

PREFACE

At the dawn of the new millennium, our eyes must dare to vision far beyond the new horizon; our minds must dare to dream of something new and seemingly impossible. Although we are limited by what we have been able to see, we need to place ourselves above the trees of tradition, to vision, to dream.

In a way, the volumes of *Advances in Agricultural Science and Technology* are to provide new sights, hopefully above the tree of tradition. We are experiencing nanotechnology, witnessing vertical revolution, and this is only the beginning.

There are four pillars for science and technology development: science, mathematics, engineering and technology. The key technology involves nanotechnology and synthetic biology. Nanotechnology focuses on electronics, biology, advance materials, optoelectronics and nanocomputer simulation to create high performance devices. Synthetic biology is to use the synthetic capacity of organic and biological chemistry to design artificial, synthetic molecules that nevertheless function in biological systems. For example, using organic chemistry to modify the RNA.

In recent years, the frontiers of science have advanced tremendously. What lies beyond genome 2000? Yes, DNA sequence has been completed. However, proteomics is far more complex than genomics. Proteomics will produce human medicine and improve human care. One cannot help but wonder what life would be like if DNA contained more than four nucleotide bases, and proteins more than 20 amino acids? What would happen to molecular biology or industrial chemistry if synthetic amino acids other than the common 20 were incorporated for construction of proteins for plants, food, or even for life itself?

Those visions, as “dreamed” above, are far above the trees of tradition. This is the challenge, and also the opportunity for scientists to project the impossible. For example, in agricultural production, we should emphasize proper input in accordance with ecological balance instead of output, to rely on information

technology, to emphasize on total utilization. Above all, to achieve a better quality of life through agricultural science and technology.

T.C. Tso

Board Chairman

*Institute of International Development and
Education in Agriculture and Life Science (IDEALS)*

Collaborator, Agricultural Research Service, USDA