Exploratory analysis and clinical application of gas molecules

松本 明彦（千葉大学大学院医学研究院 薬理学）
Akio Matsumoto (Dept. Pharmacol., Chiba Univ. Grad. Sch. Med.)

小澤 健太郎（奈良県立医科大学 薬理学）
Kentarou Ozawa (Dept. Pharmacol., Nara Medical Univ.)

Exploratory analysis and clinical application of gas molecules

臨床応用を目指したガス状分子の機能解析

Regulation of neuronal function by S-nitrosylation and oxidation

○植澤 昌
京都大学 薬・生体分子認識

○Sho Kakinawa

βアドレナリン受容体の脱感作を抑制する新たなニトリシ化薬剤

A potential therapeutic approach for heart failure: Water-soluble N-nitrosamines inducing S-nitrosylation without NO release target desensitization of β adrenergic receptor

○植田 祐子 1, 佐藤 講一郎 2, 黒瀬 等 1, 大和田 智彦 3, 増利 太朗 2
1 東大・保健医療機能推進機構
2 東大・医・脳内分泌
3 東大・薬・九大・薬

○Noriko Makita 1, Junichiro Sato 1, Hitoshi Kurose 1, Tomohiko Ohwada 2, Taroh Iiri 2

Application of molecular hydrogen on Parkinson’s disease and neuromuscular disorders

○大野 銭司
名古屋大・医・神経遺伝情報

○Kinji Ohno

脳腫生ガスとしての水素の可能性

H2 (hydrogen) gas can be used as a brain resuscitation gas

○佐野 元昭
慶應義塾大・医・循環器内科

○Motoaki Sano

Outline of Symposium

Therapeutic application of nitric oxide (NO) is an emerging field in medicine from the study of biology and chemistry of gas molecules. Therapeutic application of NO includes asthma, cystic fibrosis, and heart failure, as well as pulmonary hypertension. Although the biological action of molecular hydrogen (H2) has not been elucidated enough in molecular level, biological effects of H2 are promising to explore therapeutic applications. This symposium is going to focus on NO and H2 as medical gases with particular emphasis on the leading research projects running in Japan.
**Mini Symposium 2**

**MS2E-2**

Neuropsychological function dependent on gene expression in the hippocampal dentate gyrus

西 昭徳 (久留米大学医学部 総合医学講座)

Akinori Nishi (Dept. Pharmacol., Kurume Univ. Sch. of Med.)

宮川 剛 (熊本保健衛生大学総合医学研究所 細胞生化学研究室)

Tsuyoshi Miyakawa (Div. of Systems Medicine, ICMS, Fujita Health Univ.)

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**MS2E-2-1**

Immaturity of brain cells as a candidate endophenotype of neuropsychiatric disorders

○宮川 剛

藤田保健衛生大学・総合医学・システム医学

○Tsuyoshi Miyakawa

Div. of Systems Medicine, ICMS, Fujita Health Univ.

**MS2E-2-2**

Activity-dependent regulation of neuronal maturation in adult dentate gyrus

○小林 克典

日本医大・薬理

○Katsunori Kobayashi


**MS2E-2-3**

Antidepressant effects mediated through induction of dopamine D1 receptors in the hippocampal dentate gyrus

○西 昭徳

久留米大学・薬理

○Akinori Nishi

Dept. Pharmacol., Kurume Univ. Sch. of Med.

**MS2E-2-4**

Dynamic changes in hippocampal ensemble activities associated with contextual fear memory generalization

○松尾 直毅

1 京都大学濃密センター, 2JST さきがけ

○Naoki Matsumoto

1The Hakubi Center, Kyoto Univ., 2PRESTO, JST

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**Outline of Symposium**

The hippocampal dentate gyrus (DG) receives afferent information via the perforant path from entorhinal cortex, initiating the primary trisynaptic circuit in the hippocampus. Excitability of DG neurons controls activity of the hippocampal circuit. Gene expression in mature granule cells in the DG changes largely in mouse models of neuropsychiatric disorders, resulting in functional shift similarly to immature granule cells. Psychotropic drugs including antidepressants also affect the gene expression in mature granule cells. In this symposium, the role of gene expression changes in mature granule cells of the DG in animal models of neuropsychiatric disorders will be discussed.
Mutations in more than 30 genes account for approximately 25–30% of all human dilated cardiomyopathy (DCM) cases. The deletion mutation ΔLys210 in cardiac tropinin T, which is recurrently identified over the world, frequently causes premature sudden cardiac death (SCD) or heart failure (HF) death. Knock-in mouse model, which develops either SCD or HF death depending on genetic background, has so far been created by Morimoto and his colleagues and used to explore pathogenic mechanisms and potential therapeutic drugs in Japan and abroad. This symposium summarizes findings about potential beneficial drugs and discusses future prospects of therapeutics in the genetic DCM.
Taste and visceral senses are an essential signal as optimal nutrient intake to maintain our healthy eating and life. The healthy eating occupies one of main factors to induce the “life-style related diseases” such as obesity, diabetes, hypertension and functional dyspepsia. Peripheral and central disturbances in nutrient recognition might be involved in those disease inductions.

Taste and Visceral sense has rarely noticed as the important target for clinical medicine while it is an important sense in body nutrient homeostasis. We have a renew understanding of the importance of preemptive medicine and nutritional care to prevent those life-style related disease. In this symposium, we discuss about how taste and visceral sense is important in the preventive medicine and nutritional care.

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