Smt Uthra Dorairajan

Darshan Ranganathan

(4.6.1941 - 4.6.2001)

First woman recipient of the TWAS Award

She is the only woman of our country who received the research scholarship of the Royal Commission for the Exhibition of 1851.

A very useful strategy for aspiring women scientists in India, is to adopt the path taken by Darshan, who had realised that women scientists would face additional impediments and had planned her career rather than worrying about it. Till the very end of her life she worked very hard. Her courage and will to fight with a smile and verve and no acrimony and made all those who met her love her.

Darshan was born as a third child to Vidyavati and Shantiswarup Markan in New Delhi. Her teacher SVL Ratan greatly influenced her to pursue chemistry. "Even at a young age she was full of life and fond of music, dancing and drawing, excesses of which many times, won her rebukes from some teachers!" quips her husband and co-researcher Dr.Ranganathan. She joined as teacher at Miranda College, while pursuing research and completed Ph.D. under the guidance of the legendary Professor T.R.Seshadri. **She is the only woman of our country who received the research scholarship of the Royal Commission for the Exhibition of 1851.** Erstwhile Indian royal families have contributed to this fund enormously with the vision of helping our countrymen to do research in the west. But this was not awarded to any of our people till Prof.S.P.Agarkar unearthed and fought the colony authorities to open their treasury to young Indian researchers. Our soil benefitted by this, securing funding to the father of Indian nuclear programme Homi Bhabha, the only other Indian to have received this grant.

Passionate towards research and with brilliant scholarship, young

Darshan carried out outstanding postdoctoral work on organic natural products under Prof. DHR Barton at Imperial College London. There, she studied compounds such as cycloartenol, a type of plant sterol found in jackfruit. Since jackfruits were not available in England, her mother bought them from Delhi market and shipped them.

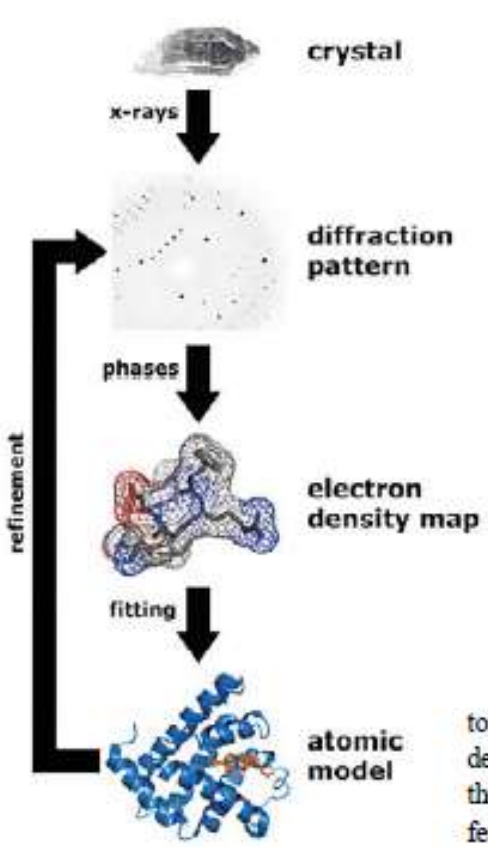
Completing her research, she returned to serve the motherland in 1969. In a few months' time, she got married to Dr.Ranganathan who was then working as an assistant professor in the department of chemistry at IITK. Soon she moved to Kanpur, but could not secure a teaching post in that institution due to the rules that did not allow spouses to work as colleagues in the same department. He later recalls, "Darshan joined our laboratory at IITK, with no scholarship at that time, but was perfectly happy to have a laboratory. She loved to work with her own hands and worked for long hours cheerfully with unparalleled skills. We counted on mercies and I am truly grateful to IITK and the Chemistry Department for permitting her to do research. I knew from the beginning that she was better than me and was proud to share my funds and students with her so that she could work on her own problems and published on her own." With sheer determination and perseverance, she blossomed into an organic chemist who won international recognition.

