

From the Pages of History

Deliverance of One Genius by Another

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Dr. Subhash Mukherjee



Dr. T.C. Anand Kumar

On a fateful afternoon of 3rd Oct 1978, Durga, the world's second and India's first IVF baby was born in Calcutta, with the help of a team led by Dr. Subhash Mukherjee. This announcement was made 67 days after the birth of the world's first IVF baby, Louise Brown by Dr. Robert Edwards and Dr. Patrick Steptoe¹. Dr. Subhash Mukherjee, the unsung hero of Indian ART, was born on 16th January 1931 in Hazaribag, Bihar. He was a medical undergraduate from Calcutta and Ph.D (Reproductive Physiology) from Calcutta University under the stewardship of Prof. Sachchidananda Banerjee. He had an ingenious mind and developed several techniques in ART which are still in use today.

Some of his achievements are:

- Dr. Mukherjee along with Prof. Sumit Mukherjee, a cryobiologist, and Dr. Saroj Kanti Bhattacharya, a gynecologist, worked on a method of in vitro fertilization that was used successfully on a patient with damaged fallopian tubes. He presented his findings in the section on ovum implantation at the 5th International Congress on hormonal steroids held in New Delhi in Oct-Nov 1978²
- Developed an assay for estimation of Luteinizing Hormone (LH) which depends on ovarian cholesterol depletion of intact immature rats pretreated with PMSG & HCG³.
- Contradicted the view of Theodore Langhans on the origin of HCG⁴.
- He was the first to successfully use human menopausal gonadotrophins (hMG) for ovulation stimulation in an IVF programme. However, the credit for this was given to Dr. Howard Jones, USA, who discovered it three years later³.
- Dr. Mukherjee was the first to approach the ovaries via the vaginal route by posterior colpotomy³. He was the first person to have succeeded in freezing and thawing human embryos using a cryoprotectant (DMSO) which is now very commonly used for freezing embryos². Sadly, even this credit went to the Australian team headed by Dr. Trounson for making this discovery in the 1980s³.
- Dr. Mukherjee was the first to have aspirated oocytes in a stimulated cycle, fertilize them in vitro and freeze the embryos in that cycle, recover and thaw and transfer them into the uterus during the following natural cycle, which led to the birth of Durga³.

Despite such phenomenal achievements of Dr. Subhash Mukherji, he did not receive the credit he was due; on the contrary when he addressed his findings by letter to the West Bengal Government in 1977, his claim was denounced as bogus and was ostracized by the government. Adding insult to injury, he was transferred to the Regional Institute of Ophthalmology, Kolkata, in June 1981 after which he committed suicide⁶. It is a tragic moment in the history of Indian science when the efforts of a genius were not only unrecognized, but denounced.

Fortunately, his phenomenal work could see the light of the day due to the nobility of Dr. T.C. Anand Kumar, who led the team which gave India's first scientifically documented IVF baby⁷.

Dr. T.C. Anand Kumar, a graduate from Bangalore, did his doctorate from the University of Jodhpur and then went on to Birmingham, UK to pursue his research. He was known not only for his scientific achievements but also for his warm personality⁸.

When he was invited to deliver the Subhash Mukherjee Memorial Oration at the third National Congress on ART and Advances in Infertility Management in Calcutta on 8th Feb 1997, he researched about the birth of first test tube baby. He had known earlier about the IVF baby from Kolkata through a report in Nature by K.S. Jayaraman. He also learned that this achievement denounced as bogus. Dr. T.C. Anand Kumar investigated by further procuring some of Dr. Mukherjee's handwritten laboratory notes, list of publications and papers presented at various scientific meetings and his various correspondences and notes left behind by him⁹. Having gone through all of it, he convinced the ICMR committee to acknowledge Durga as the country's first IVF baby.

The ICMR committee after thorough investigation now firmly believes due credit was not given to Dr. Subhash Mukherjee for his work. Dr. P M Bhargava, former Director of Centre for Cellular and Molecular Biology, who was part of the ICMR investigations, has called Dr. Subhash Mukherjee as the Father of Indian IVF.

Apart from bringing to light a major scientific achievement, Dr. Anand Kumar contributed significantly to ART.

Few of his achievements and awards are⁸ :

- He started the first electron microscopy laboratory and the neuroendocrine research laboratory at the All India Institute Medical Sciences, New Delhi, in 1970 which is still functional today.
- Founded the Indian Society for the Study of Reproduction and Fertility in 1988.
- He served as an advisor on many committees on the World Health Organization, Department of Science and Technology, Council of Scientific & Industrial Research, Government of India; Department of Biotechnology, Government of India and, of course, the Indian Council of Medical Research till September 2009.

- Contributed in drug delivery through nasal route.
- Instrumental in formulating the ICMR's National Guidelines for Accreditation, Supervision and Regulation of ART Clinics in India.
- His work was recognized by his peers and he received the Shanti Swaroop Bhatnagar Award, the highest scientific award for mid-career scientists in the country and the Sanjay Gandhi National Award.

Dr. Anand Kumar later retired to Bangalore where he opened HOPE infertility clinic, through which he has made immense contributions. Though he passed away in January 2010, his scientific contributions stay alive in all our memories.

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Sugar sensing MRI detects sugarless cancer

One of the co-inventors of NMR, Raymond Damadian devised MR scanning machine in 1977 to detect early cancer. Although the MRI, a derivative of that machine, has been extensively used in oncology, detection of early cancer is not one of its forte. But that may change in near future. In a new study published by the John Hopkins researchers in *Nature Communications*, mucins with or without attached sugar were compared between normal and neoplastic cells using an MRI configured to detect sugar. They found that the mucin-attached-sugars were markedly lower in cancer cells compared to their normal counterparts. It seems that the cells when they become cancerous, lose the sugar attached to some of the surface proteins. If their results are confirmed, MRI may indeed become an important tool in the early detection of cancer and also to monitor response to cancer chemotherapy.

(Label-free in vivo molecular imaging of underglycosylated mucin-1 expression in tumour cells, Xiaolei Song, et al., *Nat. Commun.*, doi: 10.1038/ncomms7719, published online 27 March 2015).

- Dr. K. Ramesh Rao