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
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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Hyperthermia
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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.
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. Loco-regional 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.
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.
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.

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

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

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

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

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

**DANIEL RIVERA**
Magnetic Hyperthermia Therapy in Combination with Chemoradiation for the Treatment of Glioblastoma
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
Amsterdam UMC

ERICA MONETTE VARGAS
Eradication of Staphylococcus aureus Biofilms on Photothermal Silicone Nanocomposites
Wake Forest

JOSEPHINE VOLOVETZ
Predictors of Survival after Laser Interstitial Thermal Therapy in Patients with Recurrent Glioblastoma
Cleveland Clinic

LUCAS WACHSMUTH
Gold nanostars enhance the efficacy and safety of laser interstitial therapy for the treatment of intracranial tumors
Duke
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), Amsterden Medical Center, Amsterdam, The Netherlands
- Dr. Gerard van Rhooon (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 (Tmax) per tissue and maximum time-at-Tmax
  - 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

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| 7:00am       | **Introduction to the Thermal Medicine Standards Committee**
Dario Rodrigues, PhD, University of Maryland  
Chair of the Thermal Medicine Standards Committee |

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.

| 7:05am       | **Updates from the Thermal Medicine Lexicon Subcommittee**
Dario Rodrigues, PhD, University of Maryland  
Assistant Professor, Department of Radiation Oncology, University of Maryland  
School of Medicine, Maryland |

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 & engineering, and biology. Currently, the lexicon subcommittee consists of seven groups: hyperthermia, ablation, cryotherapy, thermometry & image guidance, thermal physics, thermal biology & 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.

| 7:10am       | **Open discussion – group stage**
Groups formation for revision of the definitions thermal dose, hyperthermia, and ablation |

| 7:40am       | **Open discussion**
Each group will provide feedback regarding the definitions under analysis |

<p>| 7:55am       | Break |</p>
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| 8:05am      | Updates from the Tissue Properties Measurement (TPM) Subcommittee  
Colleen Crouch, PhD, University of Tennessee  
Assistant Professor, Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee, Knoxville  
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. |
| 8:05am      | Towards measurement standardization of electromagnetic tissue properties  
Sergio Curto, PhD, Erasmus MC  
Assistant Professor, Radiotherapy Department, Erasmus Medical Center (MC), Rotterdam, The Netherlands |
| 8:05am      | Towards measurement standardization of physiological tissue properties  
Colleen Crouch, PhD, University of Tennessee  
Assistant Professor, Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee, Knoxville |
| 8:05am      | Towards measurement standardization of thermal tissue properties  
Harry Vine, BSc, MBA  
Sales Engineer, Beacon Technical Sales, Inc., Nashua, New Hampshire |
| 8:05am      | Towards measurement standardization of optical tissue properties  
Gal Shafirstein, DSc, Roswell Park Comprehensive Cancer Center  
Professor, Department of Cell Stress Biology, Roswell Park Comprehensive Cancer Center, Buffalo, New York |
| 8:55am      | Cryo tissue properties  
Mechanical tissue properties  
MRI tissue properties  
Speakers TBD |
| 8:55am      | End |
PROGRAM

MONDAY, APRIL 24TH

08:00 - 19:00  Sponsor Exhibits | Board Room

08:00 - 19:00  Registration | Kon Tiki Foyer

08:00 - 09:00  Breakfast | Aviary Foyer

09:00 - 12:00 Career Development Workshop | Kon Tiki Ballroom
Presentation type Oral
Chair(s): Jennifer Yu

Part 1: Getting funded
Chair: Jennifer Yu
NIH Grant writing tips - Jennifer Yu
Panelists: Jennifer Yu, Elizabeth Repasky,
Dieter Haemmerich, Erik Cressman

Part 2: Finding your first job
Chair: Nicole Levi
Tips on finding your first job - Mark Hurwitz
Do’s and don’ts of a job talk - Ofer Reizes
Startup packages/what can be negotiated - Nicole Levi
Panelists: Mark Hurwitz, Ofer Reizes,
Nicole Levi, Rohan Fernandes

Part 3: Opportunities for Improving
Diversity, Equity, and Inclusion
Sponsored by the Women and Minorities in STM Committee
Chairs: Jennifer Yu and Nicole Levi
Panelists: Sharon Evans, Arlene Oei, Debbie Ledezma,
Punit Prakash, David Fuentes

09:00 - 12:00 Extracellular Stress Session | Toucan
Presentation type Oral
Chair(s): Antonio De Maio, Michael Graner

Talk 1 Stressed Exosomes (SEXOSOMES) in Glioblastoma Therapeutic Resistance
Jasmina Redzic, Arin Graner, Justin Hellwinkel,
Laura Russell, Michael Graner
University of Colorado Denver School of Medicine,
Department of Neurosurgery, Boulder, CO, USA

Talk 2 The Presence of HSP70 on Exosome Membranes, a Historical Perspective
Antonio De Maio
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

Talk 3 Release of mitochondria in extracellular vesicles as a cellular quality control pathway
Asa Gustafsson
University of California San Diego, La Jolla, CA, USA
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 Scutigliani1,2, Fernando Lobo Cerna1,3, Sergio Mingo Barba4,4,3, Stephan Scheidegger4, Przemek M Krawczyk1,2
1Amsterdam University Medical Centers, Amsterdam, Netherlands. 2Cancer Center Amsterdam, Amsterdam, Netherlands. 3ZHAW School of Engineering, Winterthur, Switzerland. 4University of Fribourg, Fribourg, Switzerland.

12:00 - 13:00  Lunch
13:00 - 14:00  Keynote - Eric Leuthardt
Presentation type Oral
Chair(s): Alireza Mohammadi
Title: Laser Interstitial Thermal Therapy – A Sea Change for the Treatment of Brain Tumors

14:00 - 17:00  Standardization Workshop in Clinical Hyperthermia & Panel Discussion
Presentation type Oral
Chair(s): Dario Rodrigues

17:00 - 19:00  Reception
TUESDAY, APRIL 25TH

07:00 - 19:00  Sponsor Exhibits  | Board Room

07:00 - 19:00  Registration  | Kon Tiki Foyer

07:00 - 09:00  Breakfast  | Aviary Foyer

07:00 - 09:00  ASME Workshop  Chair(s): Dario Rodrigues  | Toucan

09:00 - 11:00  Nanotechnology Session 1  Chair(s): 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 Priester¹, Ann L.B. Seynhaeve¹, Sergio Curto¹, Pegah Faridi¹, Punit Prakash¹, Gerard C. van Rhoