

TECHNICAL PROGRAM



17TH INTERNATIONAL PHOTODYNAMIC  
ASSOCIATION WORLD CONGRESS



# International Photodynamic Association World Congress 2019

**28 June-4 July 2019**  
Boston Marriott Cambridge  
Cambridge, MA, USA

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## IPA 2019 AWARDS

- Award for the Significant Advancement of Photodynamic Therapy
- Basic PDT Research Excellence Award
- Clinical PDT Research Excellence Award
- Early Investigator Award
- Humanitarianism Award
- Outstanding Postdoctoral Fellow Award
- Lifetime Achievement Award



# Welcome to the International Photodynamic Association World Congress 2019

Every two years, the International Photodynamic Association organizes a conference to foster scientific development and contribute to clinical practice. Since 1986, the IPA has worked to bring together researchers and clinicians in all fields of photodynamic therapy (PDT) and photodiagnosis (PD). The conference attracts physicians and scientists from the world over and is aimed at being forward looking, projecting areas most amenable to Photodynamic Therapy as well as capturing the current status of the field. Both science and clinical topics will be covered allowing adequate times for discussion. This conference should be useful to those already in the field of PDT and also to those contemplating entering it. This is anticipated to be a particularly good forum for exchange of ideas between laboratory scientists and clinicians.

We hope you enjoy your stay in Boston!



**Tayyaba Hasan**, President of IPA Board of Directors, Chair of IPA Congress 2019, Wellman Ctr. for Photomedicine (USA), Harvard Medical School (USA), and Massachusetts General Hospital (USA)

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# SPECIAL EVENTS

Friday 28 June 2019	
6:00 PM - 8:00 PM	<b>Welcome Reception</b>
Saturday 29 June 2019	
8:30 AM - 12:30 PM	<b>Clinical Workshop: Neurosurgery</b>
4:30 PM - 6:30 PM	<b>Saturday Poster Session</b>
Sunday 30 June 2019	
8:30 AM - 10:30 AM	<b>Tom Dougherty Remembrance Session</b>
4:30 PM - 6:30 PM	<b>Sunday Poster Session</b>
5:00 PM - 9:00 PM	<b>IPA Board Meeting and Dinner</b>
Monday 1 July 2019	
8:30 AM - 10:00 AM	<b>Monday Plenary Session: Re-engineering the tumor microenvironment to enhance cancer treatment: bench to bedside</b> (Jain)
9:15 AM - 10:00 AM	<b>Monday Plenary Session: Next-generation immune checkpoints: deciphering key roles in the TME</b> (Sabatos-Peyton)
12:30 PM - 2:00 PM	<b>Lunch Break and General Assembly</b>
Tuesday 2 July 2019	
9:00 AM - 10:00 AM	<b>Tuesday Plenary Session: Photochemistry and the origin of life</b> (Szostak)
10:00 AM - 10:30 AM	<b>Tuesday Plenary Session: Antimicrobial PDT: progress and challenges at the IPA 2019 meeting?</b> (Loebel)
7:00 PM - 10:00 PM	<b>Gala Dinner and Awards Ceremony</b>
Wednesday 3 July 2019	
9:00 AM - 10:00 AM	<b>Wednesday Plenary Session: Macromolecular targeting of cancer: challenges in science and translation</b> (Drummond)

## Welcome Reception

Friday 28 June 2019 • 6:00 PM - 8:00 PM

Location: Salons 1-3

All attendees are invited to relax, socialize, and enjoy refreshments. Please remember to wear your conference registration badge. Dress is casual.

THANK YOU TO OUR SPONSORS:



## Saturday Poster Session

Saturday 29 June 2019 • 4:30 PM - 6:30 PM

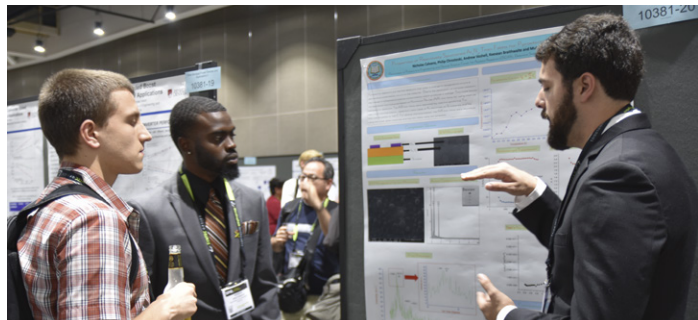
Location: Salons 1-3

Conference attendees are invited to attend the poster session on Saturday. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

### Poster Setup: Saturday 11:00 AM - 3:00 PM

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PDTPosterGuidelines>.

THANK YOU TO OUR POSTER SESSION AND AWARDS SPONSORS:



## Sunday Poster Session

Sunday 30 June 2019 • 4:30 PM - 6:30 PM

Location: Salons 1-3

Conference attendees are invited to attend the poster session on Sunday. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

### Poster Setup: Sunday 11:00 AM - 3:00 PM

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PDTPosterGuidelines>.

THANK YOU TO OUR POSTER SESSION AND AWARDS SPONSORS:



## IPA Board Meeting and Dinner

Sunday 30 June 2019 • 5:00 PM - 9:00 PM

**Business Meeting: 5:00 to 7:30 pm**

**Dinner: 7:30 to 9:00 pm**

Open to the Board of Directors and Officers of the IPA only.

## Monday Plenary Session

Monday 1 July 2019 • 8:30 AM - 10:00 AM

Location: Salon 4

8:30 AM - 9:15 AM:

### RE-ENGINEERING THE TUMOR MICROENVIRONMENT TO ENHANCE CANCER TREATMENT: BENCH TO BEDSIDE



#### Rakesh Jain, Ph.D.

Andrew Werk Cook Professor of Tumor Biology  
(Radiation Oncology)

Director, Edwin L. Steele Laboratory for Tumor Biology,  
Massachusetts General Hospital, Harvard Medical  
School (USA)

For four decades, our research has focused on one challenge: improving the delivery and efficacy of anti-cancer therapies. Working on the hypothesis that the abnormal tumor microenvironment fuels tumor progression and treatment resistance, we developed an array of novel imaging technologies and animal models as well as mathematical models to unravel the complex biology of tumors. Using these tools, we demonstrated that the blood and lymphatic vasculature, fibroblasts, immune cells and the extracellular matrix associated with tumors are abnormal, which together create a hostile biochemical and physical tumor microenvironment (e.g., hypoxia, high interstitial fluid pressure, high solid stress). Our work also revealed how these abnormalities fuel tumor progression and metastasis, while preventing treatments from reaching and attacking tumor cells.

We next hypothesized that if we could reengineer the tumor microenvironment, we should be able to improve the treatment outcome. Indeed, we demonstrated that judicious use of antiangiogenic agents—originally designed to starve tumors—could transiently “normalize” the tumor vasculature, alleviate hypoxia, increase delivery of drugs and anti-tumor immune cells, and improve the outcome of radiation, chemotherapy and immunotherapy in a number of animal models. Moreover, our trials of antiangiogenics in brain and breast cancer patients supported this concept. They revealed that the patients whose tumor blood perfusion/oxygenation increased in response to anti-VEGF therapies survived longer than those whose blood perfusion/oxygenation did not increase. The normalization hypothesis also explained how anti-VEGF agents could improve vision in patients with wet age-related macular degeneration, and opened doors to treating other non-malignant diseases harboring abnormal vasculature that afflict more than 500 million people worldwide [e.g., neurofibromatosis-2 (NF2), which can lead to deafness; tuberculosis; plaque rupture]. Our clinical finding led to the approval of bevacizumab for NF2 patients in UK in 2014.

In parallel, by imaging collagen and measuring diffusion and perfusion in tumors in vivo, we discovered that the tumor cells and the extracellular matrix compress blood vessels and impede drug delivery in desmoplastic tumors (e.g., pancreatic cancer, triple negative breast cancers). We subsequently discovered that angiotensin blockers – widely prescribed to control hypertension – are capable of “normalizing” the extracellular matrix, opening compressed tumor vessels, and improving the delivery and efficacy of molecular and nano-therapeutics. This finding offers new hope for improving treatment of highly fibrotic tumors and led to a successful phase II clinical trial at MGH on losartan and chemo-radiation therapy in pancreatic ductal adenocarcinomas (PDAC) (NCT01821729). This trial demonstrated that the addition of losartan to the standard of care led to an unprecedented R0 resection rate of 61% in locally advanced PDAC and significantly improved survival of these PDAC patients. This finding has led to a multi-institutional randomized trial. In my presentation I'll also discuss how these two broad strategies – “vascular normalization” and “matrix normalization” – can improve the delivery and efficacy of various cancer therapies, including immunotherapy.

**Rakesh K. Jain** is the Andrew Werk Cook Professor of Radiation Oncology (Tumor Biology) at Harvard Medical School, and Director of the Steele Laboratories at Massachusetts General Hospital. He is widely known for uncovering physical and physiological barriers to the delivery and efficacy of molecular-, nano-, and immuno-therapeutics; developing innovative strategies to overcome these barriers; and then translating these strategies from bench to bedside. He is among the top 1% cited researchers in Clinical Medicine, a member of all three US National Academies – Sciences, Engineering and Medicine, National Academy of Inventors, and a recipient of the US National Medal of Science.

9:15 AM - 10:00 AM:

### NEXT-GENERATION IMMUNE CHECKPOINTS: DECIPHERING KEY ROLES IN THE TME



#### Catherine Sabatos-Peyton, Ph.D.

Director of Exploratory Immuno-Oncology,  
Novartis Institutes for Biomedical Research, Inc. (USA)

The clinical proof of concept that modulation of the immune system could lead to meaningful therapeutic benefit in cancer treatment was propelled into the public eye with the approval of anti-CTLA-4 immunotherapy ipilimumab in 2011 for unresectable or metastatic melanoma. A so-called “checkpoint inhibitor,” CTLA-4 is expressed on the surface of T cells and can be exploited by tumors to evade an anti-tumor immune response by turning off T cell proliferation and activation. Blockade of another checkpoint inhibitor, PD-1, or its ligand expressed on tumors called PD-L1, demonstrated higher response rates across multiple tumor indications with an improved safety profile. Interestingly, co-blockade of CTLA-4 and PD-1 has led to enhanced clinical benefit – with both greater response rates and durability – which has led to a new wave in combination immunotherapy, targeting next-generation checkpoint inhibitors as well as novel nodes of the suppressive tumor microenvironment.

Next-generation checkpoint inhibitors including TIM-3 and LAG-3 have broad expression profiles, and preclinical research reveals novel and critical mechanisms of action for these pathways. Translational data from clinical trials also informs understanding of novel mechanisms. Further next generation targets in development, including combinations of immunotherapy with standard of care chemotherapy and targeted therapy, and novel targets of suppressive molecules/pathways in the tumor microenvironment, will expand the repertoire of key immuno-modulatory agents to harness the anti-tumor immune response.

**Catherine Sabatos-Peyton** served as Director of Immunology at a biotech startup (CoStim Pharmaceuticals) developing therapeutic antibodies against checkpoint proteins for cancer treatment. CoStim was acquired by Novartis in February 2014, and Catherine has continued there, now as a Director in Exploratory Immuno-oncology, bringing cancer therapeutic treatments forward to the clinic. Her group focuses on preclinical and translational research, driving to understand the mechanism of action of current therapeutics while also working to establish novel therapies to overcome the suppressive tumor microenvironment.

## Lunch Break and General Assembly

Monday 1 July 2019 • 12:30 PM - 2:00 PM

Location: Salons 1-3

Enjoy a complimentary lunch, a time of conversation and networking with your colleagues, and hear from the IPA leadership.

THANK YOU TO OUR LUNCH SPONSORS:



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## SPECIAL EVENTS

### Tuesday Plenary Session

Tuesday 2 July 2019 • 9:00 AM - 10:30 AM

Location: Salon 4

9:00 AM - 10:00 AM:

#### PHOTOCHEMISTRY AND THE ORIGIN OF LIFE



##### Jack W. Szostak, Ph.D.

Professor of Chemistry and Chemical Biology,  
Professor of Genetics  
Howard Hughes Medical Institute Investigator,  
Alexander Rich Distinguished Investigator  
Massachusetts General Hospital,  
Harvard Medical School (USA)

To understand the origin of life on Earth, and to evaluate the potential for life on exoplanets, we must understand the pathways that lead from chemistry to biology. Recent experiments suggest that a chemically rich environment that provides the building blocks of membranes, nucleic acids and peptides, along with sources of chemical energy, could result in the emergence of replicating, evolving cells. Diverse photochemical processes are thought to have been important for the origin of life, from photochemical steps in prebiotic synthetic pathways, to the generation of useful forms of chemical energy, to the selection of the canonical nucleotides based on their photostability. I will discuss the many ways in which UV light may have influenced the origin of life.

**Jack W. Szostak** is a Professor of Chemistry and Chemical Biology at Harvard University, a Howard Hughes Medical Institute Investigator, and the Alex Rich Distinguished Investigator at Massachusetts General Hospital. Dr. Szostak's research on telomeres, the DNA at the ends of chromosomes, contributed to our current understanding of cancer and aging, and was recognized by the 2009 Nobel Prize in Physiology or Medicine. Dr. Szostak's current research interests are in the laboratory synthesis of artificial cells and the origin of life on the early Earth.

10:00 AM - 10:30 AM:

#### ANTIMICROBIAL PDT: PROGRESS AND CHALLENGES AT THE IPA 2019 MEETING?



##### Nicolas G. Loebel

Ondine Biomedical, Inc. (USA)

### Gala Dinner and Awards Ceremony

Tuesday 2 July 2019 • 7:00 PM - 10:00 PM

Location: Longwood State Room

Enjoy an evening of networking, delicious Boston cuisine, and at the same time congratulate and celebrate with colleagues who are receiving awards. The dinner ticket must be purchased for \$100 as you register for the conference. Guest tickets may also be purchased for accompanying persons by anyone who registers for the conference and is also purchasing a dinner ticket.

Directions to the Longwood venue will be available at the meeting.

THANK YOU TO OUR SPONSORS:



### Wednesday Plenary Session

Wednesday 3 July 2019 • 9:00 AM - 10:00 AM

Location: Salon 4

#### MACROMOLECULAR TARGETING OF CANCER: CHALLENGES IN SCIENCE AND TRANSLATION



##### Daryl Drummond, Ph.D.

Head of Research, Senior Vice President, Merrimack Pharmaceuticals, Inc. (USA)

The focus of his research is in developing targeted nanotherapeutics for treating a wide range of solid tumors. He successfully developed novel platform technologies for targeting lipidic nanocarriers such as liposomes using a range of novel ligands, but most notably Fab' or scFv antibody fragments. He has also developed platform technologies for dramatically improving the in vivo drug retention of difficult to stabilize small molecule drugs, and for systemic delivery of nucleic acids. Three of their nanotherapeutics have been studied in clinical trials, including an ErbB2-targeted liposomal doxorubicin which was evaluated in a Phase II study in ErbB2-overexpressing breast cancers and a nanoliposomal formulation of irinotecan which was approved by both the EMA and FDA following promising results in a Phase III trial in gemcitabine-refractory pancreatic cancer. Onivyde is currently being studied in front line pancreatic cancer in combination with oxaliplatin and 5FU and in second line small cell lung cancer. A fourth antibody targeted liposomal drug (MM-310) is currently being evaluated in a Phase I study in multiple EphA2 overexpressing solid tumors.

**Daryl Drummond** currently serves as the Head of Research and Senior Vice President of Discovery for Merrimack Pharmaceuticals, where he oversees the discovery efforts for Merrimack's Nanotherapeutics and Biologics-based therapeutics. Dr. Drummond received a Ph.D. degree in Biochemistry from Indiana University in 1997, with an emphasis on membrane biochemistry and biophysics, and later did a postdoc under the renowned father of lipid-based drug delivery systems, Demetrios Papahadjopoulos at UCSF and California Pacific Medical Ctr. Dr. Drummond was one of two principle inventors for many of Merrimack's nanotechnology-based drugs and platform technologies, most notably Onivyde, a highly stabilized liposomal formulation of irinotecan. He joined Merrimack in October of 2009 following the merger of Merrimack with Hermes Biosciences. Overall, Dr. Drummond has more than 25 years of experience in the research and development of advanced drug delivery systems, including four unique drugs that have been tested in various clinical trials, >40 issued patents or patent applications, and more than 65 peer reviewed publications focused on lipid-based nanotherapeutics.

# ROOM LOCATIONS

Room: Concept		
Saturday 29 June	2:00 PM to 3:45 PM	Session 1: <b>PDT in Food Safety and Solid Surface Sterilizations</b>
Sunday 30 June	11:00 AM to 12:40 PM	Session 6: <b>Photosensitizing Systems</b>
	2:30 PM to 4:15 PM	Session 8: <b>PDT in Urology and Gynecology</b>
Monday 1 July	10:30 AM to 12:30 PM	Poster: <b>SLAM Talks</b>
	2:00 PM to 3:45 PM	Session 14: <b>PCI and Other Drug Delivery Methods</b>
	4:30 PM to 6:30 PM	Session 17: <b>Global Funding Workshop</b>
Room: Salon 3		
Tuesday 2 July	11:00 AM to 1:00 PM	Session 18: <b>PDT in Head and Neck Cancer</b>
Wednesday 3 July	10:30 AM to 12:30 PM	Session 21: <b>Macromolecular Targeted PDT: Is it Worth the Trouble or is it Too Early to Say?</b>
	2:00 PM to 3:45 PM	Session 24: <b>PDT in Global Health: Global Access to Healthcare Challenges and Opportunities</b>
	3:45 PM to 4:00 PM	<b>Discussion</b>
	4:30 PM to 6:15 PM	Session 28: <b>From Small Animals to Spheroids: Modelling Mechanisms of PDT Effect on Tissue</b>
Thursday 4 July	8:30 AM to 12:30 PM	<b>Roadmap to Impact: Challenges in Translating PDT Technologies and a Way Forward</b>
Room: Salon 4		
Friday 28 June	10:00 AM to 4:00 PM	<b>PDT School: Basic Sciences</b>
Saturday 29 June	8:30 AM to 12:30 PM	<b>Clinical Workshop: Neurosurgery</b>
	2:00 PM to 4:00 PM	Session 3: <b>Nanotechnology for Photodiagnosis</b>
Sunday 30 June	8:30 to 10:30 AM	<b>Tom Dougherty Remembrance</b>
	11:00 AM to 1:00 PM	Session 5: <b>Nanotechnology for Photodynamic Therapy</b>
	2:30 PM to 4:30 PM	Session 9: <b>Intracellular Mechanisms of PDT in Cancer</b>
Monday 1 July	8:30 AM to 10:00 AM	<b>Monday Plenary Session</b>
	10:30 AM to 12:30 PM	Session 11: <b>Photodynamic Immune Activation and Immunotherapy</b>
	2:00 PM to 4:00 PM	Session 13: <b>Vascular Targeted PDT</b>
	4:30 PM to 6:30 PM	Session 16: <b>Does PDT have a Role in Vaccine Development?</b>
Tuesday 2 July	9:00 AM to 10:30 AM	<b>Tuesday Plenary Session</b>
	11:00 AM to 1:00 PM	Session 19: <b>Photoactivation in Drug Delivery</b>
Wednesday 3 July	9:00 AM to 10:00 AM	<b>Wednesday Plenary Session</b>
	10:30 AM to 12:30 PM	Session 22: <b>Image-Guided Optimization and Prediction for Effective Photodynamic Therapy</b>
	2:00 PM to 4:00 PM	Session 25: <b>Low-Cost Systems and Techniques in PDT Light Delivery, Dosimetry, and Treatment Guidance</b>
	4:30 PM to 6:30 PM	Session 29: <b>Photodynamic Diagnosis and Therapy for Gastrointestinal Neoplastic Lesions</b>
Rooms: Salons 1-2		
Tuesday 2 July	11:00 AM to 1:00 PM	Session 20: <b>Applied and Mechanistic Issues of Anti-Microbial PDT</b>
Wednesday 3 July	10:30 AM to 12:30 PM	Session 23: <b>Dosimetry and Interstitial PDT</b>
	2:00 PM to 4:00 PM	Session 26: <b>Photodynamics and Ionizing Radiation: Friends or Foes?</b>
	4:30 PM to 6:15 PM	Session 27: <b>Applications of Novel PDT Light Sources</b>
Rooms: Salons 1-3		
Saturday 29 June	4:30 PM to 6:30 PM	<b>Poster Session</b>
Sunday 30 June	4:30 PM to 6:30 PM	<b>Poster Session</b>
Rooms: Salons 5-7		
Saturday 29 June	2:00 PM to 4:05 PM	Session 2: <b>PDT in Molecular and Personalized Medicine</b>
Sunday 30 June	11:00 AM to 1:00 PM	Session 4: <b>PDT in the Brain</b>
	4:30 PM to 4:30 PM	Session 7: <b>Capabilities of 5-ALA</b>
Monday 1 July	10:30 AM to 12:30 PM	Session 10: <b>PDT for Thoracic Malignant Tumors</b>
	2:00 PM to 4:00 PM	Session 12: <b>Clinical and Immunological Aspects of PDT in Dermatology</b>
	4:30 PM to 6:15 PM	Session 15: <b>Photoactivated Chemotherapy: an Oxygen-Independent Form of Anticancer Phototherapy</b>

# 17th International Photodynamic Association World Congress

*Conference Chair:* **Tayyaba Hasan**, Wellman Ctr. for Photomedicine (USA), Harvard Medical School (USA), Massachusetts General Hospital (USA)

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## FRIDAY 28 JUNE

### PDT SCHOOL: BASIC SCIENCES

ROOM: SALON 4 ..... 10:00 AM TO 4:00 PM

PDT School will provide a comprehensive review of the basic principles of PDT, as well as highlight the current state of PDT research and clinical application. Topics to be covered include photosensitizers and photochemistry, photophysics and dosimetry, antimicrobial PDT, biological aspects of PDT, and clinical translation of PDT.

- 10:00 am: **Photosensitizers and photochemistry**, Luis G. Arnaut, Univ. de Coimbra (Portugal) .....[11070-701]
- 11:10 am: **Photophysics and dosimetry**, Lothar D. Lilge, Princess Margaret Cancer Ctr. (Canada) .....[11070-702]
- Lunch Break ..... Fri 11:40 am to 1:00 pm
- 1:00 pm: **Antimicrobial PDT**, Tim Maisch, Universitätsklinikum Regensburg (Germany) .....[11070-703]
- 2:10 pm: **Photodynamic therapy: biological considerations**, Theresa M. Busch, Univ. of Pennsylvania (USA) .....[11070-704]
- 3:20 pm: **Current clinical translation of PDT**, Lothar D. Lilge, Princess Margaret Cancer Ctr. (Canada) .....[11070-705]

## SATURDAY 29 JUNE

### CLINICAL WORKSHOP: NEUROSURGERY

ROOM: SALON 4 ..... SAT 8:30 AM TO 12:30 PM

Intraoperative optical imaging now plays an important role in the surgical management of brain tumors for direct visualization of tumor tissue and more complete tumor resections. The most important recent event in surgical neuro-oncology has been the US FDA approval of 5-ALA (Gleolanã) for fluorescence-guided surgery (FGS) of suspected high-grade gliomas. Visualization of the 5-ALA metabolite, protoporphyrin IX, permits delineation of the tumor during surgery to aid the neurosurgeon in real-time. As a complement to FGS, photodynamic therapy (PDT) has now become an important potential therapeutic approach for brain tumors. PDT is currently being studied at multiple sites globally both intra-operatively and for inoperable brain tumors. This workshop examines the past, present, and future of FGS and explores the origins and future potential applications of PDT.

