

Conferment of the Degree of Doctor of Science, *honoris causa* A Citation

Professor Bai Chunli, DSc (Hon), MSc, PhD

With a keen eye for seeing the big picture in minute detail, he has blazed a trail in nanotechnology development. With his passion for and devotion to scientific research, he has helped deliver China's 'springtime for science'.

World-renowned nanoscience expert Professor Bai Chunli is a pioneer of China's scanning tunnelling microscopy. Under his leadership, China developed the first computer-controlled scanning tunnelling microscope (STM), the first low-temperature STM, the first ultrahigh vacuum-STM, the first laser atomic force microscope, and the first ballistic electron emission microscope. Thanks to these 'firsts', Professor Bai was elected an academician of the Chinese Academy of Sciences (CAS) at a peak in his career in 1997, later becoming its President in 2011. He has also been elected academician of a dozen national science and engineering academies worldwide, including the United States National Academy of Sciences, the British Royal Society, and the Russian Academy of Sciences. For his immense contributions in nanoscience, Professor Bai was appointed President of The World Academy of Sciences in 2012, becoming the first Chinese scholar to take this position.

Professor Bai Chunli, an ethnic Manchu, was born in Dandong, Liaoning province in 1953 and grew up in northeast China. A keen reader, he received a good family education, which helped him develop his high aspirations. As a youth, he joined the Down to the Countryside Movement, strengthening himself both physically and mentally in the vast, wild grasslands of Inner Mongolia. During the later stage of the Cultural Revolution, he got admitted to the Department of Chemistry at Peking University. Upon his graduation in 1978, he was admitted to the Institute of Chemistry of CAS, in what proved to be the prelude to his illustrious career at the Academy. Following his remarkable performance in scientific research, he received from CAS his MSc in 1981 and his PhD in 1985.

Professor Bai later undertook postdoctoral research in the United States at the California Institute of Technology's Jet Propulsion Laboratory. He returned to China in 1987, gradually becoming a core member of the scientific research team of the Institute of Chemistry at CAS, where he was appointed Director, and later Deputy Director, of the CAS's STM Laboratory. In 1991, Professor Bai became a visiting professor at the Institute for Materials Research of the Tohoku University in Japan. He received the 2nd China Young Scientist Award in 1994. The following year, the Hong Kong Qiu Shi Science and Technologies Foundation elected him one of its Outstanding Young Scholars. In 1996, he became the Vice President of CAS. In 2001, the Society of Chemical Industry awarded Professor Bai the International Medal. More recently, in 2010 he was awarded Medal of Contributions to Development of Nanoscience and Nanotechnology by the United Nations

Educational, Scientific and Cultural Organization, becoming the first Chinese scientist to receive this honour.

Professor Bai has dedicated himself to the study of polymer catalysts, organic compounds, molecular mechanics, and conductive polymers, and has made tremendous contributions to STM development. He has published twelve books and hundreds of articles in scientific publications, and holds a number of national patents. His research in macromolecules, supermolecules, molecular nanostructure and molecular interaction helped establish the methodology for the study of complex chemistry streams. This led to the revelation of relations between molecular compositions, structures and functions, in addition to numerous breakthroughs in nanotechnology. Through these discoveries, Professor Bai has improved mankind's quality of life in the 21st century and paved the way for China's scientific research development. Are today's mobile phones becoming more and more powerful and attractive? Are today's vehicles becoming more and more fuel-efficient and eco-friendly? These improvements have both been made possible by the advancement of nanotechnology, for which distinguished scientists like Professor Bai have contributed ground-breaking efforts.

