Decoding the language of genes

EV Soniya, winner of the National Woman Bioscientist Award, talks about her work in DNA fingerprinting and how her deep interest in molecular biology helped her make a mark in her area of expertise

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Numerous phone calls later, one gets to speak to Dr EV Soniya as she in the midst of preparations to travel to Delhi to receive her award for the National Woman Bioscientist Award for her pioneering work in DNA fingerprinting. Chief Scientific Officer - Molecular Forensics and DNA Technologies at the city-based Rajiv Gandhi Centre for Biotechnology (RGCB), Soniya says it is a lifetime achievement award for various assignments for which she led her team. "And it is a recognition of my leadership skills, for my institution and my team," she says modestly. The award is in recognition of her research contributions and their application to society.

Soniya, does not want to focus on that aspect and would much rather talk about her work and its impact in different areas and it is always the 'we' that she highlights. "We are not a nine-to-five team. It is the passion for our work that has sustained the team led by our director M Radhakrishna Pillai and that has helped us meet some tough challenges," she says.

Soniya believes it was that deep interest in her research that sustained her through the tough years of child-bearing and parenting. "It was not easy. But how many people have the opportunity to work in a field they enjoy? I know many bright men and women who did not get that chance to work in an area that challenges and motivates them," she emphasises.

Pragmatic and ambitious at the same time, 54-year-old Soniya asserts that women would have to help themselves and not expect to have things done for them.

EV Soniya
▪ THE HINDU

Dual responsiblity

"That said, women usually bear the responsibility of running a home and are the primary caregivers once they have children. Moreover, usually, if the husband has a transferable job, it is the wife's career that takes a hit. These are also some of the reasons why women are poorly represented in science and in the higher echelons of research," she believes.

Born in a conservative joint family in Thrissur, Soniya had always been a bright student and an active participant in extra-curricular activities. She remembers how her mother, Sreedevi, an exceptionally bright student, was forced to leave school after class ten to become a wife and homemaker. So Sreedevi was keen that her three children do well in academics and go in for higher studies.

"After class ten, I chose science with the vague idea of studying medicine. It was not the age of the information glut and so we had no idea about the options and choices open to us. Eventually, I took up Botany for graduation and post-graduation," she recalls.

Her teachers suggested she did her PhD. "But research did not necessarily lead to a job, and unless one had the exposure, studying abroad was not so easy to come by then," she says.

Marriage to PK Govindan Potti, an engineer in Vikram Sarabhai Space Centre, brought her to Thiruvananthapuram and in 1990, Soniya enrolled for her doctorate in the University of Kerala. "Fortunately, my husband supported me and parenting was a shared responsibility. Even today, we give each other that space to pursue our individual careers," she says.

In 1995, she completed her doctorate and got the chance to work on a two-year project at the Central Tuber Crops Research Institute. Two years later when the project ended, she got a lucky break. RGCB had just come into existence and she got selected as a research and we had to work mostly on our own and do our own research. The late Dr MR Das, founder-director of RGCB, had told us that we had to take up research in new realms of our specialisation. I took a little time to find my feet but once I found my niche, I understood the scope and expanse of my work. That is when my work no longer became work. It was intriguing and I was fascinated by the doors it opened," she says.

Molecular trails

Beginning with delving into molecular biology and biotechnology of spices such as black pepper and ginger, she moved on to more intricate detailing of plants involving the identification of certain genes and enzymes.

"I am interested in understanding the molecular mechanisms working behind the interactions of plants with both biotic and abiotic factors, especially the plant-pathogen interactions and plant stress responses, and the molecular details of metabolic pathways for the production of secondary metabolites," reads her profile on the website of RGCB. Publications in prestigious journals helped in gaining a reputation in her domain. At present, she is working on a project titled 'GenomeIndia: Cataloguing the Genetic Variation in Indians.' She comes into her own when she is talking shop. Gender discrimination and inclusivity do not really feature much in her conversation. "Well, women have to work doubly hard to prove themselves. That is true of most workplaces and not only in laboratories," she feels.

CLOSURE THROUGH SCIENCE

Soon after the Puttingal fireworks tragedy, when 111 people were killed when a pyrotechnics display went awry in a temple, RGCB's help was sought to help identify the victims through DNA fingerprinting.

"The work had to be completed at the earliest as the victims' survivors needed some kind of closure. Moreover, there were damages to be paid and identification was crucial for that. The tragedy happened just a few days before the festival of Vishu and many of us spent Vishu at work. A team from RGCB visited the place to collect blood samples from relatives. Although, in some cases, there was little to go by and the work was heartbreaking, we were able to meet the deadline," she recounts.

DAILY WONDERS OF DNA

"Genetic analysis at the molecular level is one of the most effective methods for management of endangered animals and plants. Complaints regarding the identity of the elephants were a problem for the Forest Department. So they approached RGCB to develop a marker-based DNA fingerprinting of elephants in captivity. After collecting blood samples of all the captive elephants, we gave them a database with a unique DNA fingerprint of each captive elephant. Each elephant was given an ID card with its name, the name of the owner, other details and a QR code. If you scan the bar code on your phone, all the details of the elephant can be accessed. With this, the Forest Department could easily identify an elephant. This is the first time in India that DNA data has been included in ownership details of captive elephants. We also developed a protocol to DNA fingerprint wild elephants using dung and tusk samples, to help solve wildlife crimes, including poaching and illegal trade," explains Soniya.

TRUTH OF THE MATTER

While focusing on methods to resolve paternity and immigration disputes by demonstrating the genetic links between individuals Professor Sir Alec Jeffreys invented DNA fingerprinting in 1984