- 8:30 am: **Fluorescence-guided neurosurgery and PDT: introduction**, Constantinos Hadjipanayis, Icahn School of Medicine at Mount Sinai (USA) .....[11070-706]
- 8:50 am: **Fluorescence-guided brain tumor neurosurgery**, Constantinos Hadjipanayis, Icahn School of Medicine at Mount Sinai (USA) .....[11070-707]
- 9:10 am: **Future of fluorescence-guided neurosurgery and PDT**, Walter Stummer, Universitätsklinikum Münster (Germany) .....[11070-708]
- 9:40 am: **Fluorescence-guided surgery of meningiomas**, Pablo A. Valdes Quevedo, Harvard Medical School (USA) .....[11070-709]
- Coffee Break ..... Sat 10:00 am to 10:30 am
- 10:30 am: **New applications of CNS tumor fluorescence-guided surgery**, Georg Widhalm, Medizinische Univ. Wien (Austria) .....[11070-710]
- 10:50 am: **Clinical practice of brain tumor photodynamic therapy**, Jiro Akimoto, Tokyo Medical Univ. Cancer Ctr. (Japan) .....[11070-711]
- 11:10 am: **Intraoperative photodynamic therapy of glioblastoma: the Japanese experience**, Yoshihiro Muragaki, Tokyo Women’s Medical Univ. (Japan) .....[11070-712]
- 11:30 am: **Intraoperative photodynamic therapy of glioblastoma: the French experience**, Nicolas Reyns, Ctr. Hospitalier Regional Univ. de Lille (France) .....[11070-713]

**PANEL DISCUSSION ..... 11:50 AM TO 12:30 PM**

Lunch Break ..... Sat 12:30 pm to 2:00 pm



## SESSION 1

ROOM: CONCEPT ..... SAT 2:00 PM TO 3:45 PM

### PDT in Food Safety and Solid Surface Sterilizations

Session Chairs: **Alessandra Nara de Souza Rastelli**, Univ. de São Paulo (Brazil); **Živilė Lukšienė**, Vilnius Univ. (Lithuania)

2:00 pm: **Decolonization of pathogens on living surfaces by antimicrobial photodynamic action is possible?** (*Invited Paper*), Tim Maisch, Universitätsklinikum Regensburg (Germany) ..... [11070-1]

2:20 pm: **Food safety: new challenge for PDT and photo reaction in general** (*Invited Paper*), Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) ..... [11070-2]

2:40 pm: **Chlorophyllin-based photosensitization for microbial control of fresh produce** (*Invited Paper*), Zivile Luksiene, Vilnius Univ. (Lithuania) ..... [11070-3]

3:00 pm: **Antimicrobial photodynamic therapy mediated by chlorin e-6 photosensitizer against Streptococcus mutans biofilm**, Alessandra Nara de Souza Rastelli, Univ. de São Paulo (Brazil); Adilson César Abreu Bernardi, Ctr. Univ. Araraquara (Brazil); Camila Rodero, Univ. de São Paulo (Brazil); Marlus Chorilli, Univ. Estadual Paulista "Júlio de Mesquita Filho" (Brazil); Kléber Thiago de Oliveira, Univ. Federal de São Carlos (Brazil); Dongmei Deng, Academisch Ctr. Tandheelkunde Amsterdam (Netherlands); Vanderlei S. Bagnato, Univ. de São Paulo (Brazil) ..... [11070-4]

3:15 pm: **Curcumin-based photosensitization: a novel and green technology to decontaminate food systems**, Yasmina Sultanbawa, The Univ. of Queensland (Australia) ..... [11070-6]

3:30 pm: **The potential of phytotherapeutic compounds available on the market as a new photosensitizers for dental antimicrobial PDT: a photochemical and photobiological in vitro study**, Aguinaldo Silva Garcez, Elisa F. Nardini, Rielson Cardoso, Faculdade São Leopoldo Mandic (Brazil); Martha S. Ribeiro, Instituto de Pesquisas Energéticas e Nucleares (Brazil) ..... [11070-7]

Coffee Break ..... Sat 3:45 pm to 4:30 pm

## SESSION 2

ROOM: SALONS 5-7 ..... SAT 2:00 PM TO 4:05 PM

### PDT in Molecular and Personalized Medicine

Session Chairs: **Harubumi Kato**, Tokyo Medical Univ. Hospital (Japan); **Bin Chen**, Univ. of the Sciences in Philadelphia (USA)

2:00 pm: **Towards a personalized aminolevulinic acid (ALA)-based therapy** (*Invited Paper*), Bin Chen, Univ. of the Sciences in Philadelphia (USA) ..... [11070-8]

2:20 pm: **Phase I /II study of photodynamic therapy using talaporfin sodium and diode laser (L-PDT) for cervical intraepithelial neoplasia** (*Invited Paper*), Masaru Sakamoto, Shingo Horikawa, Yuki Koike, Naomi Harano, Kayo Suzuki, Ryoko Koike, Yasuko Koyamatsu, Kenji Umayahara, Tadao Tanaka, Sasaki Foundation Kyoundo Hospital (Japan); Aikou Okamoto, Jikei Univ. School of Medicine (Japan) ..... [11070-9]

2:40 pm: **Enhancement of immunotoxin effect on tumor with photodynamic therapy** (*Invited Paper*), Takao Hamakubo, Nippon Medical School (Japan) ..... [11070-10]

3:00 pm: **Management of multiple primary lung cancer in patients with centrally located early lung cancer lesions**, Takumi Sonokawa, Takuma Matsui, Kyoshiro Takegahara, Tatsuya Inoue, Jitsuo Usuda, Nippon Medical School (Japan) ..... [11070-11]

3:15 pm: **Porphyryn-lipid nanovesicles overcome ABC transporter-mediated multidrug resistance**, Yan Baglo, Barry J. Liang, Huang-Chiao Huang, Univ. of Maryland, College Park (USA) ..... [11070-12]

3:30 pm: **Application of surgical curettage combined with photodynamic in refractory plantar wart**, Kai Huang, Shuang Zhao, Jinmao Li, Mingliang Chen, Fangfang Li, Juan Su, Wei Shi, Xiang Chen, Xiangya Hospital Central South Univ. (China) ..... [11070-14]

3:45 pm: **Salvage photodynamic therapy using new generation photosensitizer for local failure after chemoradiotherapy for esophageal cancer** (*Invited Paper*), Tomonori Yano, National Cancer Ctr. Hospital East (Japan); Manabu Muto, Kyoto Univ. Graduate School of Medicine (Japan) ..... [11070-416]

Coffee Break ..... Sat 4:05 pm to 4:30 pm

## SESSION 3

ROOM: SALON 4 ..... SAT 2:00 PM TO 4:00 PM

### Nanotechnology for Photodiagnosis

Session Chairs: **Kanyi Pu**, Nanyang Technological Univ. (Singapore); **Gang Zheng**, Univ. Health Network (Canada)

THIS SESSION IS SPONSORED IN PART BY:



2:00 pm: **Molecular afterglow imaging for cancer detection, drug screening, and imaging guided therapy** (*Invited Paper*), Kanyi Pu, Nanyang Technological Univ. (Singapore) ..... [11070-85]

2:20 pm: **From molecule to mammal: inventing luminescence nanoparticles for cancer therapy and visual enhancement** (*Invited Paper*), Gang Han, Univ. of Massachusetts Medical School (USA) ..... [11070-86]

2:40 pm: **Advanced in vivo fluorescence imaging: seeing is believing** (*Invited Paper*), Qiangbin Wang, Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO) (China) ..... [11070-87]

3:00 pm: **Biodegradable polymeric nanoparticles enhanced the effectiveness of topical PDT for squamous cell carcinoma**, Lei Shi, Xiuli Wang, Shanghai Skin Disease Hospital (China) ..... [11070-88]

3:15 pm: **Dual function antibody conjugates (DFACs) for drug quantification and therapy**, Mohammad A. Saad, Marvin Xavierselvan, Massachusetts General Hospital (USA); Hamza A. Sharif, Northeastern Univ. (USA) and Massachusetts General Hospital (USA); Srivalleesha Mallidi, Massachusetts General Hospital (USA) and Tufts Univ. (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Harvard Univ. (USA) and Massachusetts Institute of Technology (USA) [11070-89]

3:30 pm: **Exploiting cellular delivery of conjugated polymer nanoparticles for improved photodynamic therapy in a 3D glioblastoma model**, Luis Exequiel Ibarra, Lucia Beaugé, Gabriela Porcal, Carlos Chesta, Viviana Alicia Rivarola, Rodrigo Palacios, Univ. Nacional de Río Cuarto (Argentina) ..... [11070-90]

3:45 pm: **Targeting of epidermal growth factor receptor (EGFR)-positive pancreatic cancer cell lines with cetuximab-conjugated near-infrared silver sulphide quantum dots**, Peter L. Labib, Elnaz Yaghini, Univ. College London (United Kingdom); Mahshid Hashemkhani, Koç Univ. (Turkey); Brian R. Davidson, Alexander J. MacRobert, Marilena Loizidou, Univ. College London (United Kingdom); Havva Y. Acar, Koç Univ. (Turkey); Stephen P. Pereira, Univ. College London (United Kingdom) ..... [11070-91]

Coffee Break ..... Sat 4:00 pm to 4:30 pm

## POSTERS-SATURDAY

ROOM: SALONS 1-3 ..... SAT 4:30 PM TO 6:30 PM

Conference attendees are invited to attend the poster session on Saturday. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

POSTER SETUP ..... SATURDAY 11:00 AM TO 3:00 PM

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PDTPosterGuidelines>.

THANK YOU TO OUR POSTER SESSION AND AWARDS SPONSORS:



**Photodynamic priming and VDR activation modulate tumor-stroma interactions and permeability for durable control and enhanced treatment tolerability**, Michael Pigula, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Sriram Anbil, The Univ. of Texas at San Antonio (USA); Huang-Chiao Huang, Yan Baglo, Univ. of Maryland, College Park (USA); Mans Broekgaarden, Univ. Grenoble Alpes (France); Diane Simeone, New York Univ. School of Medicine (USA); Gian Paolo Dotto, Massachusetts General Hospital (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Harvard Medical School (USA) ..... [11070-193]

# CONFERENCE 11070

**DOSINDYGO: DOSe finding for INtraoperative photoDYNAMIC therapy of GliOblastoma.** Clément Dupont, Fabienne Lecomte, Pascal Deleporte, Gregory Baert, Serge R. Mordon, Nicolas Reyns, Maximilien Vermandel, OncoThAI INSERM (France) .....[11070-194]

**Efficacy of photodynamic therapy using talaporfin sodium for glioblastoma stem cell.** Megumi Ichikawa, Akimoto Jiro, Michihiro Kohno, Tokyo Medical Univ. (Japan); Srivalleesha Mallidi, Tufts Univ. (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Hiroaki Wakimoto, Massachusetts General Hospital (USA) and Harvard Medical School (USA) .....[11070-195]

**Magnetic resonance imaging based brain distribution of locally applicable PDT nanogel.** Jeena K., Sajesh K.M., Amrita Institute of Medical Science (India); Pankaj Sharma, LeadInvent Pharma Inc. (India); Giridharan L.M., Ranjith Ramachandran, G. Siddaramana Goud, Arsha Lal, Amrita Institute of Medical Science (India); Pradip Bhatnagar, LeadInvent Pharma Inc. (India); Shantikumar Nair, Manzoor Koyakutty, Amrita Institute of Medical Science (India) .....[11070-196]

**Cancer stem cells and 5-aminolevulinic acid-PDT resistance.** Chantel Rice, Vipin Shankar Chelakkot, Jayoti Som, Kensuke Hirasawa, Memorial Univ. of Newfoundland (Canada) .....[11070-197]

**Role of photodynamic therapy using talaporfin sodium and a semiconductor laser in patients with newly diagnosed glioblastoma.** Masayuki Nitta, Tokyo Women's Medical Univ. (Japan) .....[11070-198]

**Regulatory mechanism of acquired resistance against Talaporfin sodium-mediated photodynamic therapy-induced glioblastoma cell death.** Tatsuya Kobayashi, National Defense Medical College (Japan) and National Cancer Ctr. Research Institute (Japan) and Tokyo Women's Medical Univ. (Japan); Masayuki Nitta, Tokyo Women's Medical Univ. (Japan); Kentaro Mori, National Defense Medical College (Japan); Yoshihiro Muragaki, Takakazu Kawamata, Tokyo Women's Medical Univ. (Japan); Koichi Ichimura, National Cancer Ctr. Research Institute (Japan); Arata Tomiyama, National Cancer Ctr. Research Institute (Japan) and National Defense Medical College (Japan) .....[11070-199]

**Efficacy and safety of photodynamic therapy using talaporfin sodium and a semiconductor laser for patients with malignant meningeal tumors.** Jiro Akimoto, Tokyo Medical Univ. (Japan) and Kohsei Chuo General Hospital (Japan); Megumi Ichikawa, Tokyo Medical Univ. (Japan); Rei Haraoka, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA); Shinjiro Fukami, Michihiro Kohno, Tokyo Medical Univ. (Japan) .....[11070-200]

**Possible approaches to fluorescence diagnosis and photodynamic therapy for deep-seated tumors.** Victor V. Loschenov, Tatiana A. Savelieva, Pavel V. Grachev, Kirill G. Linkov, Yuliya S. Maklygina, Igor D. Romanishkin, Anastasia Ryabova, Daniil M. Kustov, A.M. Prokhorov General Physics Institute of the RAS (Russian Federation); Sergey A. Goryajnov, Alexander A. Potapov, N.N. Burdenko Neurosurgery Institute (Russian Federation) .....[11070-201]

**Analysis of the effect of photodynamic therapy with Fotoanticine on gliosarcoma cells.** Rainara M. S. Almeida, Gabrielle S. Vitória, Leticia C. Fontana, André H. C. Pereira, Juliana G. Pinto, Juliana Ferreira-Strixino, Univ. do Vale do Paraíba (Brazil) .....[11070-202]

**ALA interstitial PDT (complicated and invasive) vs ALA sonodynamic therapy (SDT) (simple and noninvasive) for recurrent glioblastoma multiforme (RGBM): a comparison.** Stuart Marcus, SonalaSense, Inc. (USA) .....[11070-203]

**Determining an in vitro dose-response relationship of photodynamic therapy with first and second-generation photosensitisers for high grade tumours.** Kirit Singh, NHS Tayside (United Kingdom); Daniel Baptista-Hon, Molly Hewitt, Omar Kouli, Univ. of Dundee (United Kingdom); Kismet Hossain-Ibrahim, Ninewells Hospital and Medical School (United Kingdom); Tim Hales, Univ. of Dundee (United Kingdom) .....[11070-204]

**A thin, flexible and transparent cranial window facilitates long-term and longitudinal studies on fluorescence imaging and photodynamic therapy.** Rei Haraoka, Zhiming Mai, Hiroaki Wakimoto, Srivalleesha Mallidi, Tayyaba Hasan, Massachusetts General Hospital (USA) .....[11070-205]

**A novel theranostic tool for pediatric malignant tumor using ICG lactosome and near-infrared laser.** Masataka Takahashi, The Univ. of Tokyo Hospital (Japan); Yuji Morimoto, National Defense Medical College (Japan); Akinari Hinoki, Nagoya City Univ. Graduate School of Medical Sciences and Medical School (Japan); Eiichi Ozeki, Isao Hara, Shimadzu Corp. (Japan); Jun Fujishiro, The Univ. of Tokyo Hospital (Japan); Shinsuke Nomura, National Defense Medical College (Japan); Ayano Sato, Okayama Univ. (Japan); Eiji Takayama, Asahi Univ. (Japan); Hiroo Uchida, Nagoya City Univ. Graduate School of Medical Sciences and Medical School (Japan) .....[11070-206]

**Handheld spectroscopic probe for ex-vivo analysis of quantitative 5-ALA fluorescence in diffusely infiltrating gliomas: correlation with histopathology, proliferation and microvascular density.** Barbara Kiesel, Mauricio Martínez-Moreno, Adelheid Wöhrer, Mario Mischkulnig, Julia Fuertner, Gerald Timelthaler, Walter Berger, Engelbert Knosp, Johannes A. Hainfellner, Stefan Wolfsberger, Georg Widhalm, Medizinische Univ. Wien (Austria) .....[11070-207]

**Novel strategy to increase specificity of ALA-induced PpIX accumulation through inhibition of transporters involved in ALA uptake.** Hung Wei Lai, Ryota Sasaki, Shiro Usuki, Tokyo Institute of Technology (Japan); Kiwamu Takahashi, Motowo Nakajima, Tohru Tanaka, SBI Pharmaceuticals Co., Ltd. (Japan); Shun-ichiro Ogura, Tokyo Institute of Technology (Japan) .....[11070-208]

**Glioma tissue discrimination based on fluorescence lifetime imaging of protoporphyrin IX using a modulated time of flight camera.** Mikael T. Erkkilä, Medizinische Univ. Wien (Austria); Nancy Hecker-Denschlag, Carl Zeiss Meditec AG (Germany); Angelika Unterhuber, Rainer A. Leitgeb, Thomas Roetzer, Johanna Gesperger, Medizinische Univ. Wien (Austria); Christoph Hauger, Carl Zeiss Meditec AG (Germany); Wolfgang Drexler, Marco Andreana, Georg Widhalm, Medizinische Univ. Wien (Austria) .....[11070-209]

**Effect of 5-aminolevulinic acid on the haem biosynthesis pathway in pancreatic cancer and pancreatic ductal epithelial cell lines.** Peter L. Labib, Walid Al-Akkad, Brian R. Davidson, Alexander J. MacRobert, Stephen P. Pereira, Univ. College London (United Kingdom) .....[11070-210]

**5-aminolaevulinic acid-based photodynamic therapy inhibits ultraviolet B-induced skin photodamage.** Dan Luo, Southern Medical Univ. (China) .....[11070-211]

**Topical 5-aminolaevulinic acid photodynamic therapy for actinic keratoses and Bowen's disease in a patient with epidermodysplasia verruciformis.** Guolong Zhang, Linglin Zhang, Shanghai Skin Diseases Hospital (China); Peiru Wang, Xiuli Wang, Shanghai Skin Disease Hospital (China) .....[11070-212]

**Comparison of the application of aminolevulinic acid and Fotoanticine in photodynamic therapy in gliosarcoma cell line.** Leticia C. Fontana, Juliana G. Pinto, André Henrique C. Pereira, Cristina P. Soares, Juliana Ferreira-Strixino, Univ. do Vale do Paraíba (Brazil) .....[11070-213]

**Cancer-associated fibroblasts contribute to ALA-PDT on cutaneous squamous cell carcinoma treatment.** Shanshan Li, HuaDong Hospital (China); Peiru Wang, Guolong Zhang, Jie Ji, Shanghai Skin Disease Hospital (China); Ting Lv, HuaDong Hospital (China); Xiuli Wang, Shanghai Skin Disease Hospital (China); Hongwei Wang, Huadong Hospital (China) and Fudan Univ. (China) .....[11070-214]

**5-aminolaevulinic acid-based photodynamic therapy pretreatment inhibits ultraviolet B-induced skin photodamage.** Luo Dan, Nanjing Medical Univ. (China) .....[11070-215]

**Investigation of protoporphyrin IX production induced by aminolevulinic acid combined with thermogenic and/or vasodilator substances.** Mirian D. Stringasci, José Dirceu Vollet-Filho, Lilian T. Moriyama, Cristina Kurachi, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) .....[11070-216]

**Experimental findings utilising a new iron chelating ALA prodrug to enhance protoporphyrin IX-induced photodynamic therapy.** Alison Curnow, Univ. of Exeter Medical School (United Kingdom) .....[11070-217]

**Mechanism of tumor-specific porphyrin accumulation after administration of ALA.** Shun-ichiro Ogura, Hung Wei Lai, Taku Nakayama, Yuichiro Hagiya, Tokyo Institute of Technology (Japan); Kiwamu Takahashi, Motowo Nakajima, Tohru Tanaka, SBI Pharmaceuticals Co., Ltd. (Japan) .....[11070-218]

**Evaluation of porphyrin metabolism in cancer cells for the therapeutic enhancement of aminolevulinic acid-mediated protoporphyrin IX.** Matthew S. Mansi, Richard Howley, Bin Chen, Univ. of the Sciences in Philadelphia (USA) .....[11070-219]

**Application of 5-ALA in the resection of spinal ependymomas: a series of 30 cases.** Mario Mischkulnig, Matthias Millesi, Barbara Kiesel, Petra Mercea, Adelheid Wöhrer, Vanessa Marzanec, Stefan Wolfsberger, Engelbert Knosp, Georg Widhalm, Klaus Novak, Medizinische Univ. Wien (Austria) .....[11070-220]

**Clinical application of optical clearing agent combined with PDT for BCC treatment.** Layla Pires, Univ. Health Network (Canada); Michelle B. Requena, Instituto de Física de São Carlos (Brazil); Anderson Z. Freitas, Instituto de Pesquisas Energéticas e Nucleares (Brazil); Vanderlei S. Bagnato, Cristina Kurachi, Instituto de Física de São Carlos (Brazil); Brian C. Wilson, Univ. Health Network (Canada); Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil) .....[11070-221]

**Detailed analysis of 5-ALA fluorescence in various brain metastases at two specialized centers: experience in 157 cases.** Petra Mercea, Medizinische Univ. Wien (Austria); Franz Marhold, Florian Scheichel, Karl Landsteiner Univ. of Health Sciences (Austria); Barbara Kiesel, Mario Mischkulnig, Anna Berghoff, Adelheid Wöhrer, Matthias Preusser, Engelbert Knosp, Medizinische Univ. Wien (Austria); Karl Ungersboeck, Karl Landsteiner Univ. of Health Sciences (Austria); Georg Widhalm, Medizinische Univ. Wien (Austria) .....[11070-222]

**ALA-PDT inducing pyroptosis of sebocytes via activation of NLRP3 inflammasome pathway.** Leihong (Flora) Xiang, Huashan Hospital, Fudan Univ. (China) .....[11070-224]

**Enhancement of 5-aminolevulinic acid (5ALA) efficiency by conjugation to quantum dot nanoparticles.** Imad Naasani, Nanoco Technologies Ltd. (United Kingdom) .....[11070-225]