Professor Bai is also a champion of green chemistry. He has advocated a ban on toxic and hazardous substances, and a stoppage in the production and disposal of waste. As the President of The World Academy of Sciences, he is committed to facilitating the exchange and collaboration between developing countries' scientific researchers and institutes, as well as to drawing international attention to the issues these countries face. His 'Take the Lead in Action' programme at CAS has not only driven research institute classification reform, but also optimised China's scientific research strategy. This programme aims to lay a solid foundation for China's scientific and technological development by promoting ecological civilisation and urbanisation, by solving the Three Rural Issues, that is, problems concerning agriculture, rural areas and farmers, and by fostering a high-end technological think tank. Professor Bai has also contributed to the research on long-lasting toxic pollutants and food safety issues in both Hong Kong and the mainland China. In addition, he has spearheaded a collaboration between CAS and the China Association (Hong Kong) for Science and Society, to promote Hong Kong and mainland China's scientific achievements to the world.

Professor Bai facilitated research collaboration and exchange between The Chinese University of Hong Kong and CAS. Ten joint laboratories have been developed in areas including stem cell and regenerative medicine, bio-resources, globalization of traditional Chinese medicines, chemical synthesis, pharmaceutical botany, material sciences, and the newly introduced biosocial psychology. CAS also vigorously supports the Chinese Academy of Sciences Academicians Visit Programme, in which more than 40 CAS academicians have visited CUHK to date.

In recognition of his contributions to the advancement of technology in China, as well as his remarkable efforts and achievements in facilitating international exchange and collaboration, it gives me great pleasure, Mr Vice-Chancellor, to present to you Professor Bai Chunli, for the award of the degree of Doctor of Science, *honoris causa*.

Conferment of the Degree of Doctor of Social Science, *honoris causa* A Citation

Professor Liu Mingkang, DSc (Hon), DBA (Hon), DSSc (Hon), MBA

Amidst the ever-turbulent waves of the financial market, he applies his expertise to surf above the risks. Amidst a busy, ever-changing world, he applies his paintbrush to record life's vicissitudes.

With the rise of its economy, China is now making a massive impact on the international stage. The banking sector, financial management industry and stock market have all played a significant role in establishing the country as an economic powerhouse. However, just as we need reins and stirrups to direct a galloping horse and ensure a swift but steady ride, so does China need effective tools and rules to control, supervise and regulate its rapidly developing economy, to ensure that it achieves its goals and wins global attention and acclaim.

As China's economy has moved ahead at full throttle, Professor Liu Mingkang has been one of its skilled leaders. Not only has he been the head trainer of its banking system, he has even been called the father of China's banking regulatory system. In 1994, he transferred from Fujian to Beijing when he was named Deputy Governor of the China Development Bank. In 1998, he was appointed Deputy Governor of the People's Bank of China and, in 2000, he took the helm of China's banking sector, becoming Chairman of the Board of Directors and President of the Bank of China (BOC), where he began his bold reform of China's banking system. The following year saw him named as one of the 'Asian Stars' by *Asiaweek*. Then in November, he received an honorary doctorate from his alma mater, City University London. In 2003, he was named the first Chairman of the China Banking Regulatory Commission (CBRC). Since then, he has also served as a senior fellow of the Hong Kong Institute of Bankers, and was a member of the Governance Body of the Basel Committee on Banking Supervision, a director of the Board of the International Centre for Leadership in Finance of Bank Negara Malaysia, and Vice Chairman of the International Institute of Finance. Professor Liu has been an invitee of the ASPEN Institute, Group of Thirty, and many other important economic and financial forums.

A native of Fuzhou, Fujian province, Professor Liu was born in Shanghai in 1946. In 1987, he received his MBA from City University London. In 1988, he became Vice President of BOC Fuzhou municipal branch, then President of the BOC Fujian provincial branch. Later he served various key positions, such as Vice Governor of Fujian province and Secretary-General of the Fujian provincial government, Deputy Governor of the China Development Bank, and Deputy Governor of the People's Bank of China. In 1999, he became the Chairman of China Everbright Group, in which he demonstrated only a small part of his talent by improving the financial structure and internal risk management of the company.

