3rd International ALA and Porphyrin Symposium (IAPS3)

~PROGRAM~

Date: December 17, 2015
Location: John A. Burns School of Medicine, University of Hawaii at Manoa

8:30-9:00  Registration

9:00-9:30  Opening Remarks and Presidential Lecture  (Chair: Naohide Yamashita)
Rosanne Harrigan (Chairperson of IAPS3, Chair, Department of Complementary and Alternative Medicine, John A. Burns School of Medicine University of Hawaii at Manoa)

9:30-10:15  Special Lectures  (Chair: Motowo Nakajima)
Naohide Yamashita (Chairperson of IAPS2, Institute of Medical Science, Univ. of Tokyo)
Abdullah Hassan Darwish (Brigadier Doctor, Technical Assistant to Director of the Royal Medical Services of Bahrain Defense Force, The Kingdom of Bahrain)
Mohammed Amin Al Awadi (Doctor, Assistant Undersecretary for Training and Planning, Ministry of Health, The Kingdom of Bahrain)

10:15-10:30  Coffee Break

Symposium 1
(Chair: Beatriz L Rodriguez, Kenzaburo Tani)

10:30-10:45  S1-1
In vivo 5-aminolevulinic acid deficiency causes impaired glycogen synthesis leading to impaired glucose tolerance and insulin resistance
Osamu Nakajima1, Shinichi Saitoh1, Takekazu Nohara1, Nobuyuki Shirasawa1, Hiroshi Nakano1, Kiwamu Takahashi2, Tohru Tanaka2, Motowo Nakajima2 (1Yamagata University School of Medicine, Japan, 2 SBI Pharmaceuticals Co., Ltd., Japan)

10:45-11:00  S1-2
Use of the dietary Supplement 5-Aminolevulinic acid (5-ALA) and its Relationship with Glucose Levels and Hemoglobin A1C among Individuals with Pre-Diabetes
Beatriz L Rodriguez, MD, PhD, J David Curb, MD, James Davis, PhD, Terry Shintani, MD, Michael H Perez, MBA, Noelani Apau-Ludlum, MD, Crystal Johnson, RN (Dept. of Complementary and Alternative Medicine, Department of Geriatric Medicine, John A. Burns School of Medicine, University of Hawaii at Manoa)
11:00-11:15  S1-3
The Relationship of 5-Aminolevulinic Acid on Mood and Coping Ability in Prediabetic Adults
Rachael M. K. Gonzales, PhD, Michael Perez, PhD, Payel Sil, MS, James Davis, PhD, Terry Shintani, MD, Beatriz Rodriguez, MD, Rosanne Harrigan, PhD (University of Hawaii)

11:15-11:30  S1-4
Impact of 5-aminolevulinic acid with iron supplementation on exercise efficiency and home-based walking training achievement in older women
Shizue Masuki1,2, Atsumi Morita1, Yoshi-ichiro Kamijo1,2, Shigeki Ikegawa1, Yufuko Kataoka1, Yu Ogawa1, Eri Sumiyoshi1, Kiwamu Takahashi3, Tohru Tanaka3, Motowo Nakajima3, Hiroshi Nose1,2 (1Department of Sports Medical Sciences, Shinshu University Graduate School of Medicine, 2Institute for Biomedical Sciences, Shinshu University, 3Department of R&D, SBI Pharmaceuticals Co., Ltd.)

11:30-11:45  S1-5
The effect of 5-Aminolevulinic acid and ferrous iron on the heme synthesis pathway during erythroid differentiation in K562 cells
Hitoshi Nakagawa1, Tomoki Ichikawa1, Yuya Kitajima1, Naoko Nozawa1, Masahiro Ishizuka1, Tohru Fujiwara2, Hideo Harigae2, Kyoko Imamura1, Motowo Nakajima1, Tohru Tanaka1 (1SBI Pharmaceuticals Co., Ltd., 2Department of Hematology and Rheumatology, Tohoku University)

11:45-13:00  Lunch

Symposium 2
(Chair: Yasutoshi Murayama, Shun-ichiro Ogura)
13:00-13:15  S2-1
Fluorescent derivative used on PDD of cancer was brought to light in a protoporphyrin-IX (Pp-IX) by a mass-spectrum microscope
Norio Miyoshi1, Vivekananda Mandal1, Keigo Sano2, Mitsutoshi Setou2, Toru Tanaka3 (1University of Fukui, 2Hamamatsu Medical University, 3SBI Pharma Co.)