**Long-term effectiveness and HPV clearance of low and high-grade cervical intraepithelial lesions treated with photodynamic therapy**, Natalia M. Inada, Cynthia A. de Castro, Hilde H. Buzzá, Instituto de Física de São Carlos (Brazil); Wellington Lombardi, Woman Health Ambulatory (Brazil); Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) . . . . .[11070-226]

**Superficial resection combined with photodynamic therapy for treatment of refractory vulvar intraepithelial neoplasia**, Dihui Liu, Shuang Zhao, Mingliang Chen, Xiang Chen, Juan Su, Jinmao Li, Kai Huang, Fangfang Li, Lixia Lu, Xiangya Hospital Central South Univ. (China) . . . . .[11070-227]

**Successful management of giant condyloma acuminatum of the vulva by combination treatment of surgical removal and photodynamic therapy: two case reports**, Yi Zhan, Xiufang Chen, Ying Zhou, Rong Xiao, The Second Xiangya Hospital of Central South Univ. (China) . . . . .[11070-228]

**Topic corticosteroid and photodynamic therapy impact on vulvar lichen sclerosus: clinical and epithelial morphology analysis**, Renata A. Belotto, Univ. Nove de Julho (Brazil); Luciana Corrêa, Univ. de São Paulo (Brazil); Waleska K. Martins, Univ. Anhanguera de São Paulo (Brazil); Maria C. Chavantes, Univ. Nove de Julho (Brazil) . . . . .[11070-229]

**PDT in clinical practice: a look at current oncology trials**, Qiuyun Yang, Henan Provincial People's Hospital (China) . . . . .[11070-230]

**Photodynamic therapy inhibit fibroblast growth factor-10 induced keratinocyte differentiation and proliferation through ROS in fibroblast growth factor receptor-2b pathway**, Luo Dan, Jiangsu People's Hospital (China); Yi Fei, Chinese Academy of Medical Sciences (China) . . . . .[11070-231]

**A tumor mitochondria-targeted molecular agent for imaging-guided surgery and overcoming chemoresistance in ovarian cancer**, Yang Liu, Vanderbilt Univ. Institute of Imaging Science (USA) . . . . .[11070-232]

**Investigation of practical use of intraoperative laser marking of small pulmonary lesions**, Kentaro Imai, Tokyo Medical Univ. (Japan) . . . . .[11070-233]

**Autofluorescence bronchoscopy findings for early-stage lung cancer in the central airway during photodynamic therapy**, Tatsuya Inoue, Kyoshiro Takegahara, Takuma Matsui, Mitsuo Matsumoto, Jitsuo Usuda, Nippon Medical School (Japan) . . . . .[11070-234]

**A new treatment for malignant pleural mesothelioma**, Shunsuke Shigefuku, Tokyo Medical Univ. (Japan) . . . . .[11070-235]

**Evaluation of safety, tolerability and efficacy of chlorin e6 (Fotolon) as a photosensitizer for the treatment of NSCLC**, Susan Herkner-Güthaus, Universitätsklinikum Essen (Germany); Dirk F. Hüttenberger, Synverdis GmbH (Germany); Kaid Darwiche, Lutz Freitag, Universitätsklinikum Essen (Germany) . . . . .[11070-236]

**Comparative study of VTP/radiation/cryoablation in a murine breast cancer model**, Kwanghee Kim, Sadna Budhu, Stephen P. La Rosa, Sylvia Jebiwott, Cai Liqun, Memorial Sloan-Kettering Cancer Ctr. (USA); Dina Preise, Weizmann Institute of Science (Israel); Alex Somma, Benjamin Gordon, Memorial Sloan-Kettering Cancer Ctr. (USA); Avigdor Scherz, Weizmann Institute of Science (Israel); Jedd D. Wolchok, Joseph Erinjeri, Taha Merghoub, Memorial Sloan-Kettering Cancer Ctr. (USA); Jonathan A. Coleman, Memorial Sloan Kettering Cancer Ctr. (USA) . . . . .[11070-237]

**Photodynamic therapy as an effective adjuvant after surgical removal of prostate cancer**, Xinning Wang, Ramamurthy Gopalakrishnan, Aditi Shirke, Joey Mangadlao, Ethan Walker, Ziyang Wang, Yu Wang, Lingpeng Shan, Mark Schluchter, James Basilion, Case Western Reserve Univ. (USA) .[11070-238]

**Impact of photodynamic therapy on the regulation of human immune system in the context of hepatocellular carcinoma**, Abhishek Kumar, Olivier Morales, Martha Baydoun, Institut de Biologie de Lille (France); Bertrand Leroux, Institut de Biologie de Lille (France) and INSERM (France); Elise Thécu, OncoThAI INSERM (France); Lynda Aoudjehane, Institute of Cardiometabolism and Nutrition (France); Alexandre Quilbe, Clémentine de Schutter, Institut de Biologie de Lille (France); Céline Frochot, Lab. Réactions et Génie des Procédés (France); Serge R. Mordon, INSERM (France); Emmanuel Boleslawski, Nadira Delhem, Institut de Biologie de Lille (France) . . . . .[11070-239]

**Impact of serum exosomes from multifractionated interstitial ALA-PpIX photodynamic therapy treated glioblastoma-rat model on immune cells**, Olivier Morales, CNRS (France); Mathilde Quidet, Ctr. Hospitalier Regional Univ. de Lille (France); Clément Dupont, OncoThAI INSERM (France); Bertrand Leroux, Univ. de Lille (France) and Institut de Biologie de Lille (France) and Institut Pasteur de Lille (France); Clémentine de Schutter, Institut de Biologie de Lille (France); Nicoals Reyns, Ctr. Hospitalier Regional Univ. de Lille (France) and Univ. Lille (France); Serge R. Mordon, Maximilien Vermandel, Univ. de Lille (France); Nadira Delhem, CNRS (France) . . . . .[11070-240]

**Annihilation of metastatic 4T1 breast tumor micrometastases by photodynamic therapy with gemcitabine**, Lilach Agemy, Weizmann Institute of Science (Israel) . . . . .[11070-241]

**Pressure ulcer therapy by low level laser**, Mohammad Nazrul Islam, Shaheed Suhrawardy Medical College and Hospital (Bangladesh) . . .[11070-242]

**Assessment of the analgesic effect of compound lidocaine cream in patients with port wine stain treated by hemoporfin photodynamic therapy**, Lian Liu, Xian Jiang, Zihui Zhang, West China Hospital (China) . . . . .[11070-243]

**Establishment of a system to measure talaporfin sodium concentrations in the skin after photodynamic therapy**, Sachio Maehara, Tokyo Medical Univ. Hospital (Japan) . . . . .[11070-244]

**Evaluation of effectiveness and long term follow up of a single visit PDT treatment for nodular basal cell carcinoma**, Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil); Natalia M. Inada, Instituto de Física de São Carlos (Brazil); Donald Botelho Veneziano, Hospital Amaral Carvalho (Brazil); Dora Patricia Ramirez Angarita, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) . . . . .[11070-245]

**Actinic keratosis: less pain during PDT treatment of large areas without decreasing efficacy**, Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil); Michelle B. Requena, Instituto de Física de São Carlos (Brazil); Elisangela Ramos Oliveira, Maira Monique da Costa Medero, Hospital Amaral Carvalho (Brazil); Natalia M. Inada, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) .[11070-246]

**The study of systematic nursing care to improve the treatment compliance of patients with condyloma who received photodynamic therapy**, Baoting Zeng, Liangcai Wu, Qun Li, Chaoying Yang, Yanchang Li, Zhixin Zheng, Cuojij Zhou, Haiying Zhan, Sixth Affiliated Hospital of Sun Yat-Sen Univ. (China) . . . . .[11070-247]

**Superficial basal cell carcinoma treatment with a single visit PDT protocol**, Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil); Natalia M. Inada, Dora Patricia Ramirez Angarita, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) . . . . .[11070-248]

**Application of surgery combined with photodynamic therapy in intractable skin tumors**, Shuang Zhao, Kai Huang, Jinmao Li, Mingliang Chen, Lixia Lu, Fangfang Li, Juan Su, Wei Shi, Xiang Chen, Xiangya Hospital Central South Univ. (China) . . . . .[11070-249]

**Clinical study on clinical operation and post-treatment reactions of HMME-PDT in treatment of PWS**, Yunjie Zhang, Yuguang Yang, Meng Qiu, Hui Lin, Xianbiao Zou, First Affiliated Hospital of Chinese PLA General Hospital (China) . . . . .[11070-250]

**Clinical study on hemoporfin PDT for infant facial port-wine stains**, Yunjie Zhang, Lei Li, Hongxia Chen, Xianbiao Zou, First Affiliated Hospital of Chinese PLA General Hospital (China) . . . . .[11070-251]

**Application of photodynamic therapy in some refractory skin diseases**, Qian Zhou, Shuang Zhao, Kai Huang, Juan Su, Jinmao Li, Fangfang Li, Wei Shi, Mingliang Chen, Xiang Chen, Xiangya Hospital Central South Univ. (China) . . . . .[11070-252]

**Photodynamic therapy for hidradenitis suppurativa/acne inversa: case report**, Yunjie Zhang, Xianbiao Zou, First Affiliated Hospital of Chinese PLA General Hospital (China) . . . . .[11070-253]

**5-aminolevulinic acid photodynamic therapy in treatment of condyloma acuminatum in urethral orifice of hemophilia A patient**, Yunjie Zhang, Xianbiao Zou, First Affiliated Hospital of Chinese PLA General Hospital (China) . . . . .[11070-254]

**A three-stage strategy of 5-ALA photodynamic therapy in treating condylomata acuminata**, Xianbiao Zou, Yunjie Zhang, Yuguang Yang, First Affiliated Hospital of Chinese PLA General Hospital (China) . . . . .[11070-255]

**A severe inflammatory acne was successfully cleared by topical photodynamic therapy mediated with 5-aminolevulinic acid in a refractory aplastic anemia female patient: a case report**, Zhou Chen, Jingyi Huang, Fen Peng, Xiaojing Yang, Peking Univ. People's Hospital (China) . . . .[11070-256]

**Evaluation of the efficacy of photodynamic therapy for the treatment of cutaneous horn: report of ten cases**, Ting Lv, HuaDong Hospital (China) . . . . .[11070-257]

**Multiple verruca vulgaris on face successfully treated with ALA-PDT: case report**, Yi Zhan, The Second Xiangya Hospital of Central South Univ. (China); Zhihui Li, Pan Chen, Puyu Zou, Second Xiangya Hospital of Central South Univ. (China); Zhiwei Zhang, Xiangya Hospital Central South Univ. (China); Rong Xiao, Second Xiangya Hospital of Central South Univ. (China) .[11070-258]

**Treatment of vulvar lichen sclerosus with combination of holmium laser and ALA-PDT: case report**, Yajing Cao, Peiru Wang, Xiuli Wang, Shanghai Skin Disease Hospital (China) . . . . .[11070-259]

**Hematoporphyrin mono-methylether photodynamic therapy (HMME-PDT) in treating port-wine stains (PWS) with Chinese patients**, Dan-chen Li, Xiang Nong, Tian-wen Fang, Ting-ting Zhao, First Affiliated Hospital of Kunming Medical Univ. (China) . . . . .[11070-260]

**Successful therapy with 5ALA-photodynamic therapy for Bowen's disease in single lobulated nodule mimicking genital warts**, Qin Yi, West China Hospital (China) . . . . .[11070-261]



# CONFERENCE 11070

**The efficacy of carbon dioxide laser combined with photodynamic therapy for the treatment of condyloma acuminatum in anal tube of patients with HIV.** Zihai Li, The Second Hospital of Nanjing Univ. (China); Yan Lu, The First Affiliated Hospital of Nanjing Medical Univ. (China) . . . . . [11070-262]

**Photodynamic therapy for skin cancers: how to enhance 5-ALA penetration with dissolving microneedles?** Mathilde Champeau, OncoThAI INSERM (France) and CEA-LETI (France); Séverine Vignoud, CEA-LETI (France); Laurent Mortier, Serge R. Mordon, OncoThAI INSERM (France) . . . . . [11070-263]

**Photodynamic therapy of basal cell carcinoma with Levulinol acid application.** Elena Filonenko, Andrey Kaprin, P. A. Herten Moscow Research Oncological Institute (Russian Federation) . . . . . [11070-264]

**Photodynamic therapy as a promising choice for pulsed dye laser-resistant port-wine stains: a retrospective study.** Gang Ma, Shanghai Ninth People's Hospital (China); Yue Han, Pinru Wu, Xiaoxi Lin, Shanghai Ninth People's Hospital (China) . . . . . [11070-265]

**How do modern sunscreens impact effective light dose in daylight photodynamic therapy?** Paul O'Mahoney, Univ. of Dundee (United Kingdom); Marina Khazova, Public Health England (United Kingdom); Sally Ibbotson, Univ. of Dundee (United Kingdom); Ewan Eadie, NHS Tayside (United Kingdom) . . . . . [11070-266]

**Methylene blue-mediated photodynamic therapy on cutaneous leishmaniasis: an in vitro and in vivo study.** Fernanda Viana Cabral, Martha Simões Ribeiro, Univ. de São Paulo (Brazil) . . . . . [11070-267]

**PDT in dermatology: quantification, relevance and comparison of light sources within a few clicks.** Anne-Sophie Vignion-Dewalle, Gregory Baert, Elise Thecua, Fabienne Lecomte, OncoThAI INSERM (France); Claire Vicentini, OncoThAI INSERM (France) and Ctr. Hospitalier Regional Univ. de Lille (France); Laurent Mortier, OncoThAI INSERM (France) and Ctr. Hospitalier Regional Univ. de Lille (France); Serge R. Mordon, OncoThAI INSERM (France) . . . . . [11070-268]

**Stimulation of apoptosis in systematically crossed cancer cell cultures by exudates from real tumors after PDT.** Violeta Purtskhvanidze, Yury Simakov, Dzhivan Rostomyan, Daria Sboeva, MCHT LaserVita (Russian Federation) . . . . . [11070-269]

**Immunohistochemical analysis of Ki-67, EGFR, P-EGFR, CD31 and CD44 in early squamous cell carcinoma of the oral cavity treated with photodynamic therapy.** Kafil Akhtar, M. A. Bilal Hussain, Jawaharlal Nehru Medical College (India); Amjad P. Khan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Shakir Khan, Shaista Siddiqui, Jawaharlal Nehru Medical College (India); Srivalleesha Mallidi, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Hui Liu, Univ. of Massachusetts Boston (USA); Satish C. Sharma, Ibne Ahmed, Jawaharlal Nehru Medical College (India); Stephen G. Bown, Colin Hopper, Univ. College London (United Kingdom); Jonathan P. Celli, Univ. of Massachusetts Boston (USA); Syed Abrar Hasan, Shahid A. Siddiqui, Jawaharlal Nehru Medical College (India); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA) . . . . . [11070-270]

**Optical techniques for the microbiological control of blood.** Thaila Q. Corrêa, Kate C. Blanco, Natalia M. Inada, Cristina Kurachi, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) . . . . . [11070-271]

**Optical techniques for decontamination of preservation fluids for transplantation of organ grafts.** José Dirceu Vollet-Filho, Yordania M. Gámez, Mariana C. Geralde, Natalia M. Inada, Cristina Kurachi, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) . . . . . [11070-272]

**Successful treatment of chromoblastomycosis using ALA-PDT in a patient with leukopenia.** Xiaowen Huang, Li Wang, Kang Zeng, Li Li, Nanfang Hospital of the Southern Medical Univ. (China) . . . . . [11070-273]

**Viability of implementation in the field of photodynamic action to eliminate *Aedes aegypti* larvae.** Larissa Marila de Souza, Univ. Federal de São Carlos (Brazil); Natalia M. Inada, Francine P. Venturini, Univ. de São Paulo (Brazil); Matheus Garbuio, Univ. Federal de São Carlos (Brazil); Natasha F. Mezzacappo, Thaila Q. Corrêa, Univ. de São Paulo (Brazil); Kléber Thiago de Oliveira, Univ. Federal de São Carlos (Brazil); Cristina Kurachi, Vanderlei S. Bagnato, Univ. de São Paulo (Brazil) . . . . . [11070-274]

**Photoactivated self-sterilizing catheters to prevent nosocomial infections.** Francisco Amaro, Miguel Gómez-Mendoza, Ana B. Descalzo, Univ. Complutense de Madrid (Spain); Luis Rivas, Ctr. de Investigaciones Biológicas (Spain); Guillermo Orellana, Univ. Complutense de Madrid (Spain) . . . . . [11070-276]

**Internalization of photodithazine in *C. albicans* microbial wall for photodynamic therapy.** Raphael Caface, Univ. de São Paulo (Brazil) [11070-277]

**Photodynamic antimicrobial chemotherapy for treatment of peri-implantitis: a controlled, randomized, clinical trial.** Maria Beatriz Biffi, Ana Carolina Gomes, Nathalia Bim, Beatriz Brito, Sandra K. Bussadori, Renato A. Prates, Univ. Nove de Julho (Brazil) . . . . . [11070-278]

**Antimicrobial photodynamic therapy action over pathogens linked with healthcare-associated infections in patients with chronic periodontal disease.** Kylze I. Sakiyama, Adenir F. Pinto, Mohamed A. K. Saleh, Univ. Brasil (Brazil); Renato A. Prates, Univ. Nove de Julho (Brazil); Ricardo S. Navarro, Alessandra Baptista, Ricardo H. Marques, Sílvia C. Nunez, Univ. Brasil (Brazil) . . . . . [11070-279]

**Photodynamic inactivation applying at *S. aureus* biofilm developed at endotracheal tube.** Amanda Cristina Zangirolami, Univ. de São Paulo (Brazil) . . . . . [11070-280]

**Acidic pH might be the key for photodynamic elimination of biofilms.** Laura M. de Freitas, Univ. de São Paulo (Brazil); Maurício da Silva Baptista, Univ. de São Paulo (Brazil) . . . . . [11070-281]

**Assessment of damages triggered by photodynamic therapy in Leishmania major and Leishmania braziliensis.** Juliana Guerra Pinto, André Henrique Correia Pereira, Luciana Maria Cortez Marcolino, Juliana Ferreira-Strixino, Univ. do Vale do Paraíba (Brazil) . . . . . [11070-282]

**Antimicrobial photodynamic therapy of encapsulated *Aspergillus fumigatus* in a rabbit maxillary sinus model.** Nicolas Loebel, Cristina P. Romo, David Meller, Daniel Joansson, Roger Andersen, Sinuwave Technologies Corp. (USA) . . . . . [11070-283]

**Photodynamic inactivation of *Candida albicans* using a synthesized bacteriochlorin as a photosensitizer.** Laura C. Martins, Thaila Q. Corrêa, Sebastião Pratavieira, Marciana P. Uliana, Instituto de Física de São Carlos (Brazil); Kleber T. Oliveira, Federal University of Sao Carlos (Brazil); Vanderlei S. Bagnato, Clovis Souza, Instituto de Física de São Carlos (Brazil) . . . . . [11070-284]

**Antimicrobial PDT in South America.** Laura M. de Freitas, Maurício S. Baptista, Univ. de São Paulo (Brazil) . . . . . [11070-285]

**Conquering carbapenem-resistant bacterial infections with photomedicine: from diagnosis to treatment.** Yanfang Feng, Akilan Palanisami, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Michael Pigula, Shoaib Ashraf, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Harvard Medical School (USA) and Massachusetts Institute of Technology (USA) . . . . . [11070-286]

**New approaches for onychomycosis diagnosis and treatment by photodynamic therapy.** Ana Paula da Silva, Instituto de Física de São Carlos (Brazil); Nyanne Paulino de Assis, Instituto de Física de São Carlos (Brazil) and UNICEP São Carlos (Brazil); Matheus Pedrino Gonçalves, Univ. Federal de São Carlos (Brazil); Vanderlei Salvador Bagnato, Natália Mayumi Inada, Instituto de Física de São Carlos (Brazil) . . . . . [11070-287]

**Dual-wavelength (460 nm+405 nm) photo-inactivation of methicillin resistant *Staphylococcus aureus*.** Leon G. Leanse, Xueping Sharon Goh, Tianhong Dai, Massachusetts General Hospital (USA) . . . . . [11070-288]

**Elimination of methicillin resistant *Staphylococcus aureus* through photo-induced chemical bleaching of staphyloxanthin by antimicrobial blue light and pyocyanin.** Leon G. Leanse, Tianhong Dai, Massachusetts General Hospital (USA) . . . . . [11070-289]

**Antimicrobial blue light inactivation of *Moraxella catarrhalis*.** Xiaojing Liu, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Institute of Photomedicine, Shanghai Skin Disease Hospital, Tongji Univ. School of Medicine (China) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA); Raquel Ferrer-Espada, Leon G. Leanse, Xueping Sharon Goh, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA); Xiuli wang, Shanghai Skin Disease Hospital (China); Jeffrey A. Gelfand, Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA); Tianhong Dai, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA) . . . . . [11070-290]

**Cell death in unicellular protozoan parasite *Tritrichomonas foetus*: review.** Newton Soares da Silva, Aline Margraf Ferreira, Univ. do Vale do Paraíba (Brazil); Carolina Weigert Galvão, Rafael Mazer Etto, Univ. Estadual de Ponta Grossa (Brazil); Juliana Ferreira-Strixino, Univ. do Vale do Paraíba (Brazil) . . . . . [11070-292]

**Sonophotodynamic therapy for the inactivation of *Staphylococcus aureus* biofilm.** Fernanda Alves, Natália Mayumi Inada, Vanderlei Salvador Bagnato, Cristina Kurachi, Univ. de São Paulo (Brazil) . . . . . [11070-293]

**Phthalocyanine-type photosensitizer: property and application.** Mingdong Huang, Fuzhou Univ. (China) . . . . . [11070-294]

**Potassium iodide potentiates antimicrobial photodynamic inactivation mediated by Rose Bengal: in vitro and in vivo studies.** Xiang Wen, Wellman Ctr. for Photomedicine (USA) and West China Hospital (China) . . . . . [11070-295]

**Mechanism and application of antimicrobial photodynamic therapy for bacterial infection**, Xiaobing Wang, Bingjie Mai, Pan Wang, Qunhong Liu, Shaanxi Normal Univ. (China) .....[11070-296]

**Photodynamic therapy damage to gram negative bacteria envelope revealed by cryo-electron tomography**, Aguinaldo S. Garcez, Faculdade São Leopoldo Mandic (Brazil); Mohammed Kaplan, Grant Jensen, Caltech (USA) .....[11070-297]

**Combinatorial antimicrobial therapy using a novel decacationic chlorin mediated antimicrobial photodynamic inactivation with covalently-bonded vancomycin against methicillin-resistant Staphylococcus aureus infections**, Xiaojing Liu, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Shanghai Skin Disease Hospital (China) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA); Min Wang, He Yin, Univ. of Massachusetts Lowell (USA); Xueping Sharon Goh, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA); Xiuli wang, Shanghai Skin Disease Hospital (China); Long Chiang, Univ. of Massachusetts Lowell (USA); Tianhong Dai, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA) .....[11070-298]