When Professor Liu assumed the mantle of President of the BOC, he began to demonstrate his true leadership and financial prowess. He initiated drastic reforms through organisational re-engineering to enhance corporate governance and tackle deep-rooted malpractice, establishing systems for sound decision-making and risk assessment, and effectively preventing moral hazards in credit decision-making, asset disposal and bulk procurement. He also masterminded the restructuring of 12 BOC Hong Kong's subsidiary banks, culminating in the bank's initial public offering in the Hong Kong Exchanges and Clearing Limited — the first public listing of any of China's state-owned banks. The next year, Professor Liu pushed forward further reform and opening up of the Chinese banking industry at the newly established CBRC to rescue the so called 'technically bankrupt' banking industry, which had been plagued by bad debts. Just within a few years, Professor Liu brought in 44 foreign banks as partners, and assisted 33 banks in mainland China to reform. Under his leadership, the CBRC set up an international consultation committee comprised of world-renowned financial experts, introduced foreign regulations, and learned through the experiences of other countries. Through measures such as state fund injection, the disposal of non-performing assets, the establishment of limited companies, the introduction of strategic investors, and timely public listings, the CBRC created a comprehensive and effective regulatory system, which helped strengthen China's banking industry against international financial crises. In 2009, the CBRC and Professor Liu himself were jointly presented with the '2009 Risk Manager of the Year Award' by the Global Association of Risk Professionals. He was honoured with the Lifetime Achievement Award by *The Asian Banker* in 2012.

Professor Liu believes it is important for the financial market to have a self-functioning system, stressing the timeliness, validity, accountability and stability of national policies. He has advocated a separation of monetary and fiscal affairs to boost the openness of government debts and minimise risks and potential hazards. He believes that China should establish a better loan culture through reforming the approval standards of loan information and enhancing transparency. He has put forward the liberalisation of foreign exchange and capital accounts to strengthen the flow of international capital and trade.

In 2011, Professor Liu retired from his eight-year tenure at the CBRC to teach and train at universities. He now sits on the International Advisory Boards of the management schools at both Peking University and Tsinghua University. He is an Honorary Dean of the Lingnan (University) College of Sun Yat-Sen University and an Honorary Professor of CUHK's Business School, as well as BCT Distinguished Research Fellow of CUHK's Institute of Global Economics and Finance (IGEF).

Despite his career's ever-changing, highly stressful environment, Professor Liu maintains a calm, relaxed lifestyle. Well-versed in the arts, calligraphy and classical music, he finds tranquillity through painting, applying his brush to capturing both landscapes and social happenings in his leisure time. Some of his paintings were exhibited in S.H. Ho College at CUHK in 2014, winning good reviews from experts, teachers and students.

Professor Liu once said, 'Life is like a painting. Sometimes dark, sometimes light, sometimes wet, and sometimes dry ... What's important is to retain a sense of childlike innocence, to stay grounded despite the world's constant changes, and to do your best to discover truth and sincerity in life.' He certainly hit the nail on the head.

In recognition of his outstanding achievements in the development of China's banking industry and financial regulatory system, as well as his contributions to the CUHK's Business School and IGEF, Mr Vice-Chancellor, I have the great honour of presenting to you Professor Liu Mingkang for the award of the degree of Doctor of Social Science *honoris causa*.

Conferment of the Degree of Doctor of Laws, *honoris causa* A Citation

Dr Leo Rafael Reif, BS, MS, PhD

Many people of Jewish background fled from Eastern Europe in the later 1930s, escaping from the persecution they were already experiencing and the even worse horrors they could see coming. Among them was a young man called Chaim Reif. In 1938, he, his wife and their infant son eventually arrived with almost no possessions in the South American country of Ecuador. From there they moved first to Colombia and then to Venezuela, where they settled down. Chaim and his wife would eventually have four sons. They were poor, as their only support came from Chaim's work as a photographer. At home their languages were Spanish and Yiddish; they spoke no English. But their sons were the first generation of the family to attend college. Education brought great advantages to this poor refugee family.

The youngest son was born in 1950. His name was Leo Rafael Reif. At the age of 23, he received his undergraduate degree in electrical engineering from the Universidad de Carabobo in Valencia, Venezuela, before moving to the Universidad Simón Bolívar in Caracas for a year in his first teaching position. But the next step was the decisive one for him, into a new language and a higher stage of education. He had perhaps learned from his parents that you have to take risks to progress. He entered graduate school at Stanford University in 1974, despite speaking little English. He nevertheless earned his Master of Science degree in the following year and his PhD in 1979, ultimately serving at Stanford as a Visiting Assistant Professor.

