



# 38TH ANNUAL MEETING OF THE SOCIETY FOR THERMAL MEDICINE

***THINKING OUTSIDE THE BOX***

**APRIL 24 – 27, 2023 • SAN DIEGO, CALIFORNIA**

2023 PROGRAM & ABSTRACT BOOK



SCAN ME

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INTERNATIONAL JOURNAL OF  
**HYPERTHERMIA**  
and thermal therapies



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## 38TH ANNUAL MEETING APRIL 24 – 27, 2023

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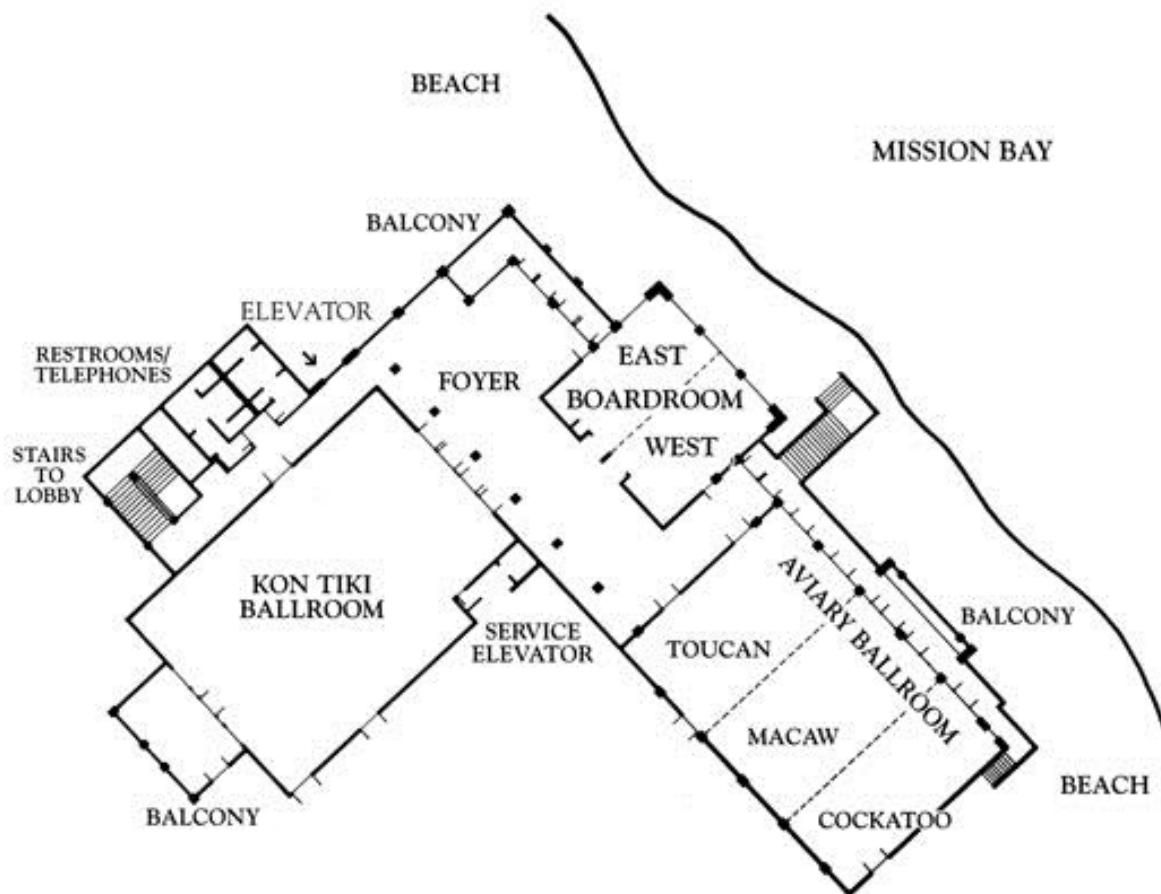
## MEETING INFO/MAPS

Registration Desk Hours of Operation in the  
KON TIKI FOYER ▶

Monday, April 24th	7:00AM – 7:00PM
Tuesday, April 25th	7:00AM – 7:00PM
Wednesday, April 26th	7:00AM – 7:00PM
Thursday, April 27th	7:00AM – 12:00PM



## MEETING SPACE MAP





PROPERTY MAP



## LETTER FROM THE PROGRAM CHAIR



ALIREZA MOHAMMADI, MD

Dear colleagues, friends and sponsors of the Society for Thermal Medicine,

On behalf of the STM Governing Council and meeting Planning Committee, it is my pleasure to welcome you to the 38th Annual Meeting of the Society for Thermal Medicine in San Diego, California, USA, at the beautiful Catamaran Resort, April 24-27, 2023.

The 38th Annual Meeting of the Society for Thermal Medicine will provide an arena for presentations of latest data, concepts, and breakthroughs in our ever-expanding understanding of thermal medicine in the context of medicine, engineering, physics, materials science, biology and immunology.

Keynote and Plenary speakers will highlight the extensive connections among clinical applications of thermal medicine, oncoimmunology, physics, biology, imaging, and the thermal state. International thought leaders will lead breakout sessions on:

- Clinical trials in cancer and other diseases
  - Traditional hyperthermia
  - HIPEC
  - Ablative thermal therapy
  - Cryotherapy
  - Thermal modeling
  - Nanotechnology
  - Tissue engineering and immune engineering
  - Functional imaging
  - Cellular response to stress to thermal therapy
  - Immunology/immunotherapy in thermal medicine
  - Combination therapies with hyperthermia and cryotherapy
  - Thermal medicine in infectious diseases
- ...and many more!

This is a diverse meeting with presenters from all around the world encompassing subjects from basic science to physics to clinical medicine. This would not be possible without the generous support from our membership and our sponsors. We look forward to this exciting conference, and we are delighted to have you join.

Sincerely,

**Alireza Mohammadi, MD**

*STM Vice President*

2023 Meeting Program Chair

Cleveland Clinic

### MISSION STATEMENT

The Society for Thermal Medicine is a 501(c)(3), non-profit organization whose mission is to significantly improve patient treatment outcomes by advancing the science, development and application of Thermal Therapy.

### OUR SOCIETY STRIVES TO:

1. To encourage the advancement of thermal medicine in all areas of natural and medical sciences.
2. To facilitate cooperative research among the disciplines of physics, engineering, biology, chemistry, and medicine in the study of the properties and effects of thermal medicine.
3. To promote dissemination of knowledge in these and related fields through publications, meetings and educational symposia.



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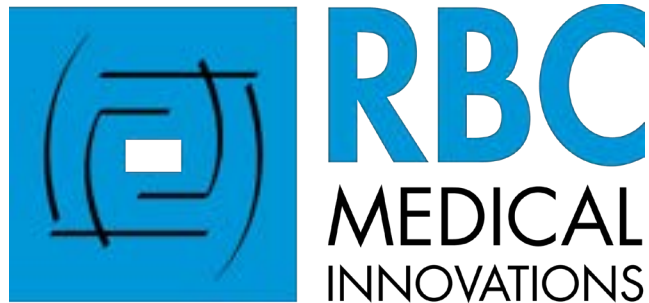
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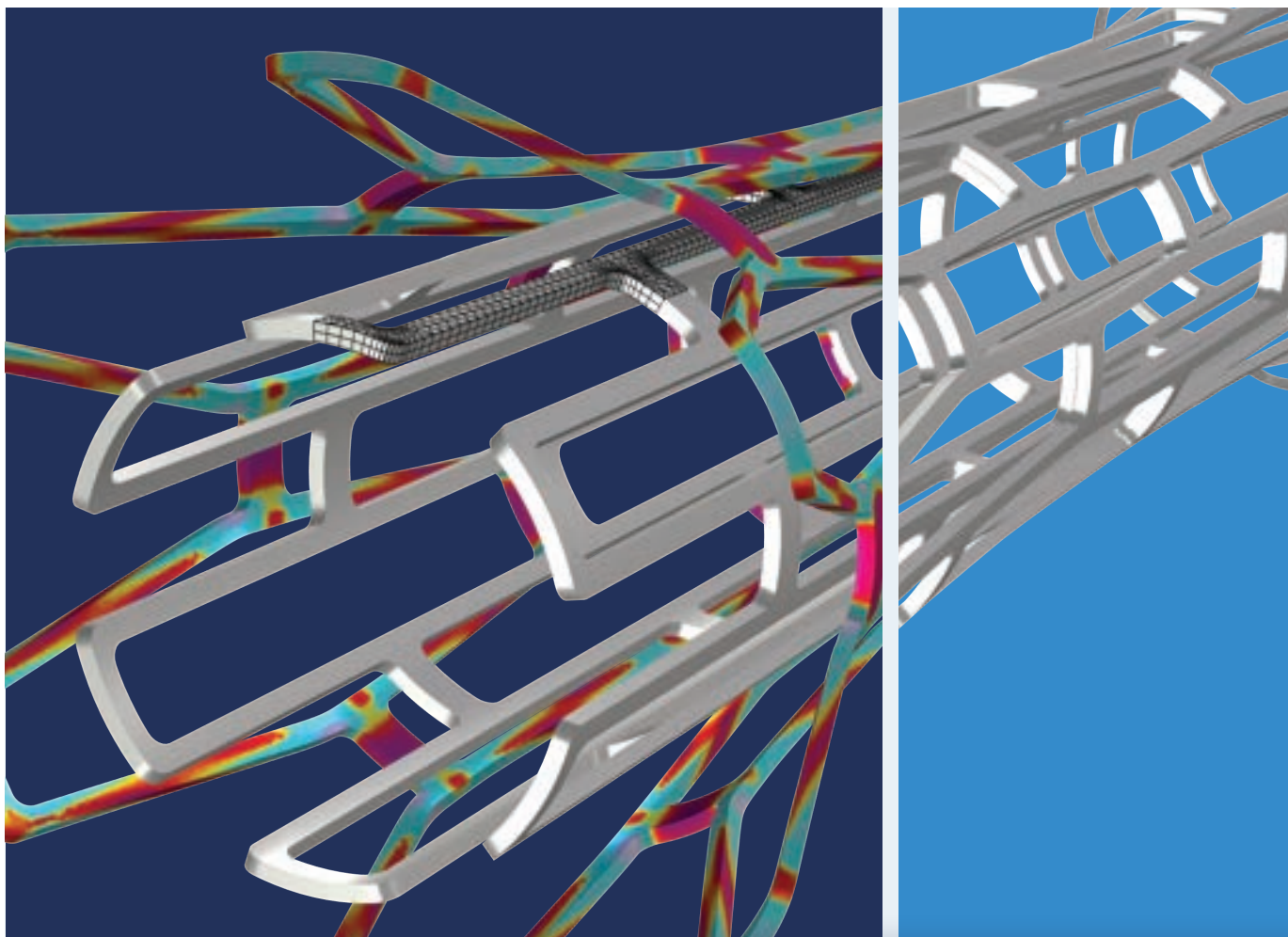
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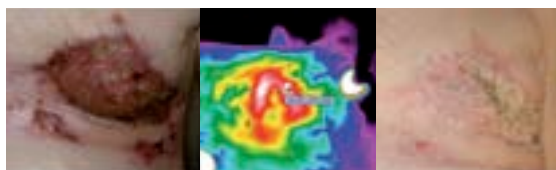
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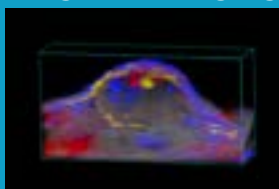
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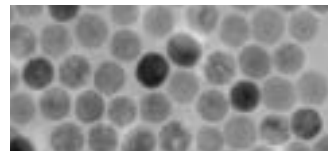
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## KEYNOTE SPEAKER #1



**DR. ERIC LEUTHARDT, MD**

**1:00pm-2:00pm Monday, 24 April, 2023, Toucan**

**ERIC C. LEUTHARDT, M.D.** is a neurosurgeon who is currently a professor with the Department of Neurological Surgery and the Department of Biomedical Engineering at Washington University in St. Louis. He is Director of the Center for Innovation in Neuroscience and Technology. His research has focused on neuroprosthetics – devices linked to the brain that may lead to cures for paralysis, allow patients to move artificial limbs, or restore other neurological functions. Dr. Leuthardt uses an integrated approach by employing multiple domains of expertise ranging from biomedical engineering, clinical neurosurgery, mathematical modeling, complex signal analysis, and computer programming. In addition to numerous peer reviewed publications, Leuthardt has numerous patents on file with the U.S. Patent and Trademark Office for medical devices and brain computer interface technologies.

