公募シンポジウム１　A会場 ■ Symposium 1　Hall A

大会第1日：3月28日(火)・March 28 (Tue)　9:50 - 11:50

【味の素株式会社協賛】
情動行動における口腔・腸―脳連関の重要性

【Supported by Ajinomoto Co., Inc.】

Oral/gut-brain interaction in emotional behavior

オーガナイザー・Organizer：
飛田 秀樹（名古屋市立大学 医学研究科 脳神経生理学）
Hideki Hida (Dept of Neurophysiol & Brain Sci, Nagoya City Univ Grad Sch Med Sci)

二ノ宮 裕三（九州大学 味覚・嗅覚センサ研究開発センター）
Yuzo Ninomiya (Div Sens Physiol, R&D Ctr Taste Odor Sens, Kyushu Univ)

1S01A1-1　口腔腸脳機能分子連関: グルコース輸送体を介する甘味受容伝達経路

○二ノ宮 裕三[1,2]，中野 啓子[1,3]，大栗 弾宏[3]，岩田 周介[2,3]，高井 信吾[3]，吉田 竜介[3]，重村 憲徳[3]，マルゴルスキー ロバート[2,3]
[1]九大・味覚嗅覚研究センター，[2]米国モネル化学感覚研，[3]九大・院歯・口腔機能

Oral-gut-brain linkage with molecules involved in glucose-sensing sweet taste pathway

Yuzo Ninomiya[1,2], Keiko Nakano[1,3], Tadahiro Ohkuri[3], Shusuke Iwata[2,3], Shingo Takai[3], Ryusuke Yoshida[3], Noriatsu Shigemura[3], Robert Margolskee[2,3]
[1]Div Sens Physiol, R&D Ctr Taste Odor Sens, Kyushu Univ, Fukuoka, Japan, [2]Monell Chem Sens Ctr, Philadelphia, USA, [3]Sect Oral Neurosci, Grad Sch Dent Sci, Kyushu Univ, Fukuoka, Japan

1S01A1-2　かつおだし摂取がマウスの情動行動に及ぼす効果とその神経メカニズム

○西丸 広史[1]，Jargalsaikhan Undarmaa[1]，松本 惇平[1]，高村 雄策[1]，中村 友也[1]，掘 悦郎[1]，近藤 高史[2]，小野 武年[1]，西条 寿夫[1]
[1]富山大・院医・システム情動科学，[2]（株）味の素・イノベーション研究所

Effects of dried-bonito broth (dashi) ingestion on emotional behaviors and their possible mechanism in young mice

Hiroshi Nishimaru[1], Undarmaa Jargalsaikhan[1], Jumpei Matsumoto[1], Yusaku Takamura[1], Tomoya Nakamura[1], Etsuro Hori[1], Takashi Kondoh[2], Taketoshi Ono[1], Hisao Nishijo[1]
[1]Syst Emotional Sci, Univ Toyama, Toyama, Japan, [2]Inst Innovation, Ajinomoto Co, Inc, Kawasaki, Japan

1S01A1-3　注意欠陥多動性モデルラットでの発育期のグルタミン酸ナトリウムによる攻撃性の減少は胃迷走神経を介する

○飛田 秀樹，横山 善弘，丸本 良介，三角 吉代，西垣 瑠里子，永井 遥，上田 佳朋，石田 章真，鄭 且均
名古屋市大・院医・脳神経生理

Decreased aggression by monosodium glutamate during the period of development is mediated by vagus nerve in an attention-deficit hyperactivity disorder model rat

Hideki Hida, Yoshihiro Yokoyama, Ryosuke Marumoto, Sachiyo Misumi, Ruriko Nishigaki, Haruka Nagai, Yoshitomo Ueda, Akimasa Ishida, Cha-gyun Jung
Dept Neurophysiol & Brain Sci, Nagoya City Univ Grad Sch Med Sci, Nagoya, Japan

1S01A1-4　うつ病や関連疾患における腸内細菌の役割

○功刀 浩
国立精・神医研セ・疾病三部

Role of gut microbiota in depression and related disorders

Hiroshi Kunugi
Dept Mental Disorder Research, NCNP, Tokyo, Japan

Aims & Scope

The gut and the brain are closely connected. Recent neurobiological studies in this gut-brain crosstalk have revealed bidirectional communication system by neural communication (vagal, sympathetic) and systemic communication (HPA axis, neurotransmitters, bacterial metabolites, cytokines). This gut-brain crosstalk is likely to have multiple effects on affection, motivation, and higher cognitive functions. Disturbances of this system have been implicated in a wide range of disorders, including anxiety, depression and neurodevelopmental disease such as attention-deficit hyperactivity disorder (ADHD).

In this symposium, we focused on the effect of taste substances on emotional behavior from the aspect of "oral/gut-brain interaction". The importance of oral/gut-brain interactions will be shown by at least four speakers. Dr. Ninomiya will present new data showing sugar sensing pathway in the gut is also found in taste cells in the oral cavity. Dr. Nishimaru will present the effect of "umami" and "dashi" on the emotional behavior focusing on the amygdala and the prefrontal cortex. Dr. Hida will show the effect of an umami substance on aggressive behavior in an ADHD model rat, which is mediated by vagus nerve. Dr. Kunugi will show the importance of the gut-brain interaction in anxiety and depression.

公募シンポジウム２　B会場 ■ Symposium 2　Hall B

大会第1日：3月28日(火)・March 28 (Tue)　9:50 - 11:50

シナプス機能研究の新展開

New developments in synapse research

オーガナイザー・Organizer：
喜多村 和郎（山梨大学大学院 総合研究部）
Kazuo Kitamura (Graduate School Department of Interdisciplinary Research, University of Yamanashi)

篠田 陽（東京薬科大学 薬学部）
Yo Shinoda (School of Pharmacy, Tokyo University of Pharmacy and Life Sciences)

1S02B1-1 (AP2)　哺乳類脳で内在性タンパク質の局在や動態を可視化する新たなストラテジー

○三國 貴康[1]，西山 潤[1]，スン イェ[1,2]，釜澤 尚美[1]，安田 涼平[1]
[1]マックスプランクフロリダ研究所，[2]フロリダアトランティック大

A new strategy for imaging protein localization and dynamics in the mammalian brain

Takayasu Mikuni[1], Jun Nishiyama[1], Ye Sun[1,2], Naomi Kamasawa[1], Ryohei Yasuda[1]
[1]Max Planck Florida Inst Neurosci, Jupiter, USA, [2]Florida Atlantic Univ, Jupiter, USA

1S02B1-2　シナプスタンパク質のリン酸化の化学量論およびシナプス構造の新しいモデル

○細川 智永
理研・脳科学

Stoichiometry of synaptic protein phosphorylation and a novel model for synaptic structure

Tomohisa Hosokawa
RIKEN, BSI, Saitama, Japan

1S02B1-3　C1qファミリー分子によるシナプス形成制御機構

○松田 恵子，柚崎 通介
慶應大・医学部・生理学

Synapse organization and modulation via C1q family proteins and their receptors

Keiko Matsuda, Michisuke Yuzaki
Dept Physiol, Keio Univ Sch Med, Tokyo, Japan

1S02B1-4　哺乳類中枢シナプス前終末の生理学的研究

○坂場 武史
同志社大学大学院脳科学研究科

Presynaptic physiology in the mammalian CNS

Takeshi Sakaba
Grad Sch Brain Science, Doshisha Univ, Kyoto, Japan

1S02B1-5　シナプス可塑性：基礎から臨床へ

○高橋 琢哉
横浜市立大学・医学部・生理学

Synaptic plasticity: from bench to bedside

Takuya Takahashi
Dept Physiol, Sch Med, Yokohama City Univ, Kanazawaku, Japan

Aims & Scope

Synapses are critical determinants for a wide range of neuronal functions including neural information processing, plasticity, circuit formation and behavior. The advent of novel technologies such as imaging, optogenetics and genome editing has shed light on important insights into the synaptic functions. Furthermore, discoveries of novel molecules and unique concept have been extending our understanding of organization and functionality of synaptic circuits. In this symposium, leading synapse researchers "synaptologists" will introduce their cutting-edge researches on pre- and post-synaptic functions and their underlying mechanisms, and will discuss the future outlook of synapse research.

公募シンポジウム３　D会場 ■ Symposium 3　Hall D

大会第1日：3月28日(火)・March 28 (Tue)　9:50 - 11:50

味覚の分子生理学の最前線

Frontiers in molecular physiology of taste

オーガナイザー・Organizer：
樽野 陽幸（京都府立医科大学大学院医学研究科 細胞生理学）
Akiyuki Taruno (Department of Molecular Cell Physiology, Graduate School of Medical Science, Kyoto Prefectural University of Medicine)

吉田 竜介（九州大学大学院歯学研究院 口腔機能解析学分野）
Ryusuke Yoshida (Section of Oral Neuroscience, Graduate School of Dental Science, Kyushu University)

1S03D1-1　味覚受容体リガンド結合領域への味物質結合と構造変化

○山下 敦子
岡山大・医歯薬

Taste-substance binding and conformational change of the ligand-binding domains of taste receptor

Atsuko Yamashita
Grad Sch Med, Dent & Pharm Sci, Okayama Univ, Okayama, Japan

1S03D1-2　霊長類味覚受容体の分子生理学

○今井 啓雄
京都大・霊長研

Molecular physiology of primate taste receptors

Hiroo Imai
Primate Research Inst, Kyoto Univ, Inuyama, Japan

1S03D1-3　脂肪酸の感覚を伝えるためのGタンパク共役型受容体とマウス鼓索神経における神経コーディング

○安松 啓子，二ノ宮 裕三
九大・味覚・嗅覚センサR&DCtr

G-protein coupled receptors and neural coding for sensing fatty acids in mouse chorda tympani nerve

Keiko Yasumatsu, Yuzo Ninomiya
Div Sensory Physiology, R&D Center for Taste and Odor Sensing, Kyushu Univ

1S03D1-4　口腔感覚修飾物質γ-glutamyl-valyl-glycineは三叉神経応答を増強する

○丸山 豊[1]
[1]味の素・イノベーション研，[2]カリフォルニア大学デービス校

A flavor modifier, γ-glutamyl-valyl-glycine, has enhancement effect on the response of trigeminal neuronal cells

Yutaka Maruyama[1]
[1]Institute for Innovation, Ajinomoto Co., Inc., Kawasaki, Japan, [2]Dept Neurobiol, Physiol, Behavior, Univ California, Davis, USA

1S03D1-5 味幹細胞培養系の確立

○岩槻 健
東農大・応生・食安健

Generation of taste stem cell culture system

Ken Iwatsuki
Dept Nutri Sci Food Safety, Tokyo Univ Agri, Tokyo, Japan

Aims & Scope

Cloning of taste receptors and other taste-related genes has greatly facilitated our understanding of taste physiology at molecular levels. However, information on dynamic aspects of these taste-related molecules is still lacking. Also, many taste phenomena in detection and transmission of taste have yet to be delineated at molecular levels. Recently, by virtue of application of molecular structural analyses and genomic techniques, remarkable progress has been made in this field.

In this symposium, we would like to introduce recent researches toward molecular mechanisms in the peripheral taste system (i.e. taste buds). (1) The world's first observation of conformational change of taste receptors (Yamashita) (2) SGLT1-mediated taste receptor-independent mechanism for sensing sugars (Yasumatsu) (3) Discovery of oral sense modifiers (kokumi substances) and the receptor (Maruyama) (4) Enhancement of neuronal response by a flavor modifier (Maruyama) (5) Development of taste bud organoid culture system as a newest tool in taste research (Iwatsuki).

The roster includes both male and female scientists who are junior, mid-track and senior, and who belong to university and company.

公募シンポジウム４　E会場 ■ Symposium 4　Hall E

大会第1日：3月28日(火)・March 28 (Tue)　9:50 - 11:50

ナノ技術による生理学・医学の新展開

Promotion of physiology and medicine with nanotechnologies

オーガナイザー・Organizer：

八尾 寛（東北大学大学院 生命科学研究科）

Hiromu Yawo (Dept Dev Biol Neurosci, Tohoku Univ Grad Sch Life Sci)

Angelo Homayoun ALL (Dept Orthopedic Surgery, Natl Univ Singapore)

1S04E1-1 Controlling photon upconversion in lanthanide-doped nanocrystals

Xiaogang Liu[1,2]

[1]Dept Chem, Natl Univ Singapore, Singapore, [2]Inst Materials Research Engineering, A*STAR, Singapore

1S04E1-2 Selective stimulation of deeper CNS neuropathways by novel near infrared-upconversion nanoparticles–channelrhodopsin transfection approach

Angelo Homayoun All

Dept Orthopedic Surgery, Natl Univ Singapore, Singapore

1S04E1-3 近赤外光駆動ナノロボットによる細胞機能の遠隔制御

○都 英次郎

産総研・ナノ材料

Remote control of cellular functions by NIR light-powered nanorobots

Eijiro Miyako

AIST, NMRI, Tsukuba, Japan

1S04E1-4 有機－ナノハイブリッド材料設計に基づく生体解析技術の開発

○水上 進

東北大・多元研

Development of bioanalytical technologies based on rational design of organic-nano hybrid materials

Shin Mizukami

IMRAM, Tohoku Univ, Sendai, Japan

1S04E1-5 アップコンバージョン・ナノ粒子を用いた近赤外光によるニューロンネットワークの光操作

○八尾 寛[1,2]，細島 頌子[3]，湯浅 英哉[4]，山下 貴之[5]，山中 章弘[5]，石塚 徹[1]

[1]東北大・院生命・脳機能解析，[2]東北大・院医・脳コア，[3]名工大・院工・生命応用化学，[4]東工大・生命理工，[5]名大・環境医学・神経2

Upconversion-rhodopsin hybrid system for near-infrared manipulation of neural network

Hiromu Yawo[1,2], Shoko Hososhima[3], Hideya Yuasa[4], Takayuki Yamashita[5], Akihiro Yamanaka[5], Toru Ishizuka[1]

[1]Dept Dev Biol Neurosci, Tohoku Univ Grad Sch Life Sci, Sendai, Japan, [2]Ctr Neurosci, Tohoku Univ Grad Sch Med, Sendai, Japan, [3]Dept Front Mater, Nagoya Inst Technol, Nagoya, Japan, [4]Dept Life Sci, Grad Sch Biosci Biotech, Tokyo Inst Technol, Yokohama, Japan, [5]Dept Neurosci II, Res Inst Environ Med, Nagoya Univ, Nagoya, Japan

Aims & Scope

One of the most promising tools for future applications in science and medicine is the use of nanotechnologies. The nanoparticles which consist of various materials have unique properties, such as fluorescence, luminescence and thermogenesis, and have a potential to manipulate the molecular and cellular functions. For example, the upconversion nanoparticles (UCNs), which absorb near-infrared light and emit visible light, have been applied as donors to activate channelrhodopsins. As a result, the activity of a channelrhodopsin-expressing neuron was manipulated by near-infrared light when the UCNs lie nearby. The UCNs would increase our understanding of the mechanisms of brain disease and enable us to develop novel therapies for them with at least two advantages. First, the targeted neurons would be able to be irradiated remotely with minimal damage to the brain as near-infrared light penetrates deep in the biological tissues. Second, the effects of irradiation would be localized to regions close to the UCNs. In this symposium, we will discuss how the nanoparticles with various properties would contribute the future physiology and medicine.

公募シンポジウム５　F会場 ■ Symposium 5　Hall F

大会第1日：3月28日 (火)・March 28 (Tue)　9:50 - 11:50

イオンチャネルのCa^{2+}による調節機構の多様性とその病態生理機能

Diversification of Ca^{2+} tuning mechanism of ion channels and its pathophysiological role

オーガナイザー・Organizer：
森 誠之 (京都大学工学研究科 合成・生物専攻)
Masayuki X. Mori (Dept Synth & Chem, Grad Sch Eng, Kyoto Univ)

亀山 正樹 (鹿児島大学大学院医歯学総合研究科 神経筋生理学)
Masaki Kameyama (Dept Physiol, Grad Sch Med & Dent Sci, Kagoshima Univ)

1S05F1-1　Ca^{2+}によるアクティブゾーンCa^{2+}チャネルの微調節

○持田 澄子
東京医大・医・細胞生理

※ご発表順変更
Changing presentation order

Constitutive and Ca^{2+}-dependent fine-tuning of the active zone Ca^{2+} channels

Sumiko Mochida
Dept Physiol, Tokyo Medical Univ, Tokyo, Japan

1S05F1-2　新規致死性不整脈「カルモジュリン病」の遺伝子基盤と病態生理、およびゲノム編集を用いた患者iPS心筋細胞の機能回復

○蒔田 直昌[1]，山本 雄太[2]，牧山 武[2]，吉田 善紀[3]，堀江 稔[4]
[1]長崎大・分子生理，[2]京都大・循内，[3]京都大・iPS研究所，[4]滋賀医大・呼吸循内

Genetic and physiological basis of a lethal arrhythmia entity “calmodulinopathy”, and functional rescue by genome-editing in a patient-derived iPS cell model

Naomasa Makita[1], Yuta Yamamoto[2], Takeru Makiyama[2], Yoshinori Yoshida[3], Minoru Horie[4]
[1]Dept Mol Physiol, Nagasaki Univ Grad Sch Biol Sci, Nagasaki, Japan, [2]Dept Cardiovasc Med, Kyoto Univ Grad Sch Med, Kyoto, Japan, [3]Kyoto Univ iPS Cell Research Application, Kyoto Japan, [4]Dept Resp Cardiovasc Med, Shiga Univ Med Sci, Otsu, Japan

1S05F1-3　カルモジュリンによるCav1.2チャネルの制御機構

○蓑部 悦子[1]，森 誠之[2]，亀山 正樹[1]
[1]鹿児島大・医歯総研・神経筋生理，[2]京都大・工・合成生物化学

Regulation of Cav1.2 channels by calmodulin: A study on genetically mutated channels

Etsuko Minobe[1], Masayuki X Mori[2], Masaki Kameyama[1]
[1]Dept Physiol, Grad Sch Med & Dent Sci, Kagoshima Univ, Kagoshima Japan, [2]Dept Synth & Chem, Grad Sch Eng, Kyoto Univ, Kyoto, Japan

1S05F1-4　温めた心筋収縮系に備わったCa^{2+}独立な収縮振動が明らかにする心拍におけるCa^{2+}変動の役割

○新谷 正嶺[1,2]，鷲尾 巧[3]，樋口 秀男[1]
[1]東京大学・理学部・物理学科，[2]日本学術振興会　特別研究員PD，[3]東京大学・人間環境学専攻

Ca^{2+} independent contractive oscillations intrinsic to heating cardiomyocytes reveal an role of Ca^{2+} variations in heartbeat

Seine A Shintani[1,2], Takumi Washio[3], Hideo Higuchi[1]
[1]Dept Phys, Grad Sch Sci, Univ Tokyo, Tokyo, Japan, [2]JSPS Research Fellow, [3]Dept Human and Engineered Environmental Studies, Univ Tokyo, Tokyo, Japan

1S05F1-5 細胞増殖におけるTRPC3の役割

○梅村 将就[1]，小田 香代子[1]，石川 義弘[1,2]
[1]横浜市立大学医学部循環制御医学，[2]横浜市立大学大学院 環境免疫病態皮膚科学

The function of Transient Receptor Potential Canonical 3 (TRPC3) channel in cell proliferation

Masanari Umemura[1], Kayoko Oda[1], Yoshihiro Ishikawa[1,2]
[1]Cardiovascular Research Inst, Yokohama City Univ Grad Sch Med, [2]Dept Enviromental Immuno-Dermato, Yokohama City Univ Grad Sch Med

1S05F1-6 Ca^{2+} buffering alters lobe specificity of CaM regulations on TRPC6 channels

Onur Kerem Polat[1], Masatoshi Uno[2], Terukazu Maruyama[1], Masayuki X Mori[1], Kayo Imamura[3], Mariko Ariyoshi[2], Masahiro Shirakawa[2], Hidehito Tochio[3], Yasuo Mori[1]
[1]Dept Syn and Biol Chem, Grad Sch Eng, Kyoto Univ, Japan, [2]Dept Mol Eng, Grad Sch Eng, Kyoto Univ, Japan, [3]Dept Biophys, Grad Sch Sci, Kyoto Univ, Japan

1S05F1-7 Bidirectional Ca^{2+} regulations of Ca^{2+} permeable channels

Xiaodong Liu, Yuxia Liu, Yaxiong Yang
Tsinghua University, China

Symposia

Aims & Scope

Functional Ca^{2+} tuning of ion channels contributes to critical roles in heart, brain and the other systems. Previous studies revealed remarkable diversification and complex tuning mechanisms of ion channels by Ca^{2+} which are mediated through calciumsensing proteins and/or classical or non-classical Ca^{2+} sensing amino acid residues. Furthermore, dysregulations of the Ca^{2+} tuning are linked with genetic diseases such as autism, cardiac arrhythmia, and kidney diseases which are caused by disordersof the electrical / Ca^{2+} signaling activities. Thus, the tuning mechanisms of ion channels will have substantial impact for therapeutic targets in future. Our aim in this symposium is to update the knowledge of ion channel tuning mechanisms by $Ca^{2+}$and to understand how and when Ca^{2+} tuning of ion channels occurs and contributes to pathophysiological functions.

