Protein Cell 2011, 2(5): 349–350
DOI 10.1007/s13238-011-1050-1

Protein & Cell

RECOLLECTION

"A friend to man, " Dr. Feifan Tang: a story of causative agent of trachoma, from "Tang's virus" to Chlamydia trachomatis, to "Phylum Chlamydiae"

Guangsheng Cheng[1], Ming Li[2], George F. Gao[1,2]

[1] Institute of Microbiology, Chinese Academy of Sciences, Beijing 100101, China
[2] Beijing Institutes of Life Science, Chinese Academy of Sciences, Beijing 100101, China

"Dr. Feifan Tang (F. F. Tang) was indeed 'a friend to man' as our old English eighteenth-century phrase has it; he loved the Chinese people and was a doughty fighter in the fundamental field of preventive medicine. With all friends here, I salute his memory and I am sure he will never be forgotten in China." The famous British scientist Joseph Needham wrote this in 1979 in his letter to the then director of the National Vaccine & Serum Institute of China, when he received the obituary notice of Dr. F. F. Tang who had died in 1958.

Dr. F. F. Tang was born in Tangjiaping, Liling County, Hunan Province in 1897. In 1921, he became the first session of graduates from the Hsiang-Ya School of Medicine (Changsha, the capital city of Hunan Province) ranking the first in academic grades among his peers. After working at the Peking Union Medical College for three years, he continued his research on virology with Prof. Hans Zinsser at the Department of Bacteriology of the Harvard School of Medicine, Harvard University, USA. In 1929, he returned to Shanghai, and was offered a faculty position at the Department of Bacteriology, Medical College, National Central University, as well as director of the Bacteriology Department of the Henry Lester Institute of Medical Research (Shanghai). In 1937, the year when the Anti-Japanese War broke out, Dr. F. F. Tang was appointed director of the National Epidemic Prevention Bureau, and in 1947, he was elected Executive Committee Member of the International Union of Microbiology Societies. After the establishment of the People's Republic of China in 1949, he was appointed director of the National Vaccine & Serum Institute and later founded the National Institute for the Control of Pharmaceutical and Biological Products. In 1952, he became chairman of the Chinese Society for Microbiology. Two years later, he was elected member of Academic Division of Geoscience and Biology, Chinese Academy of Sciences, Beijing.

Dr. F. F. Tang (1897–1958)

Dr. F. F. Tang was a pioneer virologist in China and had been conducting virological research on trachoma since 1929, when he returned from the U.S. and when trachoma was severely threatening the health condition of Chinese people. He first performed a series of inoculation experiments in human eyes including his own, and disproved the Noguchi hypothesis that bacteria were the etiologic agent of trachoma. During the following years of etiological research on

Dr. F. F. Tang (5th from the left) and his colleagues

trachoma, he was once invited to work with Dr. W. J. Elford in England, who then had developed the ultra-filtration technology. Dr. F. F. Tang was greatly inspired by this experience. He was convinced that natural microorganisms consist of a long series of microbes, from small to large in size, and there should be "transition microbes" between the known virus and bacteria, such as rickettsia and mycoplasma. The etiologic agent of trachoma should be a "big virus" whose size is larger than vaccinia virus and similar to richettsia. However, his etiological study of trachoma was interrupted due to the Anti-Japanese War and China's War of Liberation, and did not resume until 1949, when the real agent of trachoma remained yet unknown. To ensure the reliability of pathological material, he carefully collected samples from over 200 trachoma patients with the help of ophthalmologist Dr. Xiaolou Zhang, and investigated the formation and evolution of trachoma pathogen. In 1955, he elucidated the development cycle of trachoma pathogen in host cells, which clarified the confusion in the past 50 years. In the same year, his experiment of trachoma infection in monkeys also made great progress. By the yolk sac inoculation approach commonly used in the richettsia research and using antibiotics streptomycin and penicillin as inhibitors, he successfully isolated the virus strain TE, which was confirmed to be the etiologic agent of trachoma in monkey eye. The virus has been referred to as "Tang's virus" by many researchers later on. He even inoculated the isolated virus into his own eye and got typical symptoms of trachoma. He recorded the cause of trachoma for over 40 days and, further proved the pathogenicity of this virus.

This breakthrough was published in *Acta Microbiologica Sinica* in 1956, and was quickly confirmed by many laboratories all over the world. In 1958, L. H. Collier in the Lister Institute isolated the trachoma pathogen in Gambia using Tang's method, and later isolated the "trachoma virus" in other countries. It was also found that the trachoma virus belonged to the same category as the pathogens of psittacosis and of lymphogranuloma. In 1973, the category was named Chlamydia by the WHO. Today, these micro-organisms are classified into Phylum Chlamydiae in *Bergey's Manual for Systematic Bacteriology*, and chlamydiology has become an important branch of medical microbiology.

It took Dr. F. F. Tang nearly 30 years in his turbulent homeland to identify the trachoma agent, which made significant contribution to both clinical practices and basic science. His research might have been continued for greater achievements if he had not been appointed to study vaccines of measles and poliomyelitis. Even so, he was still being questioned and judged. In 1958, he gave up his life to protect his integrity and dignity. Until 23 years later when Dr. F. F. Tang was awarded the gold medal by the International Organization against Trachoma, his great contribution became to be treasured. In 1992, the Chinese government issued a postage stamp in his honor. A bronze statue of Dr. F. F. Tang stands in front of the National Vaccine & Serum Institute, Beijing. It is a great pity that the trachoma study was discontinued in China for a while. Today, when we are in the new era of innovation, the lessons from our predecessors should never be forgotten.

The postage stamp in memory of Dr. F. F. Tang issued by the Chinese government in 1992