He had intended to return to Venezuela, despite his reservations about the cold weather in Massachusetts, he was persuaded instead to apply for a position at the institution which has become his permanent home. He took up his first post at the Massachusetts Institute of Technology (MIT) as an Assistant Professor of Electrical Engineering in 1980. By 1988 he was a full professor. He had already received a United States Presidential Young Investigator Award in 1984 and had held the Analog Devices Career Development Professorship in MIT's Department of Electrical Engineering and Computer Science (EECS). From 1990 to 1999, he was Director of MIT's Microsystems Technology Laboratories, supporting research and education in microscale and nanoscale systems. He then served as Associate Head and finally Head of the EECS Department, MIT's largest academic department, from 1999 to 2005. In 2004, he was named the Fariborz Maseeh Professor of Emerging Technology.

Dr Reif had already become internationally recognized as a leading micro-electronics researcher who helped address the technical challenges arising from the ever-accelerating miniaturization of electronics in recent decades. His research has centred on three-dimensional integrated circuits, in which layers fabricated through different processes are

stacked to form complex monolithic systems. This allows a variety of electronic functions to be integrated into a smaller chip area.

Dr Reif and his group have also achieved distinction in identifying and developing environmentally benign alternatives to chemicals in the etching of patterns on microchips. Some gases widely used in the semiconductor industry are believed to contribute to global warming, and the group has worked on a variety of alternative compounds.

Dr Reif has been widely recognized for his contribution in these fields. He was named a fellow of the Institute of Electrical and Electronics Engineers in 1993 for his work in 'the low-temperature epitaxial growth of semiconductor thin films'. In 2000, he received the Aristotle Award from the Semiconductor Research Corporation (SRC) for his commitment to the education and impact on the careers of SRC students. He is an elected member of the American Academy of Arts and Sciences and the US National Academy of Engineering. He holds 15 patents and has authored, edited or co-edited many books and papers.

But his extended leadership experience also led to a new phase in Dr Reif's career, with his appointment as Provost of MIT in 2005. In this role, he helped MIT weather the economic downturn that started a few years later, oversaw partnerships with governments and foundations to create four new centres and universities worldwide, promoted a major faculty-led effort to address race and diversity challenges, and helped foster the emergence of an innovation cluster adjacent to MIT. He also led the development of two pioneering online education initiatives: MITx, the Institute's own online learning platform; and edX, a partnership between MIT and Harvard that has enriched residential education and, to date, has brought online learning to six million people from 196 countries. For his work in developing MITx, he received the 2012 Tribeca Disruptive Innovation Award. As a visionary champion of digital learning, he was also recognized with the 2015 Frank E. Taplin, Jr. Public Intellectual Award.

The youngest son of a refugee family had come a long way, including raising a family. But the journey was not over. In July 2012, Dr Reif was appointed as the 17th President of the Massachusetts Institute of Technology. In that distinguished role, he was asked by the White House to co-chair the Steering Committee of the National Advanced Manufacturing Partnership. He has also launched the MIT Innovation Initiative. As part of this effort, in November of 2015, MIT announced the launch of an 'Innovation Node' in Hong Kong intended to connect the MIT community with various resources, capabilities and opportunities in Hong Kong and its neighboring Pearl River Delta. To drive progress towards creating a sustainable human society, Dr Reif also launched the cross-disciplinary Environmental Solutions Initiative, which includes the Abdul Latif Jameel World Water and Food Security Laboratory, a new effort to help humanity adapt to a rising population, a changing climate, and increasing urbanization and development. In this same spirit, in October 2015, Dr Reif announced MIT's Plan for Action on Climate Change. In just one generation this enterprising refugee family produced an individual capable of exercising world-changing responsibility.

