Vitaly L. Ginzburg (1916–2009)

With the demise of Vitaly Lazarevich Ginzburg, Nobel Laureate, the scientific community has lost a great theoretical physicist. Ginzburg died of cardiac arrest on 8 November 2009 at the age of 93 in Moscow, after being ill for some years. He was a member of the Russian Academy of Sciences, Head of the Department of Theoretical Physics at the Lebedev Institute and Editor-in-Chief of the journal *Uspekhi Fizicheskikh Nauk*. He is considered as one of the fathers of the Soviet hydrogen bomb. This outspoken Russian, though born in a Jewish family, was an out-and-out atheist who believed much in fate. Ginzburg did not write much about himself. In his autobiographical note to the Nobel Foundation in 2003, he wrote: 'I am already 87 and will hardly ever have another occasion to write about myself and my views'[1].

Born on 4 October 1916 in Moscow, Ginzburg was the only child of his parents; father Lazar' Efimovich Ginzburg was an engineer and mother Avgusta Veniaminovna Vil'dauer-Ginzburg was a doctor. She died of typhoid when Vitaly was only four years old. His father and an aunt, Rosa, raised him. Rosa worked in an association that dealt with the purchase of scientific literature[1]. In 1937, he married Olga Zamsha, one of his classmates, with whom he had a daughter, Irina. He divorced her after nine years of marriage. In 1946 he married Nina Ermakova, formerly imprisoned for her assumed involvement in planning the assassination of Joseph Stalin (the then leader of Soviet Union). He spent the rest of his life with her but had no children out of this marriage. His father died in 1942 and his aunt Rosa, who brought him up, passed away in 1948. After these losses, Ginzburg was left forlorn.

Having missed much of his primary education, Vitaly was sent to school at the age of 11 into standard 4. At the age of 15 (when he could not continue his schooling owing to odd circumstances such as school reforms in Russia)[1], Evgeni Bakhmet'ev, whom he had met through his aunt, offered him a job in his X-ray structural analysis laboratory at a technical higher educational institute where he was teaching. This was the time when his interest in physics was aroused. O. D. Khvol'son's *The Physics of Our Days* also had a great impact[2] on him in taking up physics. For pursuing university education, he had to clear an entrance examination, for which a knowledge base till standard 10 was required, but he had dropped out after finishing standard 7 in school. He mentions in his autobiography[1]: '. . . though having, as I am convinced, merely average abilities, I managed to do in three months the program of three school years'. He considered his school years to have 'coincided with perhaps the most unfortunate period in the history of Soviet Union'[2]. Though he cleared the competitive exam, he was not granted admission to Moscow State

University initially, but the eagerness to pursue studies made him chase the dream of university education. He openly admitted that his mathematical ability was average, making him choose optics, and not theoretical physics, as his specialization. After graduating from Moscow State University in 1938, he took up theoretical physics. He had worked as an experimental physicist earlier. Soon after completing Ph D in 1940, he joined the P. N. Lebedev Physical Institute. He began his work on superconductivity in 1943 and his discovery of high-temperature superconductivity drew much attention[3]. In 1971, he became the head of the theoretical physics department of the Lebedev Institute, though he was not much interested in taking up the position. He suggested the use of lithium-6 as a nuclear fuel[1]. This idea, along with A. Sakharov's concept of 'layer structures', led to the development of the first Soviet hydrogen bomb by their team (also comprising I. E. Tamm, Yulii Khariton, Yakov Zeldovich, Igor Kurchatov, Lev Landau, A. Kompaneets and Israïl Gel'fand)[4] in 1984. Although Ginzburg was expelled from the team, his contribution to the Soviet bomb later saved him from Stalin's brutality.

Ginzburg studied the propagation of radio waves in the atmosphere during the World War II. In subsequent years 1944–1950, he worked on the theory of ferroelectrics, light scattering in liquids, undulator radiation, among others[5]. Ginzburg became editor of the journal *Uspekhi Fizicheskikh Nauk* in 1998. He also used to organize Wednesday seminars at the USSR Academy of Sciences. These were very popular, attended by physicists across Moscow and were brought to an end by him on the day of 1700th seminar[1]. He did not encourage publication of research carried at the Institute before it was presented at one of the seminars held at the department[6]. There were other interesting aspects of Ginzburg's approach in conducting the seminars. The proceedings of every conference attended outside were shared among all, travel reports and current literature were discussed as part of a 'Journal Club', and discussions over the publications he selected and distributed among the students and professors of the institute were held in the following week[6].

