Scientific prowess

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The future of our homeland must necessarily be a future of men of sciences.

THIS quotation was often heard during our visit to Cuba - especially from almost all the researchers we met. Fidel Castro said it more than 40 years ago in I960, a year after the fall of the former regime.

It is the vision of the person who has been leading Cuba since. This grand mission is now unfolding in full view of the scientific world. Its success is recognised by the World Health Organization (WHO) and many other institutions of international standing.

In fact, in the early 1980s, Cuba articulated its goal to become one of the world's leading countries in the field of medicine. Between 1970 and 1979, "green" medicine was introduced, that is, the use of herbs and plants in the treatment of a variety of diseases. The application of acupuncture was also started.

Cuba's seriousness in aiming to be a world leader in medicine can be glimpsed from the astonishing speed at which interferon technology was transferred from Finland. The chronology of events is outlined in a book titled The Story of Interferon: The Ups and Downs in the Life of a Scientist by Dr K.Cantell.

In the chapter entitled The Cubans, the author vividly narrates the great enthusiasm displayed by the Cubans in acquiring the technology. It began in March 30, 1981, when a group of six people was sent to learn from Finland. Just over a month later, in early May, the interferon laboratory in Havana was near completion. Following the visit of a colleague in June, the author writes: "Interferon production was in full swing in Cuba in a laboratory converted from a former luxury house in a suburb of Havana. Clinical studies with interferon dealing with dengue had already begun - an area of study that the Finns had not explored."

By the beginning of the following year, the brand-new and elegant Interferon Institute was inaugurated. The driving force behind the biotechnological success was Castro himself. As to why this is so, the author relates his impression as follows: "During Castro's regime, the country has remained on a par with many other developing countries in most spheres, but there has been much emphasis on the development of education and health care, and great progress has been made in these fields. "By choosing interferon, Cuba has made a strategic decision that would enable it to move to the next level, even into the fast-moving field of gene technology. All these seem to be somewhat a conscious move contributory in making Cuba a biotechnology giant that it is today."

For example, during the pre-revolutionary days of 1959, there were hardly any R&D programmes supported by the government. There were no research centres, except for four experimental stations involving fewer than 100 people. There were only three universities and the number of illiterates reached one million.

According to a briefing at the Ministry of Science, Technology and Environment (MOSTE) during our visit to Havana, the situation today is vastly different. There are more than 300 institutions devoted to science and technology (S&T), 115 of which are R&D institutes. In fact, 25 Ministries have their own R&D institutions. Currently, at least 37,000 people are directly involved in research and development, in addition to more than 20,000 professors in 63 institutes of higher education.

There are also 15 scientific and technological parks in Cuba. Notable ones are found in areas of west Havana with at least a park for social sciences. Cuba's investment in education and training of researchers as well as scientists in the appropriate fields further propelled it towards self-sufficiency.
Overall, 1.21 per cent of Cuban GDP is devoted to science and technology activities. The ratio of researchers per thousand labour force stands at 1.15 for a population of about 11 million (half that of Malaysia, which is less than one per thousand).

Given the global development, however, this may not be enough. There are still more challenges in store. After the collapse of communism and the socialist bloc, Cuba went through a difficult time, officially known as the special period. Despite this and the continued sanctions by the United States, biomedical R&D is progressing well. This is especially so in the areas of biotechnology as well as natural products.

The introduction of diagnostic and therapeutic procedures has further contributed to an improved health status. Consequently, today, Cuba is said to produce 90 per cent of the medicines it consumes with well-developed biotechnological and medical-pharmaceutical industries.

For the future, Cuba has identified a number of new frontiers to be explored. These include advanced materials, neurosciences and bioinformatics. There is no doubt that the Cubans will once again exhibit their scientific prowess in these new fields.

The writer is the Vice-Chancellor of Universiti Sains Malaysia. He visited Cuba recently to initiate scientific collaboration with Cuban research institutes.

NOTE: The USM-ABN AMRO Art and Cultural Centre at Beach Street, Penang is currently holding a Cuban Prints Exhibition. Admission is free.