A. R. Gopal-Ayengar

An obituary by C. R. Bhatia

A. R. Gopal-Ayengar was born on 1 January 1909 in the village Anekal in the former Mysore State. He had his early education in Mysore and obtained Bachelor of Science degree in 1929 and Master of Science in 1933 from the Mysore University. From 1933 to 1938 he served as lecturer in Cytology at the Mysore University. He was awarded the prestigious Vincent Massey Fellowship, at the University of Toronto in 1938 where he obtained M A and Ph D degrees. Gopal-Ayengar was then employed as Senior Instructor and Research Associate at the University of Toronto from 1941 to 1945. During 1945–47, he worked as Kettering Research Fellow at the Barnard Skin and Cancer Hospital of Washington University, St. Louis, Missouri.

Gopal-Ayengar returned to India in 1947 and was appointed as Chief Research Cytologist at the Tata Memorial Hospital. He was one of the first few scientists appointed by the Atomic Energy Commission in 1948 and was posted as Head of the AEC Unit on Cell Biology. He laid the foundation of modern multidisciplinary, bio-medical research under the Department of Atomic Energy. This is accomplished in various capacities starting from Assistant Director, Biology Division in 1953 to Director, Bio-Medical Group, the position from which he retired on superannuation in 1969. He served as Adviser to the Department of Atomic Energy from 1971 to 1975 and as Guest Professor of Biophysics, Institute for Biophysics, University of Hannover (1976–82).

Gopal-Ayengar had wide interest in several areas of modern biology. Though structure, function and behaviour of chromosomes was his first love, he made outstanding contributions in basic and applied aspects of radiobiology, radiation biophysics, cytochemistry, mutation research, cancer research, risk perception and evaluation and human health. He was one of the pioneers to isolate DNA from mouse chromosomes and this paper was published in *Cancer Research* in 1947. He made outstanding contributions on molecular organization and fine structure of chromosomes, cytological and cytochemical effects of radiations and radiomimetic substances on proliferating cells. He pioneered investigations on radioactivity, chromosomal aberrations and genetic effects on plants growing in high background radiation areas of Kerala Coast. These were reported in a series of papers published in leading journals or in the proceedings of the Geneva Conferences. With the commissioning of the Apsara reactor, he extensively investigated the biological effects of neutrons and the use of neutron irradiation in agriculture and applied genetics. He visualized the mutagenic potential of neutrons in enhancing the genetic variability in crop

plants and its use in developing more productive varieties of crop plants. He pioneered studies on radiation sensitization of cells and enhancement of radiation lethality by such chemicals which are now finding application in radiation therapy.

Gopal-Ayengar was a member of several learned societies: International Society of Cell Biology, American Society of Cancer Research, and elected fellow of Indian National Science Academy and Indian Academy of Sciences. He was member of the Council of the Indian National Science Academy (1973–75) and Indian Academy of Sciences (1974–76). During his illustrious career, Gopal-Ayengar served on a large number of committees of International and National Organizations like WHO, IAEA, UNESCO and the United Nations. He served as President, Commission on Radiation Biophysics of International Union of Pure and Applied Biophysics (IUPAB), and Chairman, United Nations Scientific Committee on the Effects of Atomic Radiation.

In recognition of his outstanding contributions to science, teaching and human health he was awarded Honorary Degree of the Doctor of Science from the University of Hannover in Germany and from his Alma Mater the University of Mysore. He was the recipient of Padma Shri award in 1967.

We owe a great deal to the vision of Gopal-Ayengar for laying the strong foundation of research in the areas of molecular biology, radiation biology, biochemistry, biotechnology and nuclear applications in agriculture, food technology and medicine in the Institutions supported by the Department of Atomic Energy.

Gopal—as he was known in the international community of scientists—was well admired for his eloquence and wit. He always had a good reservoir of stories for all occasions. Gopal-Ayengar had a keen commitment towards the application of science and technology for the welfare of mankind. He was deeply concerned with the slow pace of progress in the country. It is sad that one who devoted a good part of his early career in investigating the behaviour of cancerous cells, had to bear the pain and agony of the disease in the last days of his life. Though physically immobilized in the hospital bed, mentally he was fully alert and continued to ask probing questions on scientific papers to the visitors and doctors treating him. Gopal-Ayengar was a modern man and a scientist to the core. His commitment to an uncompromising scientific world view is best exemplified by his instructions against the performance of any religious rites at his death.

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