公募シンポジウム６　G会場 ■ Symposium 6　Hall G

大会第1日：3月28日(火)・March 28 (Tue)　9:50 - 11:50

生理学から薬理学への医学教育キャリーオーバー：何をどこまで教えればよいのか？

Carry-over of medical education from physiology to pharmacology:
what and to where should we teach?

オーガナイザー・Organizer：
安西 尚彦（千葉大学大学院医学研究院 薬理学）
Naohiko Anzai (Dept Pharmacol, Chiba Univ Grad Sch Med)

鯉淵 典之（群馬大学大学院医学系研究科 応用生理学分野）
Noriyuki Koibuchi (Department of Integrative Physiology Gunma University Graduate School of Medicine)

1S06G1-1　**イントロダクション**

○安西 尚彦
千葉大・院医・薬理

Introduction

Naohiko Anzai
Dept Pharmacol, Chiba Univ Grad Sch Med, Chiba, Japan

1S06G1-2　**薬理学講義、どこまで教えればよいのか？：基礎薬理学者の立場から**

○齊藤 源顕
高知大・医・薬理

Pharmacological lectures in Kochi Medical School

Motoaki Saito
Dept Pharmacol, Kochi Univ Kochi Med Sch, Japan

1S06G1-3　**循環生理学教育における個人的悩み：医学生理学でどこまで教えると良いのか？**

○平野 勝也
香川大・医・自律機能生理

My personal concerns regarding to what extent I should teach in medical physiology, with a focus on cardiovascular physiology

Katsuya Hirano
Dept Cardiovasc Physiol, Fac Med Kagawa Univ, Miki-cho, Kita-gun, Kagawa, Japan

1S06G1-4　**基礎医学における生理学教育をどのように薬理学教育に繋げて行くのか**

○中島 昭
藤田保健衛生大・医・生理化学

Linking physiology education to pharmacology education in basic medical sciences

Akira Nakashima
Dept Physiol Chem, Fujita Health Univ Sch Med, Aichi, Japan

ねらいと概要

米国ECFMGが2023年以降、医学教育の国際的認証を受けている医科大学・医学部の卒業生以外には受験資格を認めないと宣言したことが引き金になり、我が国でも医学教育が国際認証を受けるべきとの気運が全国的に高まっているのは周知の事実である。特に米国では少なくとも80週行われている診療型参加実習の時間確保のため、評価ポイントとして重視される統合カリキュラムや少人数Active Learningの導入により、従来型の講義時間が大幅に削減されてきているのが共通の実情ではないかと思われる。そこでここ数年のうちに生理学ないし薬理学の教授に就任し、直後にコマ数削減という事態に直面した経験を持つ先生方を演者として、項目的にオーバーラップの多い生理学と薬理学の棲み分けをどうすれば良いのか？、現在求められているキャリーオーバーについてそれぞれの視点から提案をすることで相互の理解を深めることを目的とする。

※本シンポジウムは全て日本語で開催されます。
This symposium will be held in Japanese.

公募シンポジウム7　H会場 ■ Symposium 7　Hall H

大会第1日：3月28日 (火)・March 28 (Tue)　9:50 - 11:50

【新学術「先端バイオイメージング支援プラットフォーム」共催】
非侵襲ヒト生体光イメージング：解剖・生理学研究の革新的ツール

【Co-sponsored by the MEXT "Advanced bioimaging support"】

Non-invasive human optical imaging:
innovative tools for investigating anatomy and physiology

オーガナイザー・Organizer：
星 詳子 (浜松医科大学光先端医学教育研究センター 生体医用光学研究室)
Yoko Hoshi (Dept Biomedical Optics, Hamamatsu Univ Sch Med)

1S07H1-1　時間領域拡散蛍光トモグラフィによる生体組織深部蛍光ターゲットの定量イメージング

○西村 吾朗
北海道大学・電子研

Time-domain fluorescence diffuse optical tomography for quantitative imaging of a fluorescence target in deep biological tissue

Goro Nishimura
RIES, Hokkaido Univ, Japan

1S07H1-2　マイクロコンベックスプローブを用いた非侵襲光音響イメージング

○大川 晋平[1]，精 きぐな[2]，新地 祐介[3]，中村 亜希子[1]，平沢 壮[1]，津田 均[4]，和田 隆亜[5]，堀口 明男[3]，櫛引 俊宏[1]，笹 秀典[2]，古谷 健一[2]，淺野 友彦[3]，石原 美弥[1]
[1]防衛医大・医用工学，[2]防衛医大・産科婦人科，[3]防衛医大・泌尿器科，[4]防衛医大・病態病理科，[5]富士フィルム・R&D統括本部

Noninvasive photoacoustic imaging using microconvex probe

Shinpei Okawa[1], Kiguna Sei[2], Masayuki Shinchi[3], Akiko Nakamura[1], Takeshi Hirasawa[1], Hitoshi Tsuda[4], Takatsugu Wada[5], Akio Horiguchi[3], Toshihiro Kushibiki[1], Hidenori Sasa[2], Kenichi Furuya[2], Tomohiko Asano[3], Miya Ishihara[1]
[1]Dept Med Eng, Natl Def Med Col, Saitama, Japan, [2]Dept Obst Gynec, Natl Def Med Col, Saitama, Japan, [3]Dept Urol, Natl Def Med Col, Saitama, Japan, [4]Dept Basic Pathol, Natl Def Med Col, Saitama, Japan, [5]R&D HQ, Fuji Film, Kanagawa, Japan

1S07H1-3　階層ベイズ推定法を用いた連続光拡散光トモグラフィの逆問題解法

○下川 丈明
ATR・脳情報解析研

Hierarchical Bayesian inversion algorithms for continuous-wave diffuse optical tomography

Takeaki Shimokawa
ATR-NIA, Kyoto, Japan

1S07H1-4　輻射輸送方程式に基づくタイムドメイン拡散光トモグラフィ

○星 詳子
浜松医科大・生体医用光学

Time-domain diffuse optical tomography based on the radiative transfer equation

Yoko Hoshi
Dept Biomedical Optics, Hamamatsu Univ Sch Med, Hamamatsu, Japan

Aims & Scope

The advent of recent sophisticated optical techniques, such as optogenetics and two-photon microscopy, has been contributing to elucidation of structures and functions at the microscopic level in mammals. These techniques are exclusively applied to studies in small animals, cultured tissues and cells. This is partly due to limited penetration depth of light. In contrast, optical imaging techniques using near-infrared light, which relatively easily penetrates biological tissues, are potentially effective for investigating human anatomy and physiology. Using scattered lights, diffuse optical tomography (DOT) reconstructs images of absorption and scattering coefficients, which provide information about hemodynamics and structures. The DOT image reconstruction can be approximately divided into two kinds: one is a linearization approach (linear DOT) and another is a nonlinear iterative approach (nonlinear iterative DOT). DOT can be extended to fluorescence tomography (FDOT), which enables molecular imaging in human. Photoacoustic imaging (PAI) is based on the PA effect, the generation of acoustic waves by the absorption of optical waves. In this symposium, the four above-mentioned imaging modalities are presented, and their potential as a tool for investigating human anatomy and physiology is discussed.

公募シンポジウム８　I会場 ■ Symposium 8　Hall I

大会第1日：3月28日 (火)・March 28 (Tue)　9:50 - 11:50

筋生理学の最前線：筋形成、筋疾患の分子機構

Frontiers in skeletal muscle physiology:
molecular mechanism of myogenesis and myopathies

オーガナイザー・Organizer：
林 由起子（東京医科大学 病態生理学分野）
Yukiko K. Hayashi (Dept Pathophysiol, Tokyo Medical Univ)
村山 尚（順天堂大学医学部 薬理学分野）
Takashi Murayama (Dept Pharmacol, Juntendo Univ Sch Med)

1S08I1-1　リン脂質フリッパーゼの筋管形成における役割

○原 雄二[1,2]，土谷 正樹[1]，伊藤 可梨[1]，奥田 雅貴[1]，西岡 諒太郎[1]，梅田 眞郷[1]
[1]京大・院工・合成・生物，[2]日本医療研究開発機構, PRIME

The role of phospholipid flippases in myotube formation

Yuji Hara[1,2], Masaki Tsuchiya[1], Karin Itoh[1], Masaki Okuda[1], Ryotaro Nishioka[1], Masato Umeda[1]
[1]Dept Synth Chem & Biol Chem, Kyoto Univ, Kyoto, Japan, [2]PRIME

1S08I1-2　骨格筋と心筋の筋原線維形成の分子機構とその不全による筋疾患

○遠藤 剛，高野 和儀
千葉大・院理・生物

Molecular mechanisms of myofibrillogenesis in skeletal and cardiac muscles and muscle diseases caused by their failure

Takeshi Endo, Kazunori Takano
Dept Biol, Grad Sch Sci, Chiba Univ, Chiba, Japan

1S08I1-3　ミオパチーのエキソーム解析

○宮武 聡子[1,2]
[1]横浜市大附属病院・遺伝子診療部，[2]横浜市大・院医・遺伝学

Whole exome sequencing in congenital myopathy

Satoko Miyatake[1,2]
[1]Dept Clinical Genet, Yokohama City Univ Hospital, Yokohama, Japan, [2]Dept Human Genet, Yokohama City Univ Grad Sch Med, Yokohama, Japan

1S08I1-4　筋原線維配列の乱れとタンパク質凝集体を伴う筋疾患

○林 由起子
東医大・医・病態生理

Myopathies associated with myofibril disorganization and protein aggregation

Yukiko K Hayashi
Dept Pathophysiol, Tokyo Medical Univ, Tokyo, Japan

1S08I1-5 RyR1関連筋疾患の分子機構：診断と治療に向けて

○村山 尚
順天堂大・医・薬理

Molecular mechanism of RyR1-related muscle diseases: toward diagnosis and therapy

Takashi Murayama
Dept Pharmacol, Juntendo Univ Sch Med, Tokyo, Japan

Aims & Scope

For the proper development and effective force generation, skeletal muscle has various excellent and special physiological systems. Lots of previous works have revealed the ingenious and precise molecular mechanisms of the myogenesis and muscle contraction. Further, recent advances in molecular genetics identified many causative genes for myopathies and the molecular pathomechanisms of each disease are becoming to be clarified.

This symposium will provide new insights into the myogenesis and myopathies, including the roles of membrane phospholipid translocases which produce asymmetrical distribution of phospholipids of plasma membrane, precise mechanisms of thin filament formation, and clinical and molecular pathophysiology of muscle diseases associated with sarcomere components and T-tubule–sarcoplasmic reticulum system.

公募シンポジウム９　J会場 ■ Symposium 9　Hall J

大会第1日：3月28日 (火)・March 28 (Tue)　9:50 - 11:50

リハビリテーションと脳機能計測

Rehabilitation and functional brain imaging

オーガナイザー・Organizer：
松川 寛二 (広島大学)
Matsukawa Kanji (Hiroshima University)

黒澤 美枝子 (国際医療福祉大学)
Kurosawa Mieko (International University of Health Welfare)

1S09J1-1 Non-invasive brain machine interfaces for assistive and rehabilitation robotics

Giuseppe Lisi, Jun Morimoto
Dept Brain Robot Interface, Comput Neurosci Lab, ATR Inst, Kyoto, Japan

1S09J1-2 ニューロリハビリテーションにおけるfNIRSの臨床応用

○宮井 一郎
森之宮病院・神経リハ研

Clinical application of functional near-infrared spectroscopy in neurorehabilitation

Ichiro Miyai
Neurorehab Res Inst, Morinomiya Hosp, Osaka, Japan

1S09J1-3 再生医療におけるPETを用いたイメージングの活用

○尾上 浩隆
理研・CLST・生体機能評価

Positron emission tomography (PET) molecular and functional imaging for regenerative medicine

Hirotaka Onoe
RIKEN Center for Life Science Technologies, Kobe, Japan

1S09J1-4 運動開始前にみられる前頭前野酸素化ヘモグロビン濃度の増加とセントラルコマンド

○松川 寛二，石井 圭，浅原 亮太，遠藤 加菜，梁 楠
広島大学・医学部保健学科・生理

Increased oxygenation of the prefrontal cortex prior to the onset of exercise has relation to central command

Kanji Matsukawa, Kei Ishii, Ryota Asahara, Kana Endo, Nan Liang
Dept Integrative Physiol, Grad Sch Biomed & Health Sci, Hiroshima Univ, Hiroshima, Japan

Aims & Scope

Japan is now considered a highly-aged society and elderly people may suffer brain injury or damage due to stroke and neuro-degeneration disease. So it is important for compensating or recovering the brain function from the injury or damage to promote evidenced-based rehabilitation. To do this, brain activity should be recorded in the course of rehabilitation and understanding how injury or degeneration of brain tissue may alter physiological functions and what kind of the plastic changes in the brain may occur is needed. In this symposium, we would like to focus on the evidence and recent progress of functional brain imaging to estimating brain activity using different imaging techniques (NIRS, f-MRI, PET, and EEG). Each speaker will present their state-of-the-art data about in-vivo brain imaging during behaviors in normal and disabled subjects. Drs. Kurosawa and Matsukawa have been organizing the rehabilitation-related symposiums since the 89th Annual meeting of the Physiological Society in 2012 from various aspects (autonomic function, endocrine function, cerebral blood flow regulation, integrative function facing aging, brain plasticity after stroke etc.).

公募シンポジウム10　C会場 ■ Symposium 10　Hall C

大会第1日：3月28日(火)・March 28 (Tue)　16:40 - 18:40

DOHaD研究から先制医療への展望

Developmental origins of health and disease (DOHaD) research: perspective toward preemptive medicine

オーガナイザー・Organizer：
根本 崇宏（日本医科大学生理学 生体統御学）
Takahiro Nemoto (Dept Physical, Nippon Medical School)

伊東 宏晃（浜松医科大学付属病院 周産期母子センター）
Hiroaki Itoh (Dept Obstetrics Gynecol, Hamamatsu Univ Sch Med)

1S10C2-1　**胎生期低栄養の次世代への影響**

○根本 崇宏，柿沼 由彦
日本医大・生体統御学

Impact on fetal malnutrition of the next generation

Takahiro Nemoto, Yoshihiko Kakinuma
Dept Physical, Nippon Medical School, Tokyo, Japan

1S10C2-2　Maternal stress causes loss of parvalbumin neurons and alterations of extracellular glycans in the mPFC of GAD67-GFP knock-in mouse

Tianying Wang[1], Adya Saran Sinha[1], Yuchio Yanagawa[2], Kenichiro Hata[3], Atsuo Fukuda[1]
[1]Dept Neurophysiol, Hamamatsu Univ Sch Med, Hamamatsu, Japan, [2]Dept Genet Behav Neurosci, Gunma University Grad Sch Med, Maebashi, Japan, [3]Dept Maternal-Fetal Biol, Natl Res Inst Child Health Dev, Tokyo, Japan

1S10C2-3　**胎生期の低栄養と成長後の肝脂肪変性 －小胞体ストレスの関わり－**

○伊東 宏晃
浜松医大・周産母子センター

Undernourishment *in utero* and hepatic steatosis in later life; a possible involvement of endoplasmic reticulum stress

Hiroaki Itoh
Dept Obstetrics Gynecol, Hamamatsu Univ Sch Med, Hamamatsu, Japan

1S10C2-4　**早産低出生体重児における脂肪組織の発達とインスリン抵抗性**

○中野 有也
昭和大学・医学部・小児科

Fat tissue development and insulin resistance in preterm low-birth-weight infants

Yuya Nakano
Dept Pediatrics, Showa Univ Sch Med, Tokyo, Japan

Aims & Scope

The mean birth weight has been declining, and the prevalence rate of low birth weight has increased from 1980s in Japan. According to developmental origins of heath and disease (DOHaD) theory, which is based on the early epidemiological study carriedout by David Barker, low birth weight is known to be a risk factor of developing noncommunicable diseases (NCDs). The recent increase in low birth weight infants in Japan might be a social burden in the future and to solve the problem is a matter ofgreat urgency. Timely interventions may reduce the risk of developing NCDs in individuals and also limit its transgeneration. Therefore, it is necessary to understand the mechanisms underlying developing NCDs in low birth weight infants. We also need to adopt a preemptive approach that seeks to assess NCDs risk in order to perform early intervention and interrupt the development of NCDs. Moreover, we have to inform widely this DOHaD theory. The aim of this symposium is to address recent challenges and to present novel approaches to clarify the mechanisms underlying developing NCDs in low birth weight infants including new insights from basic science to clinical medicine.

