

Praise for My Life in Medicine: A Hong Kong Journey

“My first encounter with Kwok-Yung (K.Y.) took place one evening in 1992 when I, as a very green lecturer in medicine, needed someone to perform an urgent smear on the joint fluid of a patient with high fever. It was after hours and regular staff could not be found, but for K.Y. who was working alone in the corner of the laboratory, and who later confirmed the diagnosis of gonorrhoeal infection for my patient and taught me a great lesson on the treatment of this condition. This was how dedicated K.Y. was as a microbiologist.

To many of us, K.Y. is a legend within HKUMed. He leads through practicing fairness, compassion, humility, excellence in science and, most importantly, his desires to improve the health of his patients and the society. Reading the drafts of this autobiography has filled my days with inspiration. This is a must-read for all.”

—**Professor Lau Chak-Sing**, dean, Li Ka Shing Faculty of Medicine, The University of Hong Kong

“As a school student, Professor Yuen Kwok-Yung was a fan of Sherlock Holmes. In time, he has become a world-renowned detective hunting for pathogenic viruses, bacteria, fungi and parasites, saving lives, and contributing to making the world a safer place. He is an inspiration to future generations of medical Sherlock Holmeses.”

—**Professor Dennis Lo Yuk-Ming**, president, The Hong Kong Academy of Sciences

“K.Y. Yuen, the iconic HKU microbiologist, tells the story of his life and career, and how Christian faith and love shaped his destiny. His scientific discoveries were not by chance, but through teamwork, leadership, and painstaking methodology. He sought the truth, faced, and overcame formidable challenges. His heartwarming personal story is that of a son, student, clinician, friend, husband, and teacher. It beckons us to embrace the ultimate reality.”

—**Dr. David Fang Jin-Sheng**, former president, The Hong Kong Academy of Medicine

“The incredible stories and groundbreaking discoveries of Professor Yuen in his relentless pursuit of combating infectious disease outbreaks are truly exemplary. His remarkable career trajectory—which encompassed rigorous training as a frontline physician, surgeon, clinical microbiologist and virologist—has uniquely equipped him to confront the most critical public health challenges in Hong Kong and around the globe. This book is an absolute must-read for doctors and public health officers alike.”

—**Dr. Leung Pak-Yin**, former chief executive, Hospital Authority, and founding controller, Centre for Health Protection, Hong Kong

“It was my first day as an intern in the Department of Surgery, United Christian Hospital in 1984. Dr. Yuen Kwok-Yung brought me to the bedside of an elderly woman. He held her hands and told me, ‘Au, when you greet your patients by holding their hands, you can build up the rapport and trust while assessing many useful clinical signs like warmth, moisture, pallor, pulse, and capillary refilling.’

This first encounter with Professor Yuen stayed in my mind for 40 years. After reading his autobiography, I understand how a passionate, frontline clinician grows into a great scientist with global perspective and basic research skills to combat major infectious disease outbreaks and contribute to the wellbeing of mankind.”

—**Dr. Au Yiu-Kai**, consultant surgeon, Hospital Authority, and war zone volunteer of Médecins Sans Frontières

My Life in Medicine

A Hong Kong Journey

Yuen Kwok-Yung



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To Louisa, the memories of Dad, Mom, and Grandpa;
and to the Ultimate Reality

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Foreword

What follows is a deeply personal story of a renowned physician scientist, who has made remarkable contributions to his university, his community, and the world.

