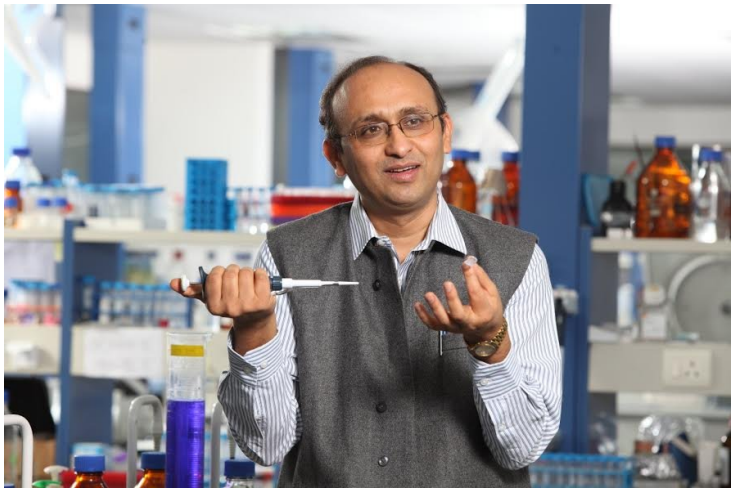
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'Scientists are future investment of our country'

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'Scientists are future investment of our country'



Prior to this, he served as a faculty at NII in the area of Chemical and Systems Biology.

Dr Gokhale holds a doctorate degree from the Indian Institute of Science (IISc), Bangalore, in the area of protein folding and stability. He then pursued his post-doctoral work at Stanford University in polyketide synthases and secondary metabolite biosynthesis.

In his exclusive interview with *BioSpectrum's Raj Gunashekar*, he says that students' interest in research need to be encouraged at a very early stage in their education.

In order to pursue research, he says, the current generation need to understand that passion should eclipse the mentality of making money alone.

His work on the tuberculosis bacteria has great potential for drug discovery and identifying targets, opening up many avenues for pharmaceutical companies.

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Excerpts:

Q: Can you tell us something about your current research activities?
Dr Gokhale: We are in the process of understanding the tuberculosis pathogen, Mycobacterium Tuberculosis (MTb), the one which causes tuberculosis in humans.

What is known about this pathogen is that it has a very complex cell wall surface, completely coated with lipid. This is a very unusual survival method in an environment for a longer period of time. One of the biggest problems in tuberculosis is that, patients have to undergo a six-month therapy with four different tablets, since the bacterium can survive for prolonged time, reactivating itself when needed.

What is not known is how this bacterium itself produces molecules which are very hydrophobic, making its cell wall surface strong and rigid.

During the course our work, we have identified how this bacterium produces these complex molecules. This is the basic discovery done at my lab with substantial amount of work.

In the future, it has tremendous potential in the area of drug discovery and identifying targets. Now, we are in collaboration with many pharmaceutical companies.

Q: According to you, what is the state of scientific research in India?
In 2009, I came back to India from Stanford University. Now, I see a lot of researchers full of energy and vibrancy. I have a very positive outlook right now.

There is tremendous amount of positive energy among young people. We want to be competitive at international level in the area of research.

Q: How do you think pursuing research can be encouraged among students?
One thing which we are unable to change is the classic situation existing in India. Most bright kids in our society are lost to medical or engineering careers, or even go on to do doctorates in the same fields. It has more to do with 'survivability'.

However, pursuing research and taking risks is gaining increasing value nowadays. This is the change that we need to see and very soon, people will realize that in our country. We just need to be patient and watch, since the change is not going to happen overnight.

Q: Do you think our Universities face short-fall of funds for R&D?
Economics is a funny game. It is a cyclic process. There is plenty of money though poverty has been our pain in the past. One cannot ask a scientist to solve today's problems. Then it is not science, its engineering. Scientists actually keep understanding scientific barriers.

Funding is low at this point. But I hope this will change, and people will realize to invest in the future. Scientists are nothing but investment of the future that determines the strength of the country.

Q: How do you think public-private partnerships (PPP) can address the funding issues?
We need to build confidence in the private sectors. The government alone cannot seed, sustain and develop everything. To support public-private partnerships, we need to create the right kind of environment and strengthen the confidence of private companies.

We need to engage with students in their early education system. It has nothing to do with subjects, but teachers.

Teachers need to be respected by giving them great importance and getting them involved in it. They are able to build character and moral of the society and create the road for the students to follow. They need to be given the right pride emphasizing that their job is important for the societal structure.

Q: How can Universities be empowered in the area of scientific research?
Today, we have a huge problem with our universities in India. The universities ecosystem itself poses many issues.

I think we need to somehow make the UGC (University Grants Commission) as an autonomous body. Universities should be provided with better manpower as well.

Q: Are there major differences in India and the West in the way research is carried out?
The level of professionalism and commitment in the West is very high and the systematic problems are very few. Over there, people don't feel that they are doing a lowly job. Whatever they do, they are happy doing it. This is where we need to be professionals. We need to inculcate this in our research as well.

Secondly, it is important to have brighter people around you. In the West, there is a sense of encouragement if another person does better than you. We need to create competence among people. It all boils down to getting the right and bright people, and get them motivated.

Q: Do you think policy-makers can play a key role here?
Right now, there is a huge energy crisis. If we do not have our own solutions and develop technologies, we will have to start importing them. If we do not invest in science, we will have no options in the future, and we will become irrelevant to the world.

Today, it is up to the political parties and systems to understand this. There are short-term and long-term solutions. We need to learn to evaluate every decade. Often very soon we tend to say that we can't do this or that.

The problem in our country is that everybody wants to count pennies. We need to encourage taking risks knowing that there are chances for failures.

Scientific research should not be looked at as a way of increasing one's finances. Risks should be taken and it has to be carefully nurtured. People need to take technical and financial risks in life and policies has to be strongly in place.

Q: Why are students way too hesitant to pursue research as their career?
At the end of the day we get pleasure from what we achieve. For many, money appears to be very miniscule in research and they have a burn-out about it.

On the other hand, when people have money, they have no energy. Our current generation should understand that passion should eclipse the mentality of making money alone.

People are indeed doing well in research and there are plenty of rewarding systems in place. They tend to get extra benefits beyond the normal salary structure, and at times they may not be aware of it.

Parents are making a huge mistake. It is a societal change that we need to bring about. How many engineers are we going to manufacture in our country? For now, things may not change dramatically. But say, 5 years from now, we'll witness a shift in this perspective.

Students have tremendous motivation and it is significant to make them feel good and get inspired from them.

Q: How does it feel to win the Infosys Foundation Award?
It is fantastic to be recognized. It puts you with greater responsibilities, now that people have recognized you. Personally, it is a great delight. This award will have a tremendous impact and it has a cascading effect.

My work was done in collaboration within India with organizations like National Institute of Immunology (NII). We worked as a team and it is great to have friends who are very supportive and contributing to the activity.

Surely awards like this encourage people to pursue research as a career option. You need to demonstrate an excellence for people to follow you. Through this we will be able to reach the younger generation. The media will play a crucial role in conveying the right messages in this regard.

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