公募シンポジウム11　D会場 ■ Symposium 11　Hall D

大会第1日：3月28日 (火)・March 28 (Tue)　16:40 - 18:40

日本生物物理学会連携シンポジウム
生物物理学的手法による生理学研究の新展開

Joint Symposium with the Biophysical Society of Japan
New horizons in physiology employing biophysical technologies

オーガナイザー・Organizer：
福田 紀男（東京慈恵会医科大学 細胞生理学講座）
Norio Fukuda (Dept Cell Physiol, Jikei Univ Sch Med)

安田 賢二（早稲田大学理工学術院 先進理工学部・物理学科）
Kenji Yasuda (Dept Physics, Waseda Univ)

Symposia

1S11D2-1　アクチン線維の細胞内、細胞外構造解析

○成田 哲博
名古屋大・院理

Structural analysis of the actin filament in vivo and in vitro

Akihiro Narita
Grad Sch Sci, Nagoya Univ, Nagoya, Japan

1S11D2-2　リバースジャイレースというDNAの二重鎖をきつく巻き上げる分子機械の一分子解析

○小川 泰策
理研・QBiC

Single-molecule analysis of DNA overwinding by reverse gyrase

Taisaku Ogawa
RIKEN QBiC, Osaka, Japan

1S11D2-3　顕微力学操作による細胞分裂機構のメカノケミカル制御

○板橋 岳志[1,2]，石渡 信一[1]
[1]早大・理工・物理，[2]早大・WABIOS

Mechano-chemical control of cell division machinery by using micromanipulation

Takeshi Itabashi[1,2], Shinichi Ishiwata[1]
[1]Dept Phys, Fac Sci Eng, Waseda Univ, Tokyo, Japan, [2]WASEDA Biosci Res Inst Singapore (WABIOS), Waseda Univ, Singapore, Singapore

1S11D2-4　マイクロファブリケーション技術を用いた人工神経回路構築技術

○寺薗 英之[1]，服部 明弘[1,2]，安田 賢二[1,2]
[1]早大・総研機構・WABIOS，[2]早大･物理

Construction of an artificial neuronal circuit using a microfabrication technique

Hideyuki Terazono[1], Akihiro Hattori[1,2], Kenji Yasuda[1,2]
[1]WASEDA Biosci Res Inst Singapore (WABIOS), Waseda Univ, [2]Dept Physics, Waseda Univ, Tokyo, Japan

1S11D2-5 **数理モデルによる心筋細胞の集団効果の解析**

○林 達也[1]，時弘 哲治[1,2]，栗原 裕基[2,3]，野村 典正[4]，安田 賢二[2,5]

[1]東大院・数理，[2]科学技術振興機構, CREST，[3]東京大学大学院医学系研究科，[4]東京医科歯科大学生体材料工学研究所，[5]早稲田大学理工学術院

Analysis of the community effect of cardiomyocytes by mathematical modeling

Tatsuya Hayashi[1], Tetsuji Tokihiro[1,2], Hiroki Kurihara[2,3], Fumimasa Nomura[4], Kenji Yasuda[2,5]

[1]Grad Sch Math Sci, Univ Tokyo, Tokyo, Japan, [2]JST, CREST, Saitama, Japan, [3]Grad Sch Med, Univ Tokyo, [4]Inst Biomat Bioeng, Tokyo Med Dent Univ, Tokyo, Japan, [5]Fac Sci Eng, Waseda Univ, Tokyo, Japan

1S11D2-6 (AP3) **マウス心臓における興奮収縮連関のナノイメージング**

○小比類巻 生，福田 紀男

慈恵医大・医・細胞生理

In vivo cardiac nano-imaging high-resolution analysis of excitation-contraction coupling in the heart

Fuyu Kobirumaki, Norio Fukuda

Dept Cell Physiol, Jikei Univ Sch Med, Tokyo, Japan

Aims & Scope

For a complete understanding of the system dynamics of life, it is imperative to uncover the mechanisms of various cellular and sub-cellular functions based on physics (single-molecule dynamics, intracellular transport and localization of cellular components, cell motility and cellular adaptation to external force); in doing so, a new era in physiology is brought forth. This symposium brings together young scientists across Japan applying cutting-edge biophysical technologies in various life science fields. We will discuss 1) structure determination of actin filament, 2) single molecular analysis of motor proteins, 3) micromanipulation of cellular division, 4) experimental analysis and mathematical modeling of cell-cell communications, and5) nano-imaging of sarcomeric contraction in the heart in vivo.

公募シンポジウム12　E会場 ■ Symposium 12　Hall E

大会第1日：3月28日(火)・March 28 (Tue)　16:40 - 18:40

イオンチャネル・トランスポータ分子の構造・動態・機能のシミュレーション研究

Simulation studies of structures, dynamics, and functions of ion channels and transporters

オーガナイザー・Organizer：
藤原 祐一郎（大阪大学医学系研究科 生理学講座）
Yuichiro Fujiwara (Dept Physiol, Grad Sch Med, Osaka Univ)

竹内 綾子（福井大学学術研究院 医学系部門・統合生理学）
Ayako Takeuchi (Integr Physiol Fac Med Sci, Univ Fukui)

1S12E2-1　コンピュータシミュレーションによって原子レベルで撮影されたイオンチャネルを通るイオン透過の3D動画

○炭竈 享司，老木 成稔
福井大・医・分子生理

A 3-D movie of ion permeation through ion channel at the atomic level filmed by computer simulation

Takashi Sumikama, Shigetoshi Oiki
Facult Med Sci, Univ Fukui, Japan

1S12E2-2　粗視化シミュレーションによるアンキリンGの細胞膜周辺での動態の解析

○近藤 寛子[1]，藤原 祐一郎[2]，城田 松之[3,4,5]，木下 賢吾[4,5,6]
[1]広市大・院情報, [2]阪大・院医・生理, [3]東北大・院医, [4]東北大・院情報, [5]東北大・メガバンク, [6]東北大・加齢研

A study of dynamics of palmitoylated Ankyrin-G around a lipid bilayer by coarse-grained simulations

Hiroko X Kondo[1], Yuichiro Fujiwara[2], Matsuyuki Shirota[3,4,5], Kengo Kinoshita[4,5,6]
[1]Grad Sch Info Sci, Hiroshima City Univ, Hiroshima, Japan, [2]Dept Physiol, Grad Sch Med, Osaka Univ, Suita, Japan, [3]Grad Sch Med, Tohoku Univ, Sendai, Japan, [4]Grad Sch Info Sci, Tohoku Univ, Sendai, Japan, [5]ToMMo, Tohoku Univ, Sendai, Japan, [6]IDAC, Tohoku Univ, Sendai, Japan

1S12E2-3　リンパ球におけるミトコンドリア-小胞体Ca^{2+}クロストークの役割に関するフィジオーム研究

○竹内 綾子[1]，金 鳳柱[2]，松岡 達[1]
[1]福井大・医・統合生理，[2]ソウル大・歯

Physiome study on the roles of mitochondria-endoplasmic reticulum Ca^{2+} crosstalk in lymphocytes

Ayako Takeuchi[1], Bongju Kim[2], Satoshi Matsuoka[1]
[1]Integr Physiol Fac Med Sci, Univ Fukui, Japan, [2]Dent Hosp Seoul Natl Univ, Korea

1S12E2-4　Kir2.1内向き整流性K^+チャネルの細胞外K^+に依存するK^+透過と開閉のメカニズム

○柳（石原）圭子[1]，松岡 達[2]，鷹野 誠[1]
[1]久留米大・医・生理・統合自律，[2]福井大・医・統合生理

Mechanisms for external K^+ dependence of K^+ permeation and gating of Kir2.1 inward rectifier K^+ channel

Keiko Ishihara[1], Satoshi Matsuoka[2], Makoto Takano[1]
[1]Dept Physiol, Kurume Univ Sch Med, Kurume, Japan, [2]Dept Integ System Physiol, Fac Med Sci, Univ Fukui, Japan

Aims & Scope

Ion channels and transporters play key roles in the physiology of a wide range of cells, especially in membrane excitation and ionic homeostasis. They have been successfully analyzed by electrophysiology in combination with diverse approaches (molecular genetics, structural biology, imaging, etc.), but there are still sotme aspects the experimental analysis of which are technically difficult. For example, understandings of molecular structural dynamics, inter molecular functional couplings and integration of cellular function are still insufficient. Simulation study can become a powerful tool to overcome such difficulties. In particular, simulation approaches based on the mathematical modeling and the statistical mechanics rather than on the genetic network are important. A wide range of computational approaches is also required in an attempt to relate the 3D structure to the physiological function. In this symposium, we will introduce our computational approaches focusing on ion channels and transporters, in each hierarchy from the atomic to the cellular level. The symposium will also cover the theoretical backgrounds and practical examples of simulation analysis combined with other techniques that will bring deep and novel understandings of membrane physiology.

公募シンポジウム13　F会場 ■ Symposium 13　Hall F

大会第1日：3月28日 (火)・March 28 (Tue)　16:40 - 18:40

心臓におけるCa^{2+}シグナル最前線 −分子から病態まで−

Forefront of Ca^{2+} signaling in the heart– from molecules to diseases –

オーガナイザー・Organizer：
西谷 (中村) 友重 (国立循環器病研究センター・分子生理部)
Tomoe Y. Nakamura-Nishitani (Dept Mol Physiol, Natl Cereb Cardiovasc Ctr)

呉林 なごみ (順天堂大学医学部 薬理学教室)
Nagomi Kurebayashi (Dept Pharmacol, Facl Med, Juntendo Univ)

Symposia

1S13F2-1　Angiotensin IIによる幼若心筋細胞の$Ca_V1.2$L型Ca^{2+}チャネル活性化の分子機構

○柏原 俊英，中田 勉，山田 充彦
信州大・医・分子薬理

Angiotensin II activates L-type $Ca_V1.2$ Ca^{2+} channels in immature cardiomyocytes

Toshihide Kashihara, Tsutomu Nakada, Mitsuhiko Yamada
Dept Mol Pharmacol, Shinshu Univ Sch Med, Matsumoto, Japan

1S13F2-2　心臓の線維化におけるTRPC3-Nox2機能連関の役割

○冨田 拓郎[1,2]，北島 直幸[3]，西村 明幸[1,2]，西田 基宏[1,2,3,4]
[1]岡崎統合バイオ (生理研)，[2]総研大，[3]九大院・薬，[4]JSTさきがけ

Functional and physical coupling between TRPC3 and Nox2 underlies maladaptive cardiac fibrosis

Takuro Numaga-Tomita[1,2], Naoyuki Kitajima[3], Akiyuki Nishimura[1,2], Motohiro Nishida[1,2,3,4]
[1]Okazaki Inst Integr BioSci (Natl Inst Physiol Sci), Okazaki, Japan, [2]Sokendai, [3]Grad Sch Pharm Sci, Kyushu Univ, Fukuoka, Japan, [4]JST, PRESTO

1S13F2-3　心臓の可塑性におけるTRPV2の役割

○片野坂 友紀
岡山大院・医歯薬・システム生理

TRPV2 is required for the normal cardiac plasticity

Yuki Katanosaka
Dept Carddiovascular Physiol, Okayama Univ, Okayama, Japan

1S13F2-4　Ca^{2+}センサー NCS-1による新規心筋ストレス防御機構

○西谷 (中村) 友重[1]，中尾 周[1]，若林 繁夫[2]
[1]国循セ・研・分子生理，[2]大阪医・薬理

Novel mechanism of stress tolerance of cardiomyocytes by a Ca^{2+} sensor protein NCS-1

Tomoe Nishitani-Nakamura[1], Shu Nakao[1], Shigeo Wakabayashi[2]
[1]Dept Mol Physiol, Natl Cer Cardiovasc Ctr, Osaka, Japan, [2]Dept Pharmacol, Osaka Med Univ, Osaka, Japan

Aims & Scope

Intracellular Ca^{2+} regulates various cellular processes such as muscle contraction via excitation-contraction (E-C) coupling, and gene expression, leading to cardiac remodeling. There are a number of Ca^{2+} regulatory proteins, such as Ca^{2+}-permeable channels and Ca^{2+} sensors. Dysregulation of Ca^{2+} signals caused by functional impairments of these proteins would lead to life-threatening arrhythmia, hypertrophy and heart failure. However, detailed molecular mechanisms underlying these disease conditions are still not fully understood. In this symposium, we will focus on some of Ca^{2+} regulatory proteins, particularly the L-type Ca^{2+} channel, TRPC3 channel, TRPV2 channel and neuronal Ca^{2+} sensor NCS-1, that are known to be important for E-C coupling and/or cardiac remodeling. We will present our current understanding of how acute and chronic cardiac disorders occur by showing our recent data. We will also discuss possible crosstalk of Ca^{2+} regulations mediated by these proteins.

公募シンポジウム14　H会場 ■ Symposium 14　Hall H

大会第1日：3月28日 (火)・March 28 (Tue)　16:40 - 18:40

シナプス分布による神経情報制御の最前線

Roles of synaptic input distribution in neuronal signal processing

オーガナイザー・Organizer：
久場 博司 (名古屋大学・医院・細胞生理学)
Hiroshi Kuba (Dept Cell Physiol, Grad Sch Med, Nagoya Univ)

1S14H2-1　**聴覚同時検出における非線形シナプス統合の役割**

○山田 玲，久場 博司
名古屋大・院医・細胞生理学

Sublinear integration at local dendrite of auditory coincidence detector neurons

Rei Yamada, Hiroshi Kuba
Dept Cell Physiol, Grad Sch Med, Nagoya Univ, Nagoya, Japan

1S14H2-2　**大脳皮質各種神経細胞へのシナプス入力**

○窪田 芳之[1,2]
[1]生理研，[2]総研大

Synapse density and estimated number on various neurons of the rat frontal cortex

Yoshiyuki Kubota[1,2]
[1]Div Cerebral Cir, Nat Inst Physiol Sci, Okazaki, Japan, [2]SOKENDAI, Okazaki, Japan

1S14H2-3　**大脳小脳連関に関与する小脳皮質のシナプス入力分布**

○石川 太郎，志牟田 美佐
慈恵医大・薬理

Synaptic input distribution in the cerebellar cortex related to cerebro-cerebellar communication

Taro Ishikawa, Misa Shimuta
Dept Pharm, Jikei Univ Sch Med, Tokyo, Japan

1S14H2-4　**樹状突起による上流ニューロン集団の選定**

○池谷 裕二
東大・院薬

Dendrites screen presynaptic neuron ensembles

Yuji Ikegaya
Grad Sch Pharmaceut Sci, Univ Tokyo, Japan

Aims & Scope

Spatial pattern of synaptic inputs has strong impact on their integration at dendrites. Recent studies have revealed that this effect is more complex than previously thought, and plays a critical role in determining neuronal output. For example, synaptic integration is augmented with accumulation of inputs within dendrites via supra-linear summation in cortical and hippocampal pyramidal neurons, whereas it is suppressed via sub-linear summation in inhibitory interneurons and brainstem auditory neurons. In this symposium, top researchers in this field will get together and discuss their up-to-date findings on the issues. Through the discussion, we will explore logics and strategies of determining synaptic distribution at dendrites in the nervous system.

公募シンポジウム15　I会場 ■ Symposium 15　Hall I

大会第1日：3月28日(火)・March 28 (Tue)　16:40 - 18:40

in vivo 生理学：その観察と操作

in vivo physiology: observation and manipulation of biological activity

オーガナイザー・Organizer：

中村 渉（大阪大学 歯学研究科）
Wataru Nakamura (Lab Oral Chronobiol, Grad Sch Dent, Osaka Univ)

山中 章弘（名古屋大学環境医学研究所 神経系分野2）
Akihiro Yamanaka (Dep Neurosci II, Res Inst Environ Med, Nagoya Univ)

1S15I2-1　**性周期を制御するサーカディアンリズムの加齢変化**

○中村 渉
大阪大・院歯・口腔時間生物

Effects of aging on circadian pacemakers for regulating reproductive functions

Wataru Nakamura
Lab Oral Chronobiol, Grad Sch Dent, Osaka Univ, Osaka, Japan

1S15I2-2　**加齢による概日リズム機能低下の神経機構**

○中村 孝博
明治大・農・動物生理

Neural mechanisms of age-related decline in circadian rhythmicity

Takahiro Nakamura
Lab Animal Physiol, Sch Agri, Meiji Univ Kanagawa, Japan

1S15I2-3　**新規技術によってみえてくる科学的現象の新しい局面**

○沼野 利佳[1]，澤畑 博人[3]，安東 頼子[2]，河野 剛士[3]
[1]豊橋技科大・環境生命工，[2]豊橋技科大・アイリス，[3]豊橋技科大・電気電子

The novel technology to observe in vivo physiology gives us new sight behind scientific phenomena

Rika Numano[1], Hirohito Sawahata[3], Yoriko Ando[2], Takeshi Kawano[3]
[1]Dept Env Life Sci, TOYOHASHI Univ Tech, Aichi, Japan, [2]EIIRIS, TOYOHASHI Univ Tech, Aichi, [3]Electrical and Electro Info, TOYOHASHI Univ Tech, Aichi, Japan

1S15I2-4
(AP1)　**知覚記憶の固定化を担う睡眠時の大脳皮質回路**

○宮本 大祐[1,2,3,4]，平井 大地[2]，ファン アラン チチュン[5]，犬束 歩[1]，小田川 摩耶[2]，ボーリンガー ローマン[6]，アダイカン チナカルパン[6]，松原 智恵[2]，松木 則夫[3]，深井 朋樹[5]，マクヒュー ジェイ トーマス[6]，山中 章弘[1]，村山 正宜[2]
[1]名大・環医研・神経系II，[2]理研BSI・行動神経生理学，[3]東大院・薬・薬品作用学，[4]学振特別研究員PD，[5]理研BSI・脳回路機能理論，[6]理研BSI・神経回路、行動生理学

Cerebral cortex circuits for perceptual memory consolidation during sleep

Daisuke Miyamoto[1,2,3,4], Daichi Hirai[2], Chi-Chung Alan Fung[5], Ayumu Inutsuka[1], Maya Odagawa[2], Roman Boehringer[6], Adaikkan Chinnakkaruppan[6], Chie Matsubara[2], Norio Matsuki[3], Tomoki Fukai[5], Thomas J Mchugh[6], Akihiro Yamanaka[1], Masanori Murayama[2]
[1]Dep Neurosci II, Res Inst Environ Med, Nagoya Univ, Nagoya, Japan, [2]Lab Behav Neurophysiol, RIKEN Brain Science Inst, Wako, Japan, [3]Lab Chemi Pharmacol, Grad Sch Pharm Sci, Univ Tokyo, Tokyo, Japan, [4]JSPS Research Fellow, Tokyo, Japan, [5]Lab Neural Circuit Theory, RIKEN Brain Science Inst, Wako, Japan, [6]Lab Circuit Behav Physiol, RIKEN Brain Science Inst, Wako, Japan

1S15I2-5 **記憶痕跡の観察と操作**

○松尾 直毅
阪大・院医・分子行動神経科学

Observation and manipulation of memory engram

Naoki Matsuo
Dept Mol & Behav Neurosci, Grad Sch Med, Osaka Univ, Osaka, Japan

1S15I2-6 **視床下部神経活動の記録と操作による睡眠覚醒と記憶の制御機構の解明**

○山中 章弘
名古屋大・環境医学研・神経2

Regulatory mechanism of sleep/wakefulness and memory by measuring and manipulating the activity of hypothalamic neurons

Akihiro Yamanaka
Dept Neurosci II, Res Inst Environmental Med, Nagoya Univ, Nagoya, Japan

Aims & Scope

Physiology is the scientific study of normal functions in living organisms, and focuses on how hierarchical systems, i.e., organs, tissue, cells, and biomolecules, carry out the chemical or physical functions present in a living system. In this symposium, we will discuss how to examine these physiological functions, along with time-associated variations such as mammalian memory, sleep, and biological rhythms. Recent progress in each subject enables us to conduct detailed observation and manipulation of in vivo systems by means of the latest opto-, toxi- and biochemical genetic techniques, using time-dependent environmental cues. This symposium will provide an understanding of the essential meaning of in vivo physiology, by using live observation and dynamic manipulation of physiological functions.