Professor Yuen Kwok-Yung (K. Y.)’s journey began in an impoverished but loving Hong Kong family in the mid-1950s. Despite multiple illnesses and severe physical injuries, he pursued knowledge with passion, motivated by a “tiger mom” who did not have a chance at higher education. His great curiosity as a child foretold his inclination for science. Step by step, he distinguished himself in school by immersing in books as well as learning from friends and mentors. His religion served as his moral compass. He took an eclectic path from secondary school to medical school, and then to practical training in both medicine and surgery. Yet another transition to hospital microbiologist transformed him into a “medical detective” solving mysterious cases one by one in his own hospital and beyond. As he extended his “pathogen sleuthing” to new viral outbreaks that plagued Hong Kong population, such as those caused by H5N1 influenza or SARS virus, he went through another evolution by becoming a laboratory scientist heading a great team, whose most notable achievements were the isolation of the causative agent of SARS and identification of its natural reservoir in horseshoe bats, a “time bomb” that forewarned the coming of another coronavirus pandemic that we all just experienced. Quietly but steadily, he became a respected physician scientist as well as a trusted and tireless public health authority at home and abroad.

K.Y.’s trials and tribulations along his fascinating journey are detailed. Personal stories of his classmates and teachers are sprinkled throughout,



as are anecdotes about various neighborhoods back in the day that would be of particular interest to locals. Abundant medical vignettes and “pearls” could be found, as any medical reader would appreciate. Numerous passages from the Bible and ancient Chinese adages exemplify his humanity and offer advice to the young. For those who know him well, an interesting explanation for his distinctive and unaltered attire is finally provided. Importantly, what comes through in this autobiography is his scientific rigor, clarity of thought, kindness of heart, and level of honesty. It is truly an inspiring life story for a star who has put microbiology at The University of Hong Kong on the global map.

David D. Ho

Professor of Microbiology and Immunology at Columbia University
Clyde '56 and Helen Wu Professor of Medicine and Director, Aaron
Diamond AIDS Research Center
Member of National Academy of Medicine and American Academy of
Arts and Sciences

Preface

Life's twists and turns take you to unimagined places

Western writers of other eras thought of Hong Kong as the “Pearl of the Orient.” Historians of the Cantonese language think of it as “Fragrant Harbor.” Officially, it is the Hong Kong Special Administrative Region. These days, the Hong Kong government calls it “Asia’s World City.”

I say it is home.

In 1842, the beautiful, sparsely populated islands whose inhabitants had hunted, farmed, and fished from time immemorial, *Heung Gong* came under British rule, exploited, and then later plundered by occupiers during a world war. In time, turmoil to the north of it made it a land of refugees, a land of hope, dreams, and resilience, and then, miraculously, it evolved into one of Asia’s premier cities.

I am privileged to have been born, raised, and educated here, and to have worked here all my adult life and to witness Hong Kong weather storms and grow strong.

After I became a physician, a surgeon, a teacher, and a scientist, I was asked in February of 2003 to evaluate a patient who had come down with a mysterious illness that at first seemed like a form of pneumonia. A few days later, I attended to his brother-in-law, who had also fallen ill. But the symptoms both had, our research would ultimately show, were not due to known causes of pneumonia but represented a new disease, caused by a virus the world had not previously seen. The disease became known as Severe Acute Respiratory Syndrome (SARS) and the virus SARS-CoV-1, a member derived from the coronavirus (CoV) family of viruses that lived in bats. This was the beginning of my long study of coronaviruses and how they emerged to threaten our world, dangerously so in 2019, when



COVID-19 came and claimed the lives of thousands in our city and millions across the globe.

It is now 2023, the twentieth anniversary of the SARS outbreak and a year past the worst of COVID-19. I have just passed my sixty-fifth birthday. Before I begin losing details to time, I decided to write this autobiography. I spent 14 days of after-work hours to put most of it down on paper in the aftermath of attending a very touching memorial service for Mr. Alex Law Kai-Yui (羅啟銳)—a dear friend, filmmaker, and one of Hong Kong's best—who passed away suddenly.

With our built-in defense mechanisms, we tend to forget all the bad things and low moments in favor of the good days and success stories. But as I looked back, I had to admit my sins: stubbornness, arrogance, lust, greed, envy, laziness, and insensitivity to others.

