



NEURO GLOBAL Seminar

Date & Time

Monday, May 18, 2026
16:30 – 18:00

Speaker

Yukio Nishimura, Ph.D.

Project Leader
Neural Prosthetics Project
Tokyo Metropolitan Institute of Medical Science



Title

Neural Interface for restoring lost functions

Venue

Lecture Room, Graduate School of Life Sciences,
/ Life Sciences Project Research Laboratory [D04] 1F, Katahira Campus
生命科学研究科講義室 (生命科学プロジェクト総合研究棟 [D04] 1F 片平キャンパス)
https://www.tohoku.ac.jp/map/ja/?f=KH_D04

Format On-site

Language English

【Neuro Global生・[先進]脳科学セミナーシリーズEx】 【NGP students, [Advanced] brain science seminar series Ex】 1 point
【医学系研究科・医学履修課程】国際交流セミナー 【Medical Science Doctoral Course】 International Interchange Seminar 1回分
【生命科学研究科・イノベーションセミナー（留学生）、単位認定セミナー】 【Innovation seminar, Credit-granted seminar】 2 points



Title

Neural Interface for restoring lost functions

Abstract

Functional loss of limb control in individuals with spinal cord injury or stroke can be caused by transection of descending pathways those connects cortical to spinal network, although neural circuits locate above and below the impaired site remains their function. I will show an artificial neuronal connection (ANC) that bridges supra-spinal system and spinal network beyond the lesion site restore lost function. The ANC was produced by a computer interface that can detect the neural activity and converted in real-time to activity-contingent electrical stimuli delivered to nervous system. A promising application is to bridge impaired biological connections, a paradigm that was demonstrated for cortically controlled electrical stimulation of paralyzed forearm muscles. ANC have clinical potential for restoring walking ability in patients with spinal cord injury. A clinical application of the ANC is the volitional walking in could be restored by muscle-controlled non-invasive magnetic stimulation to lumbar spinal cord. Patients with severe SCI could regain voluntarily-controlled walking which are initiate, stop walking and change the step cycles through ANC. These paradigms have numerous potential applications, depending on the input signals, the computed transform and the output targets.

Speaker Information:

Yukio Nishimura, PhD is a Project Leader in Neural Prosthetics Project, Tokyo Metropolitan Institute of Medical Science from April in 2017. He received his B.S. in Sports Science from Nihon University, and his M.S. in Education from Yokohama National University. He completed his PhD in Graduate school of medicine, Chiba University in Japan in 1993. Thereafter he received post-doctoral training in National Institute for Physiological Science in Japan from 2003 and then the University of Washington in US from 2007. He joined National Institute for Physiological Science in 2011, then to Kyoto University in 2016 as Associate Professor. His overall research has concerned the neural control of limb movements in human and non-human primates. His present research is focused on neural mechanisms of functional recovery after neural damage and restoring lost function via brain computer interface.