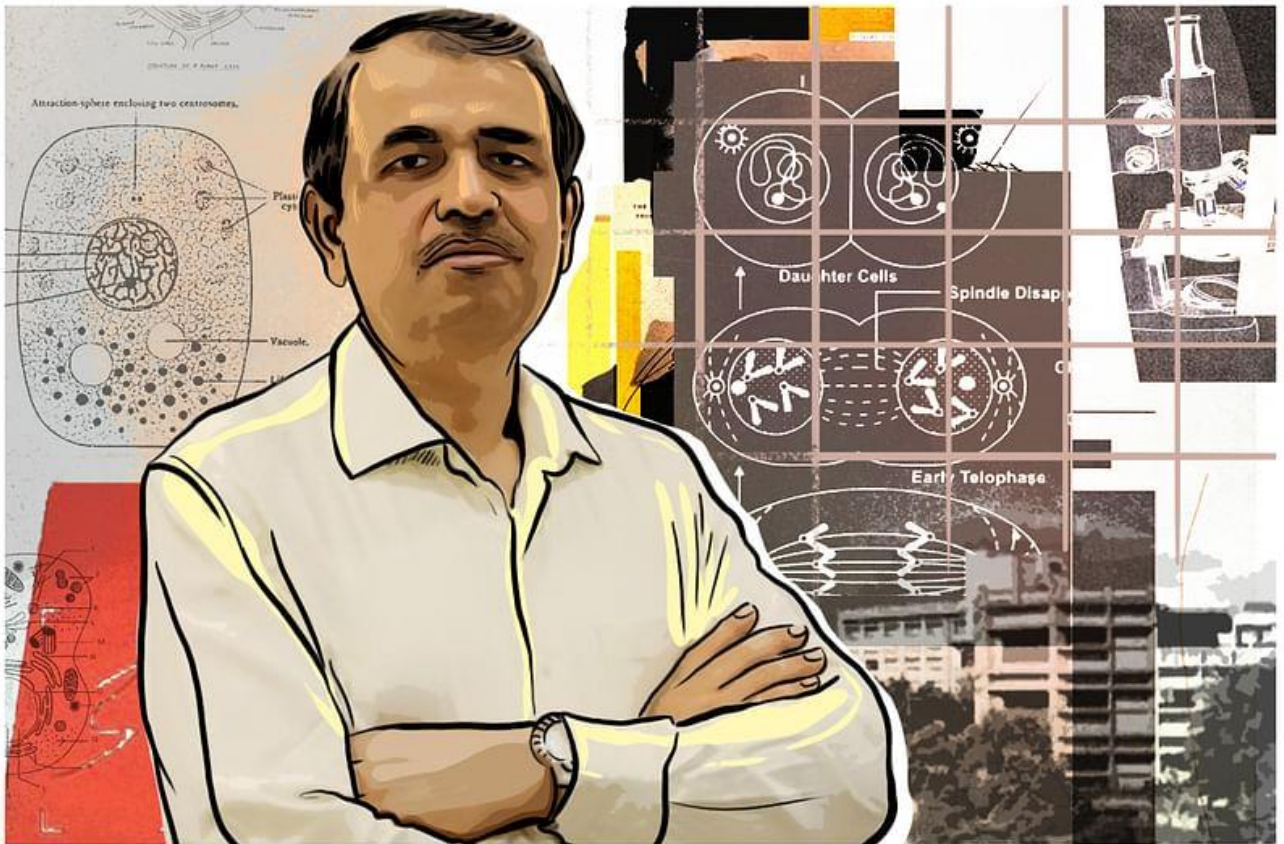


## **LS Shashidhara, brilliant geneticist and NCBS director, puts science next to social welfare**

Shashidhara wants to focus on applied and translational research in collaboration with multiple institutes to ensure a tangible outcome of immediate utility.

**SANDHYA RAMESH**

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L.S. Shashidhara, the new NCBS director. | Illustration by Prajna Ghosh | ThePrint

LS Shashidhara’s priority number one is to break down silos in science and research, and encourage collaboration within and outside the National Centre for Biological Sciences. He’s perfectly poised to do this as the new director of NCBS.

“We need to change the way we do science,” Shashidhara told ThePrint. “Science today is more global, more collaborative, and more teamwork. So we need to build a culture of people working together for a common goal.”

He’s going to set the ball rolling on home turf. NCBS abuts the campus of three institutes—the DBT’s Institute for Stem Cell Science & Regenerative Medicine (InStem), Centre for Cellular & Molecular Platforms or C-CAMP, and Tata Institute for Genetics and Society (TIGS-India). And together they form the Bangalore Life Science Cluster (BLiSC) within the sprawling 1,300-acre University of Agricultural Sciences (GKVK) campus.

“The ecosystem here is one of the best and internationally well known,” said Shashidhara. “My first order of business is to sustain the quality of whatever previous directors like Dr. K Vijay Raghavan and Dr. Satyajit Mayor have created here.” Shashidhara took over as director on 21 February from Mayor under whose tenure NCBS saw an increase in multi-institute collaborations.

Shashidhara’s vision and direction for the institute has the support of its former directors.

“To hit the ground running one needs to know where the ground is. Shashidhara knows the landscape well, both from the inside (he has seen NCBS grow and is a member of its board) and from the outside,” said former principal scientific advisor to the government and former director K Vijay Raghavan, also the institute’s former director.

Such leadership roles, explained Vijay Raghavan, are given to dynamic yet experienced leaders. “Very importantly they also have the ability to get everyone together to embark on an adventure to deal with the very exciting but complex and challenging future that life sciences research and development has,” he added.

Shashidhara wants to focus on applied and translational research in collaboration with these institutes to ensure a tangible outcome of immediate utility — either for a good venture or for public health, for the nation and for the rest of the world.

Such interdisciplinary, multidisciplinary, multi-institute collaborations will also improve quality, increase productivity and benefits, and also diversify outcomes rather than complicate them, he said.

“We have worked together on several projects and he has always demonstrated great ambition and capability to link science to society and societal needs,” said outgoing director Mayor. “He has experience in building those connections in the real world, and it’s a very valuable trait to have.”

### **The record, reputation**

Known in the academic community as simply Shashi, the molecular biologist and science communicator, helped set up IISER-Pune from scratch. He has been involved

in science communication and policy making, and is also a member of all three Indian Science Academies — the Indian National Science Academy, Indian Academy of Sciences, and the National Academy of Sciences, India.

He's worked on plant and animal genetics, and molecular biology, and is notable for his research on the fruit fly and understanding of limb development. He's also made contributions to cancer research and is part of a large collaborative network of researchers and clinicians across Delhi, Pune, and Mumbai, who are working on triple negative breast cancer and understanding why it has a disproportionately high mortality rate in the Indian subcontinent.

Shashidhara's appointment to NCBS has been met with enthusiasm not only from his peers but students as well. His former students describe him as accessible, approachable, and open minded.

"Even as an undergrad student, it was easy to approach Shashi with anything regarding academics or student affairs. As he has been engaging with the early career research fellows with various pursuits, his experience and contacts will greatly benefit everyone on campus," said a research scholar at NCBS, who did her undergraduate studies at IISER-Pune under Shashidhara's tenure.

Mayor says he is pleased and hopeful about Shashidhara taking over the reins from him.

"My hope and ambition for him is that he is able to uphold the commitment to fundamental research while also working on its bearing on society," said Mayor. "I think he has the ability to see his objectives through. He is fully aware of the complexity of how NCBS functions under the TIFR umbrella, and I am hopeful that the spirit he brings will help him build strong and lasting connections in the BLiSC."

### **Dharwad to Cambridge and back**

If there is a chasm between science and the arts, then Shashidhara can bridge it with ease. He was born in Dharwad, a small town in Karnataka, into a family that loved literature and music.

