

Editorial

Tribute to Professor Toshiharu Nagatsu

The 9th International Catecholamine Symposium took place in Kyoto, Japan, as a joint symposium with the 5th International Conference on Progress in Alzheimer's and Parkinson's disease from March 31 to April 5, 2001. Professor Toshiharu Nagatsu, as the president of Catecholamine Symposium, organized the joint symposium with Professor Yoshikuni Mizuno, Juntendo University School of Medicine, Tokyo, Japan. In this symposium, the friends of Professor Nagatsu dedicated him a symposium, "Milestones in Catecholamine Research", and symposiums on "Catecholaminergic Neurotoxins and Neuroprotection" and "The Role of Neuromelanin in the Substantia Nigra in Parkinson's Disease" were organized. We, the speakers in these symposiums, his friends, colleagues and previous students decided to pay homage to Professor Nagatsu in the form of a collection of papers written by the entire scientific community well known in catecholamine research.

The lifelong devotion of Professor Nagatsu to the studies on neurotransmitter regulation carries an important impact to basic and clinical research. His discovery of tyrosine hydroxylase with Professor Sydney Udenfriend at early 1960s opened the golden days in catecholamine research. He and his colleagues in NIH and Japan successfully accomplished the purification and characterization of enzymes in catecholamine synthesis and metabolism in the 1970s and the 1980s. Then, he dared again to enter the novel field of molecular neuroscience. His research groups at the Nagoya University School of Medicine (1984–1991) and the Institute for Comprehensive Medical Science, Fujita Health University (1991–2000) succeeded in the cloning of tyrosine hydroxylase, aromatic L-amino acid decarboxylase, phenylethanolamine *N*-methyltransferase, dopamine β -hydroxylase and many important enzymes in the biosynthesis of bipterin, the cofactor of tyrosine, tryptophan and phenylalanine hydroxylases. His contribution to neurosciences was not limited to the basic sciences, it also extends to the studies of human diseases, such as Parkinson's disease and other neurological and psychiatric disorders. His overall scientific contributions are beyond administration, and he will always be considered as the main architect of catecholamine research.

We should emphasize that during the 1980s, Professor Nagatsu also started the studies on endogenous neurotoxins

to cause Parkinsonism in humans, after the discovery of 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP). He organized the research groups with the late Professor Mitsuo Yoshida, which brought about the findings on catechol and simple isoquinolines as endogenous dopaminergic neurotoxins. The studies on the intracellular mechanism of the neurotoxicity clarified the molecular mechanism underlying the neuroprotection in Parkinson's disease and other neurodegenerative disorders.

In this special issue of Neurotoxicology and Teratology, "Milestones in Research on Neurotoxins and Neuroprotection: A Tribute to Professor Toshiharu Nagatsu", the most active researchers in neurochemistry presented their recent advances in the research on neurotoxins and neuroprotection. The paper by Professor Nagatsu will give us an overview of the neurotoxins and the pathogenic factors in Parkinson's disease. This issue presents the new results on mechanisms of neurotoxicity by endogenous and xenobiotic toxins to cause selective cell death in Parkinson's disease, such as MPTP, isoquinolines, β -carbolines and L-DOPA. The possible role of *N*-methyltransferase and other enzymes in the biosynthesis and metabolism of the toxins in the pathogenesis of Parkinson's disease was also presented. In addition, the involvement of neuromelanin and manganese in the cell death of dopamine neurons was also reviewed. A quite new finding on the role of salsolinol in pituitary prolactin secretion suggested the physiological function of the dopamine-derived isoquinoline in the brain.

Recent research advances on the molecular mechanisms of neuroprotection were also included in this issue, and cyclic and aliphatic propargylamines were proven to suppress the death process in the animal and cellular models of Parkinson's disease. The neuroprotection by GDNF and other small molecules in neurodegenerative disorders was also reviewed.

It is our great pleasure to edit a review issue on these very important subjects as a Tribute to Professor Nagatsu. His more than 40 years of contributions to neuroscience constitute as "True Milestones of Catecholamine Research". We hope that this issue will increase our knowledge on neurodegeneration and neuroprotection, and that the basic and clinical researchers will find how profoundly we owe to Professor Nagatsu for the advances in these subjects.

Makoto Naoi*,
Hasan Parvez,
Wakako Maruyama,
Michel A. Collins,
Moussa B.H. Youdim
(Editors)

* Corresponding author. Department of Brain Sciences, Institute of Applied Biochemistry, Mitake, Kani-gun, Gifu, Japan. Tel.: +81-574675500; fax: +81-574675310.

E-mail address: mnaoi@giib.or.jp