Name in English: Ray J. Wu
Name in Chinese: 吳瑞
Name in Pinyin: Wú Ruì
Gender: Male
Birth Year: August 14, 1928 – February 10, 2008
Birth Place: Beijing, China
Philanthropy: Yes

Pioneer in DNA Research & Cloning

Profession (s): Scientist, Professor, Biochemist, Bioengineer

Education: Bachelor of Science, Chemistry, University of Alabama, 1950; Ph.D, Biochemistry, University of Pennsylvania, 1955

Awards: 2003, Fellow of the American Academy for the Advancement of Science; 2003, Fellow of the Chinese Academy of Engineering; 2002, Frank Annunzio Award in Science and Technology, Christopher Columbus Fellowship Foundation

Contribution (s): In 1970, Dr. Ray J. Wu developed the first method for sequencing DNA and some of the basic tools for DNA cloning at Cornell University where he had been a professor since 1966. His primer-extension strategy was later adopted by Dr. Frederick Sanger in developing a much faster method for sequencing DNA that won Sanger the Nobel Prize in Chemistry in 1980. The basic research first done by Dr. Wu has formed the basis for the entire world of modern biotechnology and DNA research and engineering.

In 1976, Dr. Wu and other scientists spliced genetic material into bacteria, demonstrating that it is possible to introduce an artificial genetic message into living cells. At the time, he predicted that the procedure would one day make it possible to transplant a great range of genetic material. In the 1980s, he began to look at ways to make rice more resistant to insects, drought, salt water and temperature extremes through genetic engineering. His Cornell team successfully introduced transgenic rice with gene splicing applications that could also benefit crops such as corn, wheat, millet, soybeans, and sugar cane.

Dr. Wu served as an honorary professor and later as an adjunct professor at Beijing University. He founded the China-United States Biochemistry and Molecular Biology Examination and Application program, which from 1982 to 1989, brought over 400 top Chinese students to the U.S. for graduate training. These scientists, with colleagues from the Chinese Academy of Sciences, formed the Ray Wu Society to promote life sciences research. Wu played a scientific advisory role for both the Taiwan and People's Republic of China governments, establishing the Institute of Bioagricultural Sciences at Academia Sinica in Taiwan, and the National Institute of Biological Sciences in Beijing.

Philanthropy:
In 1999, he committed $500,000 to establish the Ray Wu Graduate Fellowship in Molecular Biology and Genetics to support a first-year graduate student those fields each year at Cornell University.

Publications
Su, J., Hirji, R., Zhang, L., He, C.-K., Selvaraj, G. and Wu, R. (2006) Evaluation of the stress-inducible production of choline oxidase in transgenic rice as a strategy for producing the stress-protectant glycine betaine. J. Exp. Bot. 57, 1129-1135.

Garg, A.K., Sawers, R.J.H., Wang, H., Kim, J.-K., Walker, J.M., Brutnell, T.P., Parthasarathy, M.V., Vierstra, R.D., and Wu, R. (2006) Light-regulated overexpression of an Arabidopsis phytochrome A gene in rice alters plant architecture and increases grain yield. Planta 223, 627-636.

Su, J. and Wu, R. (2004) Stress-inducible synthesis of proline in transgenic rice confers faster growth under stress conditions than that with constitutive synthesis. Plant Science 166, 941-948.

Garg, A.K., Kim, J.-K., Owens, T.G., Ranwala, A.P., Choi, Y.D., Kochian, L.V. and Wu, R.J. (2002) Trehalose accumulation in rice plants confers high tolerance levels to different abiotic stresses. Proc. Natl. Acad. Sci. USA 99, 15898-15903.

Su, J., Shen, Q., Ho, T.-H.D. and Wu, R. (1998) Dehydration-stress-regulated transgene expression in stably transformed rice plants. Plant Physiol. 117, 913-922.

Duan, X., Li, X., Xue, Q., Abo-El-Saad, M., Xu, D. and Wu, R. (1996) Transgenic rice plants harboring an introduced potato proteinase inhibitor II gene are insect resistant. Nature Biotechnology 14, 494-498.

Xu, D., Duan, X., Wang, B., Hong, B., Ho, T.-H.D. and Wu, R. (1996) Expression of a late embryogenesis abundant protein gene, HVA1, from barley confers tolerance to water deficit and salt stress in transgenic rice. Plant Physiol. 110, 249-257.

Wu, R. (1994) Development of the primer-extension approach: a key role in DNA sequencing. Trends Biochem. Sciences 19, 429-433.

McElroy, D., Blowers, A.D., Jenes, B. and Wu, R. (1991) Construction of expression vectors based on the rice actin 1 (Act1) 5' region for use in monocot transformation. Mol. Gen. Genet. 231, 150-160.

External Links:

http://www.imb.sinica.edu.tw/raywu/biography.html
www.nytimes.com/2008/02/25/nyregion/25wu.html
www.mbg.cornell.edu/MBG_Faculty_Detail.cfm?id=34
www.cals.cornell.edu/cals/public/comm/news/wu-obituary.cfm