13:15-13:30  S2-2
Intraoperative Imaging for Peritoneal Dissemination of GI Cancer using 5-ALA
Yasutoshi Murayama, Hidemasa Kubo, Kyoichi Harada, Masumi Nishimura, Yosuke Kamada, Eigo Otsuji (Division of Digestive Surgery, Department of Surgery, Kyoto Prefectural University of Medicine)
13:30-13:45 S2-3
Photodynamic diagnosis (PDD) using 5-aminolevulinic acid (5-ALA) for hepatocellular carcinoma
Masumi Nishimura, Yasutoshi Murayama, Hidemasa Kubo, Toru Mizutani, Kazuto Yamada, Hisataka Matsuo, Kyoichi Harada, Yosuke Kamada, Ryo Morimura, Hisashi Ikoma, Tomohiro Arita, Toshiyuki Kosuga, Hirotaka Konishi, Shuhei Komatsu, Atsushi Shiozaki, Yoshiaki Kuriu, Masayoshi Nakanishi, Daisuke Ichikawa, Hitoshi Fujiwara, Kazuma Okamoto, Eigo Otsuji (Division of Digestive Surgery, Department of Surgery, Kyoto Prefectural University of Medicine)

13:45-14:00 S2-4
Photodynamic diagnosis of peritoneal metastasis in pancreatic cancer using 5-aminolevulinic acid
Kyoichi Harada, Yasutoshi Murayama, Hidemasa Kubo, Toru Mizutani, Kazuto Yamada, Hisataka Matsuo, Yosuke Kamada, Masumi Nishimura, Tomohiro Arita, Toshiyuki Kosuga, Hirotaka Konishi, Ryo Morimura, Shuhei Komatsu, Atsushi Shiozaki, Yoshiaki Kuriu, Hisashi Ikoma, Masayoshi Nakanishi, Daisuke Ichikawa, Hitoshi Fujiwara, Kazuma Okamoto, and Eigo Otsuji (Division of Digestive Surgery, Department of Surgery, Kyoto Prefectural University of Medicine)

14:00-14:15 S2-5
Photodynamic diagnosis of lymph node metastasis in human colorectal cancer by 5-ALA induced protoporphirin IX
Hidemasa Kubo, Yasutoshi Murayama, Toru Mizutani, Kazuto Yamada, Kyoichi Harada, Hisataka Matsuo, Yosuke Kamada, Masumi Nishimura, Masayoshi Nakanishi, Daisuke Ichikawa, Hitoshi Fujiwara, Kazuma Okamoto, and Eigo Otsuji (Division of Digestive Surgery, Department of Surgery, Kyoto Prefectural University of Medicine)

14:15-14:30 S2-6
Usefulness of screening method using 5-ALA metabolites in urine as a new tumor marker for colorectal cancer
Yosuke Kamada, Yasutoshi Murayama, Toru Mizutani, Hidemasa Kubo, Kazuto Yamada, Kyoichi Harada, Hisataka Matsuo, Masumi Nishimura, Tomohiro Arita, Toshiyuki Kosuga, Hirotaka Konishi, Ryo Morimura, Shuhei Komatsu, Atsushi Shiozaki, Yoshiaki Kuriu, Hisashi Ikoma, Masayoshi Nakanishi, Daisuke Ichikawa, Hitoshi Hijiwara, Kazuma Okamoto and Eigo Otsuji (Division of Digestive Surgery, Department of Surgery, Kyoto Prefectural University of Medicine)
14:30-15:00  **Coffee Break**

**Symposium 3**
(Chair: Junko Takahashi, Junkoh Yamamoto)

15:00-15:15  **S3-1**
A role for 5-aminolevulinic acid (ALA) in the delayed production of reactive oxygen species (ROS) after ionizing irradiation exposure in glioma cells
Junkoh Yamamoto¹, Takehiro Kitagawa¹, Tohru Tanaka², Kunihiro Ueta¹, Daisuke Akiba¹, Yoshiteru Nakano¹, Masaru Idei¹, Shigeru Nishizawa¹ (¹Department of Neurosurgery, University of Occupational and Environmental Health, ²SBI Pharmaceuticals CO., Ltd.)

15:15-15:30  **S3-2**
Transcriptome Analysis of Porphyrin-Accumulated and X-Ray-Irradiated Cell Cultures
Junko Takahashi, Masaki Misawa and Hitoshi Iwahashi (Advanced Industrial Science and Technology)

15:30-15:45  **S3-3**
Combined treatment with X-ray irradiation and 5-aminolevulinic acid inhibits tumor growth in mouse tumor models
Junko Takahashi, Masaki Misawa and Hitoshi Iwahashi (Advanced Industrial Science and Technology)

15:45-16:00  **S3-4**
Sonochemical internalization using 5-aminolevulinic acid enhances the cytotoxic effect of bleomycin
Tomohiro Osaki¹, Yoshihiro Uto², Masahiro Ishizuka³, Tohru Tanaka³, Nobuyasu Yamanaka⁴, Tsukasa Kurahashi⁴, Kazuo Azuma¹, Yusuke Murahata¹, Takeshi Tsuka¹, Norihiko Ito¹, Tomohiro Imagawa¹, Yoshiharu Okamoto¹ (¹Department of Veterinary Clinical Medicine, School of Veterinary Medicine, Tottori University, ²Department of Life System, Institute of Technology and Science, Graduate School, Tokushima University, ³SBI Pharmaceuticals Co., Ltd., ⁴ITO CO., LTD.)