## KEYNOTE SPEAKER #2



**DR. ALIREZA SHAMSHIRSAZ, MD, FACOG**

**11:30am-12:30am Tuesday, 25 April, 2023, Kon Tiki Ballroom**

**ALIREZA SHAMSHIRSAZ** (09R—obstetrics and gynecology) ranks among the world's foremost experts in fetal surgery and in the treatment of abnormally adherent placenta, a rare pregnancy complication also known as placenta accreta spectrum. He has pioneered novel surgical techniques for neural tube defects and twin-to-twin transfusion syndrome, and he was part of the team that performed the first successful fetoscopic repair to treat spina bifida in the U.S. Shamshirsaz is board certified in OB-GYN and maternal fetal medicine and an appointed reviewer of 22 medical journals. He has published more than 250 peer-reviewed manuscripts in English language journals and 18 in Farsi. Shamshirsaz serves as director of the Maternal Fetal Medicine Care Center at Boston Children's Hospital, part of Harvard Medical School.

**DR. ALEX Y. HUANG, MD, PHD**



**11:30am-12:30pm Wednesday, 26 April, 2023, Kon Tiki Ballroom**

In 2006, **DR. HUANG** joined the Case Western Reserve University School of Medicine faculty as an Assistant Professor in the Division of Pediatric Hematology / Oncology at Rainbow Babies & Children's Hospital - Rainbow / Ireland Cancer Center with a secondary faculty appointment in the Department of Pathology, Biomedical Engineering and General Medical Sciences, with membership in the Case Comprehensive Cancer Center. Currently, Dr. Huang is also the director of clinical fellowship program in Pediatric Hematology / Oncology, and the holder of the Theresia G. & Stuart F. Kline Family Foundation Chair in Pediatric Oncology since 2014. Dr. Huang was promoted to Associate Professor in 2012, tenured in 2014, and Professor in 2017. Currently, Dr. Huang is a member of the St. Baldrick's Foundation Scientific Advisory Board, Executive Scientific Committee of the Harrington's Discovery Institute, leader of the Tumor Immunology & Immunotherapy interest group, leader of the Cancer Immunotherapy Initiative, as well as co-leader of the Hematopoiesis & Immune Cell Biology Program at the Case Comprehensive Cancer Center.

## 2023 GEORGE M. HAHN AWARD & LECTURE AWARD WINNER



**DR. HANS CREZEE, PHD**

Academic Medical Center Amsterdam

**4:30PM-7:00PM TUESDAY, 25 APRIL, 2023, KON TIKI BALLROOM**

The George M. Hahn Award is presented every other year to an investigator whose research has contributed in a significant way to new clinical applications in thermal therapy. This lecture is named in honor of Dr. George Hahn who received the first Robinson Award in 1989. Dr. Hahn led a highly productive clinical program grant at Stanford for many years and his fundamental work in the heat shock response and in how hyperthermia modifies chemotherapy sensitivity still stand today as foundational work. His highly productive career exemplifies the translational attributes of this award.

**Hans Crezee** received his MSc degree in Experimental Physics from the Free University Amsterdam in 1986 and his PhD degree from Utrecht University in 1993.

From 1988 to 2000 he was with the University Medical Center, University of Utrecht, engaged on several hyperthermia projects, including development and experimental verification of advanced hyperthermia treatment planning and development, clinical implementation and certification of interstitial hyperthermia methods.

Since 2000, he has been with the Department of Radiation Oncology, Academic Medical Center (AMC) of the University of Amsterdam, now part of Amsterdam University Medical Centers. He became Principal Investigator in 2008 with a focus on multidisciplinary hyperthermia research, focusing on (1) development and clinical implementation of new hyperthermia equipment, (2) advanced hyperthermia treatment planning, (3) preclinical research on the radiosensitizing and chemosensitizing effects of hyperthermia, (4) clinical hyperthermia studies. Locoregional Hyperthermia equipment developed at AMC has been successfully commercialized to facilitate and

promote high quality application of hyperthermia. A number of hospitals in Europe and Asia are now using hyperthermia equipment developed at AMC. He published >230 papers in peer reviewed journals, h-index: 50. He is presently president of the European Society for Hyperthermic Oncology (ESHO) and editor at the International Journal of Hyperthermia.

He is coordinator for the European HYPERBOOST project (H2020-MSCA-ITN-2020-955625) in which 14 ESRs in 6 countries are trained to become hyperthermia professionals. He is or was project leader or PI for 14 Dutch Cancer Society KWF projects and two Dutch Research Council NWO projects covering a range of hyperthermia-related research topics. Ongoing research projects include development and validation of a small animal device for targeted locoregional hyperthermia; development of advanced adaptive, biological and MR guided hyperthermia treatment planning; optimization of efficacy of hyperthermia and HIPEC drug delivery in preclinical models; and prospective/retrospective analysis of the clinical results of hyperthermia treatment delivery for various tumor sites including breast, cervix, bladder, rectum and pancreatic cancer.

## 33RD J. EUGENE ROBINSON AWARD & LECTURE AWARD WINNER

### DR. ROBERT IVKOV, PHD

Johns Hopkins University, School of Medicine,  
Department of Radiation Oncology



4:30PM-7:00PM TUESDAY, 25 APRIL, 2023, KON TIKI BALLROOM

The J. Eugene Robinson Award is presented annually to an investigator who has made outstanding contributions to the field of hyperthermic oncology in one or more of the three main disciplines: Medicine/Clinical, Biology/Physiology, and Physics/Engineering. It is the highest and most prestigious award of the Society for Thermal Medicine. The award is named after J. Eugene Robinson who was a pioneer of hyperthermia research from the 1960's through the 1980's and a strong proponent of combined radiation and hyperthermia for cancer therapy.

**Dr. Ivkov** has a primary appointment of Associate Professor in the Department of Radiation Oncology and Molecular Radiation Sciences at the Johns Hopkins School of Medicine. He holds joint appointments in the Department of Oncology at the Sydney Kimmel Comprehensive Cancer Center, Johns Hopkins School of Medicine; Department of Mechanical Engineering, and the Department of Materials Science and Engineering, both in the Whiting School of Engineering at Johns Hopkins University. He also holds a Guest Researcher position at the National Institute of Standards and Technology's (NIST) Center for Neutron Research (NCNR) in Gaithersburg, MD.

Upon his arrival to the Department of Radiation Oncology and Molecular Radiation Sciences at The Johns Hopkins University School of Medicine in early 2008, Dr. Ivkov began a program developing magnetic nanoparticles and devices that exploit magnetic hysteresis to generate therapeutic heat in models of human cancer. More recently, his research focus has expanded to include effects of systemic exposure to nanoparticles, and local thermal therapy combinations on systemic anti-cancer immune responses.

Dr. Ivkov's formal training includes a BSc in Chemistry from Andrews University, MI, an MSc in Chemistry

from the University of Toronto with an emphasis in statistical mechanics of charged colloids. He obtained his PhD in Chemistry from the University of Maryland, College Park after characterizing the polymerization of actin as a "living" polymer using small angle neutron scattering. After completing his Ph.D., Dr. Ivkov was awarded a NRC Postdoctoral Research Award to perform basic materials research at NIST (Polymers Division). He later moved to the NCNR where he continued his research as an instrument scientist on the NG7 horizontal reflectometer. In 2001, he moved to the private sector to develop oncology products using magnetic nanoparticle hyperthermia. He co-founded Triton BioSystems, Inc. and was its Vice President of Research and Development.

He has published over 100 scientific papers, patents (issued and pending) in nanotechnology, nanobiotechnology, materials science, magnetic devices, colloid and interface science, neutron scattering, and targeted cancer therapy. He currently serves as an editor of the *International Journal of Hyperthermia*, and the *International Journal of Molecular Sciences*.



## 2023 STM SCHOLAR-IN-TRAINING TRAVEL AWARDS

We are pleased to announce that The Society for Thermal Medicine, is providing travel grants to 10 Scholars-in-Training to encourage participation at the 2023 STM annual meeting.

Awardees will receive a \$500 travel grant.

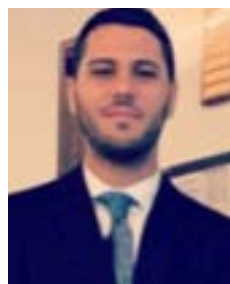
Travel Awards recipients are based upon a competitive evaluation of their submitted abstracts and Scholar-in-Training Award applications.



Johns Hopkins

### **HAYDEN CARLTON**

Method to Evaluate Merit of Magnetic Nanoparticles for Applications with Magnetic Particle Imaging and Magnetic Nanoparticle Hyperthermia



Kansas State University

### **FARAZ CHAMANI**

Modeling of temperature dependent release of HSP70, HSP90, and HMGB1 from pancreatic cancer cells



Cleveland Clinic

### **GOUTAM DEY**

Heating Up Immune Cells In Direct Contact With Ovarian Cancer Cells Induces DNA Damage and Suppresses Chemoresistance



Erlangen University

### **RUPALI KHATUN**

Improvements of highly undersampled MR hyperthermia using complex-valued convolutional networks



University of California San Diego

### **DEBBIE LEDEZMA**

The immunogenicity of Prussian blue nanoparticle-based photothermal ablation of solid tumors



Mount Sinai

### **DANIEL RIVERA**

Magnetic Hyperthermia Therapy in Combination with Chemoradiation for the Treatment of Glioblastoma

## 2023 STM SCHOLAR-IN-TRAINING TRAVEL AWARDS



Amsterdam UMC

### **PAOLA TELLO VALVERDE**

The probability of locoregional control in recurrent breast cancer patients treated with postoperative re-irradiation combined with hyperthermia shows a continuous thermal dose-effect relationship



Wake Forest

### **ERICA MONETTE VARGAS**

Eradication of *Staphylococcus aureus* Biofilms on Photothermal Silicone Nanocomposites



Cleveland Clinic

### **JOSEPHINE VOLOVETZ**

Predictors of Survival after Laser Interstitial Thermal Therapy in Patients with Recurrent Glioblastoma



Duke

### **LUCAS WACHSMUTH**

Gold nanostars enhance the efficacy and safety of laser interstitial therapy for the treatment of intracranial tumors

# STANDARDIZATION WORKSHOP IN CLINICAL HYPERTHERMIA & PANEL DISCUSSION

2:00PM-5:00PM MONDAY, 24 APRIL, 2023, TOUCAN

**Abstract:** Clinical hyperthermia is booming, but lessons from the past must be well present to guarantee effective hyperthermia treatments for maximum benefit of cancer patients. This workshop aims to promote standardization in hyperthermia therapy by discussing fundamental hyperthermia terminology, patient selection, treatment quality assurance, treatment reporting, certification, and reimbursement. Participants will also have the opportunity to share their experiences and insights.

## Chairs:

- Dr. Dario Rodrigues, University of Maryland School of Maryland, Baltimore MD
- Dr. Jennifer Yu, Cleveland Clinic, Cleveland OH

## Panel:

- Dr. Mark Hurwitz (Physician), Westchester Medical Center, Valhalla NY
- Dr. Jason Molitoris (Physician), University of Maryland School of Maryland, Baltimore MD
- Dr. Paul Stauffer (Physicist), Thomas Jefferson University, Philadelphia PA
- Dr. Chris Diederich (Physicist), University of California San Francisco, San Francisco CA
- Dr. Elizabeth Repasky (Biologist), Roswell Park Comprehensive Cancer Center, Buffalo NY
- Dr. Rüdiger Wessalowski (Physician), Heinrich Heine University, Düsseldorf, Germany
- Dr. Markus Notter (Physician), Lindenhofspital, Bern, Switzerland
- Dr. Arlene Oei (Biologist), Amsterdam University Medical Center, Amsterdam, The Netherlands
- Dr. Hans Creee (Physicist), Amsterdam University Medical Center, Amsterdam, The Netherlands
- Dr. Gerard van Rhoon (Physicist), Erasmus Medical Center, Rotterdam, The Netherlands

**Format:** panel discussion with no concurrent sessions

**Timing:** Monday, April 24, 2-5PM

**Duration:** 3h with 10min break

**Follow-up plan:** Continue these discussions in ESHO2023 (Sep 26–29, Cologne, Germany) and generate a consensus paper similar to the one published by Myerson et al. Int J Hyperthermia 2014 Feb;30(1):1-5. PMID: 24350642: “Components of a hyperthermia clinic: recommendations for staffing, equipment, and treatment monitoring.”