**Biochemical alterations on Leishmania major promastigotes after photodynamic therapy with methylene blue evaluated by Fourier Transform Infrared Spectroscopy (FT-IR)**, Jaciara Fagundes, Kumiko K. Sakane, Univ. do Vale do Paraíba (Brazil); Tanmoy Bhattacharjee, Sir John Walsh Research Institute (New Zealand); Juliana G. Pinto, Univ. do Vale do Paraíba (Brazil); Isabelle Ferreira, Univ. do Vale do Paraíba (Brazil) and Univ. Paulista (Brazil); Leandro J. Raniero, Juliana Ferreira-Strixino, Univ. do Vale do Paraíba (Brazil) .....[11070-299]

**Economic evaluation of photodynamic therapy implementation for non-melanoma skin cancer in the Brazilian public health system**, Hilde H. Buzzá, Lilian T. Moriyama, José Dirceu Vollet-Filho, Natalia M. Inada, Ana Paula da Silva, Mirian D. Stringasci, Michelle B. Requena, Renan A. Romano, Kate C. Blanco, Cristina Kurachi, Univ. de São Paulo (Brazil); Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil); Vanderlei S. Bagnato, Univ. de São Paulo (Brazil) ..... [11070-300]

**Nitromedicine**, Salaheldin Halasa, Nitromedicine LLC (USA) ..... [11070-301]

**Photosensitizer contact time dependence on the necessary time for myocardial cell necrosis**, Emiyu Ogawa, Kitasato Univ. (Japan); Yuiko Kikuchi, Marika Doi, Tsunenori Arai, Keio Univ. (Japan); Hiroshi Kumagai, Kitasato Univ. (Japan) ..... [11070-302]

**Photodynamic activation as a molecular switch to promote osteoblast cell differentiation via AP-1 activation**, Toshihiro Kushibiki, National Defense Medical College (Japan); Yupeng Tu, Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) ..... [11070-303]

**Photodynamic diagnosis uses chlorin-e6 in the pancreatic cancer orthotopic models**, Cheong-Wun Kim, Ju-Hee Jeon, Bo-Mi Lee, Til Bahadur Thapa Magar, Jeong-Hwan Lee, Yong-Wan Kim, DONGSUNG BIO PHARM. Co., Ltd. (Korea, Republic of) ..... [11070-304]

**808-nm near infrared light excited UCNP@mSiO<sub>2</sub>-Ce6-GPC3 nanocomposites for photodynamic therapy in liver cancer**, Rui Xie, Jiahe Hu, Yufeng Wang, Wei Yang, Ping Liu, Harbin Medical Univ. (China) ..... [11070-305]

**Fluorescence colon tumor imaging by IV-administered indocyanine green in a rat model of colon carcinogenesis**, Nobuhiko Onda, Olympus Corp. (Japan); Reiko Mizutani-Morita, Tokyo Univ. of Agriculture and Technology (Japan); Susumu Yamashita, Olympus Corp. (Japan) and Tokyo Univ. of Agriculture and Technology (Japan); Miho Kojima, Olympus Corp. (Japan); Toshinori Yoshida, Makoto Shibutani, Tokyo Univ. of Agriculture and Technology (Japan) ..... [11070-306]

**TOM DOUGHERTY REMEMBRANCE SESSION**

**ROOM: SALON 4 ..... SUN 8:30 AM TO 10:30 AM**

The beginnings of PDT can be traced back to the work of Von Tapiener and Raab in 1900 and there were periodic re-discoveries over the years. Perhaps the most relevant of these was the work of Lipson and Schwartz who noted that the fluorescence of neoplasia could be traced to the presence of porphyrins and that artificially supplementing these porphyrins with something called HPD promoted this phenomenon. The field was mainly dormant until Thomas Dougherty began experimenting with photosensitization of neoplasia in the 1970s. It seems quite probable that clinical PDT and the advent of conferences such as this one would have never taken place but for Tom's efforts. In this session, a group that was involved in PDT, often from the early beginnings, will discuss the role Tom played in the development of the field and how important his persevering, in spite of numerous setbacks, was to the current status of PDT as a treatment option.

8:30 am: **The Role of Death Pathways in the Efficacy of Photokilling**, David H. Kessel, H-R C. Kim, Wayne State Univ. (USA) ..... [11070-714]

8:50 am: **Tom Dougherty, PDT, and myself**, Kevin M. Smith, Louisiana State Univ. (USA) ..... [11070-715]

9:05 am: **Much more than an impactful cancer scientist: Tom Dougherty as a graduate student advisor, mentor, advocate, and friend**, Charles J. Gomer, Children's Hospital Los Angeles (USA) ..... [11070-716]

9:25 am: **Immunology and PDT: how a fantastic mentor encouraged expansion of PDT (Invited Paper)**, Sandra O. Gollnick, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-717]

9:40 am: **From chemistry to clinical trials: remembering Dr. Thomas J. Dougherty as a pioneer of photodynamic therapy**, Theresa M. Busch, Univ. of Pennsylvania (USA) ..... [11070-718]

10:00 am: **Clinical application: PDT with Tom Dougherty**, Harubumi Kato, Tokyo Medical Univ. (Japan) ..... [11070-719]

10:15 am: **Dr. Thomas J. Dougherty's remarkable vision for PDT drug**, Ravindra K. Pandey, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-720]

Coffee Break ..... Sun 10:30 am to 11:00 am

**SESSION 4**

**ROOM: SALONS 5-7 ..... SUN 11:00 AM TO 1:00 PM**

**PDT in the Brain**

Session Chairs: **Georg Widhalm**, Medizinische Univ. Wien (Austria);  
**Bryan Q. Spring**, Northeastern Univ. (USA)

11:00 am: **Experience with 5-ALA PDD in different central nervous system tumors and future approaches (Invited Paper)**, Lisa Wadiura, Medizinische Univ. Wien (Austria) ..... [11070-23]

11:20 am: **The use of quantitative vs qualitative fluorescence for neurosurgical guidance and resection of brain tumors (Invited Paper)**, Pablo A. Valdes Quevedo, Brigham and Women's Hospital (USA) ..... [11070-24]

11:40 am: **Photodynamic therapy of brain tumor stem cells overcomes drug-resistance in preclinical models (Invited Paper)**, Bryan Q. Spring, Northeastern Univ. (USA) ..... [11070-22]

12:00 pm: **Efficacy of ruthenium coordination complex based Rutherrin in a pre-clinical rat glioblastoma (GBM) model**, Lothar D. Lilje, Univ. Health Network (Canada); Manjunatha Ankathatti Munegowda, Theralase Technologies, Inc. (Canada); Carl Fisher, Univ. Health Network (Canada); Arkady Mandel, Theralase Technologies, Inc. (Canada) ..... [11070-26]

12:15 pm: **INDYGO: intraoperative PDT for newly diagnosed GBM, 2-years follow-up**, Maximilien Vermandel, Clément Dupont, Fabienne Lecomte, Pascal Delepote, Serge R. Mordon, Nicolas Reyns, OncoThAI INSERM (France) ..... [11070-180]

12:30 pm: **Comparative analysis of 5-ALA-induced fluorescence intensity and 11C-methionine PET uptake in glioma surgery**, Kazuhide Shimizu, Motoki Inaji, Yoji Tanaka, Kaoru Tamura, Takashi Sugawara, Tokyo Medical and Dental Univ. (Japan); Kenji Ishii, Tokyo Metropolitan Institute of Gerontology (Japan); Tadashi Nariai, Taketoshi Maehara, Tokyo Medical and Dental Univ. (Japan) ..... [11070-27]

12:45 pm: **Photodynamic opening of blood-brain barrier as a new method for brain drug delivery**, Oxana V. Semyachkina-Glushkovskaya, Saratov State Univ. (Russian Federation); Elena Vodovosova, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation); Alexander Khorovodov, Saratov State Univ. (Russian Federation); Anna Alekseeva, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry (Russian Federation); Andrey Terskov, Maria Klimova, Aysel Mamedova, Ilana Agranovich, Erik Duarte Torres, Saratov State Univ. (Russian Federation); Jürgen Kurths, Saratov State Univ. (Russian Federation) and Potsdam-Institut für Klimafolgenforschung (Germany) and Humboldt-Univ. zu Berlin (Germany) ..... [11070-28]

Lunch Break ..... Sun 1:00 pm to 2:30 pm

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## SESSION 5

ROOM: SALON 4 ..... SUN 11:00 AM TO 1:00 PM

### Nanotechnology for Photodynamic Therapy

Session Chairs: **Gang Zheng**, Univ. Health Network (Canada);  
**Kanyi Pu**, Nanyang Technological Univ. (Singapore)

THIS SESSION IS SPONSORED IN PART BY:



11:00 am: **Photodynamic nanomedicine synchronizes cytotoxic and molecular therapies to suppress multiple treatment escape pathways** (*Invited Paper*), Bryan Q. Spring, Northeastern Univ. (USA) . . . . . [11070-31]

11:20 am: **Reactive oxygen species goes beyond photodynamic therapy** (*Invited Paper*), Xiaoyuan Chen, National Institutes of Health (USA) . . . [11070-30]

11:40 am: **Porphyrin nanomedicine: from fundamentals to applications** (*Invited Paper*), Gang Zheng, Princess Margaret Cancer Ctr. (Canada) . [11070-29]

12:00 pm: **Photosensitizing biomolecules and nanocrystals for anti-glioma photodynamic therapy**, Collin T. Inglut, Yan Baglo, Barry J. Liang, Yan Baglo, Jill Stabile, Yahya Cheema, Yahya Cheema, Univ. of Maryland, College Park (USA); Graeme F. Woodworth, Univ. of Maryland School of Medicine (USA); Huang-Chiao Huang, Univ. of Maryland, College Park (USA) . . . . . [11070-32]

12:15 pm: **Therapeutic response of experimental choroidal neovascularization in mice with photodynamic/photothermal therapy using ICG loaded gold nanorods as a photosensitizer**, Rupesh Singh, Julia Batoki, Bela Anand-Apte, Cleveland Clinic (USA) . . . . . [11070-33]

12:30 pm: **Antimicrobial photodynamic inactivation by cationic (TMPyP4) and anionic (TPPS4) porphyrins and effect of potassium iodide**, Liyi Huang, Guangxi Medical Univ. (China); Michael R. Hamblin, Wellman Ctr. for Photomedicine (USA) . . . . . [11070-34]

12:45 pm: **Cyclodextrin-based photoactive liposomal nanoparticles for tumor targeting**, Ilya Yakavets, Univ. de Lorraine (France) and Belarusian State Univ. (Belarus) and Institut de Cancérologie de Lorraine (France); Henri-Pierre Lassalle, Univ. de Lorraine (France) and Institut de Cancérologie de Lorraine (France); Vladimir Zorin, Belarusian State Univ. (Belarus) and International Sakharov Environmental Institute (Belarus); Lina Bezdetsnaya, Univ. de Lorraine (France) and Institut de Cancérologie de Lorraine (France) . . . . . [11070-35]

Lunch Break . . . . . Sun 1:00 pm to 2:30 pm

## SESSION 6

ROOM: CONCEPT ..... SUN 11:00 AM TO 12:40 PM

### Photosensitizing Systems

Session Chairs: **Luis G. Arnaut**, Univ. de Coimbra (Portugal);  
**Mathias O. Senge**, Trinity College Dublin (Ireland)

11:00 am: **How potent should a photosensitizer be?** (*Invited Paper*), Luis G. Arnaut, Univ. de Coimbra (Portugal) . . . . . [11070-36]

11:20 am: **Design and development of metal complex photosensitizers for photodynamic therapy** (*Invited Paper*), Sherri McFarland, The Univ. of North Carolina at Greensboro (USA) . . . . . [11070-38]

11:40 pm: **Translocator protein-targeted agents for PDT of aggressive tumors**, Meng Su, Yang Liu, Jing Cui, Qing Xie, Mingfeng Bai, Vanderbilt Univ. Medical Ctr. (USA) . . . . . [11070-39]

11:55 pm: **Alternative photosensitizers based on BODIPY chromophore**, Virginia Martinez-Martinez, Univ. del País Vasco (Spain) . . . . . [11070-40]

12:10 pm: **Novel metal-based photosensitizers for photodynamic therapy: exploratory study**, Lindsey Carlsen, Taylor Mandeville, Roswell Park Comprehensive Cancer Ctr. (USA); Patrick Barrett, Evan Bradner, Tariq Sainuddin, Sherri McFarland, The Univ. of North Carolina at Greensboro (USA); Sarah Chamberlain, David Bellnier, Gal Shafirstein, Roswell Park Comprehensive Cancer Ctr. (USA) . . . . . [11070-41]

12:25 pm: **Investigation of nano immunotherapy drug delivery in lung cancer cells**, Cherie Ann Kruger, Mpho Gift Mokwena, Heidi Abrahamse, Univ. of Johannesburg (South Africa) . . . . . [11070-42]

Lunch Break . . . . . Sun 12:40 pm to 2:30 pm

## SESSION 7

ROOM: SALONS 5-7 ..... SUN 2:30 PM TO 4:30 PM

### Capabilities of 5-ALA

Session Chairs: **Anne Moor**, photonamic GmbH & Co. KG (Germany);  
**Walter Stummer**, Universitätsklinikum Münster (Germany)

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photonamic

2:30 pm: **Enhanced visualisation of glioma using 5-ALA** (*Invited Paper*), Walter Stummer, Universitätsklinikum Münster (Germany) . . . . . [11070-43]

2:50 pm: **Intraoperative fluorescence imaging with aminolevulinic acid detects grossly occult breast cancer: a Phase II randomized controlled trial** (*Invited Paper*), Kathryn Ottolino-Perry, Anam Shahid, Stephanie DeLuca, Viktor Son, Zihui (Amy) Liu, Sara Ropic, Nayana Thalanki Anantha, Shirley Wang, Emilie Chamma, Kristina Blackmore, Christopher Gibson, Philip J. Medeiros, Safa Majeed, Ashley Chu, Alessandra Pizzolato, Cheryl F. Rosen, Liis Lindvere-Teene, Danielle Dunham, Iris Kulbatski, Tony Panzarella, Susan J. Done, Alexandra M. Easson, Wey L. Leong, Ralph S. DaCosta, Univ. Health Network (Canada) . . . . . [11070-44]

3:10 pm: **Interstitial photodynamic therapy (iPDT) of brain tumours** (*Invited Paper*), Herbert Stepp, Adrian Rühm, Ronald Sroka, Laser-Forschungslabor (Germany); Walter Stummer, Universitätsklinikum Münster (Germany) . . . . . [11070-45]

3:30 pm: **Current clinical studies on 5-ALA-FD (5-aminolevulinic acid mediated-fluorescence guided detection) in detection of lung, gastric, pancreatic, and bladder cancers in Japan**, Motowo Nakajima, SBI Pharmaceuticals Co., Ltd. (Japan) . . . . . [11070-46]

3:45 pm: **Evaluation of dissolving microneedles with aminolevulinic acid in human skin - a pilot study**, Michelle B. Requena, Instituto de Física de São Carlos (Brazil); Layla Pires, Princess Margaret Cancer Ctr. (Canada); Andi D. Permana, Ryan F. Donnelly, Queen's Univ. Belfast (United Kingdom); Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil); Anderson Zanardi de Freitas, Instituto de Pesquisas Energéticas e Nucleares (Brazil); Cristina Kurachi, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) . . . . . [11070-47]

4:00 pm: **Photodynamic therapy as an alternative to antibiotic therapy for the treatment of infected leg ulcers**, Aleksandra Kawczyk-Krupka, Anna Król-Zyburra, Medical Univ. of Silesia (Poland); Aleksander Sieroń, Jan Dlugosz Univ. in Czestochowa (Poland); Grzegorz Cieslar, Medical Univ. of Silesia (Poland) . . . . . [11070-48]

4:15 pm: **5-aminolevulinic acid photodynamic therapy: an effective modality for female precancerous lesions: experience of a single center**, Qiuyun Yang, Henan Provincial People's Hospital (China) . . . . [11070-49]

Coffee Break . . . . . Sun 4:30 pm to 5:00 pm

## SESSION 8

ROOM: CONCEPT ..... SUN 2:30 PM TO 4:30 PM

### PDT in Urology and Gynecology

Session Chairs: **Lothar D. Lilge**, Princess Margaret Cancer Ctr. (Canada); **Henri Azaïs**, Pitié-Salpêtrière Hospital (France)

2:30 pm: **Phosphorescent photosensitizers as potential drugs in new theranostic flim/plim procedures** (*Invited Paper*), Angelika C. Rück, Univ. Ulm (Germany) . . . . . [11070-50]

2:50 pm: **TLD-1433 photodynamic therapy for BCG-unresponsive NMIBC: a Phase IB clinical study** (*Invited Paper*), Lothar D. Lilge, Univ. Health Network (Canada) and Univ. of Toronto (Canada); Girish Kulkarni, Univ. of Toronto (Canada) and Univ. Health Network (Canada); Arkady Mandel, Theralase, Inc. (Canada); Nathan Perlis, Michael Nesbitt, Univ. Health Network (Canada); Roger White, Wayne Embree, Theralase, Inc. (Canada); Michael Jewett, Univ. of Toronto (Canada) . . . . . [11070-51]

3:10 pm: **Treatment of peritoneal carcinomatosis of various origins by photodynamic therapy: state of the art** (*Invited Paper*), Henri Azaïs, Pitié-Salpêtrière Hospital (France) and OncoThAI INSERM (France); Martha Baydoun, Christie Rebahi, Olivier Morales, Institut de Biologie de Lille (France); Céline Frochet, Ludovic Colombeau, Lab. Réactions et Génie des Procédés (France); Bertrand Leroux, Elise Thécuta, OncoThAI INSERM (France); Nadira Delhem, CNRS (France); Pierre Collinet, Hôpital Jeanne de Flandre (France) and OncoThAI INSERM (France); Serge R. Mordon, OncoThAI INSERM (France) . . . . . [11070-52]



3:30 pm: **Topical photodynamic therapy with 5-aminolevulinic acid in the treatment of cervical low grade squamous intraepithelial lesion.** Lihua Qiu, Renji Hospital (China); Liying Gu, Zubei Hong, Anyue Wu, Mengxin Cheng, Wen Di, Renji Hospital (China) ..... [11070-344]

3:45 pm: **Intraperitoneal photodynamic therapy for ovarian cancer: a novel way to stimulate anti-tumoral immune response?** Martha Baydoun, Olivier Morales, Institut de Biologie de Lille (France); Céline Frochot, Ludovic Colombeau, Lab. Réactions et Génie des Procédés (France); Bertrand Leroux, Elise Thécua, Laurine Ziane, OncoThAI INSERM (France); Clémentine de Schutter, Institut de Biologie de Lille (France); Pierre Collinet, OncoThAI INSERM (France) and CHU Lille (France); Serge R. Mordon, OncoThAI INSERM (France); Henri Azais, OncoThAI INSERM (France) and Pitié-Salpêtrière Hospital (France); Nadira Delhem, Institut de Biologie de Lille (France) ..... [11070-54]

4:00 pm: **Preliminaries results of clinical study of condylomas acuminatae using PDT with new illumination devices,** Hilde H. Buzzá, Mirian D. Stringasci, Univ. de São Paulo (Brazil); Cynthia A. Castro, Univ. Federal de São Carlos (Brazil); Rita R. H. Crestana, Vanderlei S. Bagnato, Natalia M. Inada, Univ. de São Paulo (Brazil) ..... [11070-55]

4:15 pm: **Photodynamic therapy for high grade cervical intraepithelial neoplasia: a non-excisional treatment possibility?** Renata A. Belotto, Maria C. Chavantes, Univ. Nove de Julho (Brazil); Fernanda M. Carbinatto, Cynthia A. de Castro, Instituto de Física de São Carlos (Brazil); Raquel C. M. Fernandes, Perola Byington Hospital (Brazil); Natalia M. Inada, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) ..... [11070-56]

Coffee Break. .... Sun 4:30 pm to 5:00 pm

## SESSION 9

ROOM: SALON 4 ..... SUN 2:30 PM TO 4:30 PM

### Intracellular Mechanisms of PDT in Cancer

Session Chairs: **Anette Weyergang**, Oslo Univ. Hospital (Norway); **Imran Rizvi**, The Univ. of North Carolina at Chapel Hill (USA)

2:30 pm: **PDT: death pathways and PDT efficacy** (*Invited Paper*), David H. Kessel, Wayne State Univ. (USA); Imran Rizvi, The Univ. of North Carolina at Chapel Hill (USA); Girgis Obaid, Tayyaba Hasan, Massachusetts General Hospital (USA) ..... [11070-57]

2:50 pm: **Mechanisms of PDT-induced Immunogenic cell death: implications for photochemical internalization** (*Invited Paper*), Anette Weyergang, Oslo Univ. Hospital (Norway) ..... [11070-58]

3:10 pm: **Targeted PDT-based combinations for cancer: sub-cellular sites and cytotoxic mechanisms** (*Invited Paper*), Imran Rizvi, The Univ. of North Carolina at Chapel Hill (USA) and North Carolina State Univ. (USA); Girgis Obaid, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Shubhankar Nath, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA); Mustafa K. Ruhi, Wellman Ctr. for Photomedicine (USA) and Bogaziçi Univ. (Turkey); Kaitlin Moore, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Northeastern Univ. (USA); Shazia Bano, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA); David H. Kessel, Wayne State Univ. (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) ..... [11070-59]

3:30 pm: **Capecitabine (Xeloda) enhanced photodynamic therapy for treatment of breast cancer and its metastases in a murine breast tumor model,** Sanjay Anand, Anton Yasinchak, Taylor Bullock, Mukul Govande, Edward V. Maytin, Cleveland Clinic (USA) ..... [11070-60]

3:45 pm: **Mitochondria targeted BODIPY-based photosensitizers for treatment of hypoxic tumors,** Safacan Kolemen, Koç Univ. (Turkey); Gorkem Gunbas, Middle East Technical Univ. (Turkey); Osman Karaman, Middle East Technical Univ. (Turkey); Gurcan Gunaydin, Hacettepe Univ. (Turkey); Toghru Almammodov, Koç Univ. (Turkey); Emre M. Gedik, Hacettepe Univ. (Turkey) ..... [11070-61]

4:00 pm: **Redaporfin targets the endoplasmic reticulum and the golgi apparatus and is an inducer of immunogenic cell death,** Lígia C. Gomes-da-Silva, Luis G. Arnaut, Univ. de Coimbra (Portugal); Oliver Kepp, Univ. Paris-Sud (France) and Gustave Roussy (France) and Ctr. de Recherche des Cordeliers (France); Guido Kroemer, Faculty of Medicine (France) and Metabolomics and Cell Biology Platforms, Gustave Roussy Cancer Campus (France) and Ctr. de Recherche des Cordeliers (France) ..... [11070-62]

4:15 pm: **Dormant cancer cells accumulate high protoporphyrin IX levels and are sensitive to 5-aminolevulinic acid-based photodynamic therapy,** Taku Nakayama, Kochi Medical Hospital (Japan) and Tokyo Institute of Technology (Japan); Shimpei Otsuka, Tokyo Institute of Technology (Japan); wHideo Fukuhara, Keiji Inoue, Kazuhiro Hanazaki, Taro Shuin, Kochi Medical Hospital (Japan); Motowo Nakajima, Tohru Tanaka, SBI Pharmaceuticals Co., Ltd. (Japan); Shun-ichiro Ogura, Tokyo Institute of Technology (Japan) [11070-63]

Coffee Break. .... Sun 4:30 pm to 5:00 pm

## POSTERS-SUNDAY

ROOM: SALONS 1-3 ..... SUN 4:30 PM TO 6:30 PM

*Conference attendees are invited to attend the poster session on Sunday. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.*

POSTER SETUP ..... SUNDAY 11:00 AM - 3:00 PM

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PDTPosterGuidelines>.