公募シンポジウム16　J会場 ■ Symposium 16　Hall J

大会第1日：3月28日(火)・March 28 (Tue)　16:40 - 18:40

健康状態と病態形成における亜鉛恒常性と亜鉛シグナリングの役割

Zinc homeostasis and signaling in health and disease

オーガナイザー・Organizer：
深田 俊幸（徳島文理大学薬学部 病態分子薬理学研究室）
Toshiyuki Fukada (Pharmaceutical Sci, Mol Cell Physiol, Tokushima Bunri Univ)

神戸 大朋（京都大学大学院生命科学研究科 統合生命科学専攻 応用生物機構学講座）
Taiho Kambe (Grad Sch Biostudies, Kyoto Univ)

1S16J2-1　Role of zinc transporters and signaling in homeostasis of epitheliual tissues

Toshiyuki Fukada
Pharmaceutical Sci, Mol Cell Physiol, Tokushima Bunri Univ, Tokushima, Japan

1S16J2-2　The zinc spark is a non-invasive marker of mammalian egg and embryo quality

Nan Zhang[1], Francesca E Duncan[1], Emily L Que[1,2], Thomas V OHalloran[3], Teresa K Woodruff[1]
[1]Dept Obstet Gynecol, Northwestern Univ, Illinois, USA, [2]Dept Chem Biochem, Univ Texas at Austin, USA, [3]Dept Chem, Northwestern University, Illinois, USA

1S16J2-3　気道上皮細胞における亜鉛取り込み輸送体ZIP2の新規スプライススイッチが閉塞性肺疾患の肺病態を調節する

○首藤 剛[1]，亀井 竣輔[1,2]，首藤 恵子[3]，スイコ メリーアン[1]，甲斐 広文[1]
[1]熊本大・院薬・遺伝子機能応用学，[2]熊大院・リーディング大学院・HIGO，[3]崇城大・薬・薬理学

A novel splicing switch of zinc importer ZIP2 in airway epithelial cells that controls the pathology of obstructive lung diseases

Tsuyoshi Shuto[1], Shunsuke Kamei[1,2], Keiko Ueno-Shuto[3], Mary-Ann Suico[1], Hirofumi Kai[1]
[1]Dept Mol Med, Grad Sch Pharm Sci, Kumamoto Univ, Kumamoto, Japan, [2]Prog Leading Grad Sch HIGO, Kumamoto Univ, Kumamoto, Japan, [3]Lab Pharmacol, Sojo Univ Pharm Sch, Kumamoto, Japan

1S16J2-4　メタロチオネインと加齢性疾患

○川上 隆茂，門田 佳人，佐藤 政男，鈴木 真也
徳島文理大・薬・公衆衛生

Metallothionein and age-related diseases

Takashige Kawakami, Yoshito Kadota, Masao Sato, Shinya Suzuki
Fac Pharm Sci, Tokushima Bunri Univ Tokushima, Japan

1S16J2-5　ZnTトランスポーターによる亜鉛要求性酵素の活性化

○神戸 大朋
京大・院生命科学・統合生命

Zinc-requiring ectoenzyme activation by ZnT transporters

Taiho Kambe
Grad Sch Biostudies, Kyoto Univ, Kyoto, Japan

Aims & Scope

Zinc is an essential trace element for life, and recent studies revealed that zinc acts as a signaling factor: zinc signal, which is mediated bytransporters, channels, and metallothioneins, is involved in health and disease conditions. This symposium will aim to discuss the roles of zinc signaling and its related molecules in physiology and pathogenesis, by inviting experts including Prof. Dr. Kathy Taylor, who is the President Elect of International Society for Zinc Biology (ISZB).

公募シンポジウム17　D会場 ■ Symposium 17　Hall D

大会第2日：3月29日(水)・March 29 (Wed)　8:50 - 10:50

食嗜好の分子神経基盤

Molecular and neural basis for food preferences

オーガナイザー・Organizer：
佐々木 努(群馬大学生体調節研究所 代謝シグナル解析分野)
Tsutomu Sasaki (Metabolic Signal, IMCR, Gunma Univ)

岡本 士毅(自然科学研究機構生理学研究所 生殖・内分泌系発達機構研究部門)
Shiki Okamoto (Div Endocrinol Metab, NIPS)

2S17D1-1　**空腹による味覚感受性の変化を制御する脳部位の探索**

○中島 健一朗，傅 欧，岩井 優，三坂 巧
東大院農・応用生命化学

Hypothalamic regulation of hunger-induced changes in taste sensitivities

Ken-ichiro Nakajima, Ou Fu, Yuu Iwai, Takumi Misaka
Dept Appl Biol Chem, Grad Sch Agri Life Sci, Univ Tokyo, Tokyo, Japan

2S17D1-2　**視床下部室傍核AMPKは食物嗜好性を調節する**

○岡本 士毅，佐藤 達也，箕越 靖彦
生理研・生殖内分泌系発達機構

AMPK in the paraventricular hypothalamic nucleus regulates food selection behavior between fat and carbohydrate diet

Shiki Okamoto, Tatsuya Sato, Yasuhiko Minokoshi
Div Endocrinol Metab, NIPS, Okazaki, Japan

2S17D1-3　**Sirt1はショ糖食選択行動を制御する**

○松居 翔，佐々木 努，河野 大輔，橋本 博美，小林 雅樹，北村 忠弘
群大・生調研・代謝シグナル

Sirt1 regulates sucrose diet selection behavior

Sho Matsui, Tsutomu Sasaki, Daisuke Kohno, Hiromi Yokota-Hashimoto, Masaki Kobayashi, Tadahiro Kitamura
Metabolic Signal, IMCR, Gunma Univ, Maebashi, Japan

2S17D1-4　**Elovl6欠損マウスはショ糖嗜好性が亢進する**

○松坂 賢，島野 仁
筑波大・医学医療系・代謝内科

Enhanced high sucrose diet preference in Elovl6 deficient mice

Takashi Matsuzaka, Hitoshi Shimano
Dept Int Med (Endocrinol Metabol), Facl Med, Univ Tsukuba, Japan

Aims & Scope

Food preferences influence the decision of "what to eat," and what we eat strongly influences our health. Therefore understanding the mechanisms for food preferences is important, yet it remains elusive. Food preferences are made based on the integration of past experiences and motivations/appetite, which is influenced by sensory inputs and metabolic signaling. To decipher the complex mechanisms regulating food preferences, multi-disciplinary approaches are necessary.

In this symposium, we will discuss the new mechanisms for food preferences, revealed by new approaches and latest technologies. Four topics will be discussed: (1) interaction between the central appetite-promoting neurons and the gustatory system; (2) the role of central energy-sensing molecule in affecting food preferences; (3) how hormones and energy-sensing molecules interact to affect food preferences; and (4) how metabolic enzymes that regulate fatty acids influence food preferences.

By presenting the latest research results, we would like to encourage other scientists to join the field of food preference research and help making further progresses in the field, so that we can promote healthy eating behavior and health of mankind.

公募シンポジウム18　E会場 ■ Symposium 18　Hall E

大会第2日：3月29日(水)・March 29 (Wed)　8:50 - 10:50

受精プロセスにおける免疫応答の仕組みと働き

Multiple functions of immunity during fertilization

オーガナイザー・Organizer：
三輪 尚史（東邦大学医学部 生理学講座 細胞生理学分野）
Naofumi Miwa (Deparment of Physiology, School of Medicine, Toho University)

藤ノ木 政勝（獨協医科大学医学部 生理学（生体制御））
Masakatsu Fujinoki (Department of Regulatory Physiology, School of Medicine, Dokkyo Medical University)

Symposia

2S18E1-1　**精漿タンパク質SVS2欠損マウスから見えてきた、精子を殺すメスの免疫機構**

○河野 菜摘子[1]，康 宇鎭[2]，吉田 薫[3]，吉田 学[4]，宮戸 健二[2]
[1]明治大・農・生命，[2]国立成育医療研究センター，[3]桐蔭横浜大学，[4]東京大学

Seminal vesicle protein SVS2 is required for sperm survival in the uterus

Natsuko Kawano[1], Woojin Kang[2], Kaoru Yoshida[3], Manabu Yoshida[4], Kenji Miyado[2]
[1]Dept Life Sci, Sch Agri, Meiji Univ, Kanagawa, Japan, [2]Dept Reprod Biol, NCCHD, [3]Toin Univ Yokohama, [4]Univ Tokyo

2S18E1-2　**精子不動化抗体による精子運動調節**

○柴原 浩章
兵庫医科大学・産科婦人科

Inhibitory effect on sperm movement by sperm immobilizing antibody

Hiroaki Shibahara
Dept Obstet Gynecol, Hyogo, Japan

2S18E1-3　**多精子拒否におけるMMP-2の役割**

○岩尾 康宏
山口大・院創成・地球生命物質

The role of MMP-2 on polyspermy block at fertilization

Yasuhiro Iwao
Div Earth Sci Biol Chem, Grad Sch Sci & Tech for Innov, Yamaguchi Univ, Yamaguchi, Japan

2S18E1-4　**マウスの子宮NK細胞は妊娠6日目に減少する**

○高島 明子[1]，石川 文雄[2]
[1]東邦大学佐倉病院産婦人科，[2]東邦大学医学部免疫学講座

Uterine natural killer cells severely decrease in number at gestation day 6 in mice

Akiko Takashima[1], Fumio Ishikawa[2]
[1]Dept Obstet Gynecol, Toho Univ Med Center, Sakura Hospital, [2]Dept Immunol, Toho Univ Sch Med

Aims & Scope

[Aims] During internal fertilization, sperm properly interact and fuse with an egg, leading to the generation of an embryo inside the female body. For the female body, spermatozoa are invading "non-self" organisms, and the early embryo internalizes some properties of the "non-self" organism, indicating that the maternal innate immune system tolerates these "non-self" invaders during pregnancy. Therefore, in the field of reproductive physiology, it is important to consider how innate maternal immunity is related with fertilization. This symposium aims to provide an up-to-date knowledge concerning immunity and fertilization by introducing recent advances by several leading researchers in this field; this symposium, together with PSJ members,also aims to discuss future perspectives for this field of study.

[Overviews] We will overview several major topics concerning immunity during fertilization-including (1) the immunological response against sperm that invade into the uterus and the oviduct; (2) essential roles of immune-related proteins at the sperm-egg interaction; and (3) the immunological tolerance against embryo implantation-by modern analyses employing several methods including imaging and electron microscopy studies in addition to physiological and biochemical ones.

公募シンポジウム19　F会場 ■ Symposium 19　Hall F

大会第2日：3月29日(水)・March 29 (Wed)　8:50 - 10:50

意識の神経メカニズム解明に向けた多面的な実験的アプローチ

Multidisciplinary experimental approaches for elucidating neural mechanisms of consciousness

オーガナイザー・Organizer：
澁木 克栄（新潟大学脳研究所システム 脳生理学分野）
Katsuei Shibuki (Dept Neurophysiol, Brain Res Inst, Niigata Univ)

山田 真希子（量子科学技術研究開発機構放射線医学総合研究所 脳機能イメージング研究部）
Makiko Yamada (Natl Inst Radiol Sci, Natl Inst Quantum Radiol Sci Tch, Japan)

2S19F1-1　**こころの錯覚から見た自己意識の神経メカニズム**

○山田 真希子
量研機構・放医研・脳機能

Neural mechanisms of illusory self-awareness

Makiko Yamada
Brain and mind research team, Dept Functional Brain imaging research, NIRS, QST, Chiba, Japan

2S19F1-2　**盲視における視覚と眼球運動**

○吉田 正俊[1,2]
[1]生理研・認知行動発達，[2]総研大・生理科学

Vision and eye movements in blindsight

Masatoshi Yoshida[1,2]
[1]Dept System Neurosci, Natl Inst Physiol Sci, Okazaki, Japan, [2]Sch Life Sci, Grad Univ Adv Studies, Hayama, Japan

2S19F1-3　**物体の視覚記憶を司るマカクザル大脳皮質の局所回路と大域ネットワークのメカニズム**

○平林 敏行
量研機構・放医研

Cortical microcircuit and large-scale network for visual object memory in primates

Toshiyuki Hirabayashi
NIRS, QST, Chiba, Japan

2S19F1-4　**マウスを用いた意識の順遺伝学的解析は可能か？**

○澁木 克栄
新潟大・脳研・生理

Feasibility of forward genetic analysis of consciousness using mouse models

Katsuei Shibuki
Dept Neurophysiol, Brain Res Inst, Niigata Univ, Niigata, Japan

Aims & Scope

Consciousness is one of most important physiological functions of the brain, while only few physiological studies have been undertaken so far. It is mainly because subjectively-experienced consciousness is a very difficult theme for physiological studies, especially for those depending on animal experiments. However, recent development of artificial intelligence attracts interest of many people on the differences between the computer and the human brain. Obviously, the presence or absence of consciousness is one of the most remarkable differences. Difficulties in consciousness studies may be overcome by multidisciplinary studies. In the present symposium, four researchers of consciousness will introduce their recent results, which have beenobtained using humans, monkeys, and mice. Human studies are suitable for investigating intricate aspects of consciousness, and verbal reports of subjectively-experienced consciousness are available. Monkey studies are ideal for elucidating fine neural mechanisms using invasive techniques such as electrophysiology with electrode penetration and brain lesioning. In mouse studies, numerous genetically-manipulated strains together with new techniques such as optogenetics or two-photon imaging are available. Therefore, it may be possible to make a breakthrough in consciousness studies by combining the merits of each type of studies. We will discuss about such possibilities in multidisciplinary studies.

公募シンポジウム20　H会場 ■ Symposium 20　Hall H

大会第2日：3月29日(水)・March 29 (Wed)　8:50 - 10:50

ニューロリハビリテーションの新戦略

The new strategy in the neurorehabilitation science

オーガナイザー・Organizer：
浦川 将(広島大学大学院医歯薬保健学研究院 運動器機能医科学)
Urakawa Susumu (Dept of Musculoskeletal Functional Research and Regeneration, Hiroshima Univ)

西条 寿夫(富山大学大学院医学薬学研究部 システム情動科学)
Nishijo Hisao (System Emotional Science, Univ of Toyama)

2S20H1-1　**神経リハビリテーションにおけるニューロモジュレーション技術の応用**

○三原 雅史[1,2]
[1]大阪大・国際医工・臨神医工，[2]大阪大・院医・神経内科

Clinical application of neuromodulation technique in neurorehabilitation

Masahito Mihara[1,2]
[1]Div Clin Neuroeng, Global ctr MEI, Osaka Univ Osaka, Japan, [2]Dept Neurol, Osaka Univ, Grad Sch Med Osaka Univ, Osaka, Japan

2S20H1-2　**外界からの刺激がもたらす機能改善と神経ネットワーク機構**

○浦川 将[1,2]，大田 裕也[2]，高本 考一[3]，石黒 幸治[2]，小野 武年[3]，西条 寿夫[2]
[1]広島大・院医・運動器機能医科学，[2]富山大・院医・システム情動科学，[3]富山大・院医・神経整復学講座

Functional improvement via external stimuli and the neuronal network in the brain

Susumu Urakawa[1,2], Yuya Ota[2], Koichi Takamoto[3], Kouji Ishikuro[2], Taketoshi Ono[3], Hisao Nishijo[2]
[1]Dept Musculoskeletal Funct Res & Regen, Grad Sch Biomed & Health Sci, Hiroshima Univ, Hiroshima, Japan, [2]Dept Syst Emo Sci, Grad Sch Med & Pharm Sci, Univ Toyama, Toyama, Japan, [3]Dept Judo Neurophysiotherapy, Grad Sch Med & Pharm Sci, Univ Toyama, Toyama, Japan

2S20H1-3　**運動学習には一次運動野ニューロンに対する一時的な抑制低下と持続的な興奮性シナプスの強化が必要である**

○木田 裕之，美津島 大
山口大・医・神経生理

Motor training promotes both synaptic and intrinsic plasticity of layer II/III pyramidal neurons in the primary motor cortex

Hiroyuki Kida, Dai Mitsushima
Dept Physiol, Grad Sch Med, Yamaguchi Univ, Ube, Japan

2S20H1-4　**不安・抑うつ行動に対するトレッドミル運動の効果（比較的軽度なストレスにより作成され るモデルラットを用いた検討）**

○石田 和人，小池 航平，丸山 彰子，上西 祐貴，若山 聡夢，杉山 佳隆
名古屋大・院医・リハ療法学

Anxiety/depressive-like behaviors without the change of the HPA axis by mild stress can be improved treadmill exercise in rats

Kazuto Ishida, Kohei Koike, Akiko Maruyama, Yuki Uenishi, Satomu Wakayama, Yoshitaka Sugiyama
Dept Phys and Occup Ther, Grad Sch Med, Nagoya Univ, Nagoya, Japan

Aims & Scope

In clinical rehabilitation, it is important for the recovery from the motor dysfunction to intervene via external stimuli or repetition of motor tasks. Recently, newly rehabilitative interventions have been developed, such as robot mediated exercises, BMI (brain-machine interface), and so on. Moreover neuronal mechanisms underlying the recovery following the rehabilitative interventions have been investigated in detail. In this symposium, we will focus on these interventions and neuronal mechanisms, and that will lead to understanding the new strategy of the neurorehabilitation.

公募シンポジウム21　I会場 ■ Symposium 21　Hall I

大会第2日：3月29日(水)・March 29 (Wed)　8:50 - 10:50

酸化ストレスに対する生理機能を知る ～低酸素実験から～

Hypoxic study to identify effects of oxidative stress on physiological function

オーガナイザー・Organizer：
小河 繁彦（東洋大学）
Shigehiko Ogoh (Toyo Univ)

2S21I1-1　**低酸素が骨格筋特性に及ぼす影響**

○橋本 健志，大崎 智彦
立命館大学スポーツ健康科学部

The effect of hypoxia on skeletal muscle characteristic

Takeshi Hashimoto, Tomohiko Osaki
Facl Sport Health Sci, Ritsumeikan Univ, Shiga, Japan

2S21I1-2　**低酸素環境下での運動が認知機能に及ぼす影響**

○安藤 創一
電通大・情報理工学研究科

Cognitive function during exercise under hypoxia

Soichi Ando
Dept Mechanical Engineering Intelligent Systems, UEC, Tokyo, Japan

2S21I1-3　**低酸素環境における呼吸筋活動の増加による運動時の循環調節への影響**

○片山 敬章[1,2]
[1]名大・保体，[2]名大・院医

An increase in respiratory muscle activity affects cardiovascular regulation during exercise under hypoxic conditions

Keisho Katayama[1,2]
[1]Res Heath Phy Fit Sports, Nagoya Univ, Nagoya, Japan, [2]Grad Sch Med, Nagoya Univ, Japan

2S21I1-4　**低酸素環境下における脳循環調節**

○小河 繁彦
東洋大学

Cerebral blood flow regulation during hypoxia

Shigehiko Ogoh
Toyo Univ, Saitama, Japan

Aims & Scope

Oxidative stress, as one of the inside and outside environmental factors, is known to have a major impact on human health and physiology. For example, the risk of early onset of age-related dementia is believed to be associated with oxidative stress. However, the mechanism of oxidative stress-induced changes in physiological factors is not fully understood. From studies performed in "a hypoxic-environment", much new knowledge and understanding of the effects of oxidative stress is emerging. In this symposium, the researchers behind these studies will present recent findings and new hypothesis regarding 1) cognitive function 2) respiratory function, peripheral chemoreflex and cardiovascular regulation 3) muscle characteristic, and 4) cerebral blood flow regulation. Throughout the discussions we hope that new research projects, methods and corporations will arise with the purpose of developing new countermeasures against the negative health effects of oxidative stress. We will formulate a clear rational and recommendations for future studies focusing on the effects of oxidative stress on cerebral function and dementia as well as cardiovascular diseases.

公募シンポジウム22　J会場 ■ Symposium 22　Hall J

大会第2日：3月29日(水)・March 29 (Wed)　8:50 - 10:50

小胞体Ca^{2+}ストア研究の進展

Recent advance in regulation of Ca^{2+} store in endoplasmic reticulum

オーガナイザー・Organizer：
南沢 享（東京慈恵会医科大学 細胞生理学講座）
Susumu Minamisawa (Dept Cell Physiol, Jikei Univ)

2S22J1-1　**疾患変異RyR2はCa^{2+}動態をどのように変調するか？－非心筋細胞および心筋由来細胞を用いた検討－**

○呉林 なごみ
順天堂大・医・薬理

How do disease-linked RyR2s modulate Ca^{2+} dynamics in cultured non-cardiac and cardiac cells?