## Topics of discussion include, but are not limited to:

- Hyperthermia therapy definitions
- Clinical
  - Patient selection
  - Managing complications
  - Number of sessions per week
- Treatment quality assurance
  - How to calculate start and end of therapeutic time
  - How to calculate timing between radiation and hyperthermia
  - Thermal dose parameters and their clinical relevance
  - Interpretation of superficial HT probes
  - Maximum temperature (T<sub>max</sub>) per tissue and maximum time-at-T<sub>max</sub>
  - Indirect (surrogate) tumor measurements
- Staff guidelines
  - Who should deliver treatments
  - What training is required
- Certification
  - Which entity can/should provide certification
- Reimbursement
  - Launch the challenge
  - Bring reimbursement specialists for HT in 2024








## STANDARDIZATION IN THERMAL MEDICINE WORKSHOP

### 38TH ANNUAL SOCIETY FOR THERMAL MEDICINE MEETING, SAN DIEGO, CALIFORNIA

7:00-9:00 AM | APRIL 23, 2023

Chairs: Dario Rodrigues, PhD and Colleen Crouch, PhD

TIME (local)	TALK DESCRIPTION AND SPEAKER	
7:00am	<p><b>Introduction to the Thermal Medicine Standards Committee</b>  Dario Rodrigues, PhD, University of Maryland  <a href="#">Chair of the Thermal Medicine Standards Committee</a></p> <p>The ASME Thermal Medicine Standards Committee was established in 2021 with the goal to develop, review and maintain guidelines/standards for requirements to improve quality of care in thermal medicine applications. This committee is currently developing standards for the standardization of language and tissue properties measurements relevant to the Thermal Medicine community.</p>	
7:05am	<p><b>Updates from the Thermal Medicine Lexicon Subcommittee</b>  Dario Rodrigues, PhD, University of Maryland  <a href="#">Assistant Professor, Department of Radiation Oncology, University of Maryland School of Medicine, Maryland</a></p> <p>The Thermal Medicine Lexicon project aims to address an unmet need in the Thermal Medicine community that is the lack of standard terminology. The resulting subcommittee addressing this issue is balanced as it includes stakeholders from industry, academia, and government as well as experts within the key fields representing STM: clinical, physics &amp; engineering, and biology. Currently, the lexicon subcommittee consists of seven groups: hyperthermia, ablation, cryotherapy, thermometry &amp; image guidance, thermal physics, thermal biology &amp; physiology, and tissue properties. This talk will provide an update on each group's efforts and how the Thermal Medicine Lexicon will be developed and presented to the Thermal Medicine community.</p>	
7:10am	<p><b>Open discussion – group stage</b>  Groups formation for revision of the definitions thermal dose, hyperthermia, and ablation</p>	
7:40am	<p><b>Open discussion</b>  Each group will provide feedback regarding the definitions under analysis</p>	
7:55am	Break	

TIME (local)	TALK DESCRIPTION AND SPEAKER	
8:05am	<p><b>Updates from the Tissue Properties Measurement (TPM) Subcommittee</b>  Colleen Crouch, PhD, University of Tennessee  Assistant Professor, Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee, Knoxville</p> <p>There are currently no standards to evaluate the thermal performance of medical devices or procedures that induce tissue heating and/or cooling as an intended or unintended consequence of device use/procedure. Evaluation of thermal performance includes verification of device parameters, assessment of tissue effects (e.g., thermal damage, tissue appearance, tissue/organ function), and the related spread of thermal energy. The tissue properties subcommittee's purpose is to establish definitions, measurements, and validation techniques for thermal medicine terms. The subcommittee consists of seven groups: thermal-high temperature, thermal-cryo, physiology, mechanical, electromagnetics, optics, acoustics/ultrasound, and MRI. This talk will provide an update on each group's efforts.</p>	
	<p><b>Towards measurement standardization of <u>electromagnetic</u> tissue properties</b>  Sergio Curto, PhD, Erasmus MC  Assistant Professor, Radiotherapy Department, Erasmus Medical Center (MC), Rotterdam, The Netherlands</p>	
	<p><b>Towards measurement standardization of <u>physiological</u> tissue properties</b>  Colleen Crouch, PhD, University of Tennessee  Assistant Professor, Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee, Knoxville</p>	
	<p><b>Towards measurement standardization of <u>thermal</u> tissue properties</b>  Harry Vine, BSc, MBA  Sales Engineer, Beacon Technical Sales, Inc., Nashua, New Hampshire</p>	
	<p><b>Towards measurement standardization of <u>optical</u> tissue properties</b>  Gal Shafirstein, DSc, Roswell Park Comprehensive Cancer Center  Professor, Department of Cell Stress Biology, Roswell Park Comprehensive Cancer Center, Buffalo, New York</p>	
	<p><b>Cryo tissue properties</b>  <b>Mechanical tissue properties</b>  <b>MRI tissue properties</b>  Speakers TBD</p>	
8:55am	End	



# PROGRAM

## MONDAY, APRIL 24TH

08:00 - 19:00	<b>Sponsor Exhibits</b>	Board Room
08:00 - 19:00	<b>Registration</b>	Kon Tiki Foyer
08:00 - 09:00	<b>Breakfast</b>	Aviary Foyer
09:00 - 12:00	<b>Career Development Workshop</b> Presentation type Oral <b>Chair(s):</b> Jennifer Yu  <b>Part 1: Getting funded</b> <b>Chair:</b> Jennifer Yu NIH Grant writing tips - <i>Jennifer Yu</i> <b>Panelists:</b> Jennifer Yu, Elizabeth Repasky, Dieter Haemmerich, Erik Cressman  <b>Part 2: Finding your first job</b> <b>Chair:</b> Nicole Levi Tips on finding your first job - <i>Mark Hurwitz</i> Do's and don'ts of a job talk - <i>Ofer Reizes</i> Startup packages/what can be negotiated - <i>Nicole Levi</i> <b>Panelists:</b> Mark Hurwitz, Ofer Reizes, Nicole Levi, Rohan Fernandes  <b>Part 3: Opportunities for Improving Diversity, Equity, and Inclusion</b> Sponsored by the Women and Minorities in STM Committee <b>Chairs:</b> Jennifer Yu and Nicole Levi <b>Panelists:</b> Sharon Evans, Arlene Oei, Debbie Ledezma, Punit Prakash, David Fuentes	Kon Tiki Ballroom
09:00 - 12:00	<b>Extracellular Stress Session</b> Presentation type Oral <b>Chair(s):</b> Antonio De Maio, Michael Graner  <b>Talk 1 Stressed Exosomes (SEXOSOMES) in Glioblastoma Therapeutic Resistance</b> Jasmina Redzic, Arin Graner, Justin Hellwinkel, Laura Russell, <u>Michael Graner</u> <i>University of Colorado Denver School of Medicine, Department of Neurosurgery, Boulder, CO, USA</i>  <b>Talk 2 The Presence of HSP70 on Exosome Membranes, a Historical Perspective</b> <u>Antonio De Maio</u> <i>Division of Trauma, Surgical Critical Care, Burns, and Acute Care Surgery, Department of Surgery, University of California San Diego, School of Medicine, La Jolla, CA, USA</i>  <b>Talk 3 Release of mitochondria in extracellular vesicles as a cellular quality control pathway</b> <u>Asa Gustafsson</u> <i>University of California San Diego, La Jolla, CA, USA</i>	Toucan

**Talk 4 The Other Shoe to Drop: Fear, Anxiety, and Cancer Extracellular Microvesicular Biomarkers**  
Monika Fleshner, Tel Kelly, Shelby Hopkins, Lida Beninson  
*Center for Neuroscience, University of Colorado Boulder, Boulder, CO, USA*

**Talk 5 The Effects of Heat Stress on the Transcriptome of Human Cancer Cells: A Meta-Analysis**  
 Enzo M Scutigliani<sup>1,2</sup>, Fernando Lobo Cerna<sup>1,2</sup>, Sergio Mingo Barba<sup>3,4,5</sup>, Stephan Scheidegger<sup>3</sup>, Przemek M Krawczyk<sup>1,2</sup>  
<sup>1</sup>*Amsterdam University Medical Centers, Amsterdam, Netherlands.*  
<sup>2</sup>*Cancer Center Amsterdam, Amsterdam, Netherlands.* <sup>3</sup>*ZHAW School of Engineering, Winterthur, Switzerland.* <sup>4</sup>*University of Fribourg, Fribourg, Switzerland.* <sup>5</sup>*Adolphe Merkle Institute, Fribourg, Switzerland*

12:00 - 13:00	<b>Lunch</b>	Beach
13:00 - 14:00	<b>Keynote - Eric Leuthardt</b> Presentation type Oral <b>Chair(s):</b> Alireza Mohammadi Title: Laser Interstitial Thermal Therapy – A Sea Change for the Treatment of Brain Tumors	Toucan
14:00 - 17:00	<b>Standardization Workshop in Clinical Hyperthermia &amp; Panel Discussion</b> Presentation type Oral <b>Chair(s):</b> Dario Rodrigues	Toucan
17:00 - 19:00	<b>Reception</b>	Aviary Foyer

## TUESDAY, APRIL 25TH

07:00 - 19:00	<b>Sponsor Exhibits</b>	Board Room
07:00 - 19:00	<b>Registration</b>	Kon Tiki Foyer
07:00 - 09:00	<b>Breakfast</b>	Aviary Foyer
07:00 - 09:00	<b>ASME Workshop</b> <b>Chair(s):</b> Dario Rodrigues	Toucan
09:00 - 11:00	<b>Nanotechnology Session I</b> <b>Chair(s):</b> Samir Jenkins, Daniel Rivera	Toucan

### **Talk 6 Photothermal Cytotoxicity of Silver Nanoparticles on Melanoma Cells Harboring Intracellular Infection**

Mr. Marco A. Benavides-Taylor, Dr. Sijia Liu PhD, Spencer Phillips MS, Scott Northrup BS, Dr. Nicole H. Levi PhD  
Wake Forest University School of Medicine, Winston-Salem, NC, USA

### **Talk 7 Liver cancer treatment through intrahepatic triggered drug release from thermosensitive liposomes using local mild hyperthermia**

Marjolein I Priester<sup>1</sup>, Ann L.B. Seynhaeve<sup>1</sup>, Sergio Curto<sup>1</sup>, Pegah Faridi<sup>2</sup>, Punit Prakash<sup>2</sup>, Gerard C. van Rhooen<sup>1</sup>, Timo L.M. ten Hagen<sup>1</sup>  
<sup>1</sup>Erasmus MC, Rotterdam, Netherlands. <sup>2</sup>Kansas State University, Manhattan, Kansas, USA

### **Talk 8 Reduced Toxicities by Extracorporeal Removal of Thermosensitive Liposomal Doxorubicin**

Dieter Haemmerich<sup>1</sup>, Dan Newton<sup>1</sup>, Anjan Motamarry<sup>1</sup>, A Marissa Wolfe<sup>1</sup>, Krishna K. Ramajayan<sup>1</sup>, Miguel T. Troncoso<sup>1</sup>, Kristine Deleon-Pennell<sup>1</sup>, Thomas Benton<sup>1</sup>, Yuri Peterson<sup>1</sup>, Pegah Faridi<sup>2</sup>, Punit Prakash<sup>2</sup>, Katherine Twombly<sup>1</sup>  
<sup>1</sup>Medical Univ. of South Carolina, Charleston, SC, USA. <sup>2</sup>Kansas State Univ., Manhattan, KS, USA

