第１４９回

東北大学加齢医学研究所

集談会

プログラム

149th IDAC Biannual Meeting Program

日時：平成 30 年 1 月 26 日（金曜日）13:00～

場所：加齢医学研究所

スマート・エイジング研究棟１階　国際会議室

January 26, 2018,13:00~ Center for Smart Aging Research 1F, IDAC

共催：東北大学加齢医学研究所

Institute of Development, Aging and Cancer, Tohoku University

東北大学加齢医学研究所研究会同窓会

Society of Institute of Development, Aging and Cancer, Tohoku University

13:00－　Opening remarks　Dr. Ryuta Kawashima

第 25 回加齢医学研究所研究奨励賞授与式・受賞記念講演

25th IDAC Young Investigator Award Ceremony and Lecture

13:00－13:15　Ceremony　Dr. Ryuta Kawashima

13:15－13:35　Lecture　Chair: Dr. Kozo Tanaka

Development of PET tracers for imaging neuropathological hallmarks — From development to validation —

Department of Geriatrics and Gerontology, Institute of Development, Aging and Cancer, Tohoku University
Department of Pharmacology, Tohoku University Graduate School of Medicine

Ryuichi Harada

Alzheimer's disease (AD), which is the most common cause of dementia, is an irreversible and progressive neurodegenerative diseases clinically characterized by memory loss and cognitive decline. Neuropathological hallmarks in AD are not only abundant neuronal loss and gliosis but also protein accumulation of amyloid-β and tau protein in the brain. Clinicopathological studies have established evidences that tau deposition is correlated with neuronal loss and the severity of cognitive impairment, but not amyloid deposition. Therefore, non-invasive imaging of tau pathology would provide new insights into the pathogenesis of AD. Through screening and the compound optimization, we developed several ^{18}F-labeled quinoline derivatives as tau selective PET tracers. In clinical PET study, the latest derivative, ^{18}F-THK5351 demonstrated elevated tracer retention in site susceptible to tau deposition in patients with AD. However, there are unexplained tracer retention in the basal ganglia and thalamus (i.e. off-target binding). Recent blocking studies identified monoamine oxidase-B (MAO-B) as an off-target substrate of ^{18}F-THK5351. An imaging-autopsy

validation of a patient with AD who underwent ^{18}F-THK5351 PET prior to death demonstrated that *in vivo* ^{18}F-THK5351 retention significantly correlated with MAO-B levels in the whole brain and tau aggregates in the neocortex. MAO-B was dominantly expressed in astrocytes and its level increased in patients with AD, which is associated with neuroinflammatory changes characterized by reactive astrocytes. Astrogliosis is linked to neurodegeneration, although it is still debate regarding relationship between gliosis and AD pathophysiology and its time course. Now we are trying to develop selective tau and astrogliosis (MAO-B) through lead optimization to elucidate its relationship by longitudinal PET studies.

13:35－13:40 *break*

13:40－14:40 Sessions 1～4 Chair: Masanori Ikeda

1、Metformin directly binds the alarmin HMGB1 and inhibits its proinflammatory activity

Natsumi Sakata[1], Takahiro Horiuchi[1], Yoshihiro Narumi[1], Tomohiro Kimura[1], Takashi Hayashi[2], Keisuke Nagano[3], Keyue Liu[4], Masahiro Nishibori[4], Sohei Tsukita[5], Tetsuya Yamada[5], Hideki Katagiri[5], Ryutaro Shirakawa[1], and Hisanori Horiuchi[1]

[1]Department of Molecular and Cellular Biology, Institute of Development, Aging and Cancer, Tohoku University

[2]Biomedical, Technology Research Center and

[3]First Institute of New Drug Discovery, Tokushima Research Institute, Otsuka Pharmaceutical Co., Ltd.