THANK YOU TO OUR POSTER SESSION AND AWARDS SPONSORS:



**Superiority of diagnosis and treatment with multidisciplinary team in vascular anomalies,** Xian Jiang, West China Hospital (China); Yong Li, Sichuan Univ. (China) ..... [11070-307]

**Verteporfin photodynamic therapy with 5-aza-deoxy-cytidine for neo-adjvant treatment of primary breast cancer: results of pre-clinical investigations,** Shramana M. Banerjee, Royal Free London NHS Foundation Trust (United Kingdom) and Univ. College London (United Kingdom); Pilar Acedo, Univ. College London (United Kingdom); Soha El Sheikh, Royal Free London NHS Foundation Trust (United Kingdom); Amelia Meecham, Norman R. Williams, Univ. College London (United Kingdom); Gareth Gerrard, Univ. College London (United Kingdom) and Cancer Institute, Univ. College London (United Kingdom); Rifat Hamoudi, Univ. College London (United Kingdom) and Univ. of Sharjah (United Arab Emirates); Alexander J. MacRobert, Univ. College London (United Kingdom); Mo R. S. Keshtgar, Royal Free London NHS Foundation Trust (United Kingdom) and Univ. College London (United Kingdom) ..... [11070-309]

**Evaluation of port wine stains with optical coherence tomography angiography: the vascular features and the vascular change after vascular targeted photodynamic therapy,** Haixia Qiu, Chinese PLA General Hospital (China) ..... [11070-310]

**Analysis of the related factors of port-wine stains treated by Hematoporphyrin monomethyl ether photodynamic therapy,** Xue Wang, Huazhong Univ. of Science and Technology (China) ..... [11070-311]

**Photodynamic therapy activity of new silica-tetraphenylporphyrin nanoparticles in a colorectal cancer in vivo model,** Ludovic Bretin, David Yannick Leger, Aline Pinon, Soukaina Bouramtane, Marie-Laure Perrin, Frédérique Bregier, Vincent Chaleix, Vincent Sol, Bertrand Liagre, Univ. de Limoges (France) ..... [11070-312]

**Photosensitizer loaded photoacoustic nanodroplets for oxygen enhanced photodynamic therapy,** Marvin Xavierselvan, Wellman Ctr. for Photomedicine (USA); Jason Cook, Kimberly Homan, NanoHybrids Inc. (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA); Srivalleesha Mallidi, Wellman Ctr. for Photomedicine (USA) and Tufts Univ. (USA) ..... [11070-313]

**Glioblastoma-targeted nanoconstructs with quantifiable in vivo specificity: an optical paradigm in image-guided surgery and drug delivery,** Girgis Obaid, Wellman Ctr. for Photomedicine (USA); Kimberly Samkoe, Thayer School of Engineering at Dartmouth (USA); Kenneth Tichauer, Illinois Institute of Technology (USA); Shazia Bano, Srivalleesha Mallidi, Wellman Ctr. for Photomedicine (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) ..... [11070-314]

**In vitro study of membrane fusogenic liposomes as nanocarriers for non-melanoma skin cancer,** Ilaiáli Souza Leite, Instituto de Física de São Carlos (Brazil); Gabriela Mayr Reyes, Instituto de Química de São Carlos (Brazil); Juliana Cancino-Bernardi, Univ. Federal de Alfenas (Brazil); Natália Yamami Inada, Instituto de Física de São Carlos (Brazil) ..... [11070-315]

**NIR light triggered photoimmuno-nanoconstructs for tumor specific accumulation, penetration and targeted destruction of pancreatic cancer cells in a clinically relevant 3D heterocellular model,** Shazia Bano, Girgis Obaid, Srivalleesha Mallidi, Mans Broekgaarden, Anne-Laure Bulin, Wendong Jin, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA); Diane Simeone, NYU Langone Health (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) ..... [11070-316]

# CONFERENCE 11070

**Enhancement of biocompatibility and cancer-selectivity of iridium complex using cancer-environment-customized nanogel for minimally invasive photodynamic therapy.** Chae Gyu Lee, Chaiheon Lee, Joonhee Lee, Jung Seung Nam, Ulsan National Institute of Science and Technology (Korea, Republic of); Byeong-Su Kim, Yonsei Univ. (Korea, Republic of); Tae-Hyuk Kwon, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . . . [11070-317]

**Silica nanoparticles as photosensitizers carrier for photodynamic therapy.** Ruth Prieto, Univ. del País Vasco (Spain) . . . . . [11070-318]

**Photochromic antifolate for light-activated chemotherapy.** Carlo Matera, Institute for Bioengineering of Catalonia (Spain) and Barcelona Institute of Science and Technology (Spain) and Biomedical Research Networking Ctr. in Bioengineering, Biomaterials and Nanomedicine (Spain); Alexandre M. J. Gomila, Institute for Bioengineering of Catalonia (Spain) and Biomedical Research Networking Ctr. in Bioengineering, Biomaterials and Nanomedicine (Spain); Núria Camarero, Institute for Bioengineering of Catalonia (Spain) and Biomedical Research Networking Ctr. in Bioengineering, Biomaterials and Nanomedicine (Spain); Michela Libergoli, Institute for Bioengineering of Catalonia (Spain); Concepció Soler, Univ. de Barcelona (Spain); Pau Gorostiza, Institute for Bioengineering of Catalonia (Spain) and Biomedical Research Networking Ctr. in Bioengineering, Biomaterials and Nanomedicine (Spain) and Institució Catalana de Recerca i Estudis Avançats (Spain) . . . . . [11070-320]

**In vitro cytotoxicity and design of heavy-atom free BODIPY dyes for application in photodynamic therapy.** Susan Callaghan, Trinity College Dublin (Ireland); Mikhail A. Filatov, Dublin Institute of Technology (Ireland); Huguet Savoie, Ross W. Boyle, The Univ. of Hull (United Kingdom); Mathias O. Senge, Trinity College Dublin (Ireland) . . . . . [11070-321]

**Singlet oxygen formation in photodynamic therapy using guaiacol and red laser: an in vitro study.** Ampika Mangkhalathorn, Aroon Teerakapong, Khon Kaen Univ. (Thailand); Noppawan P. Morales, Mahidol Univ. (Thailand); Supawich Morkmued, Teerasak Damrongrungruang, Khon Kaen Univ. (Thailand) . . . . . [11070-322]

**Evaluation of a novel water soluble chlorin.** Jie Jiang, Jian Zou, Fujian Normal Univ. (China); Zhen Han, Guilin Huing Biopharmaceutical Co., Ltd. (China); Weijun Li, Fujian Normal Univ. (China); Zheng Huang, Univ. of Colorado Denver (USA) . . . . . [11070-323]

**Effect of different irradiation modes on singlet oxygen formation of azulene mediated photodynamic therapy.** Teerasak Damrongrungruang, Suttichon Rattanayatikul, Boonsita Wuttiruk, Nattapon Sontikarn, Aroon Teerakapong, Patcharaporn Tippyawat, Khon Kaen Univ. (Thailand) . . . . . [11070-324]

**Influence of cationic, anionic or non-charged substituents on photodynamic activity of water-soluble zinc (aza)phthalocyanines.** Miloslav Machacek, Jan Kollár, Marie Halašková, Monika Steklá, Charles Univ. (Czech Republic); Saad Makhseed, Kuwait Univ. (Kuwait); Tomáš Šimůnek, Petr Zimcik, Charles Univ. (Czech Republic) . . . . . [11070-325]

**Superhydrophobic microtips: singlet oxygen delivery to biological sites without direct sensitizer contact.** Sarah J. Belh, Goutam Ghosh, Niluksha Walalawela, Brooklyn College (USA) and The Graduate Ctr. of the City Univ. of New York (USA); QianFeng Xu, College of Staten Island (USA); Alessandra N. S. Rastelli, Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Alan M. Lyons, College of Staten Island (USA) and The Graduate Ctr. of the City Univ. of New York (USA) and SingletO2 Therapeutics LLC (USA); Alexander Greer, Brooklyn College (USA) and The Graduate Ctr. of the City Univ. of New York (USA) and SingletO2 Therapeutics LLC (USA) . . . . . [11070-326]

**Protophyrin to hypericin photoconversion analysis by thermal lens spectrometry.** Luis C. Malacarne, Univ. Estadual de Maringá (Brazil); Leandro S. Herculanio, Univ. Tecnológica Federal do Paraná (Brazil); Noboru Hioka, Wilker Caetano, Vinicius G. Camargo, Paulo C. S. Pereira, Renato S. Gonçalves, Vitor S. Zanuto, Univ. Estadual de Maringá (Brazil) . . . . . [11070-327]

**Can low molecular weight stable bacteriochlorins change the paradigm of topical photodynamic therapy?.** Helder Soares, Univ. de Coimbra (Portugal); Gonçalo Costa, Bluepharma S.A. (Portugal); Carlos Monteiro, Artur Abreu, Luzitín S.A. (Portugal); Luis Rocha, Luzitín S.A. (Portugal) and Bluepharma S.A. (Portugal); Fábio Schaberle, Mariette Pereira, Univ. de Coimbra (Portugal); Sérgio Simões, Luzitín S.A. (Portugal) and Bluepharma S.A. (Portugal); Luis G. Arnaut, Univ. de Coimbra (Portugal) . . . . . [11070-329]

**Enzyme-activatable photosensitizers for fluorescence-guided photodynamic therapy.** Andrew Beharry, Univ. of Toronto (Canada) [11070-330]

**Photophysical characteristics of thioxanthene dyes: potential photosensitizers for photodynamic therapy and diagnostics.** Alexander Ponyaev, Yana Glukhova, Saint-Petersburg State Institute of Technology (Russian Federation) . . . . . [11070-331]

**Anti-wrinkle efficacy of chlorin e6 conjugates by photodynamic therapy.** Ju-Hee Jeon, Shivakumar S. Jalde, Cheong-Wun Kim, Yang-Gu Lee, Yong-Wan Kim, DONGSUNG BIO PHARM. Co., Ltd. (Korea, Republic of) . . . . . [11070-332]

**Targeted photo-therapy using a DDS-type near-infrared photo absorbing agent in colon cancer.** Shinsuke Nomura, National Defense Medical College (Japan), Gordon Ctr. for Medical Imaging, Massachusetts General Hospital, Harvard Medical School (USA); Yuji Morimoto, Hironori Tsujimoto, Manabu Harada, National Defense Medical College (Japan); Isao Hara, Eiichi Ozeki, Shimadzu Corp. (Japan); Ayano Sato, Okayama Univ. (Japan); Kazuo Hase, Hideki Ueno, National Defense Medical College (Japan) [11070-333]

**Temperature-controlled photothermal therapy for rat hepatocellular carcinoma using a near infrared absorbing agent.** Manabu Harada, Yuji Morimoto, Shinsuke Nomura, Kazuo Hase, Hironori Tsujimoto, Hideki Ueno, National Defense Medical College (Japan) . . . . . [11070-335]

**Iridium (III) complexes based photodynamic therapy.** Tae-Hyuk Kwon, Jung Seung Nam, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . . . [11070-336]

**Intramolecular energy transfer based Iridium(III) photosensitizer for inducing mitochondrial oxidative stress and monitoring response.** Chaiheon Lee, Chae Gyu Lee, Jung Seung Nam, Tae-Hyuk Kwon, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . . . [11070-337]

**In vitro validation of snap-tag based antibody fusion proteins conjugated to near infrared photosensitizers on melanoma.** Fleury Augustin F. Nsole Biteghe, Univ. of Cape Town (South Africa) . . . . . [11070-338]

**A basic study of photodynamic therapy with glucose-conjugated chlorin e6 for canine mammary gland tumor.** Tomohiro Osaki, Shota Hibino, Inoru Yokoe, Tottori Univ. (Japan); Akihiro Nomoto, Osaka Prefecture Univ. (Japan); Shigenobu Yano, Nara Women's Univ. (Japan); Mamoru Tanaka, Hiroimi Kataoka, Nagoya City Univ. (Japan); Yoshiharu Okamoto, Tottori Univ. (Japan). [11070-339]

**Effect of 5-aminolevulinic acid photodynamic therapy (ALA-PDT) in treating condylomata acuminata in pregnancy.** Yuguang Yang, First Affiliated Hospital of Chinese PLA General Hospital (China) . . . . . [11070-340]

**Methylene blue as a photosensitizer in the photodynamic therapy of breast cancer cell lines.** Julio-Cesar Ramirez-San-Juan, Juan Carlos Atenco-Cuautle, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Teresita Spezzia-Mazzocco, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico) and Consejo Nacional de Ciencia y Tecnología (Mexico); Rubén Ramos-García, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); María Guadalupe Delgado-López, Ctr. de Investigación Biomédica de Oriente (Mexico) . [11070-341]

**Rose Bengal as a photosensitizer in the photodynamic therapy of breast cancer cell lines.** Teresita Spezzia-Mazzocco, Consejo Nacional de Ciencia y Tecnología (Mexico) and Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Juan Carlos Atenco-Cuautle, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); María Guadalupe Delgado-López, Ctr. de Investigación Biomédica de Oriente (Mexico); Rubén Ramos-García, Julio Cesar Ramirez-San-Juan, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico) . [11070-342]

**The influence of hypericin-mediated photodynamic therapy on secretion of selected interleukins by colon cancer cells in vitro.** Aleksandra Kawczyk-Krupka, Marta Kaleta-Richter, Anna Miedzybrodzka, Wojciech Latos, Grzegorz Cieslar, Medical Univ. of Silesia (Poland); Aleksander Sieron, Jan Dlugosz Univ. de Czestochowa (Poland) . . . . . [11070-345]

**The influence of ALA-mediated photodynamic therapy on secretion of selected growth factors, interleukins and s100 protein (S100) by colon cancer cells in vitro.** Aleksandra Kawczyk-Krupka, Zenon Czuba, Wojciech Latos, Anna Mertas, Medical Univ. of Silesia (Poland); Aleksander Sieron, Jan Dlugosz Univ. in Czestochowa (Poland); Grzegorz Cieslar, Medical Univ. of Silesia (Poland) . . . . . [11070-346]

**The effect of heme biosynthesis on the mitochondrial functions in C2C12 cell line.** Arif Suprihadi, Tokyo Institute of Technology (Japan) . . . . . [11070-347]

**The cytotoxicity of PDT is enhanced by hyperthermia enhance via regulation of HCP1 and ABCG2 expressions.** Hiromi Kurokawa, Univ. of Tsukuba (Japan); Hiromu Ito, Kagoshima Univ. (Japan); Hirofumi Matsui, Univ. of Tsukuba (Japan) . . . . . [11070-348]

**Can glycolysis inhibitors potentiate photodynamic therapy?.** Maria Inês Pimentel Mendes, Ana Catarina Sousa Lobo, Helder Tão Soares, Luis G. Arnaut, Univ. de Coimbra (Portugal) . . . . . [11070-349]

**Near-infrared laser photothermal / photodynamic therapy with indocyanine green induces apoptosis of hepatocellular carcinoma cells through oxidative stress.** Junichi Kaneko, The Univ. of Tokyo (Japan) . . . . . [11070-350]

**Interaction among oxidation, autophagy and apoptosis in photodynamic therapy.** Yi Zhao, Beijing Tsinghua Chang Gung Hospital (China) and Tsinghua Univ. (China) . . . . . [11070-351]

**Undercover stromal cells: the effects of PDT.** Olga O. Udartseva, Sandra O. Gollnick, Roswell Park Comprehensive Cancer Ctr. (USA) . [11070-352]

**Photobiomodulation inhibits Warburg metabolism and potentiates a dose dependent response by glioblastoma cells to ruthenium-based photodynamic therapy**, Mark Roufaiel, Theralase Technologies, Inc. (Canada) and Univ. Health Network (Canada); Arkady Mandel, Theralase Technologies, Inc. (Canada); Lothar D. Lilje, Univ. of Toronto (Canada) and Univ. Health Network (Canada) ..... [11070-353]

**Specific organelle damage by photosensitized oxidation are efficient modulators of proteasomal and autophagic degradation pathways**, Felipe Ravagnani, Hellen P. Valerio, Graziella Ronsein, Ancely F. dos Santos, Leticia Labriola, Marcos Yoshinaga, Lucas Dantas, Sayuri Miyamoto, Mauricio S. Baptista, Univ. de São Paulo (Brazil) ..... [11070-354]

**The redox function of apurinic/apyrimidinic endonuclease 1 as key modulator to photodynamic therapy**, Leonardo T. Franchi, Maryanne T. de Melo, Antonio C. Tedesco, Univ. de São Paulo (Brazil) ..... [11070-356]

**Overcoming drug resistance in pancreatic cancers**, Joseph Swain, Massachusetts General Hospital (USA); Sydney M. Formica, Northeastern Univ. (USA) and Massachusetts General Hospital (USA); Mohammad A. Saad, Massachusetts General Hospital (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Harvard Medical School (USA) ..... [11070-357]

**The role of proteoglycan genes in PDT-resistant Hep-2 cells**, Cristina Pacheco-Soares, Roberta Kelly de Faria Souza, Isabel Chaves Silva Carvalho, Renata A. Canevari, Bruno Henrique Godoi, Carlos Dailton G. O. Moraes, Ritchelli Ricci, Juliana Ferreira-Strixino, Univ. do Vale do Paraíba (Brazil) ..... [11070-358]

**Photodynamic therapy: an innovative approach to hepatocellular carcinoma**, Racheal Odiri Ogbodu, Michael Höpfner, Charité Universitätsmedizin Berlin (Germany) ..... [11070-359]

**The interaction of thermal and photodynamic doses observed in interstitial PDT**, Sasheen Hamilton, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-360]

**Cadmium-free indium-based quantum dot nanoparticles as a novel contrast agent for biomedical applications**, Elnaz Yaghini, Univ. College London (United Kingdom); Imad Naasani, Nanoco Technologies Ltd. (United Kingdom); Andrew Pilling, ToxPath Consultancy Ltd. (United Kingdom); Sandy MacRobert, Univ. College London (United Kingdom) ..... [11070-361]

**A numerical study about optical trapping properties of nanoparticle on composite metallic film**, Chengxian Ge, Zhensen Wu, Jing Bai, Xidian Univ. (China); Lei Gong, Xi'an Technological Univ. (China) ..... [11070-362]

**Phototoxic effect of aluminum tetra-sulfonic phthalocyanine on chemo-resistant breast cancer cells**, Eric Chekwube Aniogo, Blassan George, Heidi Abrahamse, Univ. of Johannesburg (South Africa) ..... [11070-363]

**Bioengineering system for investigation of individual hearing threshold, adjustment and transmission of internal hearing aids**, Idara Abraham, Saint Petersburg Electrotechnical Univ. "LETI" (Russian Federation) ..... [11070-364]

**Evaluation of photodynamic therapy for precancerous lesions of female lower reproductive tract**, Mengzhen Zhang, Chunyan Zhang Jr., First Affiliated Hospital of Zhengzhou Univ. (China) ..... [11070-365]

**Exploration of the three elements of photodynamic therapy and cancer recurrence after photodynamic therapy**, Libo Li, Yue-hong Lang, Southern Medical Univ. Integrated Traditional Chinese and Western Medicine Hospital (China) ..... [11070-366]

**GPC3-targeted and curcumin-loaded phospholipid microbubbles for the sono-photodynamic therapy in liver cancer**, Rui Xie, Yufeng Wang, Harbin Medical Univ. (China); Wei Yang, Jiahe Hu, Ping Liu, Affiliated Tumor Hospital of Harbin Medical Univ. (China); Jiuxin Zhu, Harbin Medical Univ. (China) [11070-367]

**Photodynamic therapy in combination with radio frequency electromagnetic field-mediated hyperthermia on cancer cells**, Heinrich Walt, UniversitätsSpital Zürich (Switzerland) ..... [11070-368]

**Energy fluence rate impacts the efficacy of photodynamic therapy with methylene blue in breast cancer cells**, Ancely Ferreira dos Santos, Daria Raquel Queiroz de Almeida, Leticia Ferreira Terra, Rosangela A. M. Wailemann, Felipe Ravagnani, Mauricio S. Baptista, Leticia Labriola, Univ. de São Paulo (Brazil) ..... [11070-369]

**Dynamic analysis of a uniaxial anisotropic particle in a high-order Bessel vortex beam**, Tan Qu, Zhen-sen Wu, Jia-Ji Wu, Qingchao Shang, Zheng-Jun Li, Xidian Univ. (China) ..... [11070-370]

**Stability and dynamics of self-arranged chiral structures in lateral optical binding**, Jing Bai, Zhensen Wu, Chengxian Ge, Xidian Univ. (China) ..... [11070-372]

**Optical binding of assembly stratified biological cells in an off-axis high-order Bessel beam field**, Zhensen Wu, Jing Bai, Chengxian Ge, Xidian Univ. (China) ..... [11070-373]

**Optical resonances of a chiral sphere interacting with light waves**, Qingchao Shang, Zhen Sen Wu, Tan Qu, Xidian Univ. (China) ..... [11070-374]

**Topical hydrogen peroxide as a neoadjuvant treatment in the surgical excision of non-melanoma skin cancers**, Kevin J. Jordan, Neil Mundi, Corey Moore, London Health Sciences Ctr. (Canada) ..... [11070-375]

**Methodology on photodynamic therapy and sensor optimizing in microcirculation**, Hua Liu, Ming Suo Li, Science and Technology on Electro-optic Control Lab. (China) ..... [11070-376]

**Porphycene targeting in photodynamic therapy applications**, Cormac Hally, Santi Nonell, Univ. Ramon Llull (Spain) ..... [11070-377]

**The use of PBM to enhance tumor response in PDT**, Clara Maria Gonçalves de Faria, Camilla Costa, Sebastião Pratavieira, Natalia M. Inada, Vanderlei S. Bagnato, Univ. de São Paulo (Brazil) ..... [11070-378]

**TRAIL secreting human mesenchymal stem cells for cancer therapy via photochemical internalized gene transfection**, Youngum Jo, Jieun Han, Hee Sook Hwang, Kun Na, The Catholic Univ. of Korea (Korea, Republic of) ..... [11070-379]