### **Talk 9 Systemic Treatment with Iron Oxide Nanoparticles Inhibits Progression of Metastatic Cancer by Altering the Host Immune Profile in Mouse Models of Breast Cancer**

Preethi Korangath<sup>1</sup>, Lu Jin<sup>2</sup>, Chun-Ting Yang<sup>1</sup>, Sean Healy<sup>1</sup>, Xin Guo<sup>1</sup>, Suqi Ke<sup>1</sup>, Chen Hu<sup>1</sup>, Kathleen Gabrielson<sup>1</sup>, Jeremy Foote<sup>3</sup>, Robert Clarke<sup>2</sup>, Robert Ivkov<sup>1</sup>  
<sup>1</sup>Johns Hopkins University, Baltimore, Maryland, USA. <sup>2</sup>The Hormel Institute, University of Minnesota, Minneapolis, Minnesota, USA.  
<sup>3</sup>University of Alabama, Tuscaloosa, Alabama, USA

**\*Talk 10 Magnetic Hyperthermia Therapy in Combination with Chemoradiation for the Treatment of Glioblastoma**

Dr Maria Anastasiadou PhD<sup>1</sup>, Daniel Rivera BS<sup>1,2</sup>, Dr Alexandros Bouras MD<sup>1,2</sup>, Tori Channenchuk MS I, Alexander Schupper MD<sup>1</sup>, Caroline Rizea BS<sup>1</sup>, Gabrielle Price MS<sup>1</sup>, Dr Hayden Carlton PhD<sup>3</sup>, Dr Robert Ivkov PhD<sup>3,4,5,6</sup>, Dr Constantinos G Hadjipanayis MD, PhD<sup>1,2</sup>

<sup>1</sup>Icahn School of Medicine at Mount Sinai, Department of Neurological Surgery, New York, NY, USA. <sup>2</sup>University of Pittsburgh, Department of Neurological Surgery, Pittsburgh, PA, USA. <sup>3</sup>Johns Hopkins University, Department of Radiation Oncology and Molecular Radiation Sciences, Baltimore, MD, USA. <sup>4</sup>Johns Hopkins University School of Medicine, Department of Oncology, Baltimore, MD, USA. <sup>5</sup>Johns Hopkins University, Department of Mechanical Engineering, Whiting School of Engineering, Baltimore, MD, USA. <sup>6</sup>Johns Hopkins University, Department of Materials Science and Engineering, Whiting School of Engineering, Baltimore, MD, USA

**Talk 11 Enhanced cellular and tumor uptake of nanoparticles via exosome membrane-coatings**

Samir V. Jenkins<sup>1</sup>, Gabriel Fletcher<sup>2</sup>, Deborah Okyere<sup>2</sup>, Jingyi Chen<sup>2</sup>, David Huitink<sup>2</sup>, Robert J. Griffin<sup>1</sup>

<sup>1</sup>University of Arkansas for Medical Sciences, Little Rock, AR, USA.

<sup>2</sup>University of Arkansas, Fayetteville, AR, USA

09:00 - 11:00 **LITT Session**

| Macaw

**Chair(s):** Jennifer Yu, Peter Fecci

**Talk 12 INVITED SPEAKER - Immunologic Consequences of LITT for Glioblastoma Patients**

David Tran

Chief of Neuro-Oncology and co-Director of the USC Brain Tumor Center, Los Angeles, CA, USA

**Talk 13 Development of a treatment planning tool for Laser Interstitial Thermal Therapy**

Yash Lad Master's<sup>1</sup>, Avesh Jangam Master's<sup>2</sup>, Anirudh Sharma<sup>3</sup>, Brad Zacharia<sup>4</sup>, Constantinos Hadjipanayis<sup>5</sup>, Robert Ivkov<sup>3</sup>, Anilchandra Attaluri<sup>1</sup>

<sup>1</sup>Pennsylvania State University, Harrisburg, Pennsylvania, USA.

<sup>2</sup>Pennsylvania State University, Harrisburg, Pennsylvania, USA. <sup>3</sup>The Johns Hopkins University School of Medicine, Baltimore, Maryland, USA.

<sup>4</sup>Pennsylvania State Health, Hershey, Pennsylvania, USA. <sup>5</sup>University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania, USA

**Talk 14 Socioeconomic Barriers in Access to Laser Interstitial Thermal Therapy: A Role for Targeted Referral**

Aden P Haskell-Mendoza MS<sup>1</sup>, Ariel T Gonzalez BS<sup>1</sup>, Aditya A Mohan BS<sup>1</sup>, Emily C Lerner MHS<sup>1</sup>, Dr. Ethan S Srinivasan MD<sup>2</sup>, Dr. Joshua D Jackson MD, PhD<sup>3</sup>, Dr. Peter E Fecci MD, PhD<sup>4</sup>

<sup>1</sup>Duke University School of Medicine, Durham, NC, USA. <sup>2</sup>Department of Neurosurgery, Johns Hopkins Hospital, Baltimore, MD, USA.

<sup>3</sup>Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA. <sup>4</sup>Preston Robert Tisch Brain Tumor Center, Duke University Medical Center, Durham, NC, USA

\* SITA Winner

**\*Talk 15 Gold nanostars enhance the efficacy and safety of laser interstitial therapy for the treatment of intracranial tumors**

Lucas Wachsmuth BS<sup>1</sup>, Pakawat Chongsathidkiet MD<sup>1</sup>, Yang Liu PhD<sup>1</sup>, Ren Odion BS<sup>1</sup>, Ethan Srinivasan MD<sup>1,2</sup>, Aden Haskell-Mendoza BS<sup>1</sup>, Ryan Edwards<sup>1</sup>, Adian Canning BS<sup>1</sup>, Gavin Willoughby<sup>1</sup>, Joseph Hinton<sup>1</sup>, Stephen Norton PhD<sup>1</sup>, Tuan Vo-Dinh PhD<sup>1</sup>, Peter Fecci MD, PhD<sup>1</sup>  
<sup>1</sup>Duke University, Durham, NC, USA. <sup>2</sup>Johns Hopkins, Baltimore, MD, USA

**Talk 16 Adapting Laser Interstitial Thermal Therapy (LITT) for Treatment of Intracranial Lesions in Dogs**

Dr. Christopher L Mariani DVM, PhD<sup>1</sup>, Dr. Peter E Fecci MD, PhD<sup>2</sup>  
<sup>1</sup>North Carolina State University, Raleigh, NC, USA. <sup>2</sup>Duke University, Durham, NC, USA

11:00 - 11:30	<b>Break</b>	Aviary Foyer
11:30 - 12:30	<b>Keynote - Alireza Shamshirsaz</b> <b>Chair(s):</b> Alireza Mohammadi <b>Title:</b> Past, present and future of fetal surgery	Kon Tiki Ballroom
12:30 - 14:00	<b>Lunch</b>	Beach
14:00 - 16:30	<b>Biology Session I</b> <b>Chair(s):</b> Arlene Oei, Allison Payne	Kon Tiki Ballroom

**Talk 17 APPLYING OPTIMAL STEREOTACTIC DOSES OF RADIATION WITH HYPERTHERMIA TO TREAT SOLID TUMORS IN A PRECLINICAL IN VIVO MODEL**

Mr Folefac C. Asonganyi, Ms. Biomedical Sciences<sup>1</sup>, Mr Priyanshu N Sinha, Ms. Biomedical Engineering<sup>1</sup>, Mateusz K. Sitarz, Ph.D.<sup>2</sup>, Prof Niels Bassler, Ph.D.<sup>2</sup>, Prof Michael R. Horsman, Ph.D.<sup>1</sup>  
<sup>1</sup>Department of Experimental Clinical Oncology, Aarhus University Hospital, Aarhus, Denmark. <sup>2</sup>Department of Clinical Medicine - DCPT - Danish Center for Particle Therapy, Aarhus, Denmark

**Talk 18 The effect of hyperthermia on radiation-induced epithelial-mesenchymal transition (EMT) signaling**

Timo L.M. ten Hagen PhD<sup>1</sup>, Arlene L. Oei PhD<sup>1,2,3,4</sup>  
<sup>1</sup>Precision Medicine in Oncology (PrMiO), Department of Pathology, Erasmus MC Cancer Institute, Rotterdam, Netherlands. <sup>2</sup>Department of Radiotherapy Oncology, Amsterdam UMC, location University of Amsterdam, Amsterdam, Netherlands. <sup>3</sup>Center for Experimental and Molecular Medicine (CEMM), Laboratory for Experimental Oncology and Radiobiology (LEXOR), Amsterdam, Netherlands. <sup>4</sup>Cancer Center Amsterdam, Cancer Biology and Immunology, Amsterdam, Netherlands

**Talk 19 Contrast-Enhanced Ultrasound Study of the Effect of Acute Heat Stress on Mice Liver Perfusion**

Amin Jarrahi, Dr. A. Colleen Crouch PhD  
University of Tennessee, Knoxville, Tennessee, USA

\* SITA Winner

**Talk 20 Liver tumor or liver tumor? Initial Experience with the Oncopig Model for Hyperthermic Therapies**

Dr. Danielle L. Stolley PhD, Dr. Natalie W. Fowlkes DVM, PhD, Ms. Maria S. Stenkamp B.S., Mr. Steve Parrish B.S., Dr. Erik N. K. Cressman PhD, MD

*MD Anderson Cancer Center, Houston, TX, USA*

**Talk 21 INVITED SPEAKER - Comparison of Heating Techniques in Hyperthermia on 3D tumor spheroids of two different cancer cell line**

Robin A. Nadar PhD<sup>1,2</sup>, Rogier van Oossanen I, Ioannis Androulakis<sup>1</sup>, Kristina Djanashvili PhD<sup>3</sup>, Antonia G. Denkova PhD<sup>2</sup>, Gerard C. van Rhoon PhD<sup>1,2</sup>

*<sup>1</sup>Erasmus MC Cancer Institute, Dept. Radiotherapy, Rotterdam, Netherlands. <sup>2</sup>Delft University of Technology, Dept. Radiation Science and Technology, Delft, Netherlands. <sup>3</sup>Delft University of Technology, Dept. Biotechnology, Delft, Netherlands*

**Talk 22 RF-hyperthermia to modulate tumor interstitial fluid pressure: an in vivo pilot study**

Anna Bottiglieri PhD<sup>1</sup>, Malea Williams<sup>2</sup>, Santosh K. Mandal<sup>2</sup>, Jun Ying Tan<sup>3</sup>, Aabila Tharveen<sup>4</sup>, Jungkwun Kim<sup>3</sup>, Balasubramaniam Natarajan<sup>5</sup>, Rahul A. Sheth<sup>2</sup>, Punit Prakash<sup>4</sup>

*<sup>1</sup>Kansas State University, Manhattan, Kansas, USA. <sup>2</sup>Department of Interventional Radiology, The University of Texas MD Anderson Cancer Center, Houston, Texas, USA. <sup>3</sup>Department of Electrical Engineering, University of North Texas, Denton, Texas, USA. <sup>4</sup>Department of Electrical and Computer Engineering, Kansas State University, Manhattan, Kansas, USA. <sup>5</sup>Department of Electrical and Computer Engineering, Manhattan, Kansas, USA*

14:00 - 16:30 **Clinical Session I**

| Toucan

**Chair(s):** Rudi Wessalowski, Hans Crezee

**Talk 23 A midterm evaluation of HYPERBOOST (Hyperthermia boosting the effect of Radiotherapy)**

Hans Crezee PhD<sup>1,2</sup>, Sergio Curto PhD<sup>3</sup>, Hana Dobsicek Trefna PhD<sup>4</sup>, Rainer Fietkau MD, PhD<sup>5</sup>, Benjamin Frey PhD<sup>5</sup>, Udo Gaipl PhD<sup>5</sup>, Pirus Ghadjar MD, PhD<sup>6</sup>, Michael Robert Horsman PhD<sup>7</sup>, Petra Kok PhD<sup>1,2</sup>, Przemek M. Krawczyk<sup>8,2</sup>, Thoralf Niendorf PhD<sup>9</sup>, Oliver J. Ott<sup>5</sup>, Pierfrancesco Pavoni<sup>10</sup>, Gerard C. van Rhoon PhD<sup>3</sup>, Oliver Riesterer MD, PhD<sup>11,12</sup>, Stephan Scheidegger PhD<sup>13</sup>, Martin Ben Wadepohl<sup>14</sup>, Ben J. Slotman MD, PhD<sup>15,2</sup>

