

## Editorial overview

# Plant science up-to-date

Yasuyuki Yamada

Professor Emeritus Nara Institute of Science and Technology and Kyoto University;  
Chairman, Plant Gene Project, Japan Society for the Promotion of Science

This issue summarizes the research results and prospects for the “Plant Gene Project” sponsored by the Japan Society for the Promotion of Science (JSPS) under its Millennium Project on “Plant Science”. The term of the project was five years, 2000 through 2004, and the objectives were to improve the basic knowledge and technologies related to the plant sciences and to contribute to the restoration of the world’s environments; two key concerns for sustainable human life. One approach to dealing with these concerns is to improve plant functions by means of genetic engineering, for which there are two main ways to increase crops; by raising crop plants’ own potentials for assimilation of nutrients and to modify the basic character of plant.

With this as a background, we investigate the following seven related areas under the leadership by seven project leaders: (1) Morphogenesis and metabolic regulation (Takashi Hashimoto), (2) Regulatory factors of cell apoptosis and division. (Hirofumi Uchimiya), (3) Increasing the assimilation potential and stress-resistance (Hiroshi Sano), (4) Translocation and storage of nutrients (Kenzo Nakamura), (5) RNA silencing in higher plants and functional genomics (Fumihiko Sato), (6) Genetically modified plants and their evaluation (Hiroshi Kamata), (7) Preservation of plant diversity and evaluation of environmental safety (Isao Inoue).

The findings of our researches have contributed significantly to progress in basic and applied plant science as witnessed by the 500 original papers published and the 49 patents granted during this five year period. Furthermore, of the papers issued, 180 were published in international journals with impact factors more than 5. These include Nature, Science, Cell, Journal of Biological Chemistry and Proceedings of the National Academy of Sciences USA. These figures indicate that the research done are of high value both in quantity and quality.

This five-year project has now ended, but it is my hope that upcoming young plant scientists will benefit from our work and contribute to the further development of the plant sciences, as the advancement of plant science, as previously stated, is a crucial area of research for the world’s food supplies and environments. Unfortunately, Japan’s independence in regard to food supplies is the lowest of all the advanced nations, 40%. It is my hope that this project’s results will contribute to raising the independence of Japan’s food supply.

To senior plant scientists, I would like to leave you with this message:

“Nobody grows old by merely living a number of years;  
people grow old only deserting their ideas.  
So long as your heart receives messages of beauty, cheer, courage  
grandeur and power from earth, from man and from the Infinite,  
so long , you are young”

from *Youth* by Samuel Ullman (1922)

I wish also to acknowledge the administrative support of H. Sano and the secretaries at the Nara Institute of Science and Technology during our five-year project.