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Distinguished Life Time Achievement

Professor Yuan-Cheng Fung
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Professor Yuan-Cheng Fung is widely recognized as the father of biomechanics, having established the fundamentals of biomechanical properties in many of the human body's organs and tissues. He is one of the few members of all three U.S. National Academy branches: National Academy of Sciences, National Academy of Engineering, and the Institute of Medicine. In 2000, Professor Fung became the first bioengineer to receive the President's National Medal of Science, the nation's highest scientific honor.

Professor Fung, professor emeritus of bioengineering at the University of California, San Diego(UCSD) Jacobs School of Engineering is one of the first visionaries to recognize that quantitative and analytical engineering principles and technologies could be used to develop innovative ways to diagnose, treat and prevent human disease. His pioneering work established the foundation of biomechanics and advanced understanding of the function of the lungs, heart, blood vessels, muscle and skin. In the 1980s he initiated a new direction for bioengineering and coined the field as "tissue engineering."

Prior to joining UCSD, Professor Fung was a faculty member in the Department of Aeronautics at the California Institute of Technology, where he received his Ph.D. in 1948. His early research focused on the dynamics of airplanes in turbulent weather, and on aircraft and spaceship safety, performance and design. His pioneering work welded the classical fields of aerodynamics and structures into a unified discipline of aeroelasticity. He published one of the two first books in that field.

Beginning in the late 1950's, Professor Fung became interested in the mechanics of the eye because his mother was suffering from glaucoma. In the mid 1960's, he published the landmark "tunnel" theory of the capillary blood vessels, and the "stress-free design" theory of the red blood cells, which are still widely accepted. He grew convinced that the understanding of the human body can be improved by paying attention to stress and strain in the body.

"I realized that existing engineering mechanics could not deal with biology without a complete revolution," said Professor Fung. "Some axioms had to be changed. All the mechanical properties of living tissues and cells had to be determined before one could proceed. New mathematical approaches had to be developed to deal with the stochastic, nonlinear, and biological complexities."

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