**Near infrared photoimmunotherapy of GPA33-positive colorectal cancer in mice**, Danfeng Wei, Yuanbiao Guo, Lei Liu, Yifang Zhu, The Third People's Hospital of Chengdu (China) ..... [11070-380]

**ROS explicit dosimetry for photofrin-mediated pleural photodynamic therapy**, Yi Hong Ong, Michele M. Kim, Andrea Dimofte, Perelman Ctr. for Advanced Medicine, Univ. of Pennsylvania (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA); Sunil Singhal, Keith A. Cengel, Timothy C. Zhu, Perelman Ctr. for Advanced Medicine, Univ. of Pennsylvania (USA) ..... [11070-381]

**Autofluorescence endoscopic surveillance and photodynamic treatment of Barrett's esophagus**, Wojciech Latos, Medical Univ. of Silesia (Poland); Aleksander Sieron, Jan Dlugosz Univ. de Czestochowa (Poland); Grzegorz Cieslar, Aleksandra Kawczyk-Krupka, Medical Univ. of Silesia (Poland) ..... [11070-382]

**The benefits of targeted endoscopic biopsy performed using the autofluorescence based diagnostic technique in gastrointestinal tumors**, Wojciech Latos, Medical Univ. of Silesia (Poland); Aleksander Sieron, Jan Dlugosz Univ. in Czestochowa (Poland); Grzegorz Cieslar, Aleksandra Kawczyk-Krupka, Medical Univ. of Silesia (Poland) ..... [11070-383]

**Targeting oncogenic Ras/MEK pathway to improve visualisation of brain tumours using PpIX fluorescence**, Vipin Shankar Chelakkot, Shaykat Saha, Ema Yoshioka, Chantel Rice, Jayoti Som, Kaiwen Liu, Memorial Univ. of Newfoundland (Canada); Maneesha Rajora, Juan Chen, Gang Zheng, Univ. of Toronto (Canada); Kensuke Hirasawa, Memorial Univ. of Newfoundland (Canada) ..... [11070-385]

**Exploring metabolic heterogeneity and plasticity of peritoneal carcinomatosis to augment PDT as a theranostic treatment modality**, Mans Broekgaarden, Maxime Henry, Sandrine Blanchet, Institut pour l'Avancée des Biosciences (France); Olivier Glehen, Ctr. Hospitalier Univ. de Lyon (France); Pierre Hainaut, Jean-Luc Coll, Institut pour l'Avancée des Biosciences (France) ..... [11070-386]

**Monitoring PDT response using a label-free multispectral lifetime fluorescence**, Renan A. Romano, Ramon G. T. Rosa, Instituto de Física de São Carlos (Brazil); Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil); Javier A. Jo, Texas A&M Univ. (USA); Cristina Kurachi, Instituto de Física de São Carlos (Brazil) ..... [11070-387]

**Study of destruction effect of blood vessels after photodynamic therapy in a model of chorioallantoic membrane**, Hilde H. Buzzá, Gabriela Arthuzo, Vanderlei S. Bagnato, Univ. de São Paulo (Brazil) ..... [11070-388]

**A system for treatment and monitoring of skin lesion PDT in real time via fluorescence images of PpIX in NIR region**, Marlon R. Garcia, Michelle B. Requena, Sebastião Pratavieira, Univ. de São Paulo (Brazil); Ana Gabriela Salvio, Hospital Amaral Carvalho (Brazil); Cristina Kurachi, Daniel V. Magalhães, Univ. de São Paulo (Brazil) ..... [11070-389]

**Appling OCTA (optical coherence tomography angiography) to monitoring PDT (photodynamic therapy)**, YiDi Liu, Ying Gu, Haixia Qiu, Chinese PLA General Hospital (China) ..... [11070-390]

**Real-time GPU accelerated hyperspectral unmixing**, Eric M. Kercher, Julia Tatz, Qianqian Fang, Bryan Q. Spring, Northeastern Univ. (USA) ..... [11070-391]

**Micro-image mosaicking for video-rate multi-channel fluorescence microendoscopy**, Ryan Lang, Julia Tatz, Eric M. Kercher, Dana Brooks, Bryan Q. Spring, Northeastern Univ. (USA) ..... [11070-392]

**Fabrication of a fast fiber scanner for fluorescence microendoscopy**, Arvind Mohan, Kai Zhang, Taresh Sharan, Guillaume Ducourthial, Eric M. Kercher, Bryan Q. Spring, Northeastern Univ. (USA) ..... [11070-393]

**Practical low-cost fabrication and optimization of a femtosecond fiber laser for multiphoton microscopy**, Nima Davoudzadeh, Guillaume Ducourthial, Kai Zhang, Bryan Q. Spring, Northeastern Univ. (USA) ..... [11070-394]



# CONFERENCE 11070

**Towards in-vivo molecular imaging as a tool for cancer cell phenotyping.** Akilan Palanisami, Wellman Ctr. for Photomedicine (USA); Bryan Q. Spring, Eric M. Kercher, Ryan Lang, Northeastern Univ. (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) . . . . . [11070-395]

**Knowledge, attitude, and practice regarding photodynamic therapy(PDT) use in dermatological disorders in developing country.** Shambhu Joshi, Far Western Community Hospital (Nepal) . . . . . [11070-396]

**Standard erythema dose (SED) and UVA exposure during daylight photodynamic therapy.** Luke J. McLellan, Univ. of Dundee (United Kingdom) . . . . . [11070-397]

**Stability evaluation of applicators for photodynamic therapy of oral cavity tumors with an endoscope.** Srivalleesha Mallidi, Wellman Ctr. for Photomedicine (USA) and Tufts Univ. (USA); Amjad P. Khan, Wellman Ctr. for Photomedicine (USA); Hui Liu, Univ. of Massachusetts Boston (USA); Shakir Khan, M. A. Bilal Hussain, Syed Abrar Hasan, Shahid A. Siddiqui, Kafil Akhtar, Jawaharlal Nehru Medical College (India); Meredith August, Maria Troulis, Massachusetts General Hospital (USA); Filip Cuckov, Jonathan P. Celli, Univ. of Massachusetts Boston (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) . . . . . [11070-398]

**Design and evaluation of applicators for photodynamic therapy of oral cavity tumors in low resource settings.** Amjad P. Khan, Srivalleesha Mallidi, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Hui Liu, Liam Daly, Grant Rudd, Univ. of Massachusetts Boston (USA); M. A. Bilal Hussain, Shakir Khan, Shahid A. Siddiqui, Syed Abrar Hasan, Kafil Akhtar, Shaista Siddiqui, Jawaharlal Nehru Medical College (India); Meredith August, Maria Troulis, Massachusetts General Hospital (USA); Filip Cuckov, Jonathan P. Celli, Univ. of Massachusetts Boston (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA) . . . . . [11070-399]

**Determination of in-vivo tissue optical properties for anal photodynamic therapy.** Yi Hong Ong, Andrew Q. Li, Andrea Dimofte, Theresa M. Busch, Timothy C. Zhu, Univ. of Pennsylvania (USA) . . . . . [11070-400]

**Electromagnetic tracking system for interstitial photodynamic therapy.** Sarah Chamberlain, Sergei Kurenov, David Bellnier, Lindsey Carlsen, Gal Shafirstein, Roswell Park Comprehensive Cancer Ctr. (USA) . . . . . [11070-401]

**A 2D singlet oxygen and photosensitizer imaging system for PDT.** Youbo Zhao, Physical Sciences Inc. (USA) . . . . . [11070-402]

**Monte Carlo simulation for light delivery in turbid media improvement by a surface coupling agent.** Thereza C. Fortunato, Lilian T. Moriyama, Univ. de São Paulo (Brazil) . . . . . [11070-403]

**ROS explicit dosimetry for ALA-mediated photodynamic therapy.** Tianqi Sheng, Yi Hong Ong, Tim Zhu, Univ. of Pennsylvania (USA) . . . . . [11070-404]

**A Monte Carlo investigation of the scatter light in cavity geometry.** Tianqi Sheng, Yi Hong Ong, Andrew Li, Timothy C. Zhu, Univ. of Pennsylvania (USA) . . . . . [11070-405]

**Fast and accurate simulations for PDT dosimetry.** Mary J. Potasek, Karl Beeson, Evgueni Parilov, Simphotek Inc. (USA); Gal Shafirstein, Emily Oakley, David Bellnier, Roswell Park Comprehensive Cancer Ctr. (USA) . . . . . [11070-406]

**Plum-blossom needle assisted photodynamic therapy: the therapy option for the treatment of oral potentially malignant disorder in the elderly.** Xing Wang, Hongwei Liu, Peking Univ. School of Stomatology (China) . . . . . [11070-407]

**Laser coagulation test of cylindrical diffusing optical fiber probe for photodynamic therapy.** Gaye Park, Hyeyeon Lee, Junho Lee, Derek M. Jung, Chang Hyun Jung, Jaesun Kim, Chihwan Ouh, Taihan Fiberoptics Co., Ltd. (Korea, Republic of) . . . . . [11070-408]

**The use of optical fiber irradiation 5-aminolevulinic acid photodynamic therapy in the treatment of acne vulgaris patients.** Qian Wang, Sichuan Provincial People's Hospital (China); Wei Liu, Sichuan Academy of Medical Sciences (China) and Sichuan Provincial People's Hospital (China) . . . . . [11070-409]

**Low-cost fabrication of a custom LED array source for photodynamic therapy.** Kai Zhang, Matthew Waquespack, Jennifer Sellings, Arvind Mohan, Eric M. Kercher, Ryan Lang, Nima Davoudzadeh, Northeastern Univ. (USA); Hui Liu, Jonathan P. Celli, Univ. of Massachusetts Boston (USA); Bryan Q. Spring, Northeastern Univ. (USA) . . . . . [11070-411]

**Role of ultrasound and photoacoustic imaging in photodynamic therapy for glioblastoma.** Srivalleesha Mallidi, Megumi Ichikawa, Rei Haraoka, Shazia Bano, Girgis Obaid, Zhiming Mai, Wellman Ctr. for Photomedicine (USA); Hiroaki Wakimoto, Massachusetts General Hospital (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) . . . . . [11070-25]

**The therapeutic effectiveness of photodynamic therapy on vaginal intraepithelial neoplasia.** Naiyan Huang, Limei Xin, Xiaoyu Qi, Deifu Chen, Jiaying Zhang, Ying Gu, Chinese PLA General Hospital (China) . . . . . [11070-53]

**Application of complex tissue engineering: variable control for clinical application of photothermal cancer therapy.** Ki-Hwan Nam, Korea Basic Science Institute (Korea, Republic of) . . . . . [11070-187]

**Combining PDT with PD-1/PD-L1 blockade: can we find the key to enhanced antitumor response?** Barbara Pucelik, Jagiellonian Univ. in Krakow (Poland); Luis G. Arnaut, Univ. de Coimbra (Portugal); Janusz Dabrowski, Jagiellonian Univ. in Krakow (Poland) . . . . . [11070-412]

**Tuning the photophysical properties of TiO<sub>2</sub>/porphyrin materials for visible light biomedical application.** Adam Sulek, Barbara Pucelik, Janusz Dabrowski, Jagiellonian Univ. in Krakow (Poland) . . . . . [11070-413]

**Targets of photodynamic inactivation in fungal cells.** Alessandra Baptista D.D.S., Silvia Cristina C. Nunez D.D.S., Airton Abrahão Martin D.D.S., UNIVBRASIL (Brazil); Martha S. Ribeiro M.D., Nuclear and Energy Research Institute (Brazil) . . . . . [11070-414]

## MONDAY 1 JULY

### MONDAY PLENARY SESSION

**ROOM: SALON 4 . . . . . MON 8:30 AM TO 10:00 AM**

**8:30 am: Re-engineering the tumor microenvironment to enhance cancer treatment: bench to bedside (Plenary).** Rakesh K. Jain, Massachusetts General Hospital (USA) . . . . . [11070-501]

**9:15 am: Next-generation immune checkpoints: deciphering key roles in the TME (Plenary).** Catherine Sabatos-Peyton, Novartis Institutes for Biomedical Research, Inc. (USA) . . . . . [11070-502]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

### POSTER SLAM TALKS

**ROOM: CONCEPT . . . . . 10:30 AM TO 12:30 PM**

*Among the poster participants from the two Poster Sessions, 10 participants will be selected and will be given an opportunity to present their posters as oral presentation (1 slide, 3 minutes). In the 3 minutes, they will explain their research poster to the jury. Winners will be selected from the SLAM talk presentations. The top four winners will be awarded the Poster of Prestige and the next six will be awarded the Poster of Excellence. Nominal amount of cash will be part of the awards.*

Lunch Break & General Assembly . . . . . Mon 12:30 pm to 2:00 pm

### SESSION 10

**ROOM: SALONS 5-7 . . . . . MON 10:30 AM TO 12:30 PM**

#### PDT for Thoracic Malignant Tumors

**10:30 am: Optical coherence tomography for the detection, diagnosis, and monitoring of pulmonary disease and thoracic malignancies (Invited Paper).** Melissa J. Suter, Massachusetts General Hospital (USA) and Harvard Medical School (USA) . . . . . [11070-64]

**10:50 am: Photodynamic therapy for peripheral-type lung cancer in a multi-center clinical trial (Invited Paper).** Jitsuo Usuda, Nippon Medical School (Japan) . . . . . [11070-65]

**11:10 am: Combining immunoncology agents and PDT in thoracic oncology: once more back to the bench, dear friends (Invited Paper).** Keith A. Cengel, Penn Medicine (USA) . . . . . [11070-66]

**11:30 am: Fluorodynamic diagnosis of thoracic malignancies.** Yoshinobu Ohsaki, Ryohei Yoshida, Takaaki Sasaki, Shunsuke Okumura, Yoshinori Minami, Yoshihiro Kazebayashi, Noriko Hirai, Kei Ishibashi, Nana Yoshida, Yasushi Yamamoto, Masahiro Kitada, Asahikawa Medical Univ. (Japan) . . . . . [11070-67]

**11:45 am: Updated results of a feasibility trial assessing intrapleural photodynamic therapy combined with pleurectomy/decortication then chemotherapy in malignant pleural mesothelioma patients.** Serge R. Mordon, INSERM (France) . . . . . [11070-68]

**12:00 pm: Combination therapy with photodynamic therapy in lung cancer.** Kinya Furukawa, Ibaraki Medical Ctr., Tokyo Medical Univ. (Japan); Jitsuo Usuda, Nippon Medical School (Japan); Masakazu Kimura, Kuniharu Miyajima, Niizashiki Central General Hospital (Japan); Taisuke Matsubara, Shotaro Ono, Eiji Nakajima, Tokyo Medical Univ. (Japan) and Ibaraki Medical Univ. (Japan); Norihiko Ikeda, Tokyo Medical Univ. (Japan); Harubumi Kato, Niizashiki Central General Hospital (Japan) . . . . . [11070-69]

**12:15 pm: A novel photodynamic therapy technique for peripheral lung tumor.** Yei-San Hsieh, Taoyuan General Hospital (Taiwan) . . . . . [11070-70]

Lunch Break & General Assembly . . . . . Mon 12:30 pm to 2:00 pm

SESSION 11

ROOM: SALON 4 ..... MON 10:30 AM TO 12:30 PM

**Photodynamic Immune Activation and Immunotherapy**

Session Chairs: **Ferry Ossendorp**,  
Leiden Univ. Medical Ctr. (Netherlands); **Arjan Griffioen**,  
Amsterdam Univ. Medical Ctr. (Netherlands)

- 10:30 am: **Photochemical internalization (PCI) of bleomycin induces T-cell activation of importance for curative effect and systemic anti-tumor immunity** (*Invited Paper*), Kristian Berg, Ane Sofie Fremstedal, Anette Weyergang, Oslo Univ. Hospital (Norway); Jakub Golab, Medical Univ. of Warsaw (Poland); Ole-Jacob Norum, Oslo Univ. Hospital (Norway) ..... [11070-71]
  - 10:50 am: **Augmentation of PDT-enhanced anti-tumor immunity and implications for immune checkpoint blockade** (*Invited Paper*), Sandra O. Gollnick, Riddhi Falk-Mahapatra, Kimberley Ramsey, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-72]
  - 11:10 am: **Nanoscale metal-organic framework-mediated photodynamic therapy enhances checkpoint blockade immunotherapy** (*Invited Paper*), Wenbin Lin, The Univ. of Chicago (USA) ..... [11070-73]
  - 11:30 am: **Photo triggered liposomes for delivery of immunostimulatory cytokines to solid tumors**, Amit Joshi, Gayatri Sharma, Medical College of Wisconsin (USA) ..... [11070-74]
  - 11:45 am: **Epidermal growth factor receptor: targeted photoimmunotherapy is fluence rate dependent in-vivo**, Henriëtte S. de Bruijn, Erasmus MC (Netherlands); Wei Peng, Erasmus MC (Netherlands) and Univ. Medical Ctr. Groningen (Netherlands); Timo ten Hagen, Erasmus MC (Netherlands); Go M. van Dam, Jan L. N. Roodenburg, Max J. Witjes, Univ. Medical Ctr. Groningen (Netherlands); Dominic J. Robinson, Erasmus MC (Netherlands) ..... [11070-75]
  - 12:00 pm: **Analysis of cell death and immune response in metronomic versus conventional photodynamic therapy of actinic keratosis in a murine model**, Sanjay Anand, Anton Yasinchak, Mukul Govande, Sajina Shakya, Edward V. Maytin, Cleveland Clinic (USA) ..... [11070-76]
  - 12:15 pm: **Development of Anti-Cadherin-17 Antibody - IR700 Conjugate for Photodynamic Therapy Against Gastrointestinal Cancers**, Yick Liang Lum, Wing Ping Fong, The Chinese Univ. of Hong Kong (Hong Kong, China); John Luk, Arbele Ltd. (Hong Kong, China) and Arbele Corp. (USA) ..... [11070-77]
- Lunch Break & General Assembly ..... Mon 12:30 pm to 2:00 pm

SESSION 12

ROOM: SALONS 5-7 ..... MON 2:00 PM TO 4:00 PM

**Clinical and Immunological Aspects of PDT in Dermatology**

Session Chairs: **Edward V. Maytin**,  
Lerner Research Institute - Cleveland Clinic (USA);  
**Xiuli Wang**, Shanghai Skin Disease Hospital (China)

- 2:00 pm: **Personalized combination regimens improve PDT outcomes for actinic keratoses and skin cancer** (*Invited Paper*), Edward V. Maytin, Lerner Research Institute - Cleveland Clinic (USA); Sanjay Anand, Lerner Research Institute - Cleveland Clinic (USA); Urvashi Kaw, Cleveland Clinic (USA); Taylor Bullock, Lerner Research Institute - Cleveland Clinic (USA); Christine B. Warren, Cleveland Clinic (USA) ..... [11070-78]
  - 2:20 pm: **Immune effects of ALA-PDT for cutaneous squamous cell carcinoma** (*Invited Paper*), Xiuli Wang, guolong Zhang, Jie Ji, Peiru Wang, Lei Shi, Hongwei Wang, Shanghai Skin Disease Hospital (China) ..... [11070-79]
  - 2:40 pm: **Insights gained from regression analysis of PpIX fluorescence imaging undertaken during routine dermatological photodynamic therapy** (*Invited Paper*), Alison Curnow, Univ. of Exeter Medical School (United Kingdom) ..... [11070-80]
  - 3:00 pm: **Photodynamic therapy for squamous cell carcinoma in situ**, Nathalie C. Zeitouni, Medical Dermatology Specialists (USA) ..... [11070-81]
  - 3:15 pm: **Photodynamic therapy for actinic keratosis: a trend towards a decrease in irradiance without loss of efficacy for a better tolerability**, Anne-Sophie Vignion-Dewalle, OncoThAI INSERM (France); Claire Vicentini, OncoThAI INSERM (France) and Ctr. Hospitalier Regional Univ. de Lille (France); Gregory Baert, Elise Thécu, Fabienne Lecomte, OncoThAI INSERM (France); Laurent Mortier, OncoThAI INSERM (France) and Ctr. Hospitalier Regional Univ. de Lille (France); Serge R. Mordon, OncoThAI INSERM (France) ..... [11070-82]
  - 3:30 pm: **Non-invasive skin evaluation for assessing treatment efficacy of port-wine stains**, Xian Jiang, West China Hospital (China) ..... [11070-83]
  - 3:45 pm: **Skin photoaging improved by ALA-PDT: from clinical to mechanism study**, Peiru Wang, Jiatong Han, Minglei Wei, Zijun Zhao, Linglin Zhang, Guolong Zhang, Xiuli Wang, Shanghai Skin Disease Hospital (China) ..... [11070-84]
- Coffee Break ..... Mon 4:00 pm to 4:30 pm

SESSION 13

ROOM: SALON 4 ..... MON 2:00 PM TO 4:00 PM

**Vascular Targeted PDT**

Session Chairs: **Avigdor Scherz**, Weizmann Institute of Science (Israel);  
**Jonathan A. Coleman**, Memorial Sloan-Kettering Cancer Ctr. (USA)

THIS SESSION IS SPONSORED IN PART BY:



- 2:00 pm: **Clinical trial experience with Tookad soluble vascular targeted photodynamic therapy for genitourinary cancers at Memorial Sloan Kettering** (*Invited Paper*), Jonathan A. Coleman, Memorial Sloan-Kettering Cancer Ctr. (USA) ..... [11070-15]
  - 2:20 pm: **WST11-VTP (Tookad soluble) is safe in the luminal treatment of obstructing esophago-gastric cancer** (*Invited Paper*), Hans Gerdes, Memorial Sloan-Kettering Cancer Ctr. (USA) ..... [11070-16]
  - 2:40 pm: **Vascular targeted photodynamic therapy with Tookad: from local ablation to systemic cancer treatment** (*Invited Paper*), Avigdor Scherz, Lilach Agemy, Dina Preise, Rachel Elmoalem-Hamri, Weizmann Institute of Science (Israel); Jonathan A. Coleman, Memorial Sloan Kettering Cancer Ctr. (USA) ..... [11070-17]
  - 3:00 pm: **Combinatorial approaches with vascular photodynamic therapy with redaporfin and immune checkpoint blockers**, Ana Catarina Sousa Lobo, Lúcia C. Gomes-da-Silva, Luis G. Arnaut, Univ. de Coimbra (Portugal) ..... [11070-18]
  - 3:15 pm: **Safety and efficacy of photosensitizer Photolon (Fotolon) in photodynamic therapy**, Tatsiana Trukhachova, RUE "Belmedpreparaty" (Belarus) ..... [11070-19]
  - 3:30 pm: **Vandetanib sensitises oral squamous cell carcinoma to photodynamic therapy through NHEJ impairment and modulation of tumour microenvironment**, Pek Lim Chu, Duke-NUS Graduate Medical School (Singapore); Waseem A. Shihabudeen, Kar Perng Low, Dennis J.J. Poon, Bhuvanewari Ramaswamy, National Cancer Ctr. of Singapore (Singapore); Zhong-Guo Liang Jr., Guangxi Medical Univ. (China); Wen Long Nei, Kevin L.M. Chua, Patricia S.P. Thong, Khee Chee Soo, National Cancer Ctr. of Singapore (Singapore); Eugenia L.L. Yeo, Duke-NUS Graduate Medical School (Singapore); Melvin L.K. Chua, Duke-NUS Graduate Medical School (Singapore) and National Cancer Ctr. of Singapore (Singapore) ..... [11070-20]
  - 3:45 pm: **Complexation of WST11 (Tookad soluble) by serum albumin modulates the photosensitizer's ability to generate free radicals and singlet oxygen**, Tadeusz Sarna, Tomasz Oles, Jozef Moscicki, Jagiellonian Univ. in Krakow (Poland); Iddo Pinkas, Avigdor Scherz, Weizmann Institute of Science (Israel) ..... [11070-21]
- Coffee Break ..... Mon 4:00 pm to 4:30 pm