Ginzburg had numerous publications and awards to his credit. He authored 12 books and published nearly 400 scientific papers[7], but bothered in the least about the citations of his publications[1]. Some of the prestigious awards he received were Lenin Prize (1966), Wolf Foundation Prize (1994–95); 'for his contributions to the theory of superconductivity and the theory of high-energy processes in astrophysics'[8], and Nobel Prize in Physics (2003). He was a member of many leading national academies worldwide. The Indian Academy of Sciences elected him as an honorary fellow in 1977.

Vitaly L. Ginzburg shared the Nobel Prize in Physics (2003) jointly with Alexei A. Abrikosov and Anthony J. Leggett for their 'pioneering contributions to the theory of superconductors and superfluids'. Ginzburg applied Lev Landau's theory of second-order phase transition to provide a theoretical framework for explaining superconductivity[9]. He also modelled superconductivity mathematically in the form of a theory with Landau, called the Ginzburg–Laundau theory. This was published in 1950 and Ginzburg preferred calling it as

the ψ-theory of superconductivity[5]. At the Lebedev Institute[10] he concentrated on three areas, namely condensed matter physics, plasma physics and astrophysics. In the field of condensed matter physics, he focused on the theory of segnetoelectricity, phase transition and Ginzburg–Landau theory; in plasma physics, he studied the propagation of waves in plasma, theory of synchrotron emission and theory of transition radiation; and in astrophysics, the origin of cosmic rays, theory of pulsar radio emission, and black hole electrodynamics. He formulated the theory of transition radiation with I. M. Frank and the relativistic theory of higher-spin particles with I. E. Tamm.

Ginzburg passed on his legacy in physics to his daughter Irina (with his first wife, who also studied physics), and grandchildren. Irina studied the history of physics, and married Lev Dorman, a specialist in cosmic rays. One of their two daughters, Viktoria Dorman is also a Ph D in physics and married to a physicist.

Ginzburg once wrote: '. . . no educational institute would make one into a very good writer, physicist, or mathematician, unless he exhibits the corresponding aptitude'[2]. He also considered luck, health, 'timely read article or book' and ambition as keys to success[2]. He stressed on the importance of school education in his writings and interviews. His contributions to physics will always be remembered.

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S. S. Sriramachari (1925–2009)

Samavedham Srinivasa Sriramachari, popularly known as Dr Chari, passed away on 25 December 2009. He was one of India's celebrated medical scientists born in the era of colonialism when medical history in India was marked not only for discoveries of the malaria pathogen by Ronald Ross but was also an age when diseases peculiar to the subcontinent were grouped generically as 'tropical diseases'. History got rewritten when a band of post-independence medical doctors such as Chari investigated the local diseases with fresh minds.

Chari was born on 25 June 1925 and had his early education in St Joseph's Convent, Waltair and Maharaja's College, Vizianagaram followed by Andhra Medical College, Visakhapatmam where he obtained MBBS and MD degrees in 1948 and 1955 respectively. Chari acknowledged the influence of M. D. Anantachari in arousing his interest in liver diseases during this period, an interest that lasted a life time. He joined the Nutrition Research Laboratories in Coonoor in 1951. It was here that some of the best work on kwashiorkor and protein calorie malnutrition was undertaken by the triumvirate of V. Ramalingaswami, C. Gopalan and Chari. They laid the foundation for our understanding of malnutrition and gave remedial and preventive guidelines to the nation. He moved to

Delhi in 1962 on deputation to the ICMR headquarters and never left it, serving the organization in various capacities. He was an institution builder. Seeing the need for pathology research in India and having observed the impact of disease databases abroad, he founded the Registry of Pathology in 1965 in two rooms of Safdarjung Hospital. With unstinting efforts he developed it into the current Institute of Pathology (IOP) which conducts research in cancer, leishmania, chlamydia and placental models for pollutant monitoring. He was appointed as the first Additional Director General of ICMR and returned to IOP and worked there till his death.

One is enriched and amazed at the breadth of investigative pathology undertaken by Chari, traversing as it did nutritional, liver, muscle and bone pathology with ease, not to mention his interest in colour photography. His publications cover kwashiorkor, varieties of fatty liver, Indian childhood cirrhosis on which he was an authority, non-cirrhotic portal fibrosis/hypertension another disease brushed off earlier as a 'tropical', effects of Vitamin D on bone mineralization, fluorosis, types and causes of cerebral oedema and neurolathyrism. His approach to diseases was characterized by not only the questions asked but the