Nonetheless, it was by the grace of God that I have lived a fulfilling life. He has satisfied my curiosity by giving me opportunities to advance science: how to hunt for sources of infectious diseases that begin in animals and the environment, how to treat and cure infected patients, how to control and manage the sources of outbreaks, and how to discover the basic mechanisms of pathogenesis—the way diseases develop. While genetic inheritance matters a lot, the environment, our encounters with people and situations, and especially our personal decisions, matter no less.

During my younger days, I was always at a loss when facing certain situations and easily swayed by dangerous peer pressure and the opinions of others. With God's grace, my values and visions have become clearer and more solid with age. If I had the chance to choose to live another life, I would choose the same path and want to meet the same people around me again. I owe my classmates, teachers, colleagues, friends, students, and patients the sincerest thanks. I am very grateful to Professor Ying Chan and Gene Mustain, who served as development editors of the book project. Gene also edited the book. I thank Mr. Michael Duckworth, publisher of Hong Kong University Press, for shepherding the manuscript to publication.

I also thank Mr. Eric Cheung Tat-Ming, Ms. Trinni Choy, Ms. Athene Lam Hoi-Ying, Ms. Bernadette Tsui Wing-Suen, Ms. Hazel Yip

Kim-Ching, Dr. David Christopher Lung, Dr. May Miao Yin-King, and Dr. Sally Wong Cheuk-Ying for reading through my first draft and giving me advice; and Dr. Siddharth Sridhar for reading and giving me feedback on the final draft. The views expressed in the following pages are of course entirely my own. I wish it were otherwise, but it is impossible to describe the contributions of all those who were involved in the investigations of the disease outbreaks or discoveries included here, or the full medical and scientific story of each over the years.

This book would not have been possible without the support of my wife, Louisa, and my family members. Neither they nor anyone else is at fault for any missteps I make along the way, but God knows I have labored to make this as true as memory and judgment enable.



Epilogue

Sapientia et Virtus

Hong Kong is my beloved birthplace, and HKU the sanctuary of my intellectual birthplace. In all circumstances, we cherish the spirit of our university insignia, *Sapientia et Virtus*, which beckons us to convey *wisdom and virtue* to life's decisions. Over 40 years at HKU in different capacities, I learned about leadership from our teachers, peers, students, and patients. True leaders develop a vision—an idea, a picture, or a need of the future. They find a roadmap to accomplish it. They build a team whose members share the vision. They abide by core values of fairness, compassion, humility, and excellence; by action, fact, and logic, they strive to set personal examples that inspire others.

True leaders are global and specific in thinking and action. They stand up to adversity and give hope to others. They are good listeners who see the good people can give. They define priorities and invite perspectives. They compromise when someone develops a better vision and are generous to the next generation of leaders. While I agree that people tend not to change unless their existence is threatened, abuse of power and threats are more often destructive than constructive in turning vision into reality. The integrity of a leader is increasingly tested as they gain in power. And I see that a majority, including me, can fall into the trap of believing in a simple solution to a complex problem offered by someone with an alternative agenda. In such a conflict, it is the responsibility of a leader to explain in

simple terms the complexity of the matter and counsel patience and collective effort.

To us humans, the future is unknowable. But it is natural for us to try to imagine it. We have seen many regional, ideological, and religious conflicts, but nearly 80 years have passed since the Second World War, the longest period of peace in modern history. In the meantime, however, runaway consumerism and population growth have led to existential threats of climate change, pollution, and shortages of water, energy, and food. Rapid unprecedented progress in science and technology has helped us innovate, but at the cost of mindless materialism and impatience with the idea of taking time to ponder the question of why we are all here in the first place. We have seen stunning developments in artificial intelligence and information technology, but these tools can be turned against us in the most destructive ways, including in the production of false or doctored photos and videos that cannot be differentiated by the most advanced forensic software. To anyone within seconds, distorted information can be channeled knowingly or unknowingly by the pocket-sized computers we all carry around, polarizing our opinions and rousing our anger.