*<sup>1</sup>Department of Radiation Oncology, Amsterdam University Medical Centers, University of Amsterdam, Amsterdam, Netherlands. <sup>2</sup>Cancer Center Amsterdam, Amsterdam, Netherlands. <sup>3</sup>Department of Radiation Oncology, Erasmus MC Cancer Institute, Rotterdam, Netherlands.*

*<sup>4</sup>Department of Electrical Engineering, Chalmers University of Technology, Gothenburg, Sweden. <sup>5</sup>Department of Radiation Oncology, Universitätsklinikum Erlangen, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany. <sup>6</sup>Department of Radiation Oncology, Charité-Universitätsmedizin Berlin, Berlin, Germany. <sup>7</sup>Experimental Clinical Oncology - Department of Oncology, Aarhus University Hospital, Aarhus, Denmark. <sup>8</sup>Department of Medical Biology, Amsterdam University Medical Centers, University of Amsterdam, Amsterdam,*



Netherlands. <sup>9</sup>Berlin Ultrahigh Field Facility, Max-Delbrück-Center for Molecular Medicine, Berlin, Germany. <sup>10</sup>Medlogix srl, Rome, Italy. <sup>11</sup>Centre for Radiation Oncology KSA-KSB, Cantonal Hospital Aarau, Aarau, Switzerland. <sup>12</sup>University of Zurich, Zurich, Switzerland. <sup>13</sup>ZHAW School of Engineering, University of Applied Sciences, Winterthur, Switzerland. <sup>14</sup>Dr. Sennewald Medizintechnik GmbH, Munich, Germany. <sup>15</sup>Department of Radiation Oncology, Amsterdam University Medical Centers, Vrije Universiteit Amsterdam, Amsterdam, Netherlands

#### **Talk 24 Regional hyperthermia as salvage treatment added to radiation in malignant pediatric tumors**

MD Ruediger Wessalowski MD<sup>1</sup>, Hana Dobsicek-Trefna PhD<sup>2</sup>, Christiane Matuschek MD<sup>1</sup>, Katrin Harder<sup>1</sup>, Oliver Mils<sup>1</sup>, Farid Ziaee MD<sup>1</sup>, Christiane Staude MD<sup>1</sup>, Ronald Richter MD<sup>3</sup>, Gerard van Rhooen PhD<sup>4</sup>, Wilfried Budach MD<sup>1</sup>

<sup>1</sup>Heinrich-Heine-University, Medical Faculty, Düsseldorf, Germany.

<sup>2</sup>Chalmers University of Technology, Department of Electrical Engineering, Göteborg, Sweden. <sup>3</sup>University Hospital Essen, WPE, Essen, Germany. <sup>4</sup>Erasmus MC Cancer Institute, Rotterdam, Netherlands

#### **Talk 25 Whole-body Hyperthermia (WBH) as an Additional Treatment for Depression: The HEATBED Study**

Dr. Ashley E Mason PhD<sup>1,2</sup>, Dr. Charles Raison MD, MA<sup>3,4</sup>, Dr. Wendy Hartogensis PhD<sup>5</sup>, Dr. Chelsea J Siwik PhD<sup>5</sup>, Dr. Leena Pandya ND<sup>5</sup>, Ms. Anoushka Chowdhary BA<sup>1</sup>, Dr. Rhonda Patrick PhD<sup>6</sup>, Dr. Patricia J Moran PhD<sup>1</sup>, Ms. Claudine Anglo BS<sup>1</sup>, Ms. Stefanie Roberts BS<sup>1</sup>, Dr. Osnat Lupesko-Persky PhD<sup>1</sup>, Dr. Christopher A Lowry PhD<sup>7</sup>, Dr. Frederick M Hecht MD<sup>1,8</sup>

<sup>1</sup>Osher Center for Integrative Health, University of California San Francisco, San Francisco, CA, USA. <sup>2</sup>Department of Psychiatry, University of California San Francisco, San Francisco, CA, USA. <sup>3</sup>School of Human Ecology, University of Wisconsin-Madison, Madison, WI, USA. <sup>4</sup>Department of Psychiatry, School of Medicine and Public Health, University of Wisconsin-Madison, Madison, WI, USA. <sup>5</sup>Osher Center for Integrative Health, University of California, San Francisco, San Francisco, CA, USA. <sup>6</sup>FoundMyFitness, San Diego, CA, USA. <sup>7</sup>Department of Integrative Physiology, University of Colorado Boulder, Boulder, CA, USA. <sup>8</sup>Division of General Internal Medicine, San Francisco, CA, USA

#### **Talk 26 Patients with fungating recurrent breast cancer: Long-term follow-up after combined wIRA-hyperthermia and re-irradiation**

Dr Markus Notter MD<sup>1</sup>, Dr Andreas R. Thomsen MD<sup>2,3</sup>, Prof. Dr. Peter Vaupel MD<sup>2,3</sup>

<sup>1</sup>Lindenhofspital, Bern, Bern, Switzerland. <sup>2</sup>University Medical Center Freiburg, Freiburg, Germany. <sup>3</sup>German Cancer Consortium (DKTK), Partner Site Freiburg and German Cancer Research Center (DKFZ), Freiburg, Germany

**Talk 27 Hyperthermia thermal dose-effect in patients with non-muscle-invasive bladder cancer treated with chemohyperthermia**

Drs. C. Paola Tello Valverde MSc<sup>1,2</sup>, Drs. Elisabeth D. Geijssen MD<sup>1</sup>, Dr. Akke Bakker PhD<sup>1</sup>, Dr. Jorg R. Oddens MD, PhD<sup>1</sup>, Dr. H. Petra Kok PhD<sup>1</sup>, Dr. Theo M. de Reijke MD, PhD<sup>1</sup>, Dr. Hans Crezee PhD<sup>1</sup>  
<sup>1</sup>Amsterdam UMC, location University of Amsterdam, Department of Radiation Oncology, Amsterdam, North Holland, Netherlands.  
<sup>2</sup>Amsterdam UMC, location Vrije Universiteit Amsterdam, Department of Radiation Oncology, Amsterdam, North Holland, Netherlands

**Talk 28 The CARES project: systemic therapy incorporating loco-regionally controlled delivery using thermosensitive liposomes and hyperthermia.**

Prof Timo LM ten Hagen PhD<sup>1</sup>, prof Grerard C van Rhoon PhD<sup>1</sup>, Prof Maarten Paulides PhD<sup>2</sup>, Dr Clemens Bos PhD<sup>3</sup>, PhD Roel Deckers PhD<sup>3</sup>, Dr Juan Hernandez Tamames PhD<sup>1</sup>, Dr Lambertus W Bartels PhD<sup>3</sup>, Dr Hans Crezee PhD<sup>4</sup>, Dr Petra Kok PhD<sup>4</sup>, Dr Arlene L Oei PhD<sup>4</sup>, Prof Maurice Heemels PhD<sup>2</sup>, Dr Sergio Curto PhD<sup>1</sup>  
<sup>1</sup>Erasmus MC, Rotterdam, Netherlands. <sup>2</sup>TUe, Eindhoven, Netherlands.  
<sup>3</sup>UMCU, Utrecht, Netherlands. <sup>4</sup>AUMC, Amsterdam, Netherlands

14:00 - 16:30 **Neuro-Oncology Session**

| Macaw

**Chair(s):** Josie Volovetz, Michael Graner

**Talk 29 Laser Interstitial Thermal Therapy (LITT) Versus Resection for Lesions In or Near the Primary Motor Cortex: Comparison of Functional Outcomes**

Dr. Ethan S Srinivasan MD<sup>1</sup>, Emily C Lerner MHS<sup>2</sup>, Aden P Haskell-Mendoza MS<sup>2</sup>, Ryan M Edwards BA<sup>2</sup>, Lucas P Wachsmuth BS<sup>2</sup>, Dr. Joshua D Jackson MD, PhD<sup>3</sup>, Dr. David Huie MD, MS<sup>3</sup>, Dr. Peter E Fecci MD, PhD<sup>4</sup>  
<sup>1</sup>Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA. <sup>2</sup>Duke University School of Medicine, Durham, NC, USA. <sup>3</sup>Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA. <sup>4</sup>Preston Robert Tisch Brain Tumor Center, Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA

**Talk 30 Treatment of Recurrent Brain Metastases with Laser Interstitial Thermal Therapy (LITT) in Combination with Stereotactic Radiosurgery (SRS): Retrospective Outcomes and Prospective Clinical Trial Design**

Dr. Joshua D Jackson M.D., Ph.D., Aden P Haskell-Mendoza B.S., Dr. Peter E Fecci M.D., Ph.D.  
Duke University, Durham, NC, USA

**Talk 31 Volumetric Analysis of Brain Metastasis After Treatment with Laser Interstitial Thermal Therapy (LITT)**

Dr Erion J de Andrade MD, MsC, Dr. Gene Barnett MD., Dr Alireza M Mohammadi MD.  
Cleveland Clinic, Cleveland, OH, USA

**Talk 32 Brain Tumor Tract Seeding is Associated with Ablation Technique and Occurs Rapidly Following Laser Interstitial Thermal Therapy**

Aden P Haskell-Mendoza MS<sup>1</sup>, Dr. Ethan S Srinivasan MD<sup>2,1</sup>, Emily C Lerner MHS<sup>1</sup>, Ryan M Edwards BA<sup>1</sup>, Allison M. Schwalb BS<sup>1</sup>, Dr. Joshua D Jackson MD, PhD<sup>3</sup>, Dr. Andrew A Hardigan MD, PhD<sup>3</sup>, Dr. Eugene J Vaios MD, MBA<sup>4</sup>, Dr. Peter E Fecci MD, PhD<sup>5</sup>

<sup>1</sup>Duke University School of Medicine, Durham, NC, USA. <sup>2</sup>Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA. <sup>3</sup>Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA. <sup>4</sup>Department of Radiation Oncology, Duke University Medical Center, Durham, NC, USA. <sup>5</sup>Preston Robert Tisch Brain Tumor Center, Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA

**\*Talk 33 Predictors of Survival after Laser Interstitial Thermal Therapy in Patients with Recurrent Glioblastoma**

Josephine Volovetz MD<sup>1</sup>, William Leidig<sup>2</sup>, Omar H Butt MD, PhD<sup>2</sup>, Tehila Kaisman-Elbaz MD, PhD<sup>1</sup>, Matthew Grabowski MD<sup>1</sup>, Ruth G Nakiwala Katumba MPH<sup>2</sup>, Tanner M Johanns MD, PhD<sup>2</sup>, Milan G Chheda MD<sup>2</sup>, Jian L Campian MD, PhD<sup>2,3</sup>, Jon T Willie MD, PhD<sup>2</sup>, Jiayi Huang MD<sup>2</sup>, Eric C Leuthardt MD<sup>2</sup>, Albert H Kim MD, PhD<sup>2</sup>, Alireza M Mohammadi MD<sup>1</sup>

<sup>1</sup>Cleveland Clinic, Cleveland, Ohio, USA. <sup>2</sup>Washington University in St. Louis, St Louis, Missouri, USA. <sup>3</sup>Mayo Clinic, Rochester, Minnesota, USA

16:30 - 19:00 **STM Awards Presentations/Ceremony and Poster Session & Mixer** | Kon Tiki Ballroom  
**Chair(s):** Michael Graner

**2023 STM George M. Hahn Award Talk:**

**Hans Crezee, PhD**, Academic Medical Center Amsterdam

Title of talk: Unlocking the full potential of clinical hyperthermia

**2023 STM J. Eugene Robinson Award (Physics) Talk:**

**Robert Ivkov, PhD**, Johns Hopkins University, School of Medicine, Department of Radiation Oncology

Title of talk: How do we transform magnetic nanoparticle hyperthermia into a precision medicine tool for cancer therapy?

