

Introduction of Professor Tze Leung Lai



Tze L. Lai (1945 – 2023) was one of the most accomplished statisticians of our time, whose research spanned both theoretical statistics and mathematics, as well as their applications in biomedical sciences, clinical trial design and analysis, cancer research, financial engineering, machine learning, and many other areas. He served as a mentor, having advised at least 79 PhD students and seven post-doctoral trainees. Dr. Lai had a distinguished academic career, most recently as the Ray Lyman Wilbur Professor of Statistics at Stanford University (1987–2023), after spending 16 years as a professor at Columbia University.

Among his many contributions to the field of sequential statistical analysis is his groundbreaking work on solving the long-standing “multi-armed bandit problem,” where an individual chooses between actions to maximize a cumulative reward. His research extended to stochastic approximation and recursive estimation, adaptive control of linear stochastic systems and Markov decision processes, saddle point approximations, and boundary-crossing probabilities in Markov random walks and random fields, as well as survival analysis.

In the 1980s, Lai developed a strong interest in biostatistics and clinical trial methodology, making significant contributions to adaptive clinical trial design. In 2009, he co-founded and co-directed the Stanford Center for Innovative Study Design, which facilitated bidirectional translation between statistical innovation and biomedical research advancements.

In addition to mentoring numerous outstanding statisticians, particularly in the pharmaceutical industry, he was actively engaged in many professional societies, including the International Society for Biopharmaceutical Statistics (ISBS). He also established the UMBC-Stanford Workshop on Clinical Trials and Regulatory Science, fostering dialogue between statisticians from academia, regulatory agencies, and the pharmaceutical industry.

In recognition of his achievements, Professor Lai received the prestigious COPSS Presidents’ Award in 1983. In 1994, he was elected to Academia Sinica, and in 2005, he was

honored with both the International Chinese Statistical Association (ICSA) Distinguished Achievement Award and the Abraham Wald Prize in Sequential Analysis.

To honor his legacy in our UMBC-Stanford Workshop on Clinical Trials and Regulatory Science, **the Lai Memorial Short Course series** and **Lai student poster award** are established to recognize his significant contributions to statistics, biostatistics, and beyond, and to promote integrated efforts among academia, industry, and government to advance clinical trials and regulatory science research through statistical innovations.