It is fearfully easy to imagine how the competition for resources—the food and water on our tables, the energy that runs our communities and comforts our homes—will cause geopolitical instability. Unless leaders of different regions can come to their senses and solve these global existential threats, calamity may be in store. Leaders in the West representing democracy, with all its deficiencies, have an extremely difficult task—of uniting divided people to work together to find solutions. They have also brought ruins around the world in the name of democracy. Democracy by itself is time-consuming and less efficient, having critical faults in times of crises. Leaders in the East representing autocracy are generally more capable of uniting people against problems, but at the cost of information control and even repression by force. Autocracy can be fast and efficient but can also produce havoc when driven by bias or incorrect information in an atmosphere where nobody dares speak up.

I have been giving much thought to world leaders who have passed, their successes and failures, their strengths, and shortcomings. The West would do well to have another Winston Churchill, the British statesman,





someone who can lead people past the limitations of democracy and unite them in a crisis to work toward a solution, such as resisting and defeating Nazism and Fascism. Among former leaders in the East, Lee Kuan Yew, the Singaporean statesman, distinguished himself as someone who can lead people past the weaknesses of autocracy and root out systematic corruption by the ruling elites while seeking to assure his citizens are well educated so that they can achieve their potential, and their small country can survive as a proud and advanced nation. Going forward, leaders in the East and West would have to come together to solve common global problems, or appalling conflicts are inevitable. A highly fatal and transmissible pandemic during the next world war which deploys conventional, cyber, and nuclear weaponry would be more calamitous than the 1918 Spanish flu associated with 17 to 100 million deaths during the First World War, and should be avoided at any cost.

He has made everything beautiful in its time. He has also set eternity in the human heart; except that no one can fathom what God does from beginning to end.

—Ecclesiastes Chapter 3:11–12

The poverty and illnesses of my childhood that I describe at the beginning of this book endowed me with empathy for the poor and the sick, as did the lessons of my family and my teachers, such as Lee Boon-Yan, who took our primary class to visit the home of a boy whose father had suddenly died and who invited needy children into her home for meals and a quiet place to study. All along the road thereafter—Queen’s College, Hong Kong University, United Christian Hospital, Queen Mary Hospital—I found environments that helped me acquire the knowledge, skills, and passion I needed to become a student, a doctor, a surgeon, a scientist, and a teacher. My parents, my wife, Louisa, my spiritual overseers, especially Dr. Chan Kin-Sang, my teachers, my colleagues, and many others who helped me were gifts God gave me.

For the longest period of my career, I was an infectious disease physician and clinical microbiologist. Discovering new pathogenic viruses, bacteria, fungi, and parasites amid the trillions of other microbes is not completely unlike finding a particular star amid the trillions of other

celestial objects, as we tried to do in my Queen's College secondary school days at the Astronomers' Club. Any reward or recognition for scientific discovery is a by-product of the process of investigation; the real prize is the joy of seeing and admiring firsthand the beauty of the plan of the Creator. This is the privilege of a glimpse into eternity and the work of God.

Curiosity breeds innovation, logic sets paths, perseverance brings results, but only love endures. What is more enjoyable than seeing the recovery of patients, the end of their suffering, and the happiness of their families? I have written this account to remind myself of what I have experienced and learned over my journey, before my memory begins to fade. The meaning of our existence remains a mystery deserving of exploration, where we do not assume anything and humbly seek to make our lives worth living.



Acknowledgments

After our discovery in 2005 of a large reservoir of SARS-CoV-1-like viruses in Chinese horseshoe bats, we predicted the inevitability of future and similar outbreaks, such as the SARS crisis of 2003. We then decided to launch a full-scale surveillance of wild animals, especially bats, in Hong Kong, the mainland, and overseas.

Only a very low amount of funding from grant agencies was available for this undertaking, but we were fortunate to secure donations from Mrs. Carol Yu and Professor Richard Yu. Their funding led to the creation of the Carol Yu Centre for Infection, which sustained our research during a difficult time.