Nagomi Kurebayashi
Dept Pharmacol, Fac Med, Juntendo Univ, Tokyo, Japan

2S22J1-2　**心筋筋小胞体でのカルシウム再取り込み機構**

○南沢 享
東京慈恵会医科大学・細胞生理学

Regulation of calcium uptake into the sarcoplasmic reticulum in the heart

Susumu Minamisawa
Dept Cell Physiol, Jikei Univ, Tokyo, Japan

2S22J1-3　**小胞体カウンターイオンチャネルTRIC-Bはコラーゲン分泌及び骨ミネラル化を制御する**

○趙 成珠[1]，竹島 浩[2]
[1]京都大・iPS，[2]京都大・院薬・生体分子

Endoplasmic reticulum counter-ion channel TRIC-B regulates collagen production and bone mineralization

Chengzhu Zhao[1], Hiroshi Takeshima[2]
[1]CiRA, Kyoto Univ, Kyoto, Japan, [2]Dept Bio Chem, Grad Sch Pharm, Kyoto Univ, Kyoto, Japan

2S22J1-4　**SR Ca^{2+}-ATPase構造研究における最近の進展**

○小川 治夫
東大・分生研

Recent advances in structural studies of SR Ca^{2+}-ATPase

Haruo Ogawa
IMCB, Univ Tokyo, Tokyo, Japan

Aims & Scope

The endoplasmic reticulum (ER), an extensive intracellular membrane system, integrally regulates the intracellular Ca^{2+} concentration in various organs. Ryanodine receptor (RyR) ans IP_3 receptor plays a primary role in releasing Ca^{2+} from the ER. The trimeric intracellular cation (TRIC) channels at the ER membrane support Ca^{2+} release by mediating cationic flux to maintain electrical neutrality. Sarco(endo)plasmic reticulun calcium ATPase (SERCA) controls the uptake of Ca^{2+} into the ER. The intracellular Ca^{2+} concentration is also fine-tuned by their intrinsic regulatory domains and associated ER proteins. A growing body of evidence, including studies using genetically engineered mouse models, has shown that Ca^{2+} cycling and Ca^{2+}-dependent signaling pathways play a critical role in maintaining cellular function. Therefore, impairment of ER function directly causes diseases in various organs such as the heart, muscles, and bones. In this symposium, we will focus on the recent advances in knowledge concerning Ca^{2+} regulation and function of the ER.

Key words: ryanodine receptor, IP_3 receptor, sarcoplasmic reticulum, calcium ATPase, phospholamban, sarcolipin, TRIC, sarcalumenin, heart failure, arrhythmia, malignant hyperthermia, bone mineralization

公募シンポジウム23　D会場 ■ Symposium 23　Hall D

大会第2日：3月29日(水)・March 29 (Wed)　13:30 - 15:30

日本病態生理学会連携シンポジウム
自律神経研究の新しい流れと病態生理学

Joint Symposium with Japanese Society of Pathophysiology
New studies on autonomic nervous system and pathophysiology

オーガナイザー・Organizer：
和田 圭司(国立精神・神経医療研究センター)
Keiji Wada (Department of Degenerative Neurological Diseases, National Institute of Neuroscience, National Center of Neurology and Psychiatry)

田中 潤也(愛媛大学医学研究科・分子細胞生理学講座)
Junya Tanaka (Department of Molecular and Cellular Physiology, Graduate School of Medicine, Ehime University)

Symposia

2S23D2-1　**オプトジェネティクスを用いた自律神経の操作：延髄C1ニューロン刺激による腎虚血再灌流障害の軽減作用を例に**

○安部 力[1,2]，井上 剛[3]，イングリス エム アンドリュース[2]，ビアル イ ケネス[2]，ホアン リイピン[3]，ジェ ホン[3]，ダイアン エル ロジン[3]，ルース エル ストルネッタ[2]，オオクサ ディ マーク[3]，ギエネ ジ パトリシュ[2]
[1]岐阜大学・医・生理学，[2]バージニア大学，[3]バージニア大学

Protection of renal ischemia/reperfusion injury by optogenetic stimulation of the C1 neurons

Chikara Abe[1,2], Tsuyoshi Inoue[3], Andrews M Inglis[2], Kenneth E Viar[2], Li-Ping Huang[3], Hong Ye[3], Rosin L Diane[3], Stornetta L Ruth[2], Mark D Okusa[3], Patrice G Guyenet[2]
[1]Dept Physiol, Gifu Univ Grad Sch Med, Gifu, Japan, [2]Dept Pharmacol, UVA, Charlottesville, VA, USA, [3]Dept Medicine, Div Nephrol, UVA, Charlottesville, VA, USA

2S23D2-2　**心臓型アデニル酸シクラーゼの阻害は心機能を低下させることなくカテコラミン誘発性不整脈を抑制する**

○吹田 憲治[1]，藤田 孝之[2]，奥村 敏[1]，石川 義弘[2]
[1]鶴見大・歯・生理学，[2]横浜市大・院医・循環制御医学

Inhibition of cardiac adenylyl cyclase suppresses catecholamine-induced arrhythmias without deteriorating heart function

Kenji Suita[1], Takayuki Fujita[2], Satoshi Okumura[1], Yoshihiro Ishikawa[2]
[1]Dept Physiol, Tsurumi Univ, Yokohama, Japan, [2]Cardiovascular Research Institute, Yokohama City Univ, Yokohama, Japan

2S23D2-3　**摂食調節因子による自律神経調節と生理的意義**

○谷田 守
金沢医大・生理2

Physiological significance of autonomic regulation by feeding regulators

Mamoru Tanida
Dept Physiol2, Kanazawa Med Univ, Isikawa, Japan

2S23D2-4　非神経性心臓コリン作動系は迷走神経を介してストレス抵抗性を亢進させる

○柿沼 由彦[1]，及川 誌乃[1]，甲斐 裕子[1]，大畠 久幸[1]，眞野 あすか[1]，溝口 尚子[2]，
洲鎌 秀永[1]，根本 崇宏[1]，鈴木 健治[1]，村本 和世[2]，金田 誠[1]
[1]日医大・院医・生体統御科学，[2]明海大学　歯学部　生理学

Non-neuronal cardiac cholinergic system induces central anti-stress responses

Yoshihiko Kakinuma[1], Shino Oikawa[1], Yuko Kai[1], Hisayuki Ohata[1],
Asuka Mano[1], Naoko Mizoguchi[2], Shuei Sugama[1], Takahiro Nemoto[1],
Kenji Suzuki[1], Kazuyo Muramoto[2], Makoto Kaneda[1]
[1]Dept Physiol, Grad Sch Med, Nippon Med Sch, Tokyo, Japan, [2]Dept Physiol, Meikai Univ, Saitama, Japan

2S23D2-5　迷走神経共通肝枝と情動行動

○関口 正幸
国立精神・神経医療研究センター

The common hepatic branch of the vagal nerve and emotional behaviors

Masayuki Sekiguchi
Dept Degen Neurol Dis, Natl Inst Neurosci, Natl Center Neurol Psychiat, Tokyo, Japan

Aims & Scope

Communication between brain and internal organs is likely to be utilized to maintain homeostasis in the body of animal. Both afferent and efferent fibers of the autonomic nervous system play pivotal roles in this communication. Here, we introduce recent advances in the studies about the autonomic nervous system. We also try to show the contribution of these advances to pathophysiology. For this purpose, four researchers who are active internationally in this field respectively present their studies on various autonomic nervous systems in this symposium. It includes the autonomic control of cardiac functions, brain-gut interaction, the vagus nerve stimulation, and interoceptional control of brain emotional function by vagal afferents. By these topics, we aim to further stimulate studies on the autonomic nervous system. This symposium is held under the coordination of the Physiological Society of Japan and Japanese Society of Pathophysiology.

公募シンポジウム24　E会場 ■ Symposium 24　Hall E

大会第2日：3月29日 (水)・March 29 (Wed)　13:30 - 15:30

循環器疾患における神経・炎症・代謝性機序の関わりと重要性

Neurogenic, inflammatory, and metabolic mechanisms of cardiovascular disease

オーガナイザー・Organizer：
佐田 悠輔 (Baker研究所)
Yusuke Sata (Neurovascular Hypertension & Kidney Disease Laboratory, Baker IDI Heart & Diabetes Institute)

James Pearson (国立循環器病研究センター研究所 心臓生理機能部)
(Department of Cardiac Physiology, National Cerebral and Cardiovascular Center)

2S24E2-1 Sympathetic nervous system mechanisms of cardiovascular disease

Murray D Esler
Baker IDI Heart and Diabetes Institute, Melbourne, Australia

2S24E2-2 Mechanisms underlying neurogenic hypertension in Schlager mouse

Geoffrey A Head
Baker IDI Heart and Diabetes Institute, Melbourne, Australia

2S24E2-3 Identifying the neural network that triggers sympathetic activation following acute myocardial infarction

Daryl O Schwenke, Ranjan Roy, Colin H Brown
Dept Physiol, Univ Otago, New Zealand

2S24E2-4 肺高血圧症病態におけるInterleukin-6/Interleukin-21シグナル軸の役割

○中岡 良和[1]，稲垣 薫克[1]，白井 幹康[2]
[1]国循研究所・血管生理，[2]国循研究所・肺高血圧症研究部

The role of interleukin-6/interleukin-21 signaling axis in pulmonary arterial hypertension

Yoshikazu Nakaoka[1], Tadakatsu Inagaki[1], Mikiyasu Shirai[2]
[1]Dept Vasc Physiol, Natl Cereb Cardiovasc Ctr Res Inst, Suita, Japan, [2]Dept Adv Med Res for PH, Natl Cereb Cardiovasc Ctr Res Inst, Suita, Japan

Aims & Scope

Cardiovascular disease (CVD) is usually accompanied by multiple risk factors but largely preventable with comprehensive risk assessment and effective management. However, even in the most common CVD, hypertension, only half of patients have blood pressure under control. Sustained elevation of sympathetic nervous system is a hallmark of hypertension. Importantly, the neural pathophysiology of hypertension is closely linked with other prevalent CVD risk factors such as metabolic disease, including obesity and diabetes. Further, perturbed lipid metabolism and atherosclerosis are closely linked with cardiac and vascular inflammation. Past and recent studies of the symposium invited speakers not only highlight strong interrelationships between various CVD disease states, but also that sympathetic activation, altered immunity, and metabolic disorder in particular evoke synergistic interactions that frequently lead to worsening of CVD and heart failure over time. Multiple underlying factors have now been shown to be critical in the early pathogenesis of various forms of hypertension that are complicated by obesity, atherosclerosis and diabetes. In this symposium, the world leading scientists of the relevant fields will discuss the crucial relationship of sympathetic, immune, and metabolic mechanisms underlying increasingly prevalent CVD.

公募シンポジウム25　F会場 ■ Symposium 25　Hall F

大会第2日：3月29日(水)・March 29 (Wed)　13:30 - 15:30

生理学研究を深化させる新しい光学技術

New optical technology deepening the physiological research

オーガナイザー・Organizer：
守本 祐司(防衛医科大学校 分子生体制御学講座)
Yuji Morimoto (Dept Integrative Physiol & Bio-Nano Med, NDMC)

2S25F2-1　マルチスペクトルイメージング機構を備えた蛍光内視鏡と5-アミノレブリン酸を用いたアテローム性プラークの検知技術

○守本 祐司[1]，萩沢 康介[2]
[1]防衛医大・分子生体制御，[2]防衛医大・生理

Visualizing method of the atheromatous plaque pre-administered 5-aminolevulinic acid using a fluorescent endoscope equipped with multispectral imaging system

Yuji Morimoto[1], Kohsuke Hagisawa[2]
[1]Dept Integrative Physiol & Bio-Nano Med, NDMC, Tokorozawa, Japan, [2]Dept Physiol, NDMC, Tokorozawa, Japan

2S25F2-2　波長1000nmを超える近赤外波長域の新しいイメージング技術の開発

○池原 譲[1,2]
[1]産総研・創薬基盤，[2]産総研・電子光技術

Development of a new near infrared imaging technology over 1000nm wave length

Yuzuru Ikehara[1,2]
[1]Biotech Res Inst for Drug Discovery, AIST, Japan, [2]Electronics and Phot Res Inst, AIST, Japan

2S25F2-3　ラマン散乱を利用した細胞分子イメージング

○藤田 克昌
阪大・院工・応物

Raman microscopy for molecular imaging of living cells

Katsumasa Fujita
Dept Appl Phys, Osaka Univ, Osaka, Japan

2S25F2-4　遺伝子発現動態の光操作から明らかになる神経幹細胞の制御機構

○今吉 格
京大・院・生命

Regulatory mechanism of neural stem cells revealed by optical manipulation of gene expressions

Itaru Imayoshi
Grad Sch Biostudies, Kyoto Univ, Kyoto, Japan

Aims & Scope

It goes without saying the importance of observing living bodies in real-time in the physiological research field. To achieve such observation, optical technology is very useful. Optical technology enables us to watch nano-scale structures, visualize lesions without contrast agents, and clarify biological functions by the use of optogenetic methods, corresponding to the discovery of unknown biological phenomenon and deepening physiology.

In this symposium, spotting on the new optical engineering technique that can be used in physiology research, leading researchers will present their latest technological accomplishment. This topic greatly contributes to the life science and profoundly encourages the young members of this society.

公募シンポジウム26　I会場 ■ Symposium 26　Hall I

大会第2日：3月29日(水)・March 29 (Wed)　13:30 - 15:30

網膜内層における情報処理研究の最前線

Frontier of signal processing research in the inner layer of the retina

オーガナイザー・Organizer：
金田 誠（日本医科大学大学院 感覚情報科学分野）
Makoto Kaneda (Dept Physiol, Nippon Med Sch)

宮地 栄一（藤田保健衛生大学医学部 生理学）
Ei-ichi Miyachi (Department of Physiology, Fujita Health University School of Medicine)

2S26I2-1　**水平細胞は網膜神経回路において多様な機能を有する**

○古川 貴久[1]，茶屋 太郎[1]，松本 彰弘[2]，杉田 祐子[1]，桒原 隆亮[3]，立花 政夫[2]
[1]大阪大・蛋白研，[2]東京大・人文社会系・心理学，[3]大阪大・超高圧電顕センター

Horizontal cells play versatile functional roles in the retinal circuit

Takahisa Furukawa[1], Taro Chaya[1], Akihiro Matsumoto[2], Yuko Sugita[1], Ryusuke Kuwahara[3], Masao Tachibana[2]
[1]Inst Protein Res, Osaka Univ, [2]Dept Psychol, Grad Sch Humanities and Sciol, Univ Tokyo, [3]Res Center Ultrahigh Voltage Electron Microscopy, Osaka Univ

2S26I2-2　Congenital nystagmus gene FRMD7 Is necessary for establishing a neuronal circuit asymmetry for direction selectivity

Keisuke Yonehara
DANDRITE, Aarhus University, Denmark

2S26I2-3　**メラノプシンの光応答モデル構築にむけて**

○松山オジョス 武[1]，高橋 政代[1]，七田 芳則[2]
[1]理研・CDB・網膜再生，[2]京大・理学・生物物理・七田研

A new model for Melanopsin based photoresponses

Take Matsuyama[1], Masayo Takahashi[1], Yoshinori Shichida[2]
[1]RIKEN CDB, Retinal Regeneration Lab, Kobe, Japan, [2]Kyoto Univ, Grad Sch Sci, Biophys, Japan

2S26I2-4　**代謝型グルタミン酸受容体6型の極性輸送・膜発現に関わる分子機構の解析**

○赤木 巧，レイ ディリップ，木山 裕子，荻原 郁男，金田 誠
日本医科大学・システム生理学

Analysis of molecular mechanisms controlling the polarized targeting of metabotropic glutamate receptor type 6

Takumi Akagi, Rai Dilip, Yuko Kiyama, Ikuo Ogiwara, Makoto Kaneda
Dept Physiol, Nippon Med Sch, Tokyo, Japan

2S26I2-5　**広域画像の揺動下における網膜神経節細胞の非線型な受容野特性**

○松本 彰弘[1]，立花 政夫[1,2]
[1]東京大・院人社・心理，[2]立命館大・総合科学研究機構

Nonlinear modulation of receptive field properties of retinal ganglion cells during global motion

Akihiro Matsumoto[1], Masao Tachibana[1,2]
[1]Dept Psychol, Grad Sch Hum and Soc, Univ Tokyo, Tokyo, Japan, [2]Center for System Vision Science, Organization of Science and Technology, Ritsumeikan Univ, Shiga, Japan

2S26I2-6 P2X受容体を介したコリン取り込み機構

○金田 誠[1], 石井 俊行[1], 本間 耕平[1], 眞野 あすか[1], 重松 康秀[2], 井上 浩義[3], 柿沼 由彦[1]
[1]日医大・システム生理, [2]東京女子医大・東医療センター, [3]慶応大・医・化学

P2X-purinoceptor-mediated choline uptake

Makoto Kaneda[1], Toshiyuki Ishii[1], Kohei Homma[1], Asuka Mano[1], Yasuhide Shigematsu[2], Hiroyoshi Inoue[3], Yoshihiko Kakinuma[1]
[1]Dept Physiol, Nippon Med Sch, Tokyo, Japan, [2]Tokyo Women's Med Univ, Medical Center, East Health Center, Tokyo, Japan, [3]Dept Chem, Keio Univ Sch Med, Tokyo, Japan

Aims & Scope

Recent progress of the retinal research at the molecular level has shown that retinal neurons (horizontal cells, bipolar cells, amacrine cells, and ganglion cells) are not homogenous population. They are subdivided into many subtypes on the basis of the differences of their histological architectures. The increasing evidences of the functional study for the individual subtypes lead many researchers to think that the signal pathways of an individual subtype are used to process the different properties of the vision in parallel. In this symposium, we will introduce how the subtype-specific signal processing pathway is formed from the molecular and ionic basis. We will also introduce how the individual subtype contributes the signal processing in the retina.