**Poster Session:**

**Poster 1 Effects of  $\alpha$ PD-1 immunotherapy and MR-guided Focused Ultrasound in a Murine Breast Cancer Model**

Undergraduate student Josh Hillyard Biomedical engineering, Dr. Allison Payne Mechanical Engineering, Dr. Sara Johnson Biomedical Engineering  
University of Utah, Salt Lake City, Utah, USA

**Poster 2 Cellular and molecular characterization of clinically utilizable targets of hyperthermic potentiation in B16-F10 melanoma cells**

Kaci Kopec B.S.<sup>1</sup>, Nicole DeSouza B.S.<sup>1</sup>, Danielle Quaranto M.S.<sup>1</sup>, Tara Jarboe M.S.<sup>1</sup>, Michelle Carnazza B.S.<sup>1</sup>, Thomas Gagliardi<sup>1</sup>, Joseph Conti<sup>1</sup>, Raj K Tiwari Ph.D.<sup>1</sup>, Jan Geliebter Ph.D.<sup>1</sup>, Mark D Hurwitz M.D.<sup>2,1</sup>

<sup>1</sup>New York Medical College, Valhalla, NY, USA. <sup>2</sup>Westchester Medical Center, Valhalla, NY, USA

\* SITA Winner

**Poster 3 Temperature impact on B16-F10 melanoma in vitro model: mapping the carcinogenic phenotype and morphological characterization**

Nicole DeSouza B.S.<sup>1</sup>, Danielle Quaranto M.S.<sup>1</sup>, Kaci Kopec B.S.<sup>1</sup>, Tara Jarboe M.S.<sup>1</sup>, Michelle Carnazza B.S.<sup>1</sup>, Thomas Gagliardi<sup>1</sup>, Joseph Conti<sup>1</sup>, Raj K Tiwari Ph.D.<sup>1</sup>, Jan Geliebter Ph.D.<sup>1</sup>, Mark D Hurwitz<sup>2,1</sup>  
<sup>1</sup>New York Medical College, Valhalla, NY, USA. <sup>2</sup>Westchester Medical Center, Valhalla, NY, USA

**Poster 4 Thermal Therapeutic Efficacy of Multifunctional Biomembrane-Coated Hybrid Nanoparticles**

Gabriel J Fletcher<sup>1</sup>, Samir V Jenkins<sup>2</sup>, Geletu Qing<sup>1</sup>, Deborah Okyere<sup>1</sup>, Jingyi Chen<sup>1</sup>, Robert J Griffin<sup>2</sup>, David Huitink<sup>1</sup>  
<sup>1</sup>University of Arkansas, Fayetteville, AR, USA. <sup>2</sup>University of Arkansas for Medical Sciences, Little Rock, AR, USA

**Poster 5 Survival analysis for modeling proliferation of Escherichia coli biofilms following photothermal treatment**

Mr Bradley Burden MS, Dr. Juan Sebastian Rodriguez-Alvarez MD, Dr. Nicole Levi PhD, Dr. F. Scott Gayzik PhD  
Wake Forest University School of Medicine, Winston-Salem, NC, USA

**Poster 6 Image-analysis technique for characterization of microwave ablation zones**

Jan Sebek Ph.D., Dr. Punit Prakash Ph.D.  
Kansas State University, Manhattan, KS, USA

**Poster 7 A Sensitivity Study Evaluating Heating at the Skull-brain Interface During Transcranial MRgFUS Surgery**

Amanda K Dame<sup>1</sup>, Jordan T Grow<sup>1</sup>, Steven P Allen PhD<sup>1</sup>, Henrik Odéen PhD<sup>2</sup>, Christopher R Dillon PhD<sup>1</sup>  
<sup>1</sup>Brigham Young University, Provo, UT, USA. <sup>2</sup>University of Utah, Salt Lake City, UT, USA

19:00 - 22:00 **Robinson Award Dinner**

| Cockatoo

## WEDNESDAY, APRIL 26TH

08:00 - 19:00	<b>Sponsor Exhibits</b>	Board Room
08:00 - 19:00	<b>Registration</b>	Kon Tiki Foyer
08:00 - 09:00	<b>Breakfast</b>	Aviary Foyer
09:00 - 11:00	<b>Nanotechnology Session 2</b> <b>Chair(s):</b> Nicole Levi, Erica Vargas	Toucan

### **\*Talk 41 Eradication of Staphylococcus aureus Biofilms on Photothermal Silicone Nanocomposites**

Erica Monette M Vargas BS<sup>1</sup>, Bradley Burden MS<sup>2</sup>, Nicole Levi PhD<sup>1</sup>, Scott Gayzik PhD<sup>2</sup>

<sup>1</sup>Wake Forest University School of Medicine, Winston-Salem, NC, USA. <sup>2</sup>Virginia Tech and Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, USA

### **Talk 42 Evaluation of a Balloon Implant for Simultaneous Magnetic Nanoparticle Hyperthermia and High-Dose-Rate Brachytherapy of Brain Tumor Resection Cavities**

Dr. Shuying Wan PhD<sup>1</sup>, Dr. Dario B Rodrigues PhD<sup>2</sup>, Prof. Paul R Stauffer MSEE, CCE<sup>1</sup>, Janet Kwiatkowski<sup>3</sup>, Dr. Omaditya Khanna MD<sup>1</sup>, Dr. Kevin D Judy MD<sup>1</sup>, Marty Overbeek Bloem<sup>4</sup>, Robert Goldstein FASM<sup>5</sup>, Dr. Yan Yu PhD, MBA<sup>1</sup>, Dr. Wenyin Shi MD, PhD<sup>1</sup>, Dr. Mark D Hurwitz MD<sup>6</sup>

<sup>1</sup>Thomas Jefferson University Hospital, Philadelphia, PA, USA.

<sup>2</sup>University of Maryland School of Medicine, Baltimore, MD, USA. <sup>3</sup>MAE Group, Deerfield, NH, USA. <sup>4</sup>Phoenix DeVentures, Morgan Hill, CA, USA. <sup>5</sup>AMF LifeSystems, Auburn Hills, MI, USA. <sup>6</sup>Westchester Medical Center Health Network, Valhalla, NY, USA

### **Talk 43 Effect of mild magnetic nanoparticle hyperthermia on the clearance of beta-amyloid plaques for Alzheimer's Disease**

Eric Dyne PhD, Byeongtak Jeon PhD, Woo-Yang Kim PhD, Min-Ho Kim PhD

Kent State University, Kent, OH, USA

### **Talk 44 Small is beautiful and powerful: The Power of Nanomagnets in Cancer Therapy**

Professor Ahmed A. El-Gendy PhD in Physics

University of Texas at El Paso, El Paso, TX, USA

### **Talk 45 Analysis of Perfusion-Based Convection during Transient Pulsed Heating**

Hayden Carlton PhD<sup>1</sup>, Preethi Korangath PhD<sup>1</sup>, Nageshwar Arepally<sup>2</sup>, Anilchandra Attaluri PhD<sup>2</sup>, Robert Ivkov PhD<sup>1</sup>

<sup>1</sup>The Johns Hopkins School of Medicine, Baltimore, MD, USA. <sup>2</sup>Penn State Harrisburg, Middletown, PA, USA

\* SITA Winner

**\*Talk 46 Improvements of highly undersampled MR hyperthermia using complex-valued convolutional networks**

MS Rupali Khatun<sup>1</sup>, Dr. Soumick Chatterjee PhD<sup>2</sup>, Dr. rer. nat. Manfred Schmid<sup>3</sup>, Prof. Dr. rer. nat. Christoph Bert<sup>4</sup>, Mr Martin wadepohl<sup>5</sup>, Prof. Dr. med. Rainer Fietkau<sup>4</sup>, Prof. Dr Andreas Nürnberger<sup>2</sup>, Prof. Dr. Udo S. Gaipl<sup>4</sup>, PD Dr.-Ing Benjamin Frey<sup>4</sup>  
<sup>1</sup>Department of Radiation Oncology, Universitätsklinikum Erlangen, Erlangen, Bavaria, Germany. <sup>2</sup>Data and Knowledge Engineering Group, Faculty of Computer Science, Otto von Guericke University Magdeburg, Magdeburg, Germany. <sup>3</sup>Department of Radiation Oncology, Universitätsklinikum Erlangen, Erlangen, Germany, Erlangen, Germany. <sup>4</sup>Department of Radiation Oncology, Universitätsklinikum Erlangen, Erlangen, Germany. <sup>5</sup>Dr. Sennewald Medizintechnik GmbH, Munich, Germany

**Talk 47 Potential therapeutic benefit for turmeric in low grade pseudomyxoma peritonei (PMP)**

Morgan Sainsbury BS, MS<sup>1</sup>, Elizabeth Norton BS, MS, MD<sup>1</sup>, Somnath Singh BPharm, MPharm, PhD<sup>2</sup>, Alekha Dash RPh, PhD<sup>2</sup>, Peter Thomas Ph.D<sup>1</sup>, Venkatesh Govindarajan PhD<sup>1</sup>, Brian Loggie MD, CM, FRCSC, FACS<sup>1</sup>  
<sup>1</sup>Creighton University School of Medicine, Omaha, NE, USA.  
<sup>2</sup>Creighton University School of Pharmacy and Health Professions, Omaha, NE, USA

**Talk 48 Metal and device implants during RF-heating: can we learn from MRI guidelines?**

Prof.Dr. Gerard C. van Rhoon PhD, Mr. Anton Rink, Dr. Sergio Curto-Ramos PhD  
Erasmus MC Cancer Institute, Dept. Radiotherapy, Rotterdam, Netherlands

**Talk 49 MUSCLE EQUIVALENT PHANTOM AT DEEP AND SUPERFICIAL HYPERTHERMIA FREQUENCIES**

Flavia Liporace, Marta Cavagnaro  
Dept. of Information Engineering, Electronics and Telecommunications Sapienza University, Rome, Italy

**Talk 50 A feasibility study: The value of non-invasive temperature measurements during hyperthermia treatment in practice; validation, sense of comfort and quality of treatment**

Martine Franckena<sup>1</sup>, Patrick Granton<sup>1</sup>, Anton F. Rink<sup>1</sup>, Juan Hernandez Tamames<sup>2</sup>, Remi A. Nout<sup>1</sup>, Sergio Curto<sup>1</sup>  
<sup>1</sup>Erasmus MC Cancer Institute, dept. Radiation Oncology, Rotterdam, Netherlands. <sup>2</sup>Erasmus MC, dept. of Radiology & Nuclear Medicine, Rotterdam, Netherlands

11:00 - 11:30 **Break**

| Aviary Foyer

11:30 - 12:30 **Keynote - Alex Huang**  
**Chair(s):** Alireza Mohammadi

| Kon Tiki Ballroom

**Title of talk:** Tumor-intrinsic Innate Sensors Drive Host Antitumor Adaptive Immune Responses Following Solid Tumor Cryotherapy

\* SITA Winner



12:30 - 14:00 **Lunch**

| Beach

14:00 - 16:30 **Biology Session 2**

| Kon Tiki Ballroom

**Chair(s):** Lucas Wachsmuth, Ofer Reizes

**Talk 51 Sex-specific differences in response to hyperthermia and radiotherapy in a mouse model of glioblastoma**

Dr. Jing Hao M.D. PhD.<sup>1</sup>, Dr. Defne Bayik Watson PhD.<sup>1</sup>, Dr. Peng Qi Ph.D.<sup>2</sup>, Dr. Haidong Huang PhD.<sup>1</sup>, Dr. Xiangzi Han MD. PhD.<sup>1</sup>, Dr. Justin Lathia PhD.<sup>1</sup>, Dr. Jennifer Yu MD. PhD.<sup>1</sup>

<sup>1</sup>Cleveland Clinic Lerner Institute, Cleveland, Ohio, USA. <sup>2</sup>Cleveland Clinic, Cleveland, Ohio, USA

**Talk 52 The influence of hyperthermia on epigenetic signaling in dysbiotic tumor vasculature**

Hailey Kristian, Robert J. Griffin Ph.D., Samir V. Jenkins Ph.D., Ruud P.M. Dings Ph.D.

