

PERSONAL NEWS

Dr. Lalji Singh

L S SHASHIDHARA

Indian Institute of Science Education and Research, Pune 411008

Email: shashi@iiserpune.ac.in



DI:LOGUE

Science, Scientists, and Society

PERSONAL NEWS

Dr. Lalji Singh

L S SHASHIDHARA

Indian Institute of Science Education and Research, Pune 411008

Email: shashi@iiserpune.ac.in

DOI: [10.29195/DSSS.01.01.0003](https://doi.org/10.29195/DSSS.01.01.0003)

I woke up on 11th December 2017 with the news that Lalji or Dr. Lalji Singh (famously known as the Father of DNA Fingerprinting in India) died of a massive heart attack on the previous evening (10th December). I was to chair a meeting on that day away from my workplace and it took a while to compose myself to carry on the work. Personally, I owe Dr. Lalji Singh a lot to for my professional growth. Of the 12+ years I spent at CCMB, Dr. Lalji Singh was the Director for more than 9 years. Having worked with him so closely in those years, I thought I would express my thoughts after few days to avoid emotional outbursts.

Much has already been written about Dr. Lalji Singh in different newspapers and online platforms about his early work on sex-determination, identification of minor satellite DNA from sex chromosome of the snake (the Banded krait), and subsequent use of the same in DNA fingerprinting, etc. Much has also been written on how he improved the infrastructure of CCMB, mentored and supported young faculty (such as me at that time) and students. While writing this obituary, I thought of highlighting how Dr. Lalji Singh's work and life is a fine example of bringing science to the public, and how this process is an important way of doing good science.

Scientists, more so those pursuing blue-sky research, often shy away from communicating with the general public. We mostly interact with anonymous peers, keep improving our science based on their comments. While communicating with those peers, we safely assume that they would not challenge us on known 'dogmas' and, therefore, we would describe only our experimental results in great detail and push the frontiers of knowledge by a few nanometers. Whenever we try to explain our work to the lay public, we need to give long introductions and their questions 'out of ignorance' on fundamentals are irritating and we tend to get derailed. We either give up, or only talk of some well-known facts in the pretext of 'popularizing science'.

Dr. Lalji Singh's work in the late eighties and early nineties indicated that he has identified DNA fragments that may help to fingerprint human individuals with as good accuracy as the probes used in UK and USA. While many molecular biologists, statisticians

and social activists were sceptical and even opposed him, he still went on and made a public announcement that he has developed an 'indigenous' DNA fingerprinting technology, only the third country in the world to do so. Those are the days when the Press never reported anything about science in India. Nevertheless, it was reported and forgotten by the public quickly. The fact that Dr. Lalji Singh went public built much pressure on him to ensure that his work stands the scrutiny of the public. While scientists excuse us if we biologists say that our discovery holds good only under so and so conditions, the public does not accept such exceptions. Therefore, his lab worked like a factory to standardize the fingerprinting technology with innumerable blind and double-blind experiments. The best statisticians were consulted to ensure that the results be reported with an accuracy that is difficult to refute. Finally, what came out was a truly trustworthy technology, which now is a household knowledge.

Unlike medicine, any new knowledge or technology that challenges our social system attracts maximum opposition and even ridicule. Galileo went through this. Darwin went through this. Many more well-known and lesser-known people have endured humiliation and insult while propagating new ideas. Dr. Lalji Singh was no exception.

His new discovery didn't go completely unnoticed by the public. A young lady (I am told, was educated only up to the school level) in Kerala read about his work and requested the Judge handling a paternity dispute that she was fighting in the court to seek DNA fingerprinting as an evidence. The Judge approached Dr. Lalji Singh, who readily agreed. He went to a small town in Kerala, a land and language equally alien to him. He took much pain explaining to the court what is DNA, what DNA fingerprinting is, etc. He also had to endure humiliation from the defense lawyer accusing him of a false claim that DNA fingerprinting is possible to verify the parental identity of a child. The court finally admitted his tests as evidence and gave the verdict in favor of the mother. Although this made both DNA fingerprinting and Dr. Lalji Singh famous, the technology was far away from general acceptance. The second case, was a dispute involving a 'godman' who was accused of raping the inmates of his ashram. Legendary lawyers were engaged to fight for the accused and Dr. Lalji Singh had to answer a volley of humiliating questions. I guess, most scientists would have given up in his place. But, Dr. Lalji Singh did not. He kept referring to the science of DNA and development of the technology of DNA fingerprinting and its precision; all along keeping his language civic against the language that the lawyers use as a matter of right. The verdict of this case made DNA fingerprinting a household name in India and its acceptance in all courts in India.

As mentioned above, general perception among scientists is that they only need to communicate within the peer group as the public, anyway, will not understand their work. As a corollary, only the scientists are capable of thinking of applications of a piece of knowledge that they know of and not others. When DNA fingerprinting became famous and solved some sensational cases such as Rajiv Gandhi's murder, tandoor murder case, etc., a Government officer in Commerce Ministry approached Dr. Lalji Singh asking if his technique can be used to fingerprint rice! He had a problem in hand. Basmati rice exports were badly affected due to adulteration, and importers from Europe and other countries were losing trust in Indian

products; although the maximum demand was for ethnic Basmati from the foothills of Himalayas, particularly from the Tehri region of Uttarakhand.

A colleague of Dr. Lalji Singh, working in the Centre for DNA Fingerprinting and Diagnostics (CDFD), Late Dr. Nagaraju, readily accepted this challenge. Dr. Nagaraju, a Zoologist, was primarily working on silk moths. Even today most academic places fight for their identity as a botanist or a zoologist or a microbiologist. But, CDFD was not one amongst those. Dr. Nagaraju was encouraged to take up this task. He quickly developed a way and provided the DNA fingerprinting services to identify authentic ethnic Basmati thereby reducing adulterations that eventually improved exports and added to our exchequer. This is a fine example of a member of the public imagining a scientific solution to the problem in hand and a scientist making it a reality.

Dr. Lalji Singh, therefore, will forever be missed not only by his colleagues in scientific institutions but also by the people of India.