公募シンポジウム27　J会場 ■ Symposium 27　Hall J

大会第2日：3月29日 (水)・March 29 (Wed)　13:30 - 15:30

痛みの感覚・情動を司る脳領域における慢性疼痛機序

The mechanisms of chronic pain in the brain areas related to sensory and emotional aspects of pain

オーガナイザー・Organizer：
江藤 圭 (生理学研究所 生体恒常性発達研究部門)
Kei Eto (Div Homeostatic Development, Natl Inst Physiol Sci)

古賀 浩平 (弘前大学大学院医学研究科 脳神経生理学講座)
Kohei Koga (Dept Neurophysiol, Grad Scho Med, Hirosaki Univ)

Symposia

2S27J2-1　**一次体性感覚野の機能的変容による領域間調節機構の慢性疼痛への寄与**

○江藤 圭[1]，石川 達也[1,2]，石橋 仁[1,3]，鍋倉 淳一[1]
[1]生理研・生体恒常，[2]福井大・医・脳形態機能学，[3]北里大・医療衛生・生理

Contribution of inter-regional regulation of primary somatosensory cortical functional change in chronic pain

Kei Eto[1], Tatsuya Ishikawa[1,2], Hitoshi Ishibashi[1,3], Junichi Nabekura[1]
[1]Div Homeostatic Development, Natl Inst Physiol Sci, Okazaki, Japan, [2]Div Brain Struct and Func, Sch Med, Univ Fukui, Fukui, Japan, [3]Dept Physiol, Sch Allied Health Sci, Kitasato Univ, Sagamihara, Japan

2S27J2-2　**慢性疼痛が引き起こす前帯状回シナプス前長期増強の分子機構**

○古賀 浩平
弘前大・院医・脳神経生理

Mechanisms of chronic pain induced presynaptic long-term potentiation in the anterior cingulate cortex

Kohei Koga
Dept Neurophysiol, Grad Scho Med, Hirosaki Univ, Aomori, Japan

2S27J2-3　**体性感覚皮質dysgranular領域が痛覚情報を表現する**

○尾崎 弘展，植田 禎史，宮田 麻理子
東京女子医大・医・生理

The dysgranular area of somatosensory cortex represents nociceptive information

Hironobu Osaki, Yoshifumi Ueta, Mariko Miyata
Dept Physiol I (Neurophysiol), Sch Med, Tokyo Women's Medical Univ, Tokyo, Japan

2S27J2-4　**侵害受容と痛み情動-痛みの慢性化における扁桃体の役割**

○高橋 由香里，杉本 真理子，宮沢 祐太，杉村 弥恵，篠原 恵，渡部 文子，加藤 総夫
慈恵医大・総合医科研・神経科学

From nociception to emotion and vice versa - Roles of the amygdala in pain chronification

Yukari Takahashi, Mariko Sugimoto, Yuta Miyazawa, Yae K Sugimura, Kei Shinohara, Ayako M Watabe, Fusao Kato
Dept Neurosci, Center for Neurosci of Pain, Jikei Univ Sch Med, Tokyo, Japan

Aims & Scope

Pain is a complex experience with sensory and emotional aspects, and each aspect is conveyed via individual pathways. The thalamus and primary somatosensory cortex (S1 have roles in the sensory aspects of pain, such as the location and duration of pain (sensory center), while the anterior cingulate cortex (ACC) and amygdala are central regions processing the emotional information of pain, such as recognition of the unpleasantness of pain (emotional center). Recent studies using functional magnetic resonance imaging (fMRI) have demonstrated that activities in these areas alter under the chronic pain conditions in humans and animal models, suggesting that plastic changes of neuronal function in these areas have critical roles in chronic pain. However, it still remains unknown how these plastic changes relate to chronic pain. In this symposium, speakers will talk of this issue in the ACC, amygdala, thalamus and S1 by using multiple advanced techniques including in vivo two-photon imaging and we would like to discuss the future direction of pain research.

公募シンポジウム28　C会場 ■ Symposium 28　Hall C

大会第2日：3月29日(水)・March 29 (Wed)　16:50 - 18:50

【新学術「温度生物学」共催】
温度生物学の視点から探る生理機能

【Co-sponsored by the MEXT "Thermal biology"】

Physiological functions in thermal biology

オーガナイザー・Organizer：
柴崎 貢志（群馬大学大学院医学系研究科 分子細胞生物学）
Koji Shibasaki (Dept Mol Cell Neurobiol, Gunma Univ Grad Sch Med)

岡部 弘基（東京大学大学院薬学系研究科 生体分析化学）
Kohki Okabe (Dept Bioanalytical Chem, Grad Sch Pharmac, Univ Tokyo)

2S28C3-1　脳内温度による神経活動の向上；温度センサー TRPV4の重要性

○柴崎 貢志
群馬大院・医・分子細胞

Enhancement of neuronal excitability by brain temperature and TRPV4

Koji Shibasaki
Dept Mol Cell Neurobiol, Gunma Univ Grad Sch Med, Maebashi, Japan

2S28C3-2　電位依存性プロトンチャネルの温度感受性ゲーティング

○藤原 祐一郎
阪大・院医・生理

Temperature-sensitive gating of voltage-gated H^+ channels

Yuichiro Fujiwara
Dept Physiol, Grad Sch Med, Osaka Univ, Suita, Japan

2S28C3-3　細胞内局所発熱による細胞機能発現

○岡部 弘基[1,2]
[1]東大・院薬・分析，[2]JST さきがけ

Investigation on cell functions mediated by intracellular local thermogenesis

Kohki Okabe[1,2]
[1]Dept Bioanalytical Chem, Grad Sch Pharmac, Univ Tokyo, Tokyo, Japan, [2]PRESTO, JST, Tokyo, Japan

2S28C3-4　Functional interaction between thermosensitive TRPV4 and TMEM16A/anoctamin 1 contributes to stimulated saliva and tear secretion

Sandra Derouiche[1], Yasunori Takayama[1], Masataka Murakami[2], Makoto Tominaga[1]
[1]Div Cell Signal, NIPS, Okazaki, Japan, [2]NIPS, Okazaki, Japan

Aims & Scope

Temperature affects various physiological functions and is one of the most important factors in homeostasis. Furthermore, temperature powerfully affects every biological process. Humans and many other mammals maintain their internal temperature as a stable level around 37°C, which appears to be optimal for their functioning as we reported. Recently, we demonstrated the first intracellular temperature mapping based on a fluorescent polymeric thermometer and fluorescence lifetime imaging microscopy. Nuclei and mitochondria showed significantly higher temperature than the cytoplasm. These results showed that our new intracellular thermometry could determine an intrinsic relationship between the temperature and organelle function. In this symposium, we invited the excellent speakers about the interaction between physiological functions of ion channels and temperature or measurement of intracellular temperature dynamics. We will introduce our new and valuable topics related to temperature and physiological functions, and would like to discuss the importance with audience. We invited an organizer from the biophysical society and a foreign speaker, and would like to have a diverse symposium focusing on the heterogeneity of the audience.

公募シンポジウム29　D会場 ■ Symposium 29　Hall D

大会第2日：3月29日(水)・March 29 (Wed)　16:50 - 18:50

グルタミン酸シナプスの分子・細胞神経生物学

Molecular and cellular neurobiology of glutamatergic synapse

オーガナイザー・Organizer：
神谷 温之（北海道大学大学院医学研究科 神経生物学分野）
Haruyuki Kamiya (Dept Neurobiol, Grad Sch Med, Hokkaido Univ)

2S29D3-1　**哺乳類中枢シナプス終末における単一シナプス小胞のライブイメージング**

○緑川 光春
同志社大・脳科学

Live cell imaging of single synaptic vesicles at mammalian CNS presynaptic terminals

Mitsuharu Midorikawa
Grad Sch Brain Sci, Doshisha Univ, Kyoto, Japan

2S29D3-2　**表面グルタミン酸受容体発現の長期増強の単一シナプスイメージング**

○石井 雄一郎，奥野 浩行，藤井 哉，尾藤 晴彦
東大・院医・神経生化

Imaging long-term potentiation of surface glutamate receptors at single synapses

Yuichiro Ishii, Hiroyuki Okuno, Hajime Fujii, Haruhiko Bito
Dept Neurochem, Grad Sch Med, Univ Tokyo, Japan

2S29D3-3　Presynaptic terminal morphology, calcium signaling and short-term plasticity at hippocampal mossy fiber synapses

Sandrine Pouvreau[1], Severine Deforges[1], Fabrice P Cordelieres[2], Christophe Mulle[1]
[1]IINS, UMR 5297 Univ Bordeaux-CNRS, 33077 Bordeaux, France, [2]BIC, UMS 3420 CNRS-UB-US4 INSERM, 33000 Bordeaux, France

2S29D3-4　**海馬における軸索スパイクのアナログ制御**

○大浦 峻介，神谷 温之
北海道大・院医・神経生物

Analog modulation of axonal spikes in the hippocampus

Shunsuke Ohura, Haruyuki Kamiya
Dept Neurobiol, Grad Sch Med, Hokkaido Univ, Sapporo, Japan

Aims & Scope

Glutamatergic synapse plays central roles in excitatory transmission in the central nervous system (CNS). This symposium will focus on recent progress in the studies on the vaious cellular and molecular aspects of glutamatergic synapses. High resolution spatiotemporal dynamics of synaptic vesicles within the glutamatergic presynaptic terminals will be demonstrated using total internal reflection fluorescence (TIRF) microscopy at resolution of single synaptic vesicles. Novel molecular tools for visualizing postsynaptic glutamate receptor dynamics within the dendritic spines and their application for the studies of synaptic plasticity will be reported. Roles of mitochondria as a low affinity buffer for Ca^{2+} handling in the presynaptic terminals will be also discussed. Temporal modulation of the size of action potentials at the axon terminals will be also reported using direct electrophysiological recording from the hippocampal mossy fiber axons, a representative en passant axons with multiple glutamatergic presynaptic terminals. All the findings of these studies aim to illustrate in more detail of real-time dynamics of the molecular and cellular machinery of glutamatergic synapses. These attempts to update the biological views of key elements of neuronal signaling in the CNS, i.e. glutamatergic synapses, may help for comprehensive understanding of the brain functions and their disorders.

公募シンポジウム30　F会場 ■ Symposium 30　Hall F

大会第2日：3月29日 (水)・March 29 (Wed)　16:50 - 18:50

日本循環制御医学会連携シンポジウム
心臓の恒常性を制御するメカニズムとその破綻による病気の発症

Joint Symposium with Japan Society of Circulation Control in Medicine
Cardiac regulatory mechanisms to preserve the homeostasis in the heart and induction of heart disease caused by their disruptions

オーガナイザー・Organizer：
奥村 敏 (鶴見大学歯学部 生理学講座)
Satoshi Okumura (Dept Physiol, Tsurumi Univ Yokohama)

藤田 孝之 (横浜市立大学医学部 循環制御医学)
Takayuki Fujita (Cardiovasc Res Inst, Grad Sch Med, Yokohama City Univ)

Symposia

2S30F3-1　**圧負荷誘導心不全におけるDrp1依存性ミトコンドリアオートファジーの役割**

○白壁 章宏[1]，池田 義之[2]，齊藤 寿郎[2]，ペヨン ザイ[2]，畑 典武[1]，浅井 邦也[3]，清水 渉[3]，佐渡島 純一[2]
[1]日本医科大学千葉北総病院・集中，[2]ラトガーズ大学・細胞生物学部門，[3]日本医科大学付属病院・循環器内科学

Drp1-dependent mitochondrial autophagy plays a protective role against pressure-overload-induced mitochondrial dysfunction and heart failure

Akihiro Shirakabe[1], Yoshiyuki Ikeda[2], Toshiro Saito[2], Zai Peiyong[2], Noritake Hata[1], Kuniya Asai[3], Wataru Shimizu[3], Jyunichi Sadoshima[2]
[1]Nippon Med Sch Chiba Hokusoh Hospital, Div Intensive Care Unit, Chiba, Japan, [2]Dept Cell Biol Mol Med, Rutgers New Jersey Medical School, Newark, New Jersey, USA, [3]Dept Cardiovasc Medicine, Nippon Med Sch, Tokyo, Japan

2S30F3-2　**心筋細胞の生存維持におけるTCTPの役割**

○藤田 孝之，蔡 文倩，日高 祐子，金 慧玲，プラジャパティ ラジェッシュ，梁 宸，中村 隆，石川 義弘
横浜市大・医・循環制御医学

TCTP plays an important role in the survival of cardiac myocytes

Takayuki Fujita, Wenqian Cai, Yuko Hidaka, Huiling Jin, Rajesh Prajapati, Chen Liang, Takashi Nakamura, Yoshihiro Ishikawa
Cardiovasc Res Inst, Grad Sch Med, Yokohama City Univ, Yokohama, Japan

2S30F3-3　**心疾患発症過程におけるEpac1の役割**

○奥村 敏
鶴見大学・歯・生理

The role of Epac1 for the development of heart failure

Satoshi Okumura
Dept Physiol, Tsurumi Univ Yokohama, Japan

2S30F3-4　**交感神経系と副交感神経系による適切な心拍数調節のメカニズム**

○川田 徹，杉町 勝
国循・循環動態

Mechanisms of proper heart rate control by the sympathetic and parasympathetic systems

Toru Kawada, Masaru Sugimachi
Dept Cardiovasc Dynamics, Natl Cereb Cardiovasc Center, Suita, Japan

Aims & Scope

The heart maintains the quality of the intracellular environment in response to various stimuli including mechanical, metabolic, and neuro/hormonal, aging stresses, which might be mediated through the signaling such as autonomic nervous system, hypertrophy, apoptosis and autophagy in the heart. However, inappropriate activation or termination of these signaling has been demonstrated to decrease the quality of the intracellular environment and disrupt the homeostasis in the heart. More importantly, they might cause heart disease such as heart failure and arrhythmia. This symposium invites four active cardiologists about the field of autonomic nervous system, myocyte apoptosis, and autophagy-lysosome system in the heart. We asked them to review their interested regulatory mechanisms to preserve the homogeneity in the heart and how these signaling might cause heart disease with their newly identified findings in the heart.

公募シンポジウム31　J会場 ■ Symposium 31　Hall J

大会第2日：3月29日(水)・March 29 (Wed)　16:50 - 18:50

味覚と嗅覚におけるモードスイッチングメカニズム

Mode-switching mechanisms of gustatory and olfactory sensations

オーガナイザー・Organizer：
荒田 晶子（兵庫医科大学生理学 生体機能部門）
Akiko Arata (Department of Physiology, Hyogo College of Medicine)

政岡 ゆり（昭和大学医学部 生体調節機能学）
Yuri Masaoka (Dept Physiol, Hyogo Coll Med)

2S31J3-1　**扁桃体中心核セロトニン2A受容体による先天的と後天的な恐怖の階層性制御**

○山中（伊早坂）智子，松尾 朋彦，小早川 令子，小早川 高
関西医大・附属生命・神経機能

Htr2a-expressing cells in the central amygdala control the hierarchy between olfactory-mediate innate and learned fear

Tomoko Isosaka-Yamanaka, Tomohiko Matsuo, Reiko Kobayakawa, Ko Kobayakawa
Dept Functional Neurosci, Kansai Med Univ, Osaka, Japan

2S31J3-2　**ヒトにおける味覚、嗅覚、視覚の多感覚相互作用：心理・生理学的研究**

○岡本 雅子[1,2]
[1]東大・院農・生命科学，[2]ERATO東原化学感覚プロジェクト

Interaction between taste, smell and visual information: human psychological and physiological studies

Masako Okamoto[1,2]
[1]Grad Sch Agric Life Sci, Univ, Tokyo, Japan, [2]ERATO Touhara Chemosensory Signal Project

2S31J3-3　**嗅覚、情動、呼吸リズム**

○政岡 ゆり
昭和大・医・生体調節機能学

Respiration is for live, and for olfaction and emotions

Yuri Masaoka
Dept Physiol, Showa Uni Sch Med, Tokyo, Japan

2S31J3-4　**周産期における下位脳幹部の味覚神経回路の発達モードの変換点**

○荒田 晶子，中山 栗太，吉田 千晃
兵庫医科大学・生理・生体機能

The turning points of taste sensation during perinatal development

Akiko Arata, Kurita Nakayama, Chiaki Yoshida
Dept Physiol, Hyogo Coll Med, Nishinomiya, Hyogo, Japan

Aims & Scope

Feeding behavior is much influenced by an interaction between gustatory and olfactory sensations. Various switching mechanism underlying this taste and smell integration are important to understand the rewarding system, cognitive and emotional influences, decision making and social interaction in animals and humans. We would like to propose this symposium to highlight a new insight of this integration from micro to macro views. This symposium is comprised of four presenters; Dr. Isosaka-Yamanaka will talk about a mode-switching mechanism between olfactory-mediate innate fear and learned fear, Dr. Okamoto will talk about the interaction between taste and smell perception influenced by an extrinsic information, Dr. Masaoka will talk about themode-switching mechanism between respiration change and olfaction, and I will talk about the turning points of taste sensation during development. We also aim to organize this symposium by members of woman scientists who dedicated their passions to their research works.

公募シンポジウム32　A会場 ■ Symposium 32　Hall A

大会第3日：3月30日(木)・March 30 (Thu)　8:50 - 10:50

【新学術「リポクオリティ」共催】
膜タンパク質―脂質相互作用への新たな挑戦：リポクオリティーによる膜タンパク質機能の制御

【Co-sponsored by the MEXT "Lipoquality"】

Lipoquality and functions of membrane proteins

オーガナイザー・Organizer：
岡村 康司（大阪大学大学院 医学系研究科）
Yasushi Okamura (Dept Physiol, Grad Sch Med, Osaka Univ)

有田 誠（理化学研究所 統合生命医科学研究センター）
Makoto Arita (RIKEN IMS)

3S32A1-1　脂肪酸クオリティの最先端リピドミクスと生理的意義の解明

○有田 誠[1,2,3]
[1]理研・IMS・メタボローム，[2]慶應大・薬・代謝生理化学，[3]横市大・院生命医

Advanced lipidomics to understand the quality difference of fatty acids in biological systems

Makoto Arita[1,2,3]
[1]RIKEN-IMS, Yokohama, Japan, [2]Keio Univ Faculty of Pharmacy, Tokyo, Japan, [3]Grad Sch Med Life Sci, Yokohama City Univ, Yokohama, Japan

3S32A1-2　電位依存性ホスファターゼの構造生物学的研究

○中川 敦史[1]，成田 宏隆[1]，神田 直樹[1]，川鍋 陽[2]，岡村 康司[2]
[1]阪大・蛋白研，[2]阪大・院医・統合生理

Structural studies of voltage-sensing phosphatase

Atsushi Nakagawa[1], Hirotaka Narita[1], Naoki Kanda[1], Akira Kawanabe[2], Yasushi Okamura[2]
[1]Inst Protein Res, Osaka Univ, Japan, [2]Dept Physiol, Grad Sch Med, Osaka Univ, Suita, Japan

3S32A1-3　電位依存性イオンチャネルの電位センサードメインへのリガンド結合による機能制御の構造メカニズム

○大澤 匡範
慶應義塾大・薬・生命機能物理学

Structural mechanism of functional regulation of the voltage-gated ion channels by ligand binding to voltage-sensing domain

Masanori Osawa
Div Physics for Life Functions, Facl Pharmacy, Keio Univ, Japan

3S32A1-4　The molecular mechanism of polyunsaturated fatty acids opening voltage-gated K channels

Fredrik Elinder
Dept Clin Exp Med, Linkoping Univ, Linkoping, Sweden

3S32A1-5 電位依存性ホスファターゼにおける膜相互作用の動態と役割

○岡村 康司[1]，川鍋 陽[1]，西澤 和久[2]，中川 敦史[3]，成田 宏隆[3]，坂田 宗平[4]，神野 有香[1]
[1]大阪大・院医・統合生理，[2]帝京大・医療技術・臨床検査，[3]大阪大・蛋白研・超分子構造解析，[4]大阪医大・医・生理

Mechanisms and roles of lipid interaction in voltage-sensing phosphatase

Yasushi Okamura[1], Akira Kawanabe[1], Kazuhisa Nishizawa[2], Atsushi Nakagawa[3], Hirotaka Narita[3], Souhei Sakata[4], Yuka Jinno[1]
[1]Dept Physiol, Grad Sch Med, Osaka Univ, Suita, Japan, [2]Dept Clinical Lab Sci, Teikyo Univ Sch Medical Technol, Tokyo, Japan, [3]Inst Protein Res, Osaka Univ, Suita, Japan, [4]Dept Physiol, Med, Osaka Medical College, Takatsuki, Japan

Symposia

Aims & Scope

Lipids are essential components of biological membranes and regulate ion channels and receptors through forming environments and by direct association. Lipids also serve as important mediators of cell signaling in many biological or pathological events such as inflammation and synaptic plasticity. Recent progress of cryoelectron-microscopy and X-ray crystal structure analysis of ion channels has shown several examples where lipids are parts of complexes of membrane proteins serving as key substances for regulating protein functions, not just providing environment or supporting membrane proteins. In addition, recent progress of mass spectrometry has identified surprisingly large number of lipid molecules with diversities in the length of carbon chain of acyl-group. Understanding structural and chemical basis by which membrane proteins recognize such specific molecular details (so called “lipoquality”) for their functions is emerging to be important. In this symposium, we will have four speakers from cutting edge research of lipids and membrane proteins and will explore for future directions of “lipoquality”-based understandings of life.