UAMS, Little Rock, AR, USA

**Talk 53 Radiotherapy and hyperthermia of cervical cancer: Timing matters**

Xionge Mei MSc.<sup>1,2,3</sup>, H. Petra Kok PhD<sup>1,3</sup>, Barbara C. Snoek PhD<sup>1,2,3</sup>, Hans M. Rodermond BSc.<sup>1,2,3</sup>, Gregor G.W. van Bochove MSc.<sup>1,2,3</sup>, Caspar M. van Leeuwen PhD<sup>1,3</sup>, Ekaterina S. Jordanova PhD<sup>4</sup>, Nicolaas A.P. Franken PhD<sup>1,2,3</sup>, Timo L.M. ten Hagen PhD<sup>5</sup>, Johannes Crezee PhD<sup>1,3</sup>, Louis Vermeulen PhD<sup>2,3,6</sup>, Lukas J.A. Stalpers PhD<sup>1,2,3</sup>, Arlene L. Oei PhD<sup>1,2,3</sup>

<sup>1</sup>Department of Radiotherapy Oncology, Amsterdam UMC, location University of Amsterdam, Amsterdam, Netherlands. <sup>2</sup>Center for Experimental and Molecular Medicine (CEMM), Laboratory for Experimental Oncology and Radiobiology (LEXOR), Amsterdam, Netherlands. <sup>3</sup>Cancer Center Amsterdam, Cancer Biology and Immunology, Amsterdam, Netherlands. <sup>4</sup>Center for Gynecologic Oncology Amsterdam, Amsterdam UMC, Amsterdam, Netherlands. <sup>5</sup>Precision Medicine in Oncology (PrMiO), Department of Pathology, Erasmus MC Cancer Institute, Rotterdam, Netherlands. <sup>6</sup>Department of Gastroenterology endocrinology metabolism, Amsterdam UMC, location University of Amsterdam, Amsterdam, Netherlands

**Talk 54 The role of ROS and Nrf2 in the induction of an adaptive stress response during mild heat at 40°C**

Dr Diana A Averill-Bates PhD<sup>1</sup>, Mr Georges Hraoui MSc<sup>1</sup>, Dr Mélanie Grondin PhD<sup>1</sup>, Dr Sophie Breton PhD<sup>2</sup>

<sup>1</sup>Université du Québec à Montréal, Montreal, Quebec, Canada.

<sup>2</sup>Université de Montréal, Montreal, Quebec, Canada

**Talk 55 Advances in Anti-CD137 Coated Prussian Blue Nanoparticles as Immunostimulatory Photothermal Agents for Melanoma**

Jacob A Medina BS, BA<sup>1</sup>, Debbie K Ledezma Ph. D.<sup>1</sup>, Jie Chen Ph. D.<sup>1</sup>, Preethi B Balakrishnan Ph. D.<sup>2</sup>, Elizabeth E Sweeney Ph. D.<sup>1</sup>, Rohan Fernandes Ph. D.<sup>1</sup>

<sup>1</sup>George Washington University, Washington, DC, USA. <sup>2</sup>ArsenalBio, San Francisco, Ca, USA

**\*Talk 56 HEATING UP IMMUNE CELLS IN DIRECT CONTACT WITH OVARIAN CANCER CELLS INDUCES DNA DAMAGE AND SUPPRESSES CHEMORESISTANCE**

Goutam Dey PhD, Rashmi Bharti PhD, Olivia Huffman, Tyler Alban, Timothy A Chan, Justin D Lathia, Robert DeBernardo, Dr. Ofer Reizes PhD  
Cleveland Clinic Foundation, Cleveland, OH, USA

14:00 - 16:30 **Clinical Session 2**

| Toucan

**Chair(s):** Paola Tello Valverde, Jason Molitoris

**\*Talk 57 The probability of locoregional control in recurrent breast cancer patients treated with postoperative re-irradiation combined with hyperthermia shows a continuous thermal dose-effect relationship**

Drs. C. Paola Tello Valverde MSc<sup>1,2</sup>, Dr. Konstantinos Pateras PhD<sup>3</sup>, Dr. Akke Bakker PhD<sup>1</sup>, Dr. H. Petra Kok PhD<sup>1</sup>, Prof. Dr. Ben J. Slotman MD, PhD<sup>2</sup>, Dr. H. J. G. Desirée van den Bongard MD, PhD<sup>1</sup>, Dr. Hans Crezee PhD<sup>1</sup>

<sup>1</sup>Amsterdam UMC, location University of Amsterdam, Department of Radiation Oncology, Amsterdam, North Holland, Netherlands.

<sup>2</sup>Amsterdam UMC, location Vrije Universiteit Amsterdam, Department of Radiation Oncology, Amsterdam, North Holland, Netherlands.

<sup>3</sup>University of Thessaly, Faculty of Public and One Health, Laboratory of Epidemiology & Artificial Intelligence, Karditsa, Thessaly, Greece

**Talk 58 Clinical Outcomes of Re-irradiation with Concurrent Deep Hyperthermia Therapy for Prostate Cancer**

Dr Muhammad A Hamza MD<sup>1</sup>, Ms Leah Chen<sup>2</sup>, Dr Justin Cohen MD<sup>1</sup>, Dr Dario Rodrigues PhD<sup>3</sup>, Dr Sina Mossahebi PhD<sup>3</sup>, Dr Nrusingh C Biswal PhD<sup>3</sup>, Dr Mark Zakhary PhD<sup>3</sup>, Dr Zeljko Vujaskovic MD PhD<sup>3</sup>, Dr Dan Kunprayoon MD<sup>3</sup>, Dr Zaker Rana MD<sup>3</sup>, Dr Jason K Molitoris MD PhD<sup>3</sup>

<sup>1</sup>University of Maryland Medical Center, Baltimore, MD, USA.

<sup>2</sup>Georgetown University, Washington D.C., Washington D.C., USA.

<sup>3</sup>University of Maryland School of Medicine, Baltimore, MD, USA

**Talk 59 Long term results of initial cohort treated with pencil beam scanning proton therapy and deep hyperthermia therapy**

Jason K Molitoris MD, PhD<sup>1</sup>, Justin Cohen MD<sup>2</sup>, Muhammad Hamza MD<sup>2</sup>, Sina Mossahebi PhD<sup>1</sup>, Mark Zakhary PhD<sup>1</sup>, Nrusingh Biswal PhD<sup>1</sup>, Kara Lehman CMD<sup>2</sup>, Dan Kunprayoon MD<sup>1</sup>, Zaker Rana MD<sup>1</sup>, Dario B Rodrigues PhD<sup>1</sup>

<sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, USA.

<sup>2</sup>University of Maryland Medical Center, Baltimore, MD, USA

**Talk 60 Complete remission of stage IV prostate cancer by new non-invasive brain temperature-titrated brain-body hyperthermia**

Dr. Marc Abreu MD<sup>1</sup>, Dr. David G Silverman MD<sup>2</sup>, Dr Victor H Spitz MD<sup>1</sup>

<sup>1</sup>BTT Medical Institute, Aventura, Florida, USA. <sup>2</sup>Yale University School of Medicine, New Haven, Connecticut, USA

\* SITA Winner

**Talk 61 Superficial and internal thermometry assessment in patients treated with deep hyperthermia concurrent with proton therapy for lower gastrointestinal malignancies**

Dario B. Rodrigues PhD<sup>1</sup>, Justin Cohen MD<sup>1</sup>, Santanu Samanta MD<sup>2</sup>, Sina Mossahebi PhD<sup>1</sup>, Nrusingh Biswal PhD<sup>1</sup>, Mark Zakhary PhD<sup>1</sup>, Dan Kunaprayoon MD<sup>1</sup>, Zaker Rana MD<sup>1</sup>, Jason K. Molitoris MD, PhD<sup>1</sup>

<sup>1</sup>University of Maryland School of Medicine, Baltimore, MD, USA.

<sup>2</sup>University of Arkansas for Medical Sciences, Little Rock, AR, USA

**Talk 62 Development of Magnetic Hyperthermia for the Systemic Treatment of Endometriosis**

Youngrong Park<sup>1</sup>, Ananiya Demessie<sup>1</sup>, Addie Luo<sup>2</sup>, Olena R Taratula<sup>1</sup>, Abraham S Moses<sup>1</sup>, Peter Do<sup>1</sup>, Leonardo Campos<sup>3</sup>, Younes Jahangiri<sup>3</sup>, Cory R Wyatt<sup>4</sup>, Hassan A Albarqi<sup>1</sup>, Khashayar Farsad<sup>3</sup>, Oy D Slayden<sup>2</sup>, Oleh Taratula<sup>1</sup>

<sup>1</sup>College of Pharmacy, Oregon State University, Portland, OR, USA.

<sup>2</sup>Division of Reproductive and Developmental Sciences, Oregon National Primate Research Center, Oregon Health & Science University, Beaverton, OR, USA. <sup>3</sup>Dotter Interventional Institute, Department of Interventional Radiology, Oregon Health & Science University, Portland, OR, USA. <sup>4</sup>Department of Diagnostic Radiology, Oregon Health & Sciences University, Portland, OR, USA

**Talk 63 The CARES project: Development of personalized MR-guided thermo-chemotherapy for breast conserving surgery**

Sergio Curto<sup>1</sup>, Gerard C. van Rhooen<sup>1</sup>, Maarten Paulides<sup>2</sup>, Clemens Bos<sup>3</sup>, Roel Deckers<sup>3</sup>, Juan Hernandez Tamames<sup>4</sup>, Lambertus W. Bartels<sup>3</sup>, Hans Crezee<sup>5</sup>, Petra Kok<sup>5</sup>, Timo ten Hagen<sup>1</sup>, Arlene Oei<sup>5</sup>, Maurice Heemels<sup>2</sup>

<sup>1</sup>Erasmus MC Cancer Institute, Rotterdam, Netherlands. <sup>2</sup>Eindhoven University of Technology, Eindhoven, Netherlands. <sup>3</sup>UMC Utrecht, Utrecht, Netherlands. <sup>4</sup>Erasmus MC, Rotterdam, Netherlands.

<sup>5</sup>Amsterdam UMC, Amsterdam, Netherlands

14:00 - 16:30 **Computational Modeling Session**  
**Chair(s):** Faraz Chamani, David Fuentes

| Macaw

**Talk 64 Impact quantification of tissue property and perfusion uncertainties on hyperthermia treatment planning using polynomial chaos expansion.**

Jort Groen MSc<sup>1,2</sup>, dr. Johannes Crezee PhD<sup>1,2</sup>, Prof. dr. Hanneke van Laarhoven PhD<sup>2,3,4</sup>, dr. Maarten Bijlsma PhD<sup>2,5</sup>, dr. Petra Kok PhD<sup>1,2</sup>

<sup>1</sup>Amsterdam UMC location University of Amsterdam, Radiation Oncology, Amsterdam, Netherlands. <sup>2</sup>Cancer Center Amsterdam, Cancer biology and immunology, Treatment and quality of life, Amsterdam, Netherlands.