“My father used to take us to classical music concerts and talks by famous writers, who would come from all over Karnataka and talk about literature,” he said, recollecting his love especially for the famed Kannada poet DR Bendre.

He grew to love Kannada literature and history so much that he considered them both as a career option at one point. “Those were the two things that fascinated me the most.”

But his family also loved the sciences. Shashi listed a number of relatives who were professors of maths and science, or engineers. He initially chose the tried and tested path of engineering. But by another stroke of fate, his admission to the engineering college he wanted to go arrived weeks after he had already started and had grown immensely interested in his science degree coursework at the University of Agricultural Sciences, Dharwad.

“The curriculum was very holistic,” he said. “The first semester or two had English literature, sociology, history of agriculture, and even economics.”

Shashidhara also studied evolution along with genetics and molecular biology, which were cutting-edge subjects for the graduating batch of 1985. He continued to study genetics and plant breeding, in which he obtained a master’s degree from the same institute.

He followed this with a year of teaching at Dharwad, after which he shifted base to University of Cambridge for his PhD and a post-doctorate in chlorophyll biosynthesis.

“In those days, nothing much was known about genes,” said Shashi with a chuckle. “Molecular biology was naturally what followed.”

And this led him to DNA and evolutionary biology.

“Because I was so fascinated by all these subjects, the dots were comparatively easy for me to connect from plants to animals,” he said.

Shashi specialised in studying Hox genes and how they helped turn early cells in an embryo into limbs. These genes offer insight into cell development because they encode proteins that are ‘[master regulators](#)’ of embryonic development.

“We all start with a single cell,” he explained good-naturedly. “Yet we all have two eyes exactly in the same position on our face. Even as babies, we have tens of trillions of cells. How do they know how to develop into which cells?”

He studied these genes extensively in *Drosophila melanogaster*, the fruit fly, in NCBS, to where he returned after 15 months in Cambridge in 1993.

“At the time, there was no email,” he reminisced. “So I wrote to the handful of labs where I could do this work, and directly went from Delhi to NCBS in Bengaluru in 1993.”

At 29, Shashidhara joined VijayRaghavan’s lab, which was then conducting comprehensive work on *Drosophila*.

“Vijay was very generous and allowed me to work on his projects. I was lucky to have a grant even when I was not faculty,” he said.

That research led him to understand how some bad cells develop: he then studied the role of APC, the colon cancer gene in humans.

“The difference between cancerous and non-cancerous cells is during development, where growth is controlled for normal cells but not for tumors,” he said. “That got me really interested in cancer research and academically it was a smooth transition.”

From 1995 to 2007, he served as a scientist in Centre for Cellular and Molecular Biology (CCMB), Hyderabad, after which he was transferred to Pune to establish and begin operations of the now-eminent Indian Institutes of Science Education and Research (IISER). Despite his move, his lab was allowed to continue to function for a few years.

At this time, he was also elected as a fellow to the Indian National Science Academy.

## **IISER and beyond**

The IISERs were formed as a new generation of institutions set up by an Act of Parliament, with their own curriculum and teaching methodology, giving the institute an opportunity to make subjects as multidisciplinary as possible.

Shashidhara described this time as an exciting period in his life, during which he contributed to everything from building architecture to designing curriculum to deciding pedagogical methods. He subsequently did the same for the sciences department at Ashoka University. At the time, he was also involved in formulation of science policies.

“Policy is important and should be based on scientific knowledge and data,” said Shashi. “Policy for social welfare should also be scientific.”

He continues to be an honorary professor at Ashoka and Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), is still informally associated with CCMB and with IISER-Pune. He was elected the president of the International Union of Biological Sciences (IUBS) in its 33rd General Assembly during its Centenary Year.

Shashidhara has also been the recipient of multiple prestigious science awards over the past two decades, including the famed Shanti Swarup Bhatnagar Prize.

If the ‘whats and whys’ of science are the hook, then the ‘hows’ are what keeps him going.

“What is more important is not what science we do. It is how we do it.”

(Edited by Anurag Chaubey)