

New crop of Indian scientists is world class. They deserve attention, funding

Dr Archana Sharma's journey from Jhansi to the mecca of particle physics is full of firsts. In 2001, she was the first Indian to get recruited by CERN, the world's largest particle physics lab in Geneva. In 2012, she was the only Indian staff scientist involved in the discovery of the 'God particle'. Today, she is principal scientist at CERN where a complex 27-km-long machine called the Large Hadron Collider was fired up again to look for the elusive dark matter and unravel the origins of the universe. Sharma, who recently turned author, talks to Neha Bhayana about her latest book, 'India's Science Geniuses'

■ The book that you recently co-authored with science writer Spoorthy Raman chronicles the work of 30 scientists from different parts of India. What made you choose this subject?

We always talk about science icons like Satyen Bose, Homi Bhabha and Vikram Sarabhai. Very little is known about the new crop of scientists in our country. They are world class, and they need some attention from the public and funding agencies.

■ What interesting back-stories did you discover while working on it?

Spoorthy and I sat through the pandemic period — very early morning for me in Geneva, very late night for her in Canada — to speak to the featured scientists in India, at an earthly hour! We discovered many interesting anecdotes. One such story was that of Dr Nisha Kannan, a young mother. Watching her baby sleep had made her ponder over the role of sleep in our lives. Kannan is looking at how excess sleep in babies helps the growth of neural circuits in the brain. She is working with scientists in Japan, using the fruit fly as a model organism to determine what might be going on in baby brains.



FOR THE RECORD

■ Any chance of potential Nobel winners here?

That's tough to say but one of the scientists we interviewed, Sivapriya Kirubakaran, an associate professor at IIT Gandhinagar, told us about how she found a congratulatory note from Nobel laureate J Robin Warren in her inbox one day. Kiruba-

karan is trying to develop drug molecules to target the notorious Helicobacter Pylori (H Pylori) bacterium found in our gut. Australian doctors Warren and Barry Marshall had won the Nobel Prize for Medicine in 2015 after they discovered that Pylori causes peptic stomach ulcers which increase risk for cancer. Their

discovery was initially met with suspicion and Marshall had to drink a concoction of the bacteria to prove it. In his note, Warren wrote: "I hope that someday, without having to drink H.Pylori, you will receive the Nobel Prize." Kirubakaran hopes she will one day hear her Nobel Prize announcement while she is enjoying a masala dosa.

■ Today, more than 40% of STEM graduates in India are women. Are we finally closing the gender gap in science?

Women (in science) have

come a long way, but we still have a very long way to go. You can still count women Nobel winners on the tips of your fingers. Women are very gradually being recognised as 50% of the workforce to be leveraged in contributing to cutting-edge science, whether it is in research, outreach or education. I think expectations from women have to increase and excellence assumed, thereby empowering and enabling women to unleash their best.

■ Young Indians are busy chasing corporate jobs with big salaries. One rarely hears of research being a field of choice.

Change is always slow and difficult, especially in a country like ours. That said there are challenges of being able to earn a good salary while you are doing research. However, I am convinced that the challenges of finding cures for diseases like cancer, Alzheimer's or innovating to make people's lives better will spur national and international collaboration. And I see in the eyes of youngsters with whom I interact, this desire to make a difference with their careers.

■ You once described yourself as a 'good student with gold medals who lacked practical experience of building scientific instruments' when you completed graduation. Is this the case with STEM students in India even now?

The scenario has drastically changed from the time when I started my career in the 1980s. Young science enthusiasts today can dig for knowledge on the internet, learn from YouTube tutorials and ask questions to any expert in the world. The world wide web, invented at CERN, incidentally, has democratised learning.

■ With the Large Hadron Collider restarting for the third time, tell us about what cosmic secrets you hope to unlock.

What we do at CERN is to recreate the kind of cosmic soup that existed at the time of the Big Bang so that we can study the process by which matter was created. If we assess all that we know so far it tells us that we know only 5% of how the world began. This is because of the behaviour of the galaxies. They move in such a way that there must be 95% more out there which we don't know. That's what is called dark matter.