For his outstanding contributions to micro-electronics, environmental sustainability and online education, as well as to global university leadership, it gives me great pleasure, Mr Vice-Chancellor, to present to you Dr Leo Rafael Reif, for the award of the degree of Doctor of Laws, *honoris causa*.

This citation is written by Professor Simon Haines

Conferment of the Degree of Doctor of Literature, *honoris causa* A Citation

Professor Wu Weishan, PhD (Hon)

With his masterful hands and a lump of clay, he sculpts old and new stories of humanity. Displaying long hair and a devoted heart, he incorporates the cultural essence of both east and west.

Professor Wu Weishan is a world-renowned sculptor with a distinctive Chinese character. His majestic, stylish sculptures consummately blend form and spirit. Their style is not only a practice of the freehand sculpture theory he advocates, but also an epitome of the poetry and vigorous artistic form he pursues. Besides being Director of the National Art Museum of China, Professor Wu also serves as Vice Chairman of China Artists Association, President of the China Academy of Sculpture, founding Director of the Academy of Fine Arts of Nanjing University, Adjunct Professor of the Department of Fine Arts at The Chinese University of Hong Kong, Fellow of Royal British Society of Portrait Sculptors and Member of the Chinese People's Political Consultative Conference.

Professor Wu was born into a scholarly family in Dongtai, Jiangsu province, in 1962. As he grew up in Jiangnan, his environment — steeped in humanities of Jiangsu and traditional Chinese culture — laid a solid foundation for his cultural and artistic education. At the age of 17, while he was studying in Wuxi, he met an old artisan who created vivid figurines by dextrously manipulating clay with his fingers. This technique fascinated him, and inspired him to take up sculpture as his lifelong career, a decision he says he has never regretted.

In 1987, upon graduation from the Department of Fine Arts at Nanjing Normal University, Professor Wu immediately took up the mantle of instructor, while still devoting himself to researching and creating sculpture. He later studied at Peking University and wrote the book *Shi jue yi shu xin li*. Those 10 years of honing his skills served Professor Wu well. In 1996, he began to make a name in the art scene, drawing international attention. From 1996 to 1997, he was a senior visiting artist at the European Ceramic Work Centre in the Netherlands. When that ended, he was invited to sculpt a portrait of Queen Beatrix Wilhelmina Armgard of the Netherlands, which earned him wide acclaim. Between 1997 and 1998, he served as a senior visiting scholar in the United States at the Department of Sculpture, School of Art at the University of Washington, where he began to establish his own unique style by blending western elements into his eastern-style sculpture. In 1998, he returned to China to serve as a professor at Nanjing University. There he founded the Sculpture Art Research Centre and assumed its directorship. Five years later, the centre was expanded and renamed as the Academy of Fine Arts, and Professor Wu served as its first president. In 2000, he was named the first Y.K. Pao Distinguished Visiting Artist of Hong Kong. In 2003, his work 'Sleeping Child' was selected for the Exhibition of the Society of Portrait Sculptors in the UK, and he became the first Asian artist to win the

Pangolin Award. In 2011, he won the first China Arts Award. In 2012, he won the only gold award of the Louvre International Art Festival, further elevating his reputation around the globe. The same year, China's Ministry of Culture hosted the 'Sculpting the Soul of a Nation' exhibition at the United Nations headquarters in New York, the National Rome Museum in Italy, France and the UK, showcasing Professor Wu's works, artistic style and achievements for all to see. Mr Ban Ki-moon, Secretary-General of the United Nations, praised that his exhibition embodied the soul of all humanity.

Over the past 30-odd years, Professor Wu has created more than 400 lifelike, perfectly balanced sculptures, which stand around the world. He has devoted his life to studying and exploring traditional Chinese culture and focused particularly on presenting this tradition and spirit through his sculpted works. He has been called 'the sculptor of the times' for his frequent use of historical figures as subjects, among them Laotze, Confucius, Luxun, Qi Baishi, Li Karen and Fei Xiaotong. One such work, 'the Lao Tzu harmony between Universe and Mankind', was held in high esteem by French artists when it was exhibited in Louvre Museum, Paris.

