

PREFACE

This volume is based on the third international conference of quantum bio-informatics held at the QBI Center of Tokyo University of Sciences.

The purpose of the conference is towards new stage making interdisciplinary bridges in mathematics, physics, information and life sciences, in particular, research for new paradigm for information science and life science on the basis of quantum theory. For this purpose we firstly return to the starting point of bio-informatics and quantum information, fields that are growing rapidly at present, and to seriously attempt mutual interaction between the two, with a view to enumerating and solving the many fundamental problems they entail. Those three years, we have established various relations between quantum information and life science. The papers submitted in this volume are all referred, whose contents are related to one of the following subjects:

- (1) Mathematical foundation of quantum information
- (2) Quantum probability
- (3) Quantum entanglement
- (4) Quantum entropy and lifting
- (5) Quantum dynamics and white noise analysis
- (6) Brain model
- (7) Classical and Quantum computing
- (8) Experimental studies of quantum computer
- (9) Superconductivity and its uses
- (10) Bio-Informatics
- (11) Genome analysis

Luigi Accardi
Wolfgang Freudenberg
Masanori Ohya