公募シンポジウム33　F会場 ■ Symposium 33　Hall F

大会第3日：3月30日(木)・March 30 (Thu)　8:50 - 10:50

神経科学から読み解く脳卒中リハビリテーションの作用：損傷脳はどう再編成されるか

Exploring the effects of poststroke rehabilitation on the reorganization of the injured brain from a viewpoint of neuroscience

オーガナイザー・Organizer：
石田 章真（名古屋市立大学大学院医学研究科 脳神経生理学分野）
Akimasa Ishida (Dept Neurophysiol and Brain Sci, Nagoya City Univ Grad Sch Med Sci)

田尻 直輝（吉備国際大学大学院 心理学研究科）
Naoki Tajiri (Dept Psychol, Grad Sch Psychol, Kibi Inter Univ)

3S33F1-1　脳梗塞後の課題特異型訓練によるニューラルネットワークリモデリング

○岡部 直彦，氷見 直之，丸山 恵美，成田 和彦，宮本 修
川崎医科大学・生理学2

Neural network remodeling induced by task-specific rehabilitative training after stroke

Naohiko Okabe, Naoyuki Himi, Emi Maruyama, Kazuhiko Narita, Osamu Miyamoto
2nd Dept Physiol, Kawasaki Med Sch

3S33F1-2　脳血管障害後の集中リハビリテーションによる皮質-脳幹路の再編

○石田 章真[1]，小林 憲太[2]，伊佐 正[3]，飛田 秀樹[1]
[1]名古屋市大・院医・脳神経生理，[2]生理研・ウイルスベクター開発室，[3]京都大・院医・神経生物

Rehabilitation-induced reorganization of the cortico-brainstem circuits after stroke

Akimasa Ishida[1], Kenta Kobayashi[2], Tadashi Isa[3], Hideki Hida[1]
[1]Dept Neurophysiol and Brain Sci, Nagoya City Univ Grad Sch Med Sci, Nagoya, Japan, [2]Sec Viral Vector Dev, NIPS, Okazaki, Japan, [3]Dept Physiol and Neurobiol, Kyoto Grad Sch Med, Kyoto, Japan

3S33F1-3　サル脳損傷モデルを用いたリハビリトレーニングによる把握動作の変化と神経の可塑的変化の解析

○村田 弓，肥後 範行
産総研・人間情報

Training-induced recovery of grasping and underlying neuronal plasticity after a lesion in macaque brain

Yumi Murata, Noriyuki Higo
Hum Informat Res Inst, AIST, Tsukuba, Japan

3S33F1-4　基礎研究から臨床応用へ向けて－脳疾患に対するリハビリテーションの展望－

○田尻 直輝[1,2]，安原 隆雄[2]，亀田 雅博[2]，守本 純[2]，岡崎 三保子[2]，金 恭平[2]，馬越 通有[2]，金 一徹[2]，桑原 研[2]，上利 崇[2]，金子 裕次[3]，ボーロンガン ブイ シーザー[3]，伊達 勲[2]
[1]吉備国大・院心・心理，[2]岡山大・院医・脳外科，[3]南フロリダ大・医・脳外科

CNS disorders : lab-to-clinic translational research

Naoki Tajiri[1,2], Takao Yasuhara[2], Masahiro Kameda[2], Jun Morimoto[2], Mihoko Okazaki[2], Kyohei Kin[2], Michiari Umakoshi[2], Ittestsu Kin[2], Ken Kuwahara[2], Takashi Agari[2], Yuji Kaneko[3], Cesar V Borlongan[3], Isao Date[2]
[1]Dept Psychol, Grad Sch Psychol, Kibi Inter Univ, Okayama, JAPAN, [2]Dept Neurol Surg, Okayama Univ Grad Sch Med, Okayama, JAPAN, [3]Dept Neurol Surg, Univ South Florida Med, FL, USA

Aims & Scope

Poststroke rehabilitation is known as an important method to promote functional recovery. However, the detailed and basic mechanism of the effects of rehabilitative therapy on the injured brain is still unclear. The aim of the present symposium is to share the recent evidences presented by up-and-coming researchers about the factors involving rehabilitation. Various remarkable topics will be introduced; such as the rehabilitation-induced reorganization of the injured brain, the influence of thedifferences of the type of stroke on rehabilitation and the combination with the regenerative therapy. The symposium can help understanding of the physiological effects of poststroke rehabilitation and stimulating the discussion.

公募シンポジウム34　H会場 ■ Symposium 34　Hall H

大会第3日：3月30日(木)・March 30 (Thu)　8:50 - 10:50

ペリサイトの多様な機能と表現型 －基礎研究からベッドサイドへの展開－

The diverse functions and phenotypes of pericytes – from bench to bedside –

オーガナイザー・Organizer：
橋谷 光（名古屋市立大学医学研究科 細胞生理学分野）
Hikaru Hashitani (Dept Cell Physiol, Grad Sch Med, Nagoya City Univ)

Theodor Burdyga（リバプール大学）
(Dept Physiol, Univ, Liverpool)

3S34H1-1　Live imaging of ureteric microvascular networks in situ: topology, morphology, Ca^{2+} signalling and vasomotor responses of myocytes and pericytes

Theodor Burdyga
Dept Physiol, Univ, Liverpool, UK

3S34H1-2　脳血管障害におけるペリサイトの役割と意義

○吾郷 哲朗
九大・院医・病態機能内科学

Role and significance of pericyte in cerebrovascular diseases

Tetsuro Ago
Dept Med Clin Sci, Grad Sch Med Sci, Kyushu Univ, Fukuoka, Japan

3S34H1-3　周皮細胞による血管新生の促進

○森川 俊一
東京女子医大・解剖発生

Promotion of angiogenesis by pericytes

Shunichi Morikawa
Dept Anat Dev Biol, Tokyo Women's Med Univ, Tokyo, Japan

3S34H1-4　内臓微小血管の各ユニットにおけるペリサイトの機能的連携

○橋谷 光
名古屋市立大学・院医・細胞生理

Functional coupling of pericytes in different units of visceral microvasculature

Hikaru Hashitani
Dept Cell Physiol, Grad Sch Med, Nagoya City Univ, Nagoya, Japan

Aims & Scope

Pericytes were originally described as perivascular cells wrapping around capillaries but also distributed in pre-capillary arterioles and post-capillary venules. These cells can be identified by their expression of PDGFRβ and NG2, but may also express α-smooth muscle actin. Consistently, pericytes themselves sometimes appear contractile even sending electrical signals to their upstream or downstream microvasculature to regulate their contractility. In several vascular beds, pericytes develop spontaneous electrical or Ca^{2+} signals, and thus may function as pacemaker cells driving neighbouring mural cells. Pericytes make close appositions with the endothelium, and pericyte-endothelium interactions are implicated in regulating the blood flow in the microvasculature. Pericytes also have important roles in angiogenesis, maintenance of the vascular permeability, and may act as multipotent stem and/or progenitor cells. During angiogenesis associated with wound healing as well as tumor growth, pericytes undergo phenotypic changes. Altered function and morphology of pericytes play a critical role in pathological conditions such as diabetic retinopathy or cerebral stroke, in which upregulation of signalling pathways in pericytes may be casually related with the enhanced blood-brain barrier breakdown. Recent advances in the understanding of the diverse functions of pericytes as well as their phenotype changes in disease will be reviewed.

公募シンポジウム35　I会場 ■ Symposium 35　Hall I

大会第3日：3月30日(木)・March 30 (Thu)　8:50 - 10:50

心臓のメカニクスとエナジェティクス

Cardiac mechanics and energetics

オーガナイザー・Organizer：
杉町 勝（国立循環器病研究センター 循環動態制御部）
Masaru Sugimachi (Department of Cardiovascular Dynamics, National Cerebral and Cardiovascular Center)

清水 秀二（国立循環器病研究センター 循環動態制御部）
Shuji Shimizu (Department of Cardiovascular Dynamics, National Cerebral and Cardiovascular Center)

3S35I1-1　**脊椎動物の心臓進化：冠循環の血流特性と心臓メカニクスからの推測**

○毛利 聡，花島 章，氏原 嘉洋，橋本 謙
川崎医科大学・生理学1

Evolution of vertebrate heart: Inference based on the relation between coronary circulation and ventricular mechanics

Satoshi Mohri, Akira Hanashima, Yoshihiro Ujihara, Ken Hashimoto
First Dept Physiol, Kawasaki Med Sch, Kurashiki, Japan

3S35I1-2　**ローキナーゼ及び酸化ストレスによる心筋サルコメア機能の調節作用**

○ピアソン ジェームズ[1,2]，土持 裕胤[1]，八木 直人[3]，白井 幹康[1]
[1]国循・心臓生理，[2]モナシュ大・生理，[3]高輝度光科学研究センター

Modulation of cardiac sarcomeric function by rho-kinase and oxidative stress

James T Pearson[1,2], Hirotsugu Tsuchimochi[1], Naoto Yagi[3], Mikiyasu Shirai[1]
[1]Dept Cardiac Physiol, National Cerebral and Cardiovascular Center, Osaka, Japan, [2]Dept Physiol, Monash University, Melbourne, Australia, [3]JASRI, Harima, Japan

3S35I1-3　**新しいテクノロジーによる左室メカノエナジェティクス解析の試み**

○小畑 孝二[1]，安部 力[1]，森田 啓之[1]，高木 都[1,2]
[1]岐阜大院・医・生理，[2]奈良県立医科大学医学部

Challenges of cardiac mechanoenergetics analysis with new technology

Koji Obata[1], Chikara Abe[1], Hironobu Morita[1], Miyako Takaki[1,2]
[1]Dept Physiol, Gifu Univ, Grad Sch Med, Gifu, Japan, [2]Nara Med Univ, Kashihara, Japan

3S35I1-4　**心筋酸素消費最小化に着目した心筋梗塞治療**

○朔 啓太，砂川 賢二
九州大学・循環器病研究センター

Minimizing myocardial oxygen consumption by left ventricular assist device limits the infract size and prevents the worsening of subsequent heart failure in myocardial infarction

Keita Saku, Kenji Sunagawa
Ctr Disruptive Cardiovasc Med, Kyushu Univ, Fukuoka, Japan

Aims & Scope

Several decades ago, Suga and Sagawa opened a new window for cardiac mechanics and energetics, that were the concepts of maximal elastance (Emax) and systolic pressure-volume area (PVA). The concepts of Emax and PVA have become basic frameworks of ventricular contraction and total ventricular contractile energy, respectively. Sunagawa and Sagawa also defined a new framework of ventricular afterload, effective arterial elastance (Ea). Up to the present, these frameworks have been widely used in physiological and clinical studies. On the other hand, recent developments of molecular biology and analytical methods may open another new window in the field of cardiac mechanics and energetics. In this symposium, we will demonstrate recent advancesin this field and discuss the significances. This symposium will add a new insight into cardiac mechanics and energetics.

公募シンポジウム36　J会場 ■ Symposium 36　Hall J

大会第3日：3月30日(木)・March 30 (Thu)　8:50 - 10:50

発見から20年～時計遺伝子研究の現在地

20 years from the discovery ~ current location of clock gene study

オーガナイザー・Organizer：
池田 正明（埼玉医科大学医学部生理学/ゲノム医学研究センター 分子時計プロジェクト）
Masaaki Ikeda (Dept Physiol, Facl Med, RCGM, Saitama Med Univ)

田丸 輝也（東邦大学医学部 生理学講座 細胞生理学分野）
Teruya Tamaru (Dept Physiol, Toho Univ Sch Med)

3S36J1-1　時計遺伝子発見と進歩- 発見20年を振り返って

○池田 正明[1]，熊谷 恵[1,2]
[1]埼玉医大・医・生理，[2]埼玉医大・ゲノム研・分子時計

The 20th anniversary of the discovery of mammalian clock genes

Masaaki Ikeda[1], Megumi Kumagai[1,2]
[1]Dept Physiol, Facl Med, Saitama Med Univ, Saitama, Japan, [2]RCGM, Saitama Med Univ, Saitama, Japan

3S36J1-2　概日リズムの同期発振を制御する時計遺伝子の分子基盤

○田丸 輝也[1]，河村 玄気[2]，吉種 光[3]，深田 吉孝[3]，小澤 岳昌[2]，高松 研[1]
[1]東邦大・医学部・細胞生理，[2]東京大学 大学院 理学系研究科 化学専攻，[3]東京大学 大学院理学系研究科 生物科学専攻

Molecular basis in clock genes to control synchronous circadian oscillation

Teruya Tamaru[1], Genki Kawamura[2], Hikari Yoshitane[3], Yoshitaka Fukada[3], Takeaki Ozawa[2], Ken Takamatsu[1]
[1]Dept Physiol, Toho Univ Sch Med, Tokyo, Japan, [2]Dept Chemistry, Sch Sci, Univ Tokyo, Tokyo, Japan, [3]Dept Biological Sci Sch Sci, Univ Tokyo, Japan

3S36J1-3　ADAR2はA-to-I編集リズムを介してRNAリズムを生み出す

○吉種 光，寺嶋 秀騎，深田 吉孝
東大・院理・生科

Circadian epitranscriptome: ADAR2 catalyzes circadian A-to-I editing and regulates RNA rhythm

Hikari Yoshitane, Hideki Terajima, Yoshitaka Fukada
Dept Biological Sci, Grad Sch Sci, Univ Tokyo, Japan

3S36J1-4　自由行動マウスの複数組織における時計遺伝子発現のin vivo追跡定量化

○浜田 俊幸[1]，サザーランド リー ケネス[2]，石川 正純[1,2,3,4]，宮本 直樹[2]，本間 さと[5]，白土 博樹[4,6]，本間 研一[5]
[1]北海道大・院医・分子追跡医学，[2]北海道大・院医・物理工学，[3]北海道大・院保健・医用生体理工学，[4]北海道大・国際連携研究教育局，[5]北海道大・院医・時間生理学，[6]北海道大・院医・放射線医学

In vivo imaging of clock gene expression in multiple tissues of freely moving mice

Toshiyuki Hamada[1], Kenneth Lee Sutherland[2], Masayori Ishikawa[1,2,3,4], Naoki Miyamoto[2], Sato Honma[5], Hiroki Shirato[4,6], Ken-ichi Honma[5]
[1]Applied Molecular-Imaging Physics, Hokkaido Univ Grad Sch Med, Sapporo, Japan, [2]Med Physics Engineering, Hokkaido Univ Grad Sch Med, Sapporo, Japan, [3]Dept Biomed Sci Engineering, Hokkaido Univ Grad Sch Health Sci, Sapporo, Japan, [4]GI-CoRE, Hokkaido Univ, [5]Chronomedicine, Hokkaido Univ Grad Sch Med, Sapporo, Japan, [6]Radiation Med, Hokkaido Univ Grad Sch Med, Sapporo, Japan

3S36J1-5 'Timing' critical periods in brain development

Yohei Kobayashi[1,2], Takao K Hensch[1,2]

[1]Dept Mol Cell Biol, Harvard Univ, Cambridge, USA, [2]Dept Neurol, Boston Children's Hospital, Boston, USA

Aims & Scope

Study of the mammalian clock genes, initiated with the discovery of "Clock gene" by Joseph Takahashi and his colleagues, will mark its 20th anniversary this year. Clock genes in the narrow sense, including Clock, Bmal1, Per1/2, Cry1/2, compose the core of the molecular circadian clocks, pace-making and orchestrating various circadian physiological rhythms in the cells/tissues of whole body. This exactly manifests "the logic illuminating harmony of the moleculer interplay". In this symposium, we will look back at the history of clock gene study, and review/discuss current location of the understanding for molecular clock machinery including other clock-related genes and transcriptional /post-transcriptional (e.g., RNA) / translational/post-translational (e.g., protein modification) regulatory processes, and strategies to capture the molecular events in living cells/tissues/animals. Additionally, we will discuss that perturbation of various physiological harmonies by impairment of clock gene functions, containing their critical roles in temporally organized physiologies and protective adaptation, which becomes risk/aggravating factors for various health problems and diseases.

公募シンポジウム37　D会場 ■ Symposium 37　Hall D

大会第3日：3月30日(木)・March 30 (Thu)　14:30 - 16:30

シナプス機能を理解し、そして制御するための新しい化学・分子技術の展開

Development of novel chemical and molecular techniques for understanding and controlling synaptic integrity

オーガナイザー・Organizer：
掛川 渉（慶應義塾大学医学部 生理学教室）
Wataru Kakegawa (Dept Physiol I, Keio Univ Sch Med)

清中 茂樹（京都大学大学院工学研究科 合成・生物化学専攻）
Shigeki Kiyonaka (Dept Synth Chem & Biol Chem, Grad Sch Eng, Kyoto Univ)

3S37D2-1　神経回路の超解像マッピング

○今井 猛
理研CDB

Large-scale super-resolution mapping of neuronal circuits

Takeshi Imai
RIKEN Center for Developmental Biology, Kobe, Japan

3S37D2-2　神経細胞および脳組織における内在性AMPA型グルタミン酸受容体の可視化および動態評価

○清中 茂樹[1]，浜地 格[1,2]
[1]京大・院工・合成生物化学，[2]JST CREST

Chemical labeling for visualizing native AMPA-type glutamate receptors in live neurons

Shigeki Kiyonaka[1], Itaru Hamachi[1,2]
[1]Dept Synth Chem & Biol Chem, Grad Sch Eng, Kyoto Univ, Kyoto, Japan, [2]CREST, JST, Japan

3S37D2-3　小脳長期抑圧の制御技術開発と運動学習メカニズムの解析

○松田 信爾[1,2]
[1]電通大・院情報理工・基盤理工，[2]科学技術振興機構 さきがけ

Analysis of the relationship between cerebellar LTD and motor learning by novel optogenatical tool

Shinji Matsuda[1,2]
[1]Dept Engineering Sci, Grad Sch Informatics and Engineering, Univ Electro-Communications, Tokyo, Japan, [2]JST PRESTO, Saitama, JAPAN

3S37D2-4　新しいデザイナーシナプスコネクターを用いたシナプス形成・可塑性の制御

○鈴木 邦道[1]，掛川 渉[1]，三浦 絵里子[1]，エレグハート ジョナサン[2]，
クレイトン アンバー[2]，アリセク エイ ラドゥー[2]，柚崎 通介[1]
[1]慶應義塾大学・医学部・生理学I，[2]オックスフォード大学・ヒト遺伝学ウェルカムトラストセンター・構造生物学

A novel designer synapse connector: for the control of synapse formation and plasticity

Kunimichi Suzuki[1], Wataru Kakegawa[1], Eriko Miura[1], Jonathan Elegheert[2], Amber Clayton[2], Radu A Aricescu[2], Michisuke Yuzaki[1]
[1]Dept Physiol I, Keio Univ Sch Med, Tokyo, Japan, [2]Div Struc Biol, Wellcome Trust Ctr Hum Genet, Univ Oxford, London, UK

Aims & Scope

Our brains contain billions of neurons, which connect with each other through synapses. Synapses underlie not only neurotransmission but also learning and memory. Furthermore, various neurological and psychiatric diseases reportedly involve abnormalities of synapse formation and function. Therefore, it is essential to understand how synapses are formed and behave in vivo in both physiological and pathological contexts. Recently, there have been dramatic advances across an array of chemical and molecular techniques for exploring detailed mechanisms underlying synaptic integrity. In this symposium, four young scientists will discuss recent advances in chemical/molecular tools and techniques useful for understanding and manipulating synaptic integrity. Matsuda et al. will introduce a new optogenetic tool that controls synaptic AMPA receptor trafficking and motor learning, while Kiyonaka et al. will discuss a chemical labeling method for visualizing native AMPA receptors. Imai et al. will introduce an improved technique for brain tissue clearing, which enables the large-scale analysis of fine synaptic structures. Suzuki et al. will detail new techniques for regulating synaptic functions and animal behaviors using artificial synaptic connectors/disconnectors. We hope that this symposium will provide key insights into the mechanisms underlying synaptic integrity and will be impactful to the conference audience.