A legacy and further development of traditional Chinese techniques and aesthetic, Professor Wu's sculptures are also an extension and recreation of western artistic concepts. The work describing a calamity group commissioned by the Nanjing Massacre Memorial Hall, is a case in point. The fleeing refugees depicted in the sculpture – some seized with terror, some frail and small, some sacrificing themselves to save the young, and some holding candles to pray for the death – are a reflection of his view on the ultimate philosophical discussion of human nature. This painstakingly crafted masterpiece is a miniature of the enormous suffering in wars, which transcends the boundaries of race and nation, and became a famous masterpiece of World War II in promoting world peace.

Professor Wu is an old friend of The Chinese University of Hong Kong. Over a decade ago, he was an S.Y. Chung Visiting Fellow of New Asia College, and is now an Adjunct Professor at the Department of Fine Arts. In 2010, he was awarded an Honorary Fellowship, and in 2013 he was the distinguished speaker of the Shun Hing Lecture in Arts and Humanities. He has created numerous sculptures of CUHK's luminaries, including Dr Choh-Ming Li, CUHK's founding Vice-Chancellor; Mr Ch'ien Mu, the founding Head of New Asia College, and Professor Charles K. Kao, former Vice-Chancellor and Nobel laureate, Professor Yang Chen-ning, Dr the Honourable Simon Li Fook-sean, and Professor the Honourable Jao Tsung-I. The bust of Professor Jao stands side by side with the bust of Dante on the first floor of the CUHK University Library. Professor Jao is pleased and quipped, 'I can engage in a conversation with Dante now'.

In celebration of CUHK's Golden Jubilee, the University established the Golden Jubilee Alumni Garden at the eastern gate of CUHK in 2013. Fifty-one trees were planted in this garden, along with the installation of a giant bronze sculpture named 'The Integration'. The sculpture features faces of a youngster and an old man, creating dialogues of life and

spirit, time and space, symbolizing the inheritance of science and humanities. Standing tall at the eastern gate as a guardian of CUHK, this sculpture was designed and crafted by Professor Wu to mark the University's 50th Anniversary.

In recognition of his immense accomplishments in the Chinese and international art scenes, his tremendous efforts in integrating Chinese and western arts, and his promotion of Chinese culture, as well as the massive contribution he has made to CUHK, it gives me great pleasure, Mr Vice-Chancellor, to present to you Professor Wu Weishan for the award of the degree of Doctor of Literature, *honoris causa*.

Conferment of the Degree of Doctor of Science, *honoris causa* A Citation

Professor Shinya Yamanaka, DSc (Hon), MD, PhD, Nobel Laureate in Physiology or Medicine

In organisms such as mammals which have many cells, there exists one fundamental type of cell called a stem cell. This is a kind of mother cell, which has not yet differentiated itself as part of the normal cell-division process into one of the more specialised types, such as a bone or blood or organ or skin cell, but which is capable of developing into any of them. Obviously in mammals these stem cells are mainly to be found in embryos, at the beginning of the growth cycle. They can also be found in adults, as cells which maintain and repair tissue. But adult stem cells are not as versatile or potent as the embryonic ones; they are not what is called 'pluripotent', which means they cannot turn themselves into any cell type. On the other hand, scientists have been able to create an embryonic-like cell in the lab: embryonic stem (ES) cells, which are pluripotent.

ES cells have enormous potential for regenerative medicine, such as in the transplanting of cells in incurable disease therapy. They also have important applications in drug testing, and in the basic understanding of how certain diseases develop. But the creation of human ES cells requires the use of human embryos, which raises difficult ethical problems as well as practical ones such as rejection by the host's immune system. Is there an alternative?

It has been known for 50 years, through the work of John Gurdon, Ian Wilmut and others, that the nucleus of an adult cell can be transplanted into an egg which can then grow into a new frog or a sheep, like the famous Dolly. This is known as cloning. But this technique also has limited application; it is extremely inefficient, which means an extraordinary number of eggs are needed. The Holy Grail of stem cell research became to discover a way of reprogramming an ordinary functional adult cell such as a skin cell so as to return it to a pluripotent state: in other words to create the equivalent of an ES cell out of an ordinary adult body cell, called a somatic cell. And that discovery was made only nine years ago.