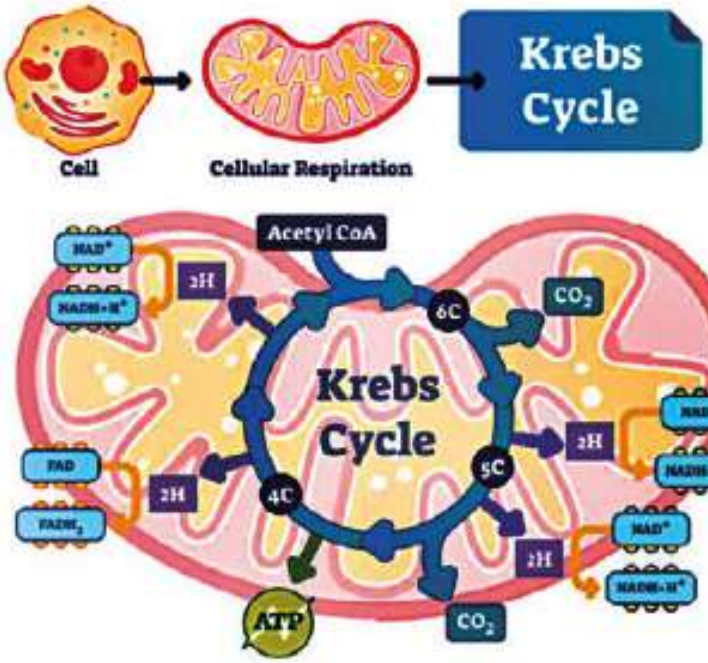
Her contribution to chemical education was monumental. She co-authored several books and a generation of young organic chemists grew up with a monthly analysis of current literature, *Current organic chemistry highlights*, with her husband. Her collaboration with Dr. Isabella Karle of Naval Research Laboratory, Washington can be described as very unique in the field of research, as these two great women never met. Through continuous correspondence, these two gifted women solved the structures of many complex crystals using X-ray studies. "Towards the later stages, Darshan's output was so prodigious that I was not able to assess their impact. I believe that there is a latent running thread that serves as link in the evolution of novel ideas. I edited the quintessence of her work with Isabella Karle, named *Patterns for supramolecular design*," recalls Dr.Ranganathan.

DO YOU KNOW ?

Supramolecule complexes are formed by non-covalent interactions between two chemical moieties, which can be understood as a host and a guest. Generally, the interacting species are held together by hydrogen bonds. The definition excludes compounds formed by electrostatic interactions, which are called **ion pairs.**

Moiety - Each of two parts into which a thing is or can be divided.





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The World Academy of Sciences
for the advancement of science in developing countries

She was the first woman recipient of the most coveted The World Academy of Sciences Award (TWAS) in 1999.

She brought in a fresh wave to organic chemistry. Darshan demonstrated Kreb's cycle in the laboratory and its salient features which is considered as a magnificent achievement. She simulated the process of genesis of pituitary hormones and discovered several specific DNA cleaving agents. She became a wizard in conjuring supramolecules. She successfully designed and assembled many membranes, ion channels, ionophores, nanotubes, cyclic and hybrid peptides in laboratory. In most cases, she had their structure established by X-ray crystallography. With these immense contributions, she was elected as a Fellow of Indian Academy of Sciences. In 1992, she got a permanent position at RRL (now CSIR NIIST), Trivandrum. She later moved to Indian Institute of Chemical Technology, IICT Hyderabad in 1998.

She ventured into domains that others feared to tread and succeeded brilliantly. She played on molecules like an instrumentalist and created divine melodies with the minimum tones. She collaborated extensively and all were happy to be associated with her. The wonderful human being's end came early in the form of cancer. Destiny has its own ways and sometimes it is cruel! At the time of her passing away in 2001, she was the most prolific organic chemist in India, having dozens of publications in internationally reputed journals. A few of her works were later published posthumously.

She became a **Fellow of The Indian National Science Academy** (1996); won **AV Rama Rao Foundation Award** from JNCASR (Jawaharlal Nehru Centre for Advanced Scientific Research) and **Jawaharlal Nehru Birth Centenary Visiting Fellowship** from INSA (Indian National Science Academy).

She was the first woman recipient of the most coveted The World Academy of Sciences Award (TWAS) in 1999.

This was given in recognition of her outstanding contributions to bio-organic chemistry, particularly on supramolecule assemblies. All these achievements assume special significance, particularly for young aspiring women scientists in India!