公募シンポジウム38　E会場 ■ Symposium 38　Hall E

大会第3日：3月30日(木)・March 30 (Thu)　14:30 - 16:30

酸素濃度変化が起点となる心血管生理調節機構

Remodeling of cardiovascular system driven by oxygen

オーガナイザー・Organizer：
佐藤 元彦（愛知医科大学医学部 生理学講座）
Motohiko Sato (Dept Physiol, Aichi Med Univ)

横山 詩子（横浜市立大学医学部 循環制御医学）
Utako Yokoyama (Cardi Res, Yokohama City Univ Med)

3S38E2-1　虚血組織における血管新生シグナル制御

○佐藤 元彦，マムン アル アブドラ，林 寿来
愛知医科大学・生理学

Regulation of angiogenic signals in the ischemic tissue

Motohiko Sato, Abdullah Al Mamun, Hisaki Hayashi
Dept Physiol, Aichi Med Univ, Nagakute, Japan

3S38E2-2　酸素化により動脈管は解剖学的閉鎖を誘導する

○金 美花[1,2]，横山 詩子[2]，石渡 遼[2]，南沢 享[3]，石川 義弘[2]
[1]国循・肺高血圧症先端医学部，[2]横浜市立大学・医学研究科・循環制御医学，[3]東京慈恵会医科大学・細胞生理学講座

Oxygenation-induced postnatal remodeling of the ductus arteriosus

Meihua Jin[1,2], Utako Yokoyama[2], Ryo Ishiwata[2], Susumu Minamisawa[3], Yoshihiro Ishikawa[2]
[1]Dept Adv Med Res, NCVC, Osaka, Japan, [2]Cardi Res, Yokohama City Univ Med, Yokohama, Japan, [3]Dept Cell Physiol, Jikei Univ Sch Med, Tokyo, Japan

3S38E2-3　低酸素誘導性肺血管リモデリングにおける炎症細胞の役割

○武田 憲彦[1,2]
[1]東大・医・循環器，[2]JSTさきがけ

The role of inflammatory cells in hypoxia-induced pulmonary artery remodelling

Norihiko Takeda[1,2]
[1]Dept Cardiovasc Med, Grad Sch Med, Univ Tokyo, Tokyo, Japan, [2]PRESTO, JST

3S38E2-4　血管リモデリングにおける低酸素応答因子HIF-1の役割

○冨田 修平
大阪市大・院医・分子病態薬理学

Role of hypoxia inducible factor-1 in vascular remodeling

Shuhei Tomita
Dept Pharmacol, Osaka City Univ Grad Sch Med, Osaka, Japan

Aims & Scope

Oxygen is an essential substrate to maintain life system. Change of oxygen content induces physiological and pathophysiological responses in cells that lead to remodeling of tissues. Adaptation of cells to a new set point of oxygen is accompanied by alteration of signal transduction in hormone- and oxygen-mediated pathways. Although oxygen influences various responses in multiple tissues, this symposium will focus on cardiovascular events and signal alteration operated by oxygen. Decrease of oxygen content influences cell proliferation, angiogenesis, pulmonary artery remodeling, metabolic pathway and survival, that are associated with change of hypoxia-inducible factors expression, inflammatory signals or signal transduction mediated by vascular endothelial growth factor, angiotensin II and heterotrimeric G-protein. On the other hand, the dramatic increase of oxygen tension at birth causes transformation of the circulation system, which is concomitant with extracellular matrix remodeling in the artery walls. The recent advances of those topics will be presented and discussed in this symposium. The symposium will contribute to our understanding of signal alteration and cardiovascular responses elicited by oxygen.

公募シンポジウム39　F会場 ■ Symposium 39　Hall F

大会第3日：3月30日(木)・March 30 (Thu)　14:30 - 16:30

日本理学療法士協会連携シンポジウム
実験室から日常生活をつなぐ認知機能研究

Joint Symposium with Japanese Physical Therapy Association
A bridge of cognitive function studies between laboratory and daily life

オーガナイザー・Organizer：
小峰 秀彦（産業技術総合研究所 自動車ヒューマンファクター研究センター 生理機能研究チーム）
Hidehiko Komine (Automotive Human Factors Research Center, National Institute of Advanced Industrial Science and Technology)

金子 文成（札幌医科大学保健医療学部 理学療法学科）
Fuminari Kaneko (School of Health Science, Sapporo Medical University)

3S39F2-1　**物体再認課題を用いた経頭蓋電気刺激法の評価**

○渡辺 由美子[1]，武井 宙之 [1,2]，高島 一郎[1]
[1]産総研・人間情報，[2]筑波大学

Assessment of transcranial electrical stimulations using object recognition tasks

Yumiko Watanabe[1], Hiroyuki Takei[1,2], Ichiro Takashima[1]
[1]AIST, Tsukuba, Japan, [2]Univ Tsukuba, Tsukuba, Japan

3S39F2-2　**脳活動計測技術を用いた実環境における認知機能の評価**

○岩木 直，武田 裕司，佐藤 稔久
産総研・AHFRC

Electrophysiological measures to evaluate cognitive performance in real-world behavior

Sunao Iwaki, Yuji Takeda, Toshihisa Sato
AHFRC, Natl Inst Adv Indust Sci Tech (AIST), Tsukuba, Japan

3S39F2-3　**高齢者における認知機能と脳**

○土井 剛彦
国立長寿医療研究センター

Cognitive function and brain in older adults

Takehiko Doi
Natl Ctr Geriatrics Gerontol, Aichi, Japan

3S39F2-4　**地域における認知症予防のスキーム**

○島田 裕之
国立長寿医療研究センター

Scheme for preventing dementia in the community

Hiroyuki Shimada
Natl Ctr Geriatrics Gerontol, Aichi, Japan

ねらいと概要

高齢化の進展に伴って、認知症患者あるいは認知機能の低下した人の増加が社会的課題となりつつある。認知機能を予防・回復するためのエビデンス構築のためには、生理学的アプローチによるメカニズムの解明から、日常生活におけるフィールドスタディまでを横断的かつ相互補完的に進める必要がある。本シンポジウムでは、生理学会と理学療法士協会とが連携し、実験室レベルでの生理学研究から、認知機能低下者に対するリハビリテーションによる介入効果に関する研究発表を行う。これにより、実験室レベルで行う生理学的研究とフィールドを中心行う理学療法研究とが双方の長所を取り入れ、新たな研究展開へとつながることを期待する。

※本シンポジウムは全て日本語で開催されます。
This symposium will be held in Japanese.

公募シンポジウム40　H会場 ■ Symposium 40　Hall H

大会第3日：3月30日(木)・March 30 (Thu)　14:30 - 16:30

概日時計システムの脳内機構

Circadian clock system in the mammalian brain

オーガナイザー・Organizer：
榎木 亮介(北海道大学大学院医学研究科 光バイオイメージング部門)
Ryosuke Enoki (Photonic Bioimaging, Hokkaido Univ, Grad Sch Med)

三枝 理博(金沢大学医学系分子神経科学 統合生理学)
Michihiro Mieda (Dept Mol Neurosci, Grad Sch Med Sci, Kanazawa Univ)

Symposia

3S40H2-1 Optical detection of circadian voltage rhythms in the suprachiasmatic nucleus

Ryosuke Enoki[1,2], Yoshiaki Oda[1], Michihiro Mieda[5], Daisuke Ono[4], Sato Honma[3], Ken-ichi Honma[3]

[1]Photonic Bioimaging, Hokkaido Univ, Grad Sch Med, Sapporo, Japan, [2]JST PRESTO, [3]Res&Educ Center Brain Sci, Hokkaido Univ, Grad Sch Med, Sapporo, Japan, [4]Nagoya Univ, Dep of Neurosci II, Nagoya, Japan, [5]Kanazawa Univ, Grad Sch Med Sci, Kanazawa, Japan

3S40H2-2 バソプレシン産生ニューロンは視交叉上核のペースメーカー機能に重要な役割を果たす

○三枝 理博
金沢大・院医・分子神経科学

AVP neurons play a critical role in the circadian pacemaking of SCN

Michihiro Mieda
Dept Mol Neurosci, Grad Sch Med Sci, Kanazawa Univ, Kanazawa, Japan

3S40H2-3 物体認識記憶の概日変動を生み出す分子メカニズム

○清水 貴美子，小林 洋大，仲辻 英里香，深田 吉孝
東大・院理・生科

Molecular mechanism of circadian regulation of recognition memory

Kimiko Shimizu, Yodai Kobayashi, Erika Nakatsuji, Yoshitaka Fukada
Dept Biol Sci, Grad Sch Sci, Univ Tokyo, Tokyo, Japan

3S40H2-4 概日光受容体メラノプシンの機能と性質

○羽鳥 恵
慶應・医・眼・光生物

Mechanisms and properties of signaling by melanopsin retinal ganglion cells

Megumi Hatori
Photobiology lab, Dept Ophthalmol, Sch Med, Keio Univ, Tokyo, Japan

3S40H2-5 体内時計の中枢を制御するGz共役型オーファンGPCRシグナル

○土居 雅夫，岡村 均
京大・院薬・医薬創成情報科学

Identification of a Gz-linked orphan GPCR that tunes the center of the circadian clock

Masao Doi, Hitoshi Okamura
Dept Syst Biol, Grad Sch Pharmaceut Sci, Kyoto Univ, Kyoto, Japan

Aims & Scope

The circadian clock in most living organisms on earth makes it possible to coordinate their biology with daily environmental changes. In mammals, the master circadian clock is located in the hypothalamic suprachiasmatic nucleus (SCN), which controlsdaily rhythms in physiology and behavior, such as sleep-wake cycle. At single cell level, recent studies revealed that individual cellular oscillators are driven by autoregulatory transcriptional/post-translational feedback loops (TTFLs) involving clock genes and their products. In contrast, network- and system-level mechanisms underlying the circadian clock in the brain remain largely unknown. Aim of this symposium is to present the recent research topics on circadian system in the mammalian brain, such as high-resolution multi-color imaging (Enoki) and cell-type specific genetic manipulation (Mieda) of the SCN neural network, screening/analysis of novel GPCR specifically expressed in the SCN (Doi), characterization of regulators and cellular/neural pathways that mediate photic entrainment (Hatori), and clock-controlled memory formation in the hippocampus (Shimizu). We will discuss future direction toward the comprehensive understanding of circadian system in mammalian brain.

公募シンポジウム41　I会場 ■ Symposium 41　Hall I

大会第3日：3月30日(木)・March 30 (Thu)　14:30 - 16:30

呼吸ニューロンネットワーク機構の多階層的理解：延髄スライスでの微小神経回路から覚醒動物まで

Multi-level understanding of the respiratory neuron network function: from microcircuit in medullary slices to freely moving conscious animals

オーガナイザー・Organizer：
岡田 泰昌（独立行政法人国立病院機構村山医療センター 臨床研究部 電気生理学研究室）
Yasumasa Okada (Clin Res Ctr, Murayama Medical Ctr)

越久 仁敬（兵庫医科大学生理学 生体機能部門）
Yoshitaka Oku (Dept Physiol, Hyogo College of Medicine)

3S41I2-1　マウス延髄スライス標本のpre-Botzinger complexにおける自発的同期活動を起こす興奮性ならびに抑制性の吸息性ニューロンの活性化パターン

○尾家 慶彦[1]，三分一 史和[2]，越久 仁敬[1]，ベッサー ステファニー[3]，ヒルリンガー ヨハネス[3]，ヒュルスマン スベン[4]

[1]兵庫医大・生理・生体機能，[2]統数研・モデリング，[3]ドイツ・ライプツィヒ大学・カールルートヴィヒ生理学研究所，[4]ドイツ・ゲッティンゲン大学・麻酔学部門

Rhythmic activation patterns of excitatory/inhibitory inspiratory neurons in the pre-Botzinger complex of the mice medulla slice

Yoshihiko Oke[1], Fumikazu Miwakeichi[2], Yoshitaka Oku[1], Stefanie Besser[3], Johannes Hirrlinger[3], Swen Huelsmann[4]

[1]Dept Physiol, Hyogo College of Medicine, Hyogo, Japan, [2]Dept Stats Modeling, Inst Stats Math, Tokyo Japan, [3]Carl-Ludwig-Institute for Physiol, Univ Leipzig, Leipzig, Germany, [4]Clinic for Anesthesiol, Gottingen Univ, Gottingen, Germany

3S41I2-2　新生ラット摘出脳幹-脊髄標本における呼吸リズム形成

○林 思女亭[1]，鬼丸 洋[2]

[1]昭和大・薬・薬物治療学，[2]昭和大・医・生体調節機能学

Respiratory rhythm generation in the *in vitro* brainstem-spinal cord preparation of the neonatal rat

Shih-Tien Lin[1], Hiroshi Onimaru[2]

[1]Dept Pharmacother, Div Clin Pharm, Showa Univ, Tokyo, Japan, [2]Dept Physiol, Sch Med, Showa Univ, Tokyo, Japan

3S41I2-3　呼吸ニューロンネットワークの研究のための除皮質灌流標本

○矢澤 格

星薬科大・生命科学研

A decerebrates and artificially-perfused *in situ* preparation for the study of respiratory neuron network

Itaru Yazawa

Hoshi Univ Sch Pharm Pharmaceut Sci, Tokyo, Japan

Symposia

3S41I2-4 呼吸と循環機能の協調的な調節における中脳の役割

○堀内 城司，吉岡 優海，高橋 知幸
東洋大学・理工・生体医工

Role of the midbrain in coordinated regulation of respiratory and cardiovascular function in anesthetized animals

Jouji Horiuchi, Yuumi Yoshioka, Tomoyuki Takahashi
Dept Biomed Engin, Toyo Univ, Saitama, Japan

3S41I2-5 自発呼吸下の覚醒マウスにおける低酸素換気応答とアストロサイトの役割

○福士 勇人[1,2]，武田 湖太郎[1,3]，寺田 二郎[1,4]，ミエチスラフ ポコルスキー[1,5]，
堀内 城司[2]，岡田 泰昌[1]
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[4]千葉大・呼吸内科，[5]Opole Medical School, Opole, Poland

Hypoxic ventilatory response in conscious mice

Isato Fukushi[1,2], Kotaro Takeda[1,3], Jiro Terada[1,4], Pokorski Mieczyslaw[1,5], Jouji Horiuchi[2], Yasumasa Okada[1]
[1]Clin Res Ctr, Murayama Medical Ctr, Tokyo, Japan, [2]Dept Biomed Eng, Grad Sch Sci & Eng, Toyo Univ, Saitama, Japan, [3]Fujita Memorial Nanakuri Inst, Fujita Health Univ, Mie, Japan, [4]Dept Respirology, Chiba Univ, Chiba, Japan, [5]Opole Medical School, Opole, Poland

Aims & Scope

Basic respiratory rhythm is generated primarily in the medulla. However, final respiratory motor output is formed by interconnected neuron networks distributed from the higher brain to the spinal cord. To precisely and comprehensively understand how respiratory rhythm is generated and ventilation is regulated to maintain homeostasis, it is necessary to elucidate the respiratory neuron network mechanisms at multi-levels, i.e., from the microcircuit to the whole animal. In the proposed symposium, we will introduce the latest studies conducted from microscopic to macroscopic viewpoints: (1) Respiratory rhythm generation in the microcircuit in the pre-Bötzinger complex (preBötC) using thin transverse slices of the medulla (by Oke). (2) Respiratory control in the parafacial respiratory group (pFRG), another primary oscillator longitudinally coupled with the preBötC, using isolated brainstem-spinal cord preparations of neonatal rodents (by Lin). (3) Respiratory control in the more intact and mature condition using decerebrated, arterially perfused in situ preparations (by Yazawa). (4) Respiratory as well as cardiovascular neuron network function analyzed in anesthetized whole animals (Horiuchi). (5) Ventilation and its responses to various physiological stimuli such as hypoxia in unrestrained conscious animals (by Fukushi). These multi-level approaches would enable us to better understand the respiratory neuron network function in health and disease.

公募シンポジウム42　J会場 ■ Symposium 42　Hall J

大会第3日：3月30日 (木)・March 30 (Thu)　14:30 - 16:30

宇宙生理学の新展開 －臨床医学との融合－

Frontier in space physiology and medicine – from bench to bedside –

オーガナイザー・Organizer：
後藤 勝正 (豊橋創造大学大学院 健康科学研究科)
Katsumasa Goto (Lab Physiol, Sch Health Sci, Toyohashi SOZO Univ)
河合 康明 (鳥取大学医学部 適応生理学)
Yasuaki Kawai (Division of Adaptation Physiology, Tottori University Faculty of Medicine)

3S42J2-1　熱ショック転写因子1の欠損は荷重除去によるミオシン重鎖の速筋化を抑制する

○横山 真吾[1]，大平 充宣[2]，吉岡 利忠[3]，後藤 勝正[1,4]
[1]豊橋創造大・保健医療，[2]同志社大・院スポーツ健康科学，[3]弘前学院大，[4]豊橋創造大・院健康科学

Deficiency of heat shock transcription factor 1 suppresses unloading-associated slow-to-fast transition of myosin heavy chain isoforms in mouse soleus muscle

Shingo Yokoyama[1], Yoshinobu Ohira[2], Toshitada Yoshioka[3], Katsumasa Goto[1,4]
[1]Lab Physiol, Sch Health Sci, Toyohashi SOZO Univ, Aichi, Japan, [2]Grad Sch Health Sports Sci, Doshisha Univ, Kyoto, Japan, [3]Hirosaki Gakuin Univ, Aomori, Japan, [4]Dept Physiol, Grad Sch Health Sci, Toyohashi SOZO Univ, Aichi, Japan

3S42J2-2　宇宙環境暴露による循環調節障害の機序：今後の研究展望を踏まえて

○和気 秀文，山中 航
順天堂大・院スポ健・生理

Mechanisms underlying cardiovascular deconditioning induced by space flight: current and future prospects

Hidefumi Waki, Ko Yamanaka
Dept Physiol, Grad Sch Health and Sports Science, Juntendo Univ, Chiba, Japan

3S42J2-3　再生医療実現を目指した高効率骨格筋前駆細胞誘導法の開発

○細山 徹
山口大学・院医・器官病態外科

High efficient derivation of skeletal muscle progenitor cells from human pluripotent stem cells for regenerative medicine

Tohru Hosoyama
Dept Surg Clinic Sci, Yamaguchi Univ Grad Sch Med, Ube, Japan

3S42J2-4　宇宙酔い発症における前庭系のかかわり－スペースシャトル上で行われた実験結果を踏まえて－

○肥塚 泉
聖マリアンナ医大・耳鼻咽喉科

Space motion sickness and vestibular system –based on the results of the NeuroLab experiment at space shuttle Columbia (STS-90)–

Izumi Koizuka
Dept Otolaryngol, St. Marianna Univ Sch Med, Kanagawa, Japan

Aims & Scope

Functions and structures of organs in mammals have been developed under 1-G environment on Earth. Therefore, exposure to microgravity during spaceflight as well as to simulated microgravity impacts on physiological functions in various organs such as bone, skeletal muscle, heart, vestibular organ, and so on. Scientific researches in this field could provide us new aspects for both physiological and clinical approaches. In this symposium, we will discuss novel evidences of space and gravitational physiology and their applications in clinical medicine, showing a new insight and a future direction into the translational research.