

LIFE IN CHINA

Sharing Benefits of Astaxanthin Research

By Bi Weizi

Kunming Area of China (Yunnan) Pilot Free Trade Zone is a national demonstration base for small and micro enterprises in Yunnan Province. It is here that Japanese expert Toru Numasawa and his research team extracted Astaxanthin from *Haematococcus Pluvialis*, filling the gap in Yunnan's biomedical industry.

Astaxanthin is an antioxidant that has the effect of decreasing aging and enhancing cell regeneration. Its ability to eliminate free radicals is 6,000 times more ef-



Mr. Toru Numasawa. (COURTESY PHOTO)

fective than vitamin C. How to let more people know about such a good thing, and also bring it to those who need it? With this idea in mind, Toru Numasawa joined the army of Astaxanthin research and development.

Taking root in Yunnan

In 2004, Numasawa and his research team developed a technology for the commercial extraction of natural Astaxanthin from *Haematococcus Pluvialis*. But back then, Astaxanthin was not well known throughout China or even the world. Most of the Astaxanthin was extracted from the eyes of shrimps, which was not only costly, but also limited in quantity. So, Numasawa's company started to try to grow the *Haematococcus Pluvialis*.

"While searching for a culture base for *Haematococcus Pluvialis*, Yunnan was found [to be] suitable with long annual sunshine duration, good water quality and average annual temperature," he said. This was the start of his 17-year research career in China.

Sharing research discovery

From the culture of a raw source, to conducting a large number of Astaxanthin extraction experiments, Numasawa's numerous failures, eventually led to the development of China's first fully enclosed light-bio tubular reactor in 2008.

Meanwhile, a novel airtight microalga culture system was also developed not only to realize the high efficiency propagation of *Haematococcus Pluvialis* and the high concentration accumulation of Astaxanthin, but also avoid the mixing of impurities in the culture process.

Having achieved such great breakthroughs in the Astaxanthin business, Numasawa did something that surprised everyone. Instead of applying for a patent on

the invention, he decided to contribute it so that more companies could reap the benefits of his research achievement. It is under his guidance that Yunnan's Astaxanthin industry thrives. In recent years, the number of Astaxanthin-related enterprises in Yunnan has increased quickly and the variety of products has been enriched. Yunnan has now become the main supply market for Astaxanthin worldwide.

Love for Yunnan

In addition to devoting himself to his research work, Numasawa has also come to enjoy Yunnan life. When he is not working, his favorite thing is tasting various cuisines and enjoying the beautiful scenery. At the same time, he also likes to shop online and marvels at the great development of China's economy and society over the years.

In 2021, he was awarded the Chinese Government Friendship Award for his outstanding contributions to China's modernization. Numasawa could not hide his excitement when talking about this honor. "The Chinese Government Friendship Award is the greatest recognition of my scientific work over the years. This honor is very important to me and will inspire me and my team to go on and contribute more to scientific research," he told *Science and Technology Daily*.

Talking about the future, he said that he will continue to carry out research and development on Astaxanthin products in Yunnan, bring health and beauty to more people and promote the innovative development of this industry. He always upholds the philosophy, "Doing research is more about sharing than hiding. Only by sharing the technology with more can we really make a greater contribution to the society!"

Letter to the Editor

China, A Role Model to Be Followed in the World

By Rasha Khalil

Compass is one of the greatest inventions of all times, so is the rise of modern China with its profound impact on the civilization worldwide. China shows the direction toward peace, sustainable development and compassion.

Development relies on the availability of resources, the evolution of institutions, and a positive mindset. These are the factors that helped China top the list of development and major scientific achievements in the 21st century. The Chinese government has successfully been able to utilize the available resources and achieve sustainable economic development through creating an open and balanced legal and administrative system that derives its foundations from a deep-rooted nurturing culture and a long-standing social system.

The remarkable progress and incredible achievement of China can be attributed to the enormous effort that have been made to enhance and encourage innovation at individual and institutional levels.