16:00-16:15  **Coffee Break**

**Symposium 4**
(Chair: Taku Chibazakura, Tohru Tanaka)

16:15-16:30  **S4-1**
Hemmaglutinating virus of Japan envelope as a versatile vector for photodynamic therapy against prostate cancer
Mizuho Inai\textsuperscript{1}, Norihiro Honda\textsuperscript{2}, Hisanao Hazama\textsuperscript{3}, Hiroyuki Nakamura\textsuperscript{4}, Hidehiro Yasuda\textsuperscript{5}, Tomoyuki Nishikawa\textsuperscript{6}, Yasufumi Kaneda\textsuperscript{6}, Kunio Awazu\textsuperscript{1,3,7} (\textsuperscript{1}Graduate School of Frontier Biosciences, Osaka University; \textsuperscript{2}Institute of Academic Initiatives, Osaka University; \textsuperscript{3}Graduate School of Engineering, Osaka University; \textsuperscript{4}Chemical Resources Laboratory, Tokyo Institute of Technology; \textsuperscript{5}Research Center for Ultra-High Voltage Electron Microscopy, Osaka University; \textsuperscript{6}Graduate School of Medicine, Osaka University; \textsuperscript{7}The Center for Advanced Medical Engineering and Informatics, Osaka University) 

16:30-16:45 S4-2

5-aminolevulinic acid as a potent sensitizer for hyperthermia of cancer
Taku Chibazakura\textsuperscript{1}, Yui Toriyabe\textsuperscript{1}, Mariko Kawakami\textsuperscript{1}, Haruna Kuwamura\textsuperscript{1}, Tomoki Iida\textsuperscript{1}, Takumi Sato\textsuperscript{1}, Kiwamu Takahashi\textsuperscript{2}, Atsuko Kamiya\textsuperscript{2}, Shun-ichiro Ogura\textsuperscript{3}, Fuminori Abe\textsuperscript{2}, Motowo Nakajima\textsuperscript{2}, Tohru Tanaka\textsuperscript{2} (\textsuperscript{1}Dept. of Bioscience, Tokyo Univ. of Agric., \textsuperscript{2}SBI Pharmaceuticals Co., Ltd., \textsuperscript{3}Frontier Res. Center., Tokyo Inst. of Tech.)

16:45-17:00 S4-3

PDT effect of TFPP derivatives having two different functional groups
Shiho Hirohara\textsuperscript{1}, Yusuke Kubota\textsuperscript{1}, Naoto Akiyama\textsuperscript{1}, Makoto Obata\textsuperscript{2}, Hirofumi Matsui\textsuperscript{3}, Kiyomi Kakiuchi\textsuperscript{4} (\textsuperscript{1}Department of Chemical and Biological Engineering, Ube National Collage of Technology, \textsuperscript{2}Interdisciplinary Graduate School of Medicine and Engineering, University of Yamanashi, \textsuperscript{3}Faculty of Medicine, University of Tsukuba, \textsuperscript{4}Graduate School of Materials Science, Nara Institute of Science and Technology)

17:00-17:15 S4-4

Impact of 5-ALA on Eucalypts seedlings drought tolerance
Keiji Tomita, Yoshiya Izumi (Biomaterial in Tokyo Co., Ltd.)

17:15-17:30 \textbf{The OKABE award ceremony} (Chair: Ichiro Okura)

17:30 \textbf{Closing Remark}

\begin{align*}
\text{5-Amino Levulinic Acid (ALA)} & \quad \text{Protoporphyrin IX} \\
\begin{tikzpicture}
  \draw [black, thick] (0,0) -- (1,0) -- (1,1) -- (0,1) -- cycle;
  \draw [black, thick] (0,0) -- (0,-1);
  \node at (0.5,0.5) {COOH};
  \node at (0.5,-0.5) {H$_2$N};
  \node at (0.5,0.25) {CH$_2$};
  \node at (0.25,0.25) {H$_2$C};
  \node at (0.75,0.25) {CH$_2$};
  \node at (0.5,0.75) {O=C};
  \node at (0.75,0.75) {CH$_2$};
\end{tikzpicture}
& \quad \begin{tikzpicture}
  \draw [black, thick] (0,0) -- (1,0) -- (1,1) -- (0,1) -- cycle;
  \draw [black, thick] (0,0) -- (0,-1);
  \node at (0.5,0.5) {HOOC};
  \node at (0.5,-0.5) {H$_2$C};
  \node at (0.5,0.25) {N};
  \node at (0.75,0.25) {CH$_3$};
  \node at (0.25,0.25) {CH$_3$};
  \node at (0.5,0.75) {HOOC};
  \node at (0.75,0.75) {NH};
  \node at (0.75,0.25) {HN};
\end{tikzpicture}
\end{align*}