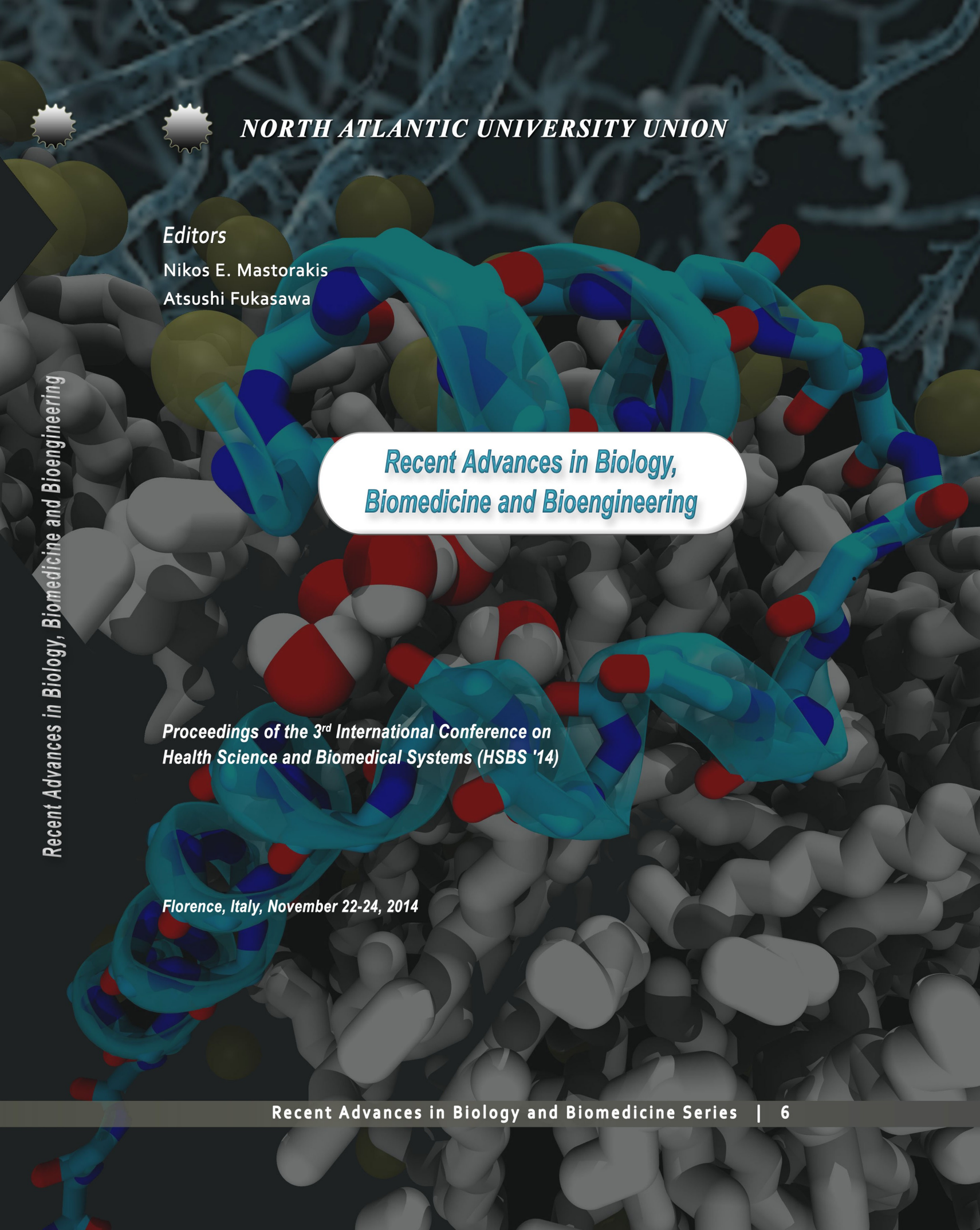

NORTH ATLANTIC UNIVERSITY UNION

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Recent Advances in Biology, Biomedicine and Bioengineering

Proceedings of the 3rd International Conference on Health Science and Biomedical Systems (HSBS '14)

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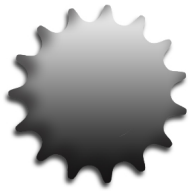

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ISSN: 1790-5125
ISBN: 978-960-474-401-5

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Published by WSEAS Press
www.wseas.org

All papers of the present volume were peer reviewed by no less that two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

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Plenary Lecture 1

The Latest Attainment and Future Themes of Studies in Neuron and Neural Systems

Professor Atsushi Fukasawa
Institute of Statistical Mathematics
Japan
E-mail: takizawa@ism.ac.jp

Abstract: Animals (human) behave following direction from neural systems. However principle of operation of neural systems is still unsolved today due to complex interaction among multiple neurons. The authors reduce the problem into that of a neuron and a group of neurons.
He will first present modelling of an active neuron based on the study of excitatory cells. The potential and the motion of cilia of paramecium are not uniform but depends on time and position in the cell. So the modelling of active neuron is composed by three zones under the membrane to yield mutual interactions. A neuron is shown being a pulse generator.
He will then present systematization of a neural group. Fluctuation of phase and period of pulse of individual neuron is stabilized to hold the time in common (synchronization) by mutual pulse injection. Network modelling is given by recurrent connection, and applied to sensing of acoustic event in time-space (2D/3D) domains.
He will lastly present future themes on neural systems based on the entity proposed as the whole categories of living system.

Brief Biography of the Speaker: Atsushi Fukasawa received the Master of Arts degree in Electrical communication and the Ph.D. degree from Waseda University in 1967 and 1983. He joined Graduate School of Science and Technology, Chiba University as a professor in 1997. He received the Award of the Agency of Science and Technology, Japan in 1982, and Ohm (publisher) Prize in 1994. He received Telecommunication System Technology Prize from the Foundation of Telecommunication Association, Japan in 2004. He is a senior member of the IEEE.