This approach has led to significant progress in numerous sectors. For instance, the focus in the education system has significantly shifted to fostering quality improvement and creating an integrated and advanced educational system that meets the needs of the nation for the coming decades.

In addition, sustainable infrastructure has been intensively developed not only to deliver basic services but also to stimulate economic growth and improve the quality of life and competitiveness of all regions. The energy production, transportation and communication networks have experienced a rapid and considerable growth.

Moreover, Chinese innovations in manufacturing and high technology pave the way for what will become future basic needs of humanity, and new breakthroughs in advanced technologies such as artificial intelligence, biotechnology, green energy, robotics, as well as high speed and high functional efficiency mobile communications.

It should be emphasized that all the efforts and policies aimed at encouraging researchers and scientists to be more courageous have induced creativity and innovation, which have helped China to emerge as a world leader in the field of academic publishing and scientific research. That resulted in a dramatic increase in the number of patents and commercial applications at national and worldwide level.

The Chinese government has astonishing achievements in various areas that inspire the world. Nevertheless, its phenomenal accomplishment is that in human development.

While China is launching its most

ambitious human space mission and sending the first astronauts to its self-developed space station, it keeps cherishing and nurturing its citizens even in the most remote rural areas. The Chinese government is fully committed to eradicating poverty in all forms everywhere on the entire Chinese soil.

The government is addressing causes of poverty and providing basic needs for all to ensure that productive resources including education and training are accessible to the poor. In every rural area, there is a development project that provides a wide array of opportunities, services, and technical assistance.

These unremitting efforts to permanently lift people out of poverty are not limited to China, and they go beyond the borders to help people all over the world. It is one of the most noble strategies, as it is concerned not only with the economic development of the country, but also with the well-being and progress of all communities and individuals.

China has always been proactive in helping all those impacted by a natural disaster, wars and pandemic. The best example of this is the unprecedented help and support provided by China to every nation affected by COVID-19.

Indeed, China has become unique phenomenon and a role model to be followed in the world. Governments and countries should benefit and learn from the Chinese pioneering experience.

China, the nation which introduced the most significant four inventions of all the time to the world civilization i.e., papermaking, printing, gunpowder and the compass, is the same nation that introduced to humanity the manned submarine "Jiaolong", the Hong Kong-Zhuhai-Macao Bridge, the "Tianwen-1" Mars probe, and is the same nation who links the world through the Belt and Road Initiative to build a new world based on peace, sharing and caring.

(Rasha Khalil is a professor of Law and Management at Sichuan International Studies University.)



Professor Rasha Khalil. (COURTESY PHOTO)

Traditional Eastern Wisdom

Fuxi: From Fishing to Exploring of the Universe

By BI Weizi



A cartoon picture of Fuxi. (PHOTO: VCG)

Fuxi is one of the original ancestors of humankind, as well as China's first hero and one of the most powerful gods, according to Chu Silk Manuscript, which is the earliest and most complete myth before the Pre-Qin Period.

Fuxi is credited with creating a number of innovations that benefited humankind, such as Eight Trigrams or Bagua (cosmology symbols), the writing system, fishing and domestication of animals, and played an immeasurable role in the progress and development of Chinese civilization.

According to Ban Gu, a famous historian in the Han Dynasty, it was Fuxi who laid down the law of humankind from no moral or social order.

The Invention of Fishing

Fuxi is considered to genuinely

have cared about the people, and ready to help whenever they encountered hardships.

In ancient times, the earth was a place with lush vegetation and a wide variety of animals everywhere. At that time, humans had no other way to feed themselves than by hunting. Fuxi noticed that when the hunting went well, people could eat for several days. However, when they caught nothing, they had to starve indefinitely. After seeing people suffer from hunger, he went to a nearby stream, put his hand in and caught a few fish. He then showed humans how to catch fish by hand.

The Domestication of Livestock

In addition to being the first fisherman, Fuxi also taught people to domesti-

cate livestock. He reasoned that having animals available for milk, meat and labor was much more practical than wasting time and energy hunting. Fuxi is also said to be responsible for the invention of writing, smelting metals and preserving meat.

