Third Laureate
Fundamental Research

- **Research Work Title:** **Nitrate transport and signalingnia**
- **Researcher:** **Prof. Yi-Fang Tsay**
- **Field:** **Biology**
- **Scientific Affiliation:** **Academia Sinica**

Abstract:

N fertilizer is essential for improving crop yield, but at the same time, also impose severe energy and environmental problems. To alleviate these problems, nitrogen utilization efficiency of crops need to be improved. Prof. Tsay's pioneering works of nitrate transport and signaling could provide novel strategy to improve nitrogen utilization efficiency. She had cloned the first nitrate transporter gene CHL1 in higher plants. This opened the door to study nitrate transport mechanism at the molecular level. And, then, by studying CHL1 and its homologues, she made several breakthroughs and provide new concepts in nitrate transport and signaling. She found out that transporter responsible for uptake also function as a sensor, and elucidated how transceptor (transporter with receptor function) senses the concentration changes, and elicits different levels of responses. This study could serve as a prototype for others to study different nutrient sensing.

Biography:

Prof. Tsay got her bachelor degree in 1983, and master degree in 1985 at department of botany in National Taiwan University, Taiwan. And, then she received her PhD degree in 1990 at department of biology in Carnegie Mellon University, Pittsburgh, Pennsylvania. She worked as a post-doctoral fellow in University of California, San Diego from 1990 to 1993. During that period, she cloned the first nitrate transporter gene CHL1. She joined institute of Molecular biology, Academia Sinica, Taipei, Taiwan in 1994 to establish her own research group. Since then, she made several breakthroughs in nitrate transport and signaling, and published outstanding research papers and review articles in prestige journals like Cell, Nature, EMBO J., Plant Cell etc. Some of her studies could be developed into new strategy to improve nitrogen utilization of crops.