Our work was later sustained by the repeated donations by Dr. Arthur Lui and Mr. Jonathan Lui of the Providence Foundation, Mrs. Teresa Lim Wong On-Yik, and funding from the Department of Health under a consultancy agreement crafted by Dr. Thomas Tsang Ho-Fai, and by a grant for animal surveillance of novel microbes facilitated by Dr. York Chow, former secretary of the Food and Health Bureau (FHB).

Our department again ran into great difficulty in 2011, due to the loss of three staff positions. However, with generous donations from Mrs. Mona Shaw of the Shaw Foundation and Mr. Michael Tong Seak-Gun, we were able to maintain our research, teaching, and clinical services without much disruption.

Moreover, strong support from Dr. Leung Pak-Yin of the Hospital Authority, and Food and Health Bureau Secretaries Dr. Ko Wing-Man and Dr. Sophia Chan Siu-Chee enabled our QMH Biosafety Level 3 laboratory at QMH to begin operating in 2017, so as to complement the



operation of the Biosafety Level 3 laboratory within the faculty. Dr. Ko Wing-Man, Dr. Leung Pak-Yin, Dr. Ronald Lam Man-Kin (director of health), Dr. Thomas Tsang Ho-Fai (former controller of the Centre for Health Protection), Dr. Edwin Tsui Lok-Kin (controller of the Centre for Health Protection), Dr. Janice Lo Yee-Chi (consultant microbiologist of the Centre for Health Protection) have facilitated the procurement and transfer of clinical specimens, microbial strains, and data for our research during the 1997 avian flu, 2003 SARS, 2020 COVID-19, and many other outbreaks in Hong Kong.

Without these state-of-the-art laboratories, we would not have been able to fight avian flu, SARS, and COVID-19 as efficiently as we did. All these leaders in different fields and positions helped us to help people and advance science. They know that only leaders with acute vision can persuade others to support good causes.

We also gratefully acknowledge the support of many more donors too numerous to name and those who wish to remain anonymous. We hope we have justified your generosity.

Finally, I wish to thank the healthcare staff of Hong Kong for their dedication and professionalism in the many battles against infectious diseases. My thanks also go to our citizens for their public spirit in complying with disease control measures. Together, we have made Hong Kong a safer place.

About the Author

Yuen Kwok-Yung (袁國勇), Henry Fok Professor and Chair in Infectious Diseases of the Department of Microbiology at the University of Hong Kong (HKU), is a physician, virologist, microbiologist, and one of the world's foremost medical and scientific researchers. He has been named as a Highly Cited Researcher by Clarivate and one of the top one percent of most influential scholars in the world.

Dr. Yuen has published extensively on the hunt for microbes and emerging infectious diseases. His team has discovered over 100 novel viruses, bacteria, fungi, and parasites from animal and human specimens. He is a member of the Chinese Academy of Engineering (Basic Medicine) and the American Academy of Microbiology, and fellow of the Hong Kong Colleges of Pathologists, Surgeons, and Physicians; the American College of Physicians; the Royal College of Pathologists of the UK; the Royal College of Surgery of Glasgow; and the Royal Colleges of Physicians in Edinburgh and London.

In 2003, Dr. Yuen's team attended to the first SARS patients and isolated SARS-CoV-1—the SARS virus—from their clinical specimens. In 2020, he led the team to discover the person-to-person transmissibility of SARS-CoV-2 which causes the COVID-19 pandemic. Both findings played a critical role in the containment of the SARS outbreak and the COVID epidemic. In 2005, he was appointed by the Ministry of Science and Technology of China to serve as the founding co-director of the State Key Laboratory of Emerging Infectious Diseases at HKU, China's first State Key Laboratory outside the mainland. He received the 2021 Future

Science Prize for his discoveries and the correct prediction that the bat SARS-related coronaviruses will jump to humans again.

Dr. Yuen is a lifelong resident of Hong Kong and earned his undergraduate and medical degrees from the university he has served in multiple capacities since 1988.