SESSION 14

ROOM: CONCEPT ..... MON 2:00 PM TO 3:45 PM

**PCI and Other Drug Delivery Methods**

Session Chairs: **Per Walday**, PCI Biotech AS (Norway);  
**Mans Broekgaarden**, Institut pour l'Avancée des Biosciences (France)

THIS SESSION IS SPONSORED IN PART BY:



- 2:00 pm: **The scientific basis of photochemical internalization (PCI)** (*Invited Paper*), Kristian Berg, Oslo Univ. Hospital (Norway) ..... [11070-92]
  - 2:20 pm: **Review of photochemical internalisation (PCI) applications** (*Invited Paper*), Anders Høgstet, Per Walday, PCI Biotech AS (Norway) ..... [11070-93]
  - 2:40 pm: **Photochemical internalization: current clinical trials in cholangiocarcinoma** (*Invited Paper*), Hans Olivecrona, PCI Biotech AS (Norway) ..... [11070-94]
  - 3:00 pm: **Initial clinical studies with PCI**, Colin Hopper, Eastman Dental Hospital & Institute (United Kingdom) ..... [11070-95]
  - 3:15 pm: **Light-induced permeabilization of liposomes for nuclear antibody delivery**, Ramtin Rahmzadeh, Univ. zu Lübeck (Germany) ..... [11070-96]
  - 3:30 pm: **Enhancing the efficacy of drug released from loaded fibrin glue by photochemical internalization (PCI)**, Henry Hirschberg, Lina Nguyen, Mai T. Le, Univ. of California, Irvine (USA); Steen Madsen, Univ. of Nevada, Las Vegas (USA) ..... [11070-97]
- Coffee Break ..... Mon 3:45 pm to 4:30 pm

# CONFERENCE 11070

## SESSION 15

ROOM: SALONS 5-7 ..... MON 4:30 PM TO 6:15 PM

### Photoactivated Chemotherapy: an Oxygen-Independent Form of Anticancer Phototherapy

Session Chairs: **Sylvestre Bonnet**, Leiden Univ. (Netherlands);  
**Si Wu**, Max-Planck-Institut für Polymerforschung (China)

4:30 pm: **Dual action photoactive transition metal complexes for photochemotherapy** (*Invited Paper*), Claudia Turro, The Ohio State Univ. (USA) ..... [11070-98]

4:50 pm: **Red-light-responsive Ru-containing polymers for deep-tissue biomedical applications** (*Invited Paper*), Si Wu, Univ. of Science and Technology of China (China) ..... [11070-99]

5:10 pm: **Photoactivated chemotherapy in hypoxic cancer cells** (*Invited Paper*), Sylvestre Bonnet, Leiden Univ. (Netherlands) ..... [11070-100]

5:30 pm: **Light emitting fabrics for photodynamic treatment of vulvar primary extramammary Paget's disease**, Elise Thécua, OncoThAI INSERM (France) and MDB Texinov S.A.S. (France); Fabienne Lecomte, Laurine Ziane, Anne-Sophie Vignion-Dewalle, OncoThAI INSERM (France); Cyril Maire, Claire Vicentini, Henry Abirached, OncoThAI INSERM (France) and CHU Lille (France); Delphine Staumont, Ctr. Hospitalier Regional Univ. de Lille (France); Laurent Mortier, OncoThAI INSERM (France) and Ctr. Hospitalier Regional Univ. de Lille (France); Serge R. Mordon, OncoThAI INSERM (France) ..... [11070-101]

5:45 pm: **Near infrared light-mediated delivery of anticancer agents**, Thomas Shell, Norwich Univ. (USA); Jennifer R. Shell, Dartmouth College (USA); Colter G. Sheveland, Dillon C. Zites, Norwich Univ. (USA) ..... [11070-102]

6:00 pm: **Novel mechanism of dendritic cell maturation by dying/death tumor cells via photodynamic modulation of type 1 interferon pathway**, María Julia Lamberti, Fátima Mentucci, Viviana Alicia Rivarola, Natalia Belén Rumie Vittar, Univ. Nacional de Río Cuarto (Argentina); Mariana Maccioni, Univ. Nacional de Córdoba (Argentina) ..... [11070-103]

## SESSION 16

ROOM: SALON 4 ..... MON 4:30 PM TO 6:30 PM

### Does PDT have a Role in Vaccine Development?

Session Chairs: **Sandra O. Gollnick**, Roswell Park Comprehensive Cancer Ctr. (USA); **Kristian Berg**, Oslo Univ. Hospital (Norway)

4:30 pm: **Specific immuno-photodynamic therapy of cancer** (*Invited Paper*), Ferry Ossendorp, Leiden Univ. Medical Ctr. (Netherlands) ..... [11070-105]

4:50 pm: **Cancer PDT vaccines: progress and prospects** (*Invited Paper*), Mladen Korbelik, BC Cancer Research Ctr. (Canada) ..... [11070-106]

5:10 pm: **Measuring and modulating tumor microenvironment in PDT: an immunological perspective** (*Invited Paper*), Theresa M. Busch, Univ. of Pennsylvania (USA) ..... [11070-107]

5:30 pm: **Phase I clinical study for validation of photochemical internalisation (fimaVacc): a novel technology for enhancing cellular immune responses important for therapeutic effect of peptide- and protein-based vaccines** (*Invited Paper*), Anders Høgset, PCI Biotech AS (Norway); Anne Grete Nedberg, Victoria Edwards, Monika Håkerud, Oslo Univ. Hospital (Norway); Hans Olivecrona, Tone Otterhaug, PCI Biotech AS (Norway) ..... [11070-108]

5:45 pm: **Understanding the first steps towards immune-modulation triggered by nanobody-targeted photodynamic therapy**, Irati Beltrán Hernández, Tommaso Del Buono D'Ondes, Alessia Di Maggio, Sabrina Oliveira, Utrecht Univ. (Netherlands) ..... [11070-109]

6:00 pm: **A new platform technology RuVaCare, an extracorporeal anti-cancer vaccine is efficient in breaking immune barrier to target cancer cells**, Lothar D. Lilge, Univ. Health Network (Canada); Manjunatha Ankathatti Munegowda, Theralase Technologies, Inc. (Canada) and Univ. Health Network (Canada); Arkady Mandel, Roger Dumoulin-White, Theralase Technologies, Inc. (Canada) ..... [11070-110]

6:15 pm: **Photodynamic therapy induced prostaglandin E2 plays an unexpected beneficial role in the generation of anti-tumor immunity**, Riddhi Falk-Mahapatra, Sandra O. Gollnick, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-111]

## SESSION 17

ROOM: CONCEPT ..... MON 4:30 PM TO 6:30 PM

### Global Funding Workshop

The IPA Global Funding Workshop brings together a series of fundamental, translational and clinical researchers at different stages of their careers whose research in photodynamic therapy has been funded by organizations and institutions from across the globe. The purpose of this two-part workshop is to provide global insights, and personal experiences of obtaining funding strategies for research in photodynamic therapy. These include career transition awards, junior investigator awards, clinical-basic research partnerships. The workshop will also include a "Mentor's Word of Advice" from Dr. Tayyaba Hasan.

Join us at the IPA Global Funding Workshop to learn about career trajectories and how to fund your research from experienced and well-funded investigators from North America, Europe and Japan.

## TUESDAY 2 JULY

### TUESDAY PLENARY SESSION

ROOM: SALON 4 ..... TUE 9:00 AM TO 10:30 AM

9:00 am: **Photochemistry and the origin of life** (*Plenary*), Jack W. Szostak, Massachusetts General Hospital (USA) and Harvard Medical School (USA) ..... [11070-503]

10:00 am: **Antimicrobial PDT: progress and challenges at the IPA 2019 meeting?** (*Plenary*), Nicolas G. Loebel, Ondine Research Labs., Inc. (USA) ..... [11070-504]

Coffee Break ..... Tue 10:30 am to 11:00 am

## SESSION 18

ROOM: SALON 3 ..... TUE 11:00 AM TO 1:00 PM

### PDT in Head and Neck Cancer

Session Chairs: **Merrill A. Biel**, Univ. of Minnesota, Twin Cities (USA);  
**Kimberley S. Samkoe**, Dartmouth-Hitchcock Medical Ctr. (USA)

11:00 am: **Results of a Phase 2A, multicenter, open-label, study of RM-1929 photoimmunotherapy (PIT) in patients with locoregional, recurrent head and neck squamous cell carcinoma (rHNSCC)** (*Invited Paper*), Ann M. Gillenwater, The Univ. of Texas M. D. Anderson Cancer Ctr. (USA) ..... [11070-112]

11:20 am: **Developing world applications of PDT in head and neck cancer** (*Invited Paper*), Colin Hopper, Eastman Dental Hospital & Institute (United Kingdom); Bing Tan, Maastricht Univ. Medical Ctr. (Netherlands); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA); Cristina Kurachi, Vanderlei S. Bagnato, Univ. de São Paulo (Brazil); Eduardo Milanesi, Maxillofacial Surgery (Bolivia); Shahid A. Siddiqui, Aligarh Muslim Univ. (India) ..... [11070-113]

11:40 am: **EGFR-targeted fluorescence guided surgery in head and neck cancer** (*Invited Paper*), Jason M. Warram, The Univ. of Alabama School of Medicine (USA) ..... [11070-114]

12:00 pm: **Surgical navigation in oral tongue cancer resections**, Mark Varvares, Meredith August, Massachusetts General Hospital (USA); Tayyaba Hasan, Srivalleesha Mallidi, Wellman Ctr. for Photomedicine (USA) ..... [11070-115]

12:15 pm: **Interstitial PDT treatment planning and dosimetry for locally advanced head and neck squamous cell carcinoma**, Hassan Arshad, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-116]

12:30 pm: **Interpretation of ultrasonography indicators of photodynamic therapy treatment response in early malignancy of buccal mucosa**, Shaista Siddiqui, Aligarh Muslim Univ. (India); Ibne Ahmed, Kafil Akhtar, Shahid A. Siddiqui, M. A. Bilal Hussain, Shakir Khan, Jawaharlal Nehru Medical College (India); Srivalleesha Mallidi, Amjad P. Khan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Hui Liu, Filip Cuckov, Grant Rudd, Liam Daly, Univ. of Massachusetts Boston (USA); Colin Hopper, Stephen G. Bown, Univ. College London (United Kingdom); Satish C. Sharma, Syed Abrar Hasan, Jawaharlal Nehru Medical College (India); Jonathan P. Celli, Univ. of Massachusetts Boston (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Paola Leon, Univ. of Massachusetts Boston (USA) ..... [11070-117]

12:45 pm: **Investigation of the implications of atropisomersim for redaporfin-photodynamic therapy efficacy**, Claire Donohoe, Fábio Scharbele, Univ. de Coimbra (Portugal); Nuno P. F. Gonçalves, Univ. degli Studi di Torino (Italy); Mariette M. Pereira, Lígia C. Gomes-da-Silva, Luis G. Arnaut, Univ. de Coimbra (Portugal) ..... [11070-118]

Lunch Break ..... Tue 1:00 pm to 2:30 pm



SESSION 19

ROOM: SALON 4 ..... TUE 11:00 AM TO 1:00 PM

**Photoactivation in Drug Delivery**

Session Chairs: **Jonathan Lovell**, Univ. at Buffalo (USA);  
**Huang-Chiao Huang**, Univ. of Maryland, College Park (USA)

11:00 am: **Control of local tumors by light-activatable prodrugs for PDT and site-specific chemotherapy: PB/PKPD-based optimization of the treatment conditions** (*Invited Paper*), Youngjae You, Sukyung Woo, The Univ. of Oklahoma Health Sciences Ctr. (USA) ..... [11070-119]

11:20 am: **Surface modified nanoparticles mediate selective photodynamic therapy against tumor stroma** (*Invited Paper*), Shiyi Zhou, Chaebin Lee, Wen Jiang, Weizhong Zhang, Jin Xie, The Univ. of Georgia (USA) . . . . [11070-120]

11:40 am: **Multifunctional polysilsesquioxane nanoparticle-based platform for the treatment of triple-negative breast cancer in vitro and in vivo using chemo and photodynamic therapy** (*Invited Paper*), Juan L. Vivero-Escoto, Zachary Lyles, The Univ. of North Carolina at Charlotte (USA) . . . . . [11070-121]

12:00 pm: **Single-agent liposomal chemophototherapy for rat mammary tumors**, Jonathan Lovell, Univ. at Buffalo (USA) ..... [11070-122]

12:15 pm: **Photo-immunoconjugated liposomal irinotecan for triple combination cancer therapy**, Barry J. Liang, Collin T. Inglut, Daniel Najafali, Univ. of Maryland, College Park (USA); Michael Pigula, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Univ. (USA); Huang-Chiao Huang, Univ. of Maryland, College Park (USA) and Wellman Ctr. for Photomedicine, Massachusetts General Hospital and Harvard Medical School (USA) and Univ. of Maryland School of Medicine (USA). . . . . [11070-123]

12:30 pm: **Combination light-based therapies to treat pancreatic cancer**, Pilar Acedo, Ismahan Mahamed, Alex Ney, Andres Garcia, Univ. College London (United Kingdom); Pal Selbo, The Norwegian Radium Hospital (Norway); Patricia Sancho, Barts Cancer Institute (United Kingdom); Alexander J. MacRobert, Stephen P. Pereira, Univ. College London (United Kingdom). . . . . [11070-124]

12:45 pm: **Mild hyperthermia enhances drug accumulation and photodynamic therapy efficacy**, Samir V. Jenkins, Klressa D. Barnes, Univ. of Arkansas for Medical Sciences (USA); Gal Shafirstein, Roswell Park Comprehensive Cancer Ctr. (USA); Robert J. Griffin, Univ. of Arkansas for Medical Sciences (USA). . . . . [11070-125]

Lunch Break ..... Tue 1:00 pm to 2:30 pm

SESSION 20

ROOM: SALONS 1-2 ..... TUE 11:00 AM TO 1:00 PM

**Applied and Mechanistic Issues of Anti-Microbial PDT**

Session Chairs: **Maurício da Silva Baptista**, Univ. de São Paulo (Brazil);  
**Tianhong Dai**, Harvard Medical School (USA)

11:00 am: **Mutants of E. coli, which lack antioxidant enzymes, are more susceptible towards type-1 mechanism of action of photoantimicrobials compared to type-2 photoantimicrobials** (*Invited Paper*), Tim Maisch, Pouriya Faraj Tabrizi, Sara Wennige, Universitätsklinikum Regensburg (Germany) ..... [11070-126]

11:20 am: **Antimicrobial photodynamic therapy: from basis to clinical applications** (*Invited Paper*), Martha S. Ribeiro, Instituto de Pesquisas Energéticas e Nucleares (Brazil) ..... [11070-127]

11:40 am: **Butyl toluidine blue: an improved phenothiazinium photoantimicrobial** (*Invited Paper*), Mark Wainwright, Liverpool John Moores Univ. (United Kingdom); Leticia Theodoro, Valdir Garcia, Marta Nuernberg, Univ. Estadual Paulista "Júlio de Mesquita Filho" (Brazil) ..... [11070-128]

12:00 pm: **Photodynamic inactivation of bacterial pneumonia with extracorporeal illumination: current developments**, Giulia Kassab, Johan S. D. Tovar, Instituto de Física de São Carlos (Brazil); Samara S. da Silva, Instituto de Física de São Carlos (Brazil) and UNICEP São Carlos (Brazil); Alana K. Pereira, Univ. Federal de São Carlos (Brazil); Natalia M. Inada, Cristina Kurachi, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) ..... [11070-129]

12:15 pm: **Advances in the clinical application of photodynamic action for pharyngotonsillitis treatment**, Kate C. Blanco, Jennifer Soares, Natalia M. Inada, Vanderlei S. Bagnato, Univ. de São Paulo (Brazil) . . . [11070-130]

12:30 pm: **The mechanisms of bacterial inactivation via MB-APDT avoid drug resistance**, Caetano Padiál Sabino, Univ. de São Paulo (Brazil) and BioLambda, Scientific and Commercial Ltd. (Brazil); Maurício S. Baptista, Univ. de São Paulo (Brazil); Martha S. Ribeiro, Instituto de Pesquisas Energéticas e Nucleares (Brazil); Nilton Lincopan, Univ. de São Paulo (Brazil) . . . . . [11070-131]

12:45 pm: **Correlation between 405-nm antimicrobial blue light inactivation of multidrug-resistant microorganisms and the endogenous porphyrin content**, Raquel Ferrer-Espada, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA); Ying Wang, Chinese PLA General Hospital (China); Xueping Sharon Goh, Tianhong Dai, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA) and Vaccine and Immunotherapy Ctr., Massachusetts General Hospital, Harvard Medical School (USA) . . . . [11070-132]

Lunch Break ..... Tue 1:00 pm to 2:30 pm

WEDNESDAY 3 JULY

WEDNESDAY PLENARY SESSION

ROOM: SALON 4 ..... WED 9:00 AM TO 10:00 AM

9:00 am: **Macromolecular targeting of cancer: challenges in science and translation** (*Plenary*), Daryl Drummond, Merrimack (USA) . . . . . [11070-505]

Coffee Break ..... Wed 10:00 am to 10:30 am

SESSION 21

ROOM: SALON 3 ..... WED 10:30 AM TO 12:30 PM

**Macromolecular Targeted PDT: Is it Worth the Trouble or is it Too Early to Say?**

Session Chairs: **Girgis Obaid**, Wellman Ctr. for Photomedicine (USA);  
**Sabrina Oliveira**, Utrecht Univ. (Netherlands)

10:30 am: **Title to be confirmed** (*Invited Paper*), Adnan O. Abu-Yousif, Massachusetts General Hospital (USA) ..... [11070-417]

10:55 am: **EGFR-targeted photosensitizer-peptide conjugates** (*Invited Paper*), M. Graca H. Vicente, Louisiana State Univ. (USA) . . . . [11070-135]

11:15 pm: **Nanobody-targeted photodynamic therapy selectively kills viral GPCR-expressing glioblastoma cells**, Timo de Groof, Vrije Univ. Amsterdam (Netherlands); Vida Mashayekhi, Utrecht Univ. (Netherlands); Tian Shu Fan, Nick Bergkamp, Vrije Univ. Amsterdam (Netherlands); Paul van Bergen en Henegouwen, Utrecht Univ. (Netherlands); Raimond Heuker, Martine J. Smit, Vrije Univ. Amsterdam (Netherlands); Sabrina Oliveira, Utrecht Univ. (Netherlands) ..... [11070-138]

11:30 am: **Selectivity versus specificity in the world of molecular targeted photonanomedicines: a nanoscale conundrum**, Girgis Obaid, Wellman Ctr. for Photomedicine (USA); Kimberley S. Samkoe, Dartmouth-Hitchcock Medical Ctr. (USA); Shazia Bano, Wellman Ctr. for Photomedicine (USA); Kenneth M. Tichauer, Illinois Institute of Technology (USA); Srivalleesha Mallidi, Tufts Univ. (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) ..... [11070-418]

11:45 am: **Radionuclide stimulated therapy**, Christopher Egbulefu, Samuel Achilefu, Washington Univ. in St. Louis (USA). . . . . [11070-136]

12:00 pm: **Long-circulating prostate-specific membrane antigen-targeted NIR phototheranostic agent**, Marta Overchuk, Univ. of Toronto (Canada) and Princess Margaret Cancer Ctr. (Canada); Kara M. Harmatys, Juan Chen, Princess Margaret Cancer Ctr. (Canada); Martin G. Pomper, The Johns Hopkins Univ. School of Medicine (USA); Brian C. Wilson, Gang Zheng, Princess Margaret Cancer Ctr. (Canada) and Univ. of Toronto (Canada) ..... [11070-137]

12:15 pm: **Excellent antitumor effects for gastrointestinal cancers using photodynamic therapy with a novel glucose conjugated chlorin e6**, Hirota Nishie, Hiroshi Ichikawa, Taketo Suzuki, Mamoru Tanaka, Nagoya City Univ. Graduate School of Medical Sciences and Medical School (Japan); Akihiro Nomoto, Osaka Prefecture Univ. (Japan); Shigenobu Yano, Nara Women's Univ. (Japan); Hiromi Kataoka, Nagoya City Univ. Graduate School of Medical Sciences and Medical School (Japan) ..... [11070-139]

Lunch Break ..... Wed 12:30 pm to 2:00 pm

# CONFERENCE 11070

## SESSION 22

ROOM: SALON 4 .....WED 10:30 AM TO 12:30 PM

### Image-Guided Optimization and Prediction for Effective Photodynamic Therapy

Session Chairs: **Srivalleesha Mallidi**, Wellman Ctr. for Photomedicine (USA); **Ulas Sunar**, Wright State Univ. (USA)

- 10:30 am: **Fluorescence-guided surgery and margin analysis with panitumumab-IRDye800: initial experience in head and neck cancer** (*Invited Paper*), Fred Baik, Nynke van den Berg, Stan van Keulen, Naoki Nishio, Eben Rosenthal, Stanford Univ. School of Medicine (USA) ..... [11070-140]
- 10:50 am: **Optical imaging guided photodynamic therapy monitoring and optimization** (*Invited Paper*), Ulas Sunar, Wright State Univ. (USA) ..... [11070-141]
- 11:10 am: **Possibilities of utilizing multi-parametric Imaging to predict photodynamic therapy response in tumor models** (*Invited Paper*), Srivalleesha Mallidi, Zhiming Mai, Marvin Xavierselvan, Amjad Khan, Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) ..... [11070-142]
- 11:30 am: **Molecularly targeted imaging in multiple myeloma**, Monica Shokeen, Washington Univ. School of Medicine in St. Louis (USA) ..... [11070-143]
- 11:45 am: **The role of medical imaging in the context of photodynamic therapy**, Maximilien Vermandel, Serge R. Mordon, Clément Dupont, OncoThAI INSERM (France) ..... [11070-144]
- 12:00 pm: **5-aminolevulinic acid as a potential contrast agent for image-guided surgery in pancreatic cancer**, Peter L. Labib, Elnaz Yaghini, Brian R. Davidson, Alexander J. MacRobert, Stephen P. Pereira, Univ. College London (United Kingdom) ..... [11070-145]
- 12:15 pm: **Dosimetry recommendations for NMIBC: a simulation and in vivo study**, Lothar D. Lilge, Univ. Health Network (Canada); Daniel Molehuis, Univ. of Toronto (Canada); Angelica Manalac, McMaster Univ. (Canada); Fynn Schwiigelshohn, Ruhr-Univ. Bochum (Germany); Vaughn Betz, Univ. of Toronto (Canada); Wayne Embree, Arkady Mandel, Roger Dumoulin-White, Theralase Technologies, Inc. (Canada); Girish Kulkani, Michael Jewett, Univ. Health Network (Canada) ..... [11070-146]
- Lunch Break ..... Wed 12:30 pm to 2:00 pm