<sup>3</sup>Cancer Center Amsterdam, Imaging and Biomarkers, Amsterdam, Netherlands. <sup>4</sup>Amsterdam UMC, location University of Amsterdam, Department of Medical Oncology, Amsterdam, Netherlands. <sup>5</sup>Amsterdam UMC location University of Amsterdam, Center for Experimental and Molecular Medicine, Laboratory for Experimental Oncology and Radiobiology, Amsterdam, Netherlands

**Talk 65 Thermal impact of photobiomodulation therapy on the therapeutic efficacy**

Laxmigayathri Challa MSc, Fateme Esmailie PhD  
University of North Texas, Denton, Texas, USA

**\*Talk 66 Modeling of temperature dependent release of HSP70, HSP90, and HMGB1 from pancreatic cancer cells**

Faraz Chamani<sup>1</sup>, Marla Pyle I, Tej Shrestha PhD<sup>1</sup>, Anna Bottiglieri PhD<sup>1</sup>, Stefan H Bossmann PhD<sup>2</sup>, Subhrajit Saha PhD<sup>2</sup>, Rahul A Sheth MD<sup>3</sup>, Punit Prakash PhD<sup>1</sup>

<sup>1</sup>Kansas State University, Manhattan, Kansas, USA. <sup>2</sup>University of Kansas Medical Center, Kansas city, Kansas, USA. <sup>3</sup>University of Texas MD Anderson Cancer Center, Houston, Texas, USA

**Talk 67 Robust optimization and evaluation of radiotherapy combined with hyperthermia based on equivalent enhanced radiation dose**

Timoteo D Herrera M. Sc.<sup>1,2</sup>, Jakob Ödén PhD<sup>3</sup>, Johannes Crezee PhD<sup>4,5</sup>, Andrea Lorenzo Polo M. Sc.<sup>3</sup>, H. Petra Kok PhD<sup>4,6</sup>

<sup>1</sup>Amsterdam UMC location University of Amsterdam, Radiation Oncology, Amsterdam, Noord Holland, Netherlands. <sup>2</sup>Cancer Center Amsterdam, Cancer biology and immunology, Treatment and quality of life, Amsterdam, Noord Holland, Netherlands. <sup>3</sup>RaySearch Laboratories AB, Stockholm, Sweden. <sup>4</sup>Amsterdam UMC location University of Amsterdam, Radiation Oncology, Amsterdam, Netherlands. <sup>5</sup>Cancer Center Amsterdam, Cancer biology and immunology, Treatment and quality of life, Amsterdam, Netherlands. <sup>6</sup>Cancer Center Amsterdam, Cancer biology and immunology, Treatment and quality of life, Amsterdam, Netherlands

**Talk 68 Validation of a temperature-feedback controlled automated magnetic hyperthermia device**

Dr. Anirudh Sharma PhD<sup>1</sup>, Mr. Avesh Jangam<sup>2</sup>, Mr. Julian L.Y. Shen<sup>2</sup>, Mr. Aiman Ahmed<sup>2</sup>, Mr. Nageshwar Arepally<sup>2</sup>, Mr. Benjamin Rodriguez<sup>3</sup>, Mr. Joseph Borrello<sup>3</sup>, Dr. Alexandros Bouras MD<sup>4</sup>, Dr. Lawrence Kleinberg MD<sup>5</sup>, Dr. Kai Ding PhD<sup>5</sup>, Dr. Constantinos G Hadjipanayis MD, PhD<sup>4</sup>, Dr. Dara L Kraitchman DVM, PhD<sup>1</sup>, Dr. Robert Ivkov PhD<sup>1</sup>, Dr. Anilchandra Attaluri PhD<sup>2</sup>

<sup>1</sup>Johns Hopkins University School of Medicine, Baltimore, MD, USA. <sup>2</sup>Pennsylvania State University, Harrisburg, PA, USA. <sup>3</sup>Mount Sinai School of Medicine, New York, NY, USA. <sup>4</sup>University of Pittsburgh Medical Center, Pittsburgh, PA, USA. <sup>5</sup>Johns Hopkins Medicine, Baltimore, MD, USA

16:30 - 17:00 **Break**

| Aviary Foyer

17:00 - 18:00 **STM Presidential Symposium - Quality of Life**

| Kon Tiki Ballroom

**Chair(s):** Rohan Fernandes, Nicole Levi

**Please join us for talks by:**

Dr. Rüdiger Wessalowski

Dr. Markus Notter

\* SITA Winner

## THURSDAY, APRIL 27

08:00 - 12:00	<b>Sponsor Exhibits</b>	Board Room
08:00 - 12:00	<b>Registration</b>	Kon Tiki Foyer
08:00 - 09:00	<b>Breakfast</b>	Aviary Foyer
09:00 - 11:00	<b>Nanotechnology Session 3</b> <b>Chair(s):</b> Robert Ivkov, Hayden Carlton	Kon Tiki Ballroom

### **Talk 69 Response of Infected/Non-infected Breast Cancer Cells to Silver Nanoparticle-induced Photothermal Therapy**

Sijia Liu PhD, Scott Northrup, Nicole Levi PhD

Wake Forest University School of Medicine, Winston-Salem, NC, USA

### **\*Talk 70 Method to Evaluate Merit of Magnetic Nanoparticles for Applications with Magnetic Particle Imaging and Magnetic Nanoparticle Hyperthermia**

Hayden Carlton PhD<sup>1</sup>, Marzieh Salimi PhD<sup>1</sup>, Gabriela Bentolila<sup>1</sup>, Nageshwar Arepally<sup>2</sup>, Anirudh Sharma PhD<sup>1</sup>, Adnan Bibic PhD<sup>3</sup>, Matt Newgren<sup>4</sup>, Patrick Goodwill PhD<sup>4</sup>, Anilchandra Attaluri PhD<sup>2</sup>, Jeff W. M. Bulte PhD<sup>1</sup>, Preethi Korangath PhD<sup>1</sup>, Robert Ivkov PhD<sup>1</sup>

<sup>1</sup>The Johns Hopkins School of Medicine, Baltimore, MD, USA. <sup>2</sup>Penn State Harrisburg, Middletown, PA, USA. <sup>3</sup>Kennedy Krieger Institute, Baltimore, MD, USA. <sup>4</sup>Magnetic Insight, Alameda, CA, USA

### **Talk 71 Heating power of dual-material radioactive magnetic nanoparticles for thermobrachytherapy**

Rogier van Oossanen<sup>1</sup>, Alexandra Maier<sup>2</sup>, Antonia G. Denkova PhD<sup>3</sup>, Jeremy Godart PhD<sup>1</sup>, Kristina Djanashvili PhD<sup>2</sup>, Gerard C. van Rhooen PhD<sup>1</sup>

<sup>1</sup>Erasmus MC Cancer Institute, Dept. Radiotherapy, Rotterdam, Netherlands. <sup>2</sup>TU Delft, Dept. Biotechnology, Delft, Netherlands. <sup>3</sup>TU Delft, Dept. Radiation Science and Technology, Delft, Netherlands

### **Talk 72 Magnetic Particle Imaging Guided Bioheat Transfer Simulations to Optimize Magnetic Nanoparticle Hyperthermia Treatment**

Nageshwar Arepally MS<sup>1</sup>, Joshua Vannname MS<sup>1</sup>, Dr Hayden Carlton PHD<sup>2</sup>, Dr. Robert Ivkov PHD<sup>2,3</sup>, Dr Anilchandra Attaluri PHD<sup>1</sup>

<sup>1</sup>Penn State Harrisburg, Middletown, Pennsylvania, USA. <sup>2</sup>The Johns Hopkins University School of Medicine, Baltimore, Maryland, USA. <sup>3</sup>Johns Hopkins University, Baltimore, Maryland, USA

### **Talk 73 MNP hyperthermia treatment planning approach using combine virtual human model, electromagnetic and bio-heat solvers**

Dr. Levan Shoshiashvili Ph.D<sup>1</sup>, Dr. Irma Shamatava Ph.d<sup>2</sup>, Dr David Kakulia Ph.D<sup>1</sup>, Dr. Fridon Shubitidze Ph.D<sup>2</sup>

<sup>1</sup>Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia, Tbilisi, Georgia. <sup>2</sup>Dartmouth College, Hanover, NH, USA

\* SITA Winner

**Talk 74 Magnetic hyperthermia treatment planning for glioblastoma**

Dr. Anirudh Sharma<sup>1</sup>, Mr. Julian L.Y. Shen<sup>2</sup>, Mr. Avesh A. Jangam<sup>2</sup>, Dr. Kai Ding PhD<sup>3</sup>, Dr. Anilchandra Attaluri PhD<sup>2</sup>, Dr. Lawrence Kleinberg MD<sup>3</sup>, Dr. Constantinos Hadjipanayis MD, PhD<sup>4</sup>, Dr. Robert Ivkov PhD<sup>1</sup>, Dr. Dara L. Kraitchman DVM, PhD<sup>1</sup>

<sup>1</sup>Johns Hopkins University School of Medicine, Baltimore, MD, USA.

<sup>2</sup>Pennsylvania State University, Harrisburg, PA, USA. <sup>3</sup>Johns Hopkins

Medicine, Baltimore, MD, USA. <sup>4</sup>University of Pittsburgh Medical Center, Pittsburgh, PA, USA

09:00 - 11:00

**Immunotherapy Session**

| Toucan

**Chair(s):** Sharon Evans, Debbie Ledezma

**Talk 75 INVITED SPEAKER - Remote Control of the Genetics within Tumors via Focused Ultrasound for Cancer Immunotherapy**

Professor Yingxiao Wang PhD

USC, Los Angeles, CA, USA

**\*Talk 76 The immunogenicity of Prussian blue nanoparticle-based photothermal ablation of solid tumors**

Debbie K Ledezma Ph.D., Rohan Fernandes Ph.D.

George Washington University, Washington, D.C., District of Columbia, USA

**Talk 77 Engineering glioblastoma-specific T cells for adoptive therapy using immunostimulatory photothermal Prussian blue nanoparticles**

Dr. Rohan Fernandes

George Washington University, Washington, DC, USA

**Talk 78 Thermal Regulation of the Immune Landscape in the Tumor Microenvironment**

Dr Daniel T Fisher PhD, Dr. Joseph J Barbi PhD, Dr. Sharon S Evans PhD

Roswell Park Comprehensive Cancer Center, Buffalo, NY, USA

**Talk 79 The importance of ambient housing temperature on baseline tumor growth and function of CD8+ T cell-dependent anti-tumor immunity in murine models of cancer: is there an impact on thermal therapy outcomes?**

Caitlin M James, Cameron MacDonald, Jee Eun Choi, Dr. Scott H Olejniczak PhD, Dr. Elizabeth A Repasky PhD

Roswell Park Comprehensive Cancer Center, Buffalo, NY, USA

09:00 - 11:00

**Ablation Session**

| Macaw

**Chair(s):** Colleen Crouch, Jason Stafford

**Talk 80 Thermal Ablation Terms and Definition – Initial Report from the ASME Lexicon Group**

Principal Scientist Rebecca Vincelette PhD<sup>1</sup>, Professor Marta Cavagnaro PhD<sup>2</sup>, Professor Chris Diederich PhD<sup>3</sup>, Senior Lecturer Lourdes Farrugia PhD<sup>4</sup>, Professor Gal Shafirstein D.Sc.<sup>5</sup>

<sup>1</sup>Medtronic, Louisville, CO, USA. <sup>2</sup>Sapienza University, Rome, Italy.

<sup>3</sup>UCSF, San Francisco, CA, USA. <sup>4</sup>University of Malta, Msida, Malta.

<sup>5</sup>Roswell Park Comprehensive Cancer Center, Buffalo, NY, USA

\* SITA Winner

**Talk 81 In-vivo evaluation of the TheraVision interstitial ultrasound system for prostate focal thermal ablation**

Pragya Gupta<sup>1</sup>, Tamas Heffter<sup>2</sup>, Peter D Jones<sup>1</sup>, Muhammad Zubair<sup>1</sup>, Paul Neubauer<sup>2</sup>, Emery Williams<sup>2</sup>, I-Chow Hsu<sup>1</sup>, E. Clif Burdette<sup>2</sup>, Chris J. Diederich<sup>1</sup>

<sup>1</sup>University of California San Francisco, San Francisco, CA, USA.

<sup>2</sup>Acoustic MedSystems, Savoy, IL, USA

**Talk 82 HeatSYNCTM Gel: Mechanism of Action as Thermal Accelerant and Development of Drug-Eluting System for Anti-tumor Agents Post-Ablation**

William KC Park PhD

Theromics, West Bridgewater, MA, USA

**Talk 83 Tuning Thermal and Ablative Effects of Acid Anhydrides in Thermoembolization**

Dr. Danielle L. Stolley PhD, Dr. Natalie W. Fowlkes DVM, PhD, Dr.

Erik N. K. Cressman PhD, MD

MD Anderson Cancer Center, Houston, TX, USA

**Talk 84 Characterization of ex-vivo ovine lung tissue in relation to density at microwave frequencies**

Klementina Vidjak MsC<sup>1</sup>, Dr. Laura Farina PhD<sup>2</sup>, Prof. Marta Cavagnaro PhD<sup>1</sup>

<sup>1</sup>Department of Information Engineering, Electronics and

Telecommunications, Sapienza University of Rome, Rome, Italy.

<sup>2</sup>Endowave Ltd, Galway, Ireland

11:00 - 13:00 **STM Business Lunch**

| Kon Tiki Ballroom

13:00 - 13:30 **Closing Comments & Adjourn**

| Kon Tiki Ballroom