The man who made it was the son and grandson of hard-working engineers. Their small factory in Osaka designed and manufactured components for sawing machines. The child copied his father. He loved taking clocks and radios to pieces and then usually failing to put them back together again. Meanwhile as a hobby he loved judo and rugby, and his bones often got broken. This aroused his interest in repairing bodies instead of clocks and radios and he decided to become an orthopedic surgeon. He received his MD from Kobe University in 1987 and during his residency was able to treat his own father's diabetes and hepatitis during the last two years of his life. But in fact he found the exposure to incurable diseases so distressing, maybe like the broken radios he could not fix as a child, that he decided to become a scientist instead, and look for the cures.

He took his PhD in pharmacology at Osaka City University in 1993. He developed an interest in molecular genetics and especially gene targeting in mice: that is, inducing or deleting single genes in order to alter cells. This is a technique pharmacology cannot hope to emulate. In 1993 he moved to the Gladstone Institute of Cardiovascular Diseases in San Francisco to pursue his research. He now had to learn how to culture ES cells in mice as part of his gene targeting work. By now he was married with a family of his own, but when his wife and two daughters returned to Japan he went back to the Osaka City University's Pharmacology Department.

ES cells were now his main research interest. After several setbacks he finally got his own laboratory at the Nara Institute of Science and Technology in 1999. He was becoming more interested in human ES cells than in mice; but given the ethical and practical problems, and building on the older frog and sheep genetic research, he was determined to find ways of generating ES cell-like pluripotent cells directly from ordinary somatic cells through genetic engineering. He brought his lab over to Kyoto University's Institute of Frontier Medical Sciences, and there from 2005 to 2007, he and his colleagues finally succeeded in converting skin cells into induced pluripotent stem (iPS) cells, first in mice and then in humans, by the addition of just four genes.

Of course those iPS cells can be derived from a patient's own skin, making them specific to him or her, and thus much more effective for studying and treating disease without immunological resistance, as well as for developing chemical and natural products to make medicines. Conditions as varied as sickle cell anaemia, Parkinson's disease, Alzheimer's disease, Lou Gehrig's disease, cancer and diabetes, the disease our scientist's own father had, are potentially all treatable by iPS cell technology.

The team had indeed found that Holy Grail of stem cell research, and in 2008 their leader was made director of the newly created Center for iPS Cell Research and Application (CiRA), at Kyoto University. Prizes and awards followed thick and fast on that breakthrough success. They included two of the world's top three awards in medicine, the Wolf Prize in Israel in 2011 and the Albert Lasker Basic Medical Research Award in the US in 2009, as well as the Millennium Technology Award in Finland in 2012, and Hong Kong's own Shaw Prize in Life Science and Medicine in 2008. He has been named a member of several national science academies including the US National Academy of Sciences, the Pontifical Academy of Sciences and the Japan Academy. Along with remaining director of CiRA, currently he is also a senior investigator at the Gladstone Institutes in San Francisco. He is no stranger to CUHK either, since he gave the Dr Lui Che Woo Distinguished Professor Public Lecture here last year.

That little boy who wanted to fix radios, clocks and broken bones, who loved judo and rugby and still runs marathons to raise money for cell research, has ended up by transforming human cell technology and revolutionizing medical research. He is of course Shinya Yamanaka. In 2012, jointly with Sir John Gurdon, he was awarded the Nobel Prize

in Physiology or Medicine, and while of course his father was not present at the ceremony, his mother was.

For his remarkable and ongoing contribution to stem cell research, molecular biology and biotechnology, with its vast implications for regenerative medicine, it gives me great pleasure, Mr Vice-Chancellor, to present to you Professor Shinya Yamanaka, for the award of the degree of Doctor of Science, *honoris causa*.

This citation is written by Professor Simon Haines