



IN MEMORIAM

RITA LEVI-MONTALCINI WAS AN INSPIRING RESEARCHER AND FOR MANY YEARS A COMMITTED FRIEND OF TWAS.

• **Rita Levi-Montalcini**, the 1986 Nobel laureate in physiology/medicine, passed away on 30 November 2012 at the age of 103.

The neuroscientist shared the Nobel prize with colleague Stanley Cohen for the discovery of nerve growth factor (NGF), which helped to initiate a new era in neurobiology. She had been the longest-living Nobel winner and the first-ever centenarian. A TWAS fellow since 1992, the Italian-born researcher overcame profound obstacles to make an historic discovery about the human nervous system. She will be remembered for her untiring passion for science and the support for all people, women in particular. Through her RLM-Onlus Foundation, she devoted the last decades of her life to promoting education programmes for women and the new generations, and to improving living conditions in countries where people still struggle to meet the basic needs of life.

Levi-Montalcini had close connections with the Trieste System, and TWAS in particular. She was among the first 10 women members of the Academy, and visited the city several times, attending public events organized by the local scientific community. In 1988 she attended the CIDA/TWAS conference on ‘The Role of Women in the Development of Science and Technology in the Third World’, while in 1991 she received the *Laurea honoris causa* in Medicine from the University of

Trieste. She visited TWAS’s headquarters again, in 1993, to celebrate the Academy’s 10th anniversary and to praise its mission in support of the developing countries.

“Rita Levi-Montalcini was one of the most remarkable persons I had the great privilege to meet”, said former TWAS executive director Mohamed H.A. Hassan. “She had a great passion towards the plight of scientists in resource-constrained countries around the world. I remember how delighted she was when she was elected as a member of TWAS, in 1992, in recognition not only of her scientific accomplishment, but also for serving the cause of science in developing countries.”

Levi-Montalcini was born in Turin in 1909 to Italian-Jewish family. She had a twin sister, Paola, and two older siblings, Gino and Anna. Rita earned a degree at the Univer-

sity of Turin’s medical school in 1936 under the supervision of neurohistologist Giuseppe Levi.

Unfortunately, obstacles and discriminations – related to her Jewish heritage, her gender, and the onset of World War II – marked her youth first, and her scientific career later. Benito Mussolini had enacted his Manifesto of Race and the laws banning Jews from academic careers. This measure prompted her and her colleague Giuseppe Levi to move to Belgium in 1938. She continued her studies on the differentiation of the nervous system, working at Brussels University until she returned to her hometown, Turin, in 1940.

This matter of personal challenge soon became instrumental to making her fortune in science, proving that, sometimes, even the most severe tests forge lives in unpre-





PEOPLE, PLACES, EVENTS

dictable ways. “Above all, don’t fear difficult moments. The best comes from them”, she commented later, during a conference on the occasion of her 100th birthday.

Moved by a deep passion and enthusiasm, and inspired by an article authored by scientist Viktor Hamburger, in 1940 she set up an extemporaneous laboratory – her bedroom – where she carried out her first experiments on chick embryos. Through this investigation, Levi-Montalcini hoped to understand the role of genetic and environmental factors in the differentiation process of the nervous system.

In 1946, Hamburger invited Levi-Montalcini for a six-month visit to his laboratory in the United States, at St. Louis’ Washington University. She accepted, not imagining that six months would become 30 years. From 1947 to 1977, Levi-Montalcini split her professional life and career between St. Louis, where the discovery of the nerve growth factor (NGF) took place in 1952, and Rome, where she established a research unit in 1962. The investigations she carried out at Washington University were of paramount importance and mark the dawn of modern neurobiology.

Growth factors belong to a family of naturally synthesized biological mediators which trigger cell growth and differentiation, helping specific nerve cell populations to survive and work. NGF, in particular, stimulates the morphological differentiation of cells of the peripheral and central nervous system.

The breakthrough came during several years of hard work (1949-1952) while Montalcini was studying the effects of transplanting mouse sarcoma tissues into a chick embryo, an experimental proce-

cedure aimed at assessing whether a neoplastic tissue could support the development of spinal cord and sensory ganglia. She found that the tumour tissues stimulated over-innervation of embryo organs. This led her to hypothesize, and subsequently prove, that the transplanted tissues were releasing a diffusible factor able to induce growth and differentiation of nerve cells. Indeed, the diffusible factor was NGF. This was the discovery that would earn her the Nobel prize.

Part of her vibrant involvement in deciphering the secrets of our nervous system stemmed from her natural curiosity and inclination to investigate. The teeming scientific atmosphere of those years brought her into close contact with Renato Dulbecco and Salvador Luria, schoolmates who themselves would win a Nobel prize for studies on tumour viruses and for bacteriophage genetics, respectively. (Coincidentally, Levi-Montalcini and Dulbecco had set off for the United States in 1947 aboard the same Polish steamship *Sovietzky*).