Creating Eight Trigrams

Perhaps Fuxi's greatest religious contribution to Chinese society was the creation of the Bagua or Eight Trigrams. The symbols in the Eight Trigrams contain the great mysteries of the universe, which consists of three broken or unbroken lines and are intended to represent the eight fundamental principles of reality. Eight Trigrams are the foundation of Tai ji and Feng Shui practices. Fuxi was said to draw Bagua after seeing a turtle coming out of a river.

Sino-German Entrepreneurs Exchange Innovation in Shenzhen

By SUN Guowang

The German Division Final of the 5th China (Shenzhen) Innovation & Entrepreneurship International Competition was held in Shenzhen on November 10.

This competition covered seven industries, including new-generation electronic information, digitalization and fashion, high-end equipment manufacturing, green and low-carbon energy, new materials, biomedicine and health, and the marine economy. This year, 121 projects

were entered in the competition from around the globe. The first prize went to an innovative indoor heating project.

The competition has received positive responses from international innovators, and its global influence is growing. Since first being held in 2016, the competition has attracted 6,182 projects from 89 countries, of which 350 projects have been brought to Shenzhen to join the final competition, and 45 projects have been put into practice in the city.

In a speech given at the opening

ceremony, Rainer Seider, head of International Cooperation at Berlin Senate's Department for Economics, Energy and Public Enterprises, invited enterprises and startups from Shenzhen to Berlin to attend the AsiaBerlin Summit, a platform built up by the Berlin Senate to enhance startup ecosystems' exchanges from Germany and Asia. He also proposed that Berlin enterprises visit China to explore business opportunities at the earliest possible time.

Li Chenhao, second secretary at the

Chinese Embassy in Germany, said that Shenzhen and Berlin are the most innovative and entrepreneurial cities in the world. The industries of the two cities are highly complementary and there is large space for cooperation. This event will become a high-quality platform for cooperation and exchanges for young sci-tech entrepreneurs and investors of the two countries.

Source: Science and Technology Section of the Chinese Embassy in Germany

Photo News

Expats in Guangxi Hail China's Development

On November 19, about 20 foreign experts from eight countries including Thailand, the UK and the U.S. visited an exhibition featuring the Communist Party of China (CPC)'s 100-year history. The activity aimed to deepen expats' understanding in the history of the CPC and China's stories, the organizer said.

Source: Department of Science and Technology of Guangxi Zhuang Autonomous Region



Int'l Cooperation in Pediatrics Can Drive Research

An international conference on pediatrics held by Hebei Children's Hospital on November 13 brought together many well-known pediatric hematological tumor experts and scholars from China, and other countries like Canada and the U.S. Views were shared on treatment methods and experience of how to improve the survival rate of children suffering from malignant hematological tumor diseases.

Guo Yuming, deputy director of the Science and Technology Department of Hebei Province, also director of Hebei Provincial Bureau of Foreign Experts Affairs, stressed that Hebei Children's Hospital (HBCH) had been actively involved in cooperation with world-class medical research institutes.

Duan Guochen, the director of HBCH, spoke about the achievements made at the institution as well as its proposed development plan, while professor Ronald Grant, principal investigator

of the pediatric oncology research center at the Hospital for Sick Children (SickKids) of Canada, summarized a variety of methods focusing on pediatric recurrent neuroblastoma, seen as an upfront therapy project. CAR-T cell immunotherapy and vaccination-based therapy may be forthcoming, which shed light on improving prognosis, reducing recurrence and mortality.

Michael Pulsipher, from the Transplantation and Cellular Therapy section of Los Angeles Children's Hospital, shared a report showing the latest research results supported by substantial scientific data and multi-center joint studies. He said the challenges faced by CAR-T cell therapy in predicting the recurrence of acute lymphoblastic leukemia, shows a meaningful direction for further exploration of cellular immunotherapy in the future.

Source: Hebei Children's Hospital