## SESSION 23

ROOM: SALONS 1-2 .....WED 10:30 AM TO 12:30 PM

### Dosimetry and Interstitial PDT

Session Chairs: **Gal Shafirstein**, Roswell Park Comprehensive Cancer Ctr. (USA); **Herbert Stepp**, Laser-Forschungslabor (Germany)

- 10:30 am: **Dose planning and real-time dosimetry in interstitial PDT of recurrent prostate cancer** (*Invited Paper*), Johannes Swartling, SpectraCure AB (Sweden) ..... [11070-147]
- 10:50 am: **Pretreatment planning and light dosimetry for interstitial PDT of locally advanced cancer** (*Invited Paper*), Gal Shafirstein, David Bellnier, Emily Oakley, Michael Habitzruther, Hannah Cooper, Sarah Chamberlain, Sasheen Hamilton, Alan Hutson, Sandra Sexton, Leslie Curtin, Joseph Spornyak, Steven Turowski, Hassan Arshad, Lawrence Tworek, Matthew Mallory, Barbara Henderson, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-148]
- 11:10 am: **Dosimetric considerations for intra cavity photodynamic therapy** (*Invited Paper*), Robert van Veen, The Netherlands Cancer Institute-Antoni van Leeuwenhoek Hospital (Netherlands); Rens Boumans, The Netherlands Cancer Institute (Netherlands); Tessa van Doeveren, Erasmus MC (Netherlands); Pim Schreuder, Maarten van Alphen, The Netherlands Cancer Institute (Netherlands); Ferdinand van der Heijden, Univ. of Twente (Netherlands); Bing Tan, Maastricht Univ. Medical Ctr. (Netherlands); Baris Karakullukcu, , The Netherlands Cancer Institute (Netherlands) ..... [11070-149]
- 11:30 am: **Modelling novel PDT approaches to target peripheral lung cancers**, Lothar D. Lilge, Univ. Health Network (Canada); Christopher McFadden, Univ. of Toronto (Canada); Khaled Ramadan, Univ. Health Network (Canada); Zhangcheng Zheng, Univ. of Toronto (Canada); Fynn Schwiigelshohn, Ruhr-Univ. Bochum (Germany); Vaughn Betz, Univ. of Toronto (Canada); Marcelo Cypel, Univ. Health Network (Canada) ..... [11070-150]
- 11:45 am: **Computational evaluation of the effect of interstitial PDT with 5-ALA for pretreatment planning**, Takahiro Nishimura, Atsuki Izumoto, Hisanao Hazama, Kunio Awazu, Osaka Univ. (Japan) ..... [11070-151]
- 12:00 pm: **Light dosimetry and monitoring approaches for interstitial photodynamic therapy (iPDT)**, Adrian Rühm, Max Aumiller, Christian Heckl, Herbert Stepp, Ronald Sroka, Klinikum der Univ. München (Germany) [11070-152]
- 12:15 pm: **Computational guided dosimetry for the safe and effective treatment of locally advanced VX2 carcinoma with interstitial photodynamic therapy**, Emily Oakley, Michael Habitzruther, Hannah Cooper, Sandra Sexton, Leslie Curtin, Lawrence Tworek, Matthew Mallory, David Bellnier, Gal Shafirstein, Roswell Park Comprehensive Cancer Ctr. (USA) ..... [11070-153]
- Lunch Break ..... Wed 12:30 pm to 2:00 pm

## SESSION 24

ROOM: SALON 3 .....WED 2:00 PM TO 3:45 PM

### PDT in Global Health: Global Access to Healthcare Challenges and Opportunities

Session Chairs: **Colin Hopper**, Eastman Dental Institute (United Kingdom); **Cristina Kurachi**, Instituto de Física de São Carlos (Brazil)

- 2:00 pm: **Global opportunities for PDT** (*Invited Paper*), Colin Hopper, Eastman Dental Hospital & Institute (United Kingdom) ..... [11070-154]
- 2:20 pm: **Oncological PDT in Latin America** (*Invited Paper*), Cristina Kurachi, Vanderlei S. Bagnato, Instituto de Física de São Carlos (Brazil) ..... [11070-155]
- 2:40 pm: **The role of PDT in nasopharyngeal cancer in Indonesia** (*Invited Paper*), Bing Tan, The Netherlands Cancer Institute (Netherlands) ..... [11070-156]
- 3:00 pm: **Photodynamic therapy as an alternative treatment modality for early stage buccal mucosa malignancy**, Shahid A. Siddiqui, M. A. Bilal Hussain, Jawaharlal Nehru Medical College (India); Amjad P. Khan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Kafil Akhtar, Shaista Siddiqui, Shakir Khan, Jawaharlal Nehru Medical College (India); Hui Liu, Univ. of Massachusetts Boston (USA); Srivalleesha Mallidi, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard University of Medicine (USA); Grant Rudd, Liam Daly, Paola L. Alacron, Filip Cuckov, Univ. of Massachusetts Boston (USA); Satish C. Sharma, Ibne Ahmed, Jawaharlal Nehru Medical College (India); Stephen G. Bown, Colin Hopper, Univ. College London (United Kingdom); Jonathan P. Celli, Univ. of Massachusetts Boston (USA); Syed Abrar Hasan, Jawaharlal Nehru Medical College (India); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA) ..... [11070-157]
- 3:15 pm: **How important are the contact-dependent reactions to the outcome of PDT?**, Maurício S. Baptista, Thiago T. Tasso, Univ. de São Paulo (Brazil) ..... [11070-158]
- 3:30 pm: **Photodynamic therapy in primary breast cancer: the first human study**, Shramana M. Banerjee, Royal Free London NHS Foundation Trust (United Kingdom) and Univ. College London (United Kingdom); Soha El Sheikh, Anmol Malhotra, Royal Free London NHS Foundation Trust (United Kingdom); Sandy Mosse, Sweta Parker, Norman R. Williams, Sandy MacRobert, Univ. College London (United Kingdom); Rifaf Hamoudi, Univ. College London (United Kingdom) and Univ. of Sharjah (United Arab Emirates); Stephen G. Bown, Univ. College London (United Kingdom); Mo R. S. Keshtgar, Royal Free London NHS Foundation Trust (United Kingdom) and Univ. College London (United Kingdom) ..... [11070-159]
- Coffee Break ..... Wed 3:45 am to 4:30 am

## SESSION 25

ROOM: SALON 4 .....WED 2:00 PM TO 4:00 PM

### Low-Cost Systems and Techniques in PDT Light Delivery, Dosimetry, and Treatment Guidance

Session Chairs: **Jonathan P. Celli**, Univ. of Massachusetts Boston (USA); **Dominic J. Robinson**, Erasmus MC (Netherlands)

- 2:00 pm: **Quantum dot light emitting diodes (QLEDs) as low-cost PDT light sources** (*Invited Paper*), Hao Chen, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Peter Palomaki, QLEDCures, LLC (USA); Juan He, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Raymond Lanzafame, QLEDCures, LLC (USA) and Raymond J. Lanzafame MD PLLC (USA); Istvan Stadler, Rochester General Hospital (USA); Hamid El-Hamidi, Hui Liu, Jonathan Celli, Univ. of Massachusetts Boston (USA); Michael R. Hamblin, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA); Yingying Huang, Harvard Medical School (USA) and Wellman Ctr. for Photomedicine (USA); Gal Shafirstein, Roswell Park Comprehensive Cancer Ctr. (USA); Ho-Kyoon Chung, Sungkyunkwan Univ. (Korea, Republic of); Shin-Tson Wu, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Yajie Dong, Univ. of Central Florida (USA) and QLEDCures, LLC (USA) ..... [11070-160]
- 2:20 pm: **ROS explicit dosimetry for photodynamic therapy** (*Invited Paper*), Timothy C. Zhu, Perelman Ctr. for Advanced Medicine, Univ. of Pennsylvania (USA) ..... [11070-161]
- 2:40 pm: **Low-cost smartphone-based dosimeter for individualization of PDT treatment planning for protoporphyrin IX based skin cancer treatment** (*Invited Paper*), Alberto J. Ruiz, Ethan Philip M. LaRochelle, Thayer School of Engineering at Dartmouth (USA); M. Shane Chapman, Dartmouth-Hitchcock Medical Ctr. (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) ..... [11070-162]

3:00 pm: **Clinical evaluation of smartphone-based fluorescence imaging for guidance and monitoring of ALA PDT**, Shakir Khan, M. A. Bilal Hussain, Jawaharlal Nehru Medical College (India); Amjad P. Khan, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Hui Liu, Univ. of Massachusetts Boston (USA); Shaista Siddiqui, Jawaharlal Nehru Medical College (India); Srivalleesha Mallidi, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Paola Leon, Liam Daly, Grant Rudd, Filip Cuckov, Univ. of Massachusetts Boston (USA); Colin Hopper, Stephen G. Bown, Univ. College London (United Kingdom); Shahid A. Siddiqui, Jawaharlal Nehru Medical College (India); Jonathan P. Celli, Univ. of Massachusetts Boston (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Harvard Medical School (USA).....[11070-163]

3:15 pm: **Photodynamic therapy (PDT) based on chlorin e6 in the palliative treatment of head neck malignancies**, Thomas Giesen, Praxis Dr. med. Dipl.-Ing Thomas Giesen (Germany); Sönke Baumann, Omicron Laserage Laserprodukte GmbH (Germany); Jens Buentzel, Klinik Nordhausen (Germany).....[11070-164]

3:30 pm: **Weather forecast and light-tissue model based dose planning for daylight PpIX-photodynamic therapy of skin**, Ethan Philip M. LaRochelle, Alberto J. Ruiz, Thayer School of Engineering at Dartmouth (USA); Robert E. LeBlanc, Dartmouth College (USA); Edward V. Maytin, Cleveland Clinic (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); M. Shane Chapman, Dartmouth College (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA).....[11070-165]

3:45 pm: **Implantable electronic device and tissue-adhesive nanosheets can introduce photodynamic therapy into inside the body**, Izumi Kirino, Kyoto Univ. (Japan) and National Defence Medical College (Japan); Kento Yamagishi, Isao Takahashi, Waseda Univ. (Japan); Hizuru Amano, Waseda Univ. (Japan) and The Univ. of Tokyo (Japan); Shinji Takeoka, Waseda Univ. (Japan); Shinji Uemoto, Kyoto Univ. (Japan); Toshinori Fujie, Waseda Univ. (Japan) and Tokyo Institute of Technology (Japan) and Japan Science and Technology Agency, PRESTO (Japan); Yuji Morimoto, National Defense Medical College (Japan).....[11070-166]

Coffee Break..... Wed 4:00 pm to 4:30 pm

## SESSION 26

ROOM: SALONS 1-2 ..... WED 2:00 PM TO 4:00 PM

### Photodynamics and Ionizing Radiation: Friends or Foes?

Session Chairs: **Anne-Laure Bulin**, ESRF - The European Synchrotron (France); **Brian C. Wilson**, Univ. of Toronto. (Canada)

2:00 pm: **Using x-ray in photodynamic therapy (Invited Paper)**, Céline Frochot, Philippe Arnoux, Samir Acherar, Francis Baros, Lab. Réactions et Génie des Procédés (France); François Lux, Institut Lumière Matière (France); Marc Verelst, Ctr. d'Elaboration de Matériaux et d'Etudes Structurales (France); Olivier Tillement, Institut Lumière Matière (France); Muriel Barberi-Heyob, Ctr. de recherche en automatique de Nancy (France).....[11070-167]

2:20 pm: **High resolution imaging of tumor pO2 with Cherenkov-excited luminescence scanned imaging (Invited Paper)**, Brian W. Pogue, Ethan Philip M. LaRochelle, Xu Cao, Jason Gunn, Jennifer A. Shell, Cuiping Yao, Thayer School of Engineering at Dartmouth (USA); Sergei A. Vinogradov, Univ. of Pennsylvania (USA).....[11070-168]

2:40 pm: **Radioluminescent nanomaterials to induce deep-tissue PDT: towards a complete description of the therapeutic contributions (Invited Paper)**, Anne-Laure Bulin, ESRF - The European Synchrotron (France); Frédéric Chaput, Ecole Normale Supérieure de Lyon (France); Mans Broekgaarden, Lucie Sancey, Institut pour l'Avancée des Biosciences (France); Jean-Luc Ravanat, CEA-INAC (France); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Hélène Elleaume, ESRF - The European Synchrotron (France).....[11070-169]

3:00 pm: **Tumor targeting vitamin B12 derivatives for x-ray activated chemotherapy**, Jennifer R. Shell, Dartmouth College (USA); Thomas Shell, Norwich Univ. (USA); Brian W. Pogue, Dartmouth College (USA); Liberty Gendron, St. Anselm College (USA); Colter G. Sheveland, Norwich Univ. (USA).....[11070-170]

3:15 pm: **Targeted XPDT with and without Cherenkov and/or nanoscentillators**, Brian C. Wilson, Princess Margaret Cancer Ctr. (Canada).....[11070-171]

3:30 pm: **Using biodegradable chemotherapy-free nanocarriers and low dose x-rays for combined photodynamic therapy of colorectal cancer**, Wei Deng, Macquarie Univ. (Australia).....[11070-172]

3:45 pm: **Liposomal and polymeric nanoformulations for imaging guided photodynamic therapy**, Tymish Y. Ohulchanskyy, Hao Xu, Oksana M. Chepurna, Artem Yakovliev, Shenzhen Univ. (China); Ludmyla O. Vretik, Taras Shevchenko National Univ. of Kyiv (Ukraine); Yuri L. Slominskii, Institute of Organic Chemistry (Ukraine); Junle Qu, Shenzhen Univ. (China).....[11070-173]

Coffee Break..... Wed 4:00 pm to 4:30 pm

## SESSION 27

ROOM: SALONS 1-2 ..... WED 4:30 PM TO 6:15 PM

### Applications of Novel PDT Light Sources

Session Chairs: **Steven J. Davis**, Physical Sciences Inc. (USA); **Serge R. Mordon**, INSERM (France)

4:30 pm: **An historical perspective of PDT light sources (Invited Paper)**, Steven J. Davis, Physical Sciences Inc. (USA).....[11070-174]

4:50 pm: **Light emitting fabrics for PDT: technology and results of clinical studies (Invited Paper)**, Serge R. Mordon, Anne-Sophie Vignion-Dewalle, Fabienne Lecomte, Pascal Deleporte, Gregory Baert, Elise Thecuva, Laurine Ziane, Claire Vicentini, Cyril Maire, Laurent Mortier, OncoThAI INSERM (France).....[11070-175]

5:10 pm: **A low-cost platform for image-guided PDT treatment or oral cancer in resource limited settings (Invited Paper)**, Hui Liu, Liam Daly, Grant Rudd, Paola Leon, Univ. of Massachusetts Boston (USA); Amjad P. Khan, Srivalleesha Mallidi, Massachusetts General Hospital (USA); M. A. Bilal Hussain, Aligarh Muslim Univ. (USA); Shakir Khan, Shahid A. Siddiqui, Aligarh Muslim Univ. (India); Filip Cuckov, Univ. of Massachusetts Boston (USA); Tayyaba Hasan, Massachusetts General Hospital (USA); Jonathan P. Celli, Univ. of Massachusetts Boston (USA).....[11070-176]

5:30 pm: **Light distribution monitoring using an IR navigation system for pleural PDT**, Timothy C. Zhu, Michele M. Kim, Yi Hong Ong, Andreea Dimofte, Perelman Ctr. for Advanced Medicine, Univ. of Pennsylvania (USA); Sunil Singhal, Univ. of Pennsylvania (USA); Keith A. Cengel, Perelman Ctr. for Advanced Medicine, Univ. of Philadelphia (USA).....[11070-177]

5:45 pm: **Flexible organic light-emitting diodes for antimicrobial photodynamic therapy**, Cheng Lian, Univ. of St. Andrews (United Kingdom); Marta Piksa, Ludwik Hirsfeld Institute of Immunology and Experimental Therapy (Poland); Kou Yoshida, Saydulla Persheyev, Univ. of St. Andrews (United Kingdom); Kuba Pawlik, Ludwik Hirsfeld Institute of Immunology and Experimental Therapy (Poland); Katarzyna Matczyszyn, Wrocław Univ. of Science and Technology (Poland); Ifor D. W. Samuel, Univ. of St. Andrews (United Kingdom).....[11070-178]

6:00 pm: **Devices based on light emitting fabrics dedicated to pdt preclinical studies**, Elise Thecuva, Laurine Ziane, Gregory Baert, Pascal Deleporte, Bertrand Leroux, OncoThAI INSERM (France); Abhishek Kumar, Martha Baydoun, Olivier Moralès, Nadira Delhem, Institut de Biologie de Lille (France); Serge R. Mordon, OncoThAI INSERM (France).....[11070-179]

## SESSION 28

ROOM: SALON 3 ..... WED 4:30 PM TO 6:15 PM

### From Small Animals to Spheroids: Modelling Mechanisms of PDT Effect on Tissue

Session Chairs: **Theresa M. Busch**, Univ. of Pennsylvania (USA); **Patrycja M. Nowak-Sliwinska**, Univ. de Genève (Switzerland)

4:30 pm: **Provocative questions informing preclinical models of PDT research (Invited Paper)**, Theresa M. Busch, Univ. of Pennsylvania (USA).....[11070-181]

4:50 pm: **Organotypic 3D co-cultures and animal tumor models in comparison to 2D cell cultures: mechanistic differences in treatment responses (Invited Paper)**, Patrycja Nowak-Sliwinska, Univ. de Genève (Switzerland).....[11070-182]

5:10 pm: **Microenvironmental cues in 3D cancer models to inform targeted PDT combinations (Invited Paper)**, Shubhankar Nath, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA); Huang-Chiao Huang, Univ. of Maryland, College Park (USA); Michael Pigula, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Christina Conrad, Univ. of Maryland, College Park (USA); Amjad P. Khan, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); William Hanna, Univ. of Massachusetts Boston (USA); Sepideh Afsar, Walfre Franco, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA); Giuliano Scarcelli, Univ. of Maryland, College Park (USA); Utkan Demirci, Stanford Univ. (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA); Imran Rizvi, The Univ. of North Carolina at Chapel Hill (USA) and North Carolina State Univ. (USA) and Wellman Ctr. for Photomedicine, Massachusetts General Hospital, Harvard Medical School (USA).....[11070-183]

5:30 pm: **Surgery-induced immunosuppression of photodynamic therapy efficacy: mechanism and mitigation**, Gwendolyn M. Cramer, Richard W. Davis IV, Astero Klampatsa, Edmund Moon, Keith A. Cengel, Theresa M. Busch, Univ. of Pennsylvania (USA).....[11070-184]



# CONFERENCE 11070

5:45 pm: **Evaluation of photomedicine and anti-microRNA combination therapies in 3D cell culture models of pancreatic ductal adenocarcinoma**, Ljubica Petrovic, Tomas Materdey Jr., Eric Struth, Univ. of Massachusetts Boston (USA); Maud-Emmanuelle Gilles, Meirav Segal, Frank Slack, Beth Israel Deaconess Medical Ctr. (USA); Jonathan P. Celli, Univ. of Massachusetts Boston (USA) ..... [11070-185]

6:00 pm: **Photodynamic therapy followed by abraxane chemotherapy can significantly suppress pancreatic cancer metastasis**, Zhiming Mai, Massachusetts General Hospital (USA); Myung-Gyu Choi, Catholic Research Institute of Medical Science, The Catholic Univ. of Korea (Korea, Republic of); Tayyaba Hasan, Massachusetts General Hospital (USA) ..... [11070-186]

## SESSION 29

ROOM: SALON 4 ..... WED 4:30 PM TO 6:30 PM

### Photodynamic Diagnosis and Therapy for Gastrointestinal Neoplastic Lesions

Session Chairs: **Kenneth K. Wang**, Mayo Clinic (USA); **Myung-Gyu Choi**, The Catholic Univ. of Korea (Korea, Republic of)

4:30 pm: **New concepts of photodynamic therapy in unresectable cholangiocarcinoma: 200 cases for 10 years, single center experiences** (*Invited Paper*), Eun Taek Park, Kosin Univ. Gospel Hospital (Korea, Republic of) ..... [11070-188]

4:50 pm: **Molecular imaging of gastrointestinal tumors** (*Invited Paper*), Jae Myung Park, Seoul St. Mary's Hospital (Korea, Republic of) ..... [11070-189]

5:10 pm: **EUS-guided photodynamic therapy for locally advanced pancreatic cancer** (*Invited Paper*), John M. DeWitt, Indiana Univ. Health Medical Ctr. (USA) ..... [11070-190]

5:30 pm: **Photodynamic therapy for cholangiocarcinoma**, Kenneth K. Wang, Mayo Clinic (USA) ..... [11070-191]

5:45 pm: **Phototherapy-immunostimulant induced tumor-specific immune responses against metastatic cancers**, Wei R. Chen, Univ. of Central Oklahoma (USA) ..... [11070-192]

6:00 pm: **The impact of photodynamic therapy with polarity-tunable bacteriochlorins on the antitumor immunity: local effects and systemic consequences**, Janusz Dabrowski, Barbara Pucelik, Jagiellonian Univ. in Krakow (Poland); Luis G. Arnaut, Univ. de Coimbra (Portugal) ..... [11070-334]

6:15 pm: **Efficacy of photodynamic therapy with a new photosensitizer (talaporfin sodium) as a salvage treatment for local failure of esophageal cancer**, Mamoru Tanaka, Hirotsada Nishie, Hiromi Kataoka, Nagoya City Univ. (Japan) ..... [11070-13]

## THURSDAY 4 JULY

### PANEL DISCUSSION

ROOM: SALON 3 ..... 8:30 AM TO 12:30 PM

### Roadmap to Impact: Challenges in Translating PDT Technologies and a Way Forward

Taking the stock of PDT today, this panel will explore ways that IPA can better support its membership and the global PDT community. The role of social media platforms will be presented to enable greater membership engagement and interaction. The panel will present the challenges and opportunities for PDT and how these may evolve over time. Strategies to ensure greater collaboration as well as a coordinated approach to research and clinical development that can lead to sustainable adoption of PDT as a standard of care in global healthcare systems will also be discussed.

Coffee Break ..... Thu 10:00 am to 10:30 am

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