From that remarkable finding onwards, her career followed a route of intuition, hard work and brilliant discoveries.

The latest came in 2010, just two years before her death. Her idea of a possible new role of NGF in embryo development prompted one of her early favorite students, Antonino Cattaneo, today group leader at Rome-based European Brain Research Institute (EBRI), to further investigate that hypothesis. From this research, and with close advice from Levi-Montalcini, Cattaneo’s team published a paper in the journal *Proceedings of the National Academy of Sciences* (PNAS), in January 2012, which features her as principal investigator.

Developing countries became a life-project that Levi-Montalcini embraced. In 1992, she founded the Rita Levi-Montalcini Foundation, becoming an ardent supporter of women in science. The foundation is a non-profit organization that supports African women by promoting schooling and professional fulfillment. “Education”, Levi-Montal-



Rita Levi-Montalcini (right) with Italian senator Susanna Agnelli at the TWOWS Conference in 1988

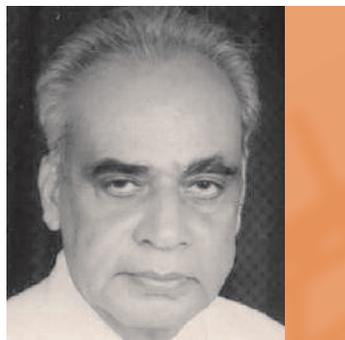


cini used to say, “is the most powerful tool for development.” To date, the foundation has launched 142 projects and is seen globally as a landmark institution. Covering a broad spectrum of initiatives in education and professional training, from computer instruction to classes in hygiene and sanitation for child-care, these projects have certainly given young African women better options for their future.

Levi-Montalcini wrote more than 20 books. Most of them have gained worldwide recognition, but some are particularly representative of her life and spirit. They are: *In Praise of Imperfection*, an autobiographical work; *Il Tuo Futuro* (‘Your Future’), dedicated to young people who need to make vital choices in their youth; and *Senza Olio e Contro Vento* (‘Without Fuel and Against the Wind’), a celebration of courage and resolution as seen in 10 of her friends and acquaintances who ‘sailed’ difficult lives.

Levi-Montalcini never stopped working, even in the last days of her life. Though her energy was ebbing, she continued to visit laboratories. The night before she passed away, she worked at her desk, writing notes and sketching ideas, and when some visiting friends departed, she told them: “I’ll see you on Monday, in my office.” (*Cristina Serra*)

- **George Thottappilly** (TWAS Fellow 1997) passed away in April 2012. He was the dean of the biotechnology department of the Sahrudaya College of engineering and technology, Kerala, India, and head of the biotechnology department of the International Institute of Tropical Agriculture, Ibadan, Nigeria. A native of Karoor in the Indian state



of Kerala, Thottappilly received an international education that began in his native country and was continued in Göttingen and Giessen universities in Germany and at the Slovak Academy of Sciences.

A passionate plant virologist and a world-renowned expert in biotechnology, Thottappilly authored two seminal books: *The Sweet Potato and Virus and Virus-Like Diseases of Major Crops in Germany*, where he addressed the impact of virus diseases on the major crops in developing countries.

He was member of the National Academy of Sciences (India), the Indian Phytopathological Society and the Indian Virological Society.

HONOURS

- **Eugenia Maria del Pino Veintimilla**, professor of biological sciences at the Pontifical Catholic University of Ecuador (PUCE), and TWAS Fellow 1989, has been awarded the 2012 Eugenio Espejo Prize in the Sciences. This prestigious award is given every two years to distinguished citizens and/or organizations, in recognition of their merits.

Del Pino, a renowned developmental biologist, was selected in view of her scientific activity, in particular for her unceasing promotion of biodiversity conservation in the Galá-

pagos Islands and her conspicuous scientific production.

Ecuadorian President Rafael Correa chaired the ceremony on 9 August 2012, on the nation’s day of culture, and bestowed the prize on three winners. The other two prizes were awarded in the performing arts and in literature.

Del Pino was born and raised in Quito, Ecuador. She studied in the United States and returned to Ecuador in 1972 after her doctoral studies.

The Andean marsupial frog (*Gastrotheca riobambae*) is the focus of her investigations. Her comparative studies shed light on the reproductive and developmental adaptations of this frog in comparison with other tropical frogs.



Del Pino is the recipient of many other awards, including the Charles Darwin Foundation’s medal for the Galapagos Islands (1999), the TWAS Medal Lecture (2005) and the 2000 L’Oreal/ UNESCO Award for Women in Science. In 2005, she also received the Eugenio Espejo Medal in the Sciences given by the Council and the Mayor of Quito.

In Ecuador, del Pino combines research and teaching, as she strongly believes in the importance of training young and students to become tomorrow’s enthusiastic scientists.