[4]Department of Pharmacology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences

[5]Department of Metabolism and Diabetes, Tohoku University Graduate School of Medicine

2、A mathematical model describing difference in chromosome dynamics between normal and cancer cells

Manuel A Campos, Kenji Iemura, Kozo Tanaka

Department of Molecular Oncology, Institute of Development, Aging and Cancer, Tohoku University

３、New methodology to detect and quantitate extracellular vesicles in blood plasma

Masashi Takao[1], Tetsuhiko Ohba[2], and Yutaka Nagai[3]
[1]Department of Project Program, IDAC, Tohoku University
[2]Department of Physics, Graduate School of Science and Faculty of Science, Tohoku Univerisy
[3]IVD Operations, Nihon Kohden Corporation

４、A novel and feasible antibody-based medicine for cancers targeting vasohibin-2

EunSeo LEE[1], Yasuhiro Suzuki[1], Hironori Nakagami[2], Hideki Tomioka[3], Yasufumi Sato[1]
[1]Department of Vascular Biology, IDAC, Tohoku University
[2]Department of Health Development & Medicine, Osaka University. Graduate School of Medicine
[3]Department of Research & Development, FunPep Co.,Ltd

14:40－14:50 *Coffee break*

14:50－15:35 Sessions 5～7 Chair: Akihiro Yamada

５、Nrf2 plays a role in ischemia-reperfusion lung injury after lung transplantation

Takeo Togo[1], Yasushi Hoshikawa[2], Keiko Taguchi[3], Hiroshi Yabuki [1], Hideki Mitomo[1],Tatsuaki Watanabe[1], Masafumi Noda[1], Junichi Funahashi[1], Masayuki Yamamoto[3], Yoshinori Okada [1]
[1]Department of Thoracic Surgery, Institute of Development, Aging and Cancer, Tohoku University
[2]Department of Thoracic Surgery, Fujita Health University School of Medicine
[3]Department of Medical Biochemistry, Tohoku University Graduate School of Medicine

６、Identification of molecular biological factors on effect of anti-EGFR treatment in colorectal cancer for a biomarker development

Akira Okita, Shin Takahashi, Kota Ouchi, Chikashi Ishioka
Department of Clinical Oncology, Institute of Development, Aging and Cancer , Tohoku University

７、Gene regulatory mechanisms by mechanical forces in cardiovascular system

Atsushi Kubo, Makoto Kanayama, Kakeru Watanabe, Takahiro Niida, Yusuke Watanabe, Ken Matsumoto, Toshihiko Ogura
Department of Developmental Neurobiology, Institute of Development, Aging and Cancer, Tohoku University

15:35－15:40 *break*

15:40－16:25 Sessions 8～10 Chair: Hiromitsu Ota

８、Involvement of IL-32 in the regulation of malignant mesothelioma cell growth and VEGF and IL-8 secretion

Muneo Numasaki, Jyuri Ueda, Aiko Ishiki, Naoki Tomita, Shoji Okinaga and Hiroyuki Arai
Department of Geriatrics and Gerontology, Institute of Development, Aging and Cancer,Tohoku University

９、Activation of NRF2 Alleviates Lethal Autoimmune Inflammation in Scurfy Mice

Takuma Suzuki[1,2], Shohei Murakami[1], Shyam S. Biswal[3], Shimon Sakaguchi[4], Hideo Harigae[2], Masayuki Yamamoto[5] and Hozumi Motohashi[1]
[1]Department of Gene Expression Regulation, Institute of Development, Aging and Cancer, Tohoku University
[2]Department of Hematology and Rheumatology, Tohoku University Graduate School of Medicine
[3]Department of Environmental Health Sciences, Bloomberg School of Public Health, Johns Hopkins University
[4]Experimental Immunology, World Premier International Research Center, Immunology Frontier Research Center, Graduate School of Medicine, Osaka University
[5]Department of Medical Biochemistry, Tohoku University Graduate School of Medicine

１０、**Single cell RNA-Seq analysis defines distinct gene-expression profiles of tissue-specific plasma cells**

Ari Itoh-Nakadai, Atsuko Kayaba, Toshiyuki Takai
Department of Experimental Immunology, Institute of Development, Aging and Cancer, Tohoku University

---

一般口演について
発表時間１２分，討論３分とします。時間厳守にてお願いします。座長は研究員会委員の集談会コンテスト係が行ないます。

16:25－16:30　Closing remarks　Dr. Hozumi Motohashi

終了後
加齢研実験研究棟 7 階セミナー室（1）におきまして１８時から研究員会主催新年会を開催いたします。皆様、多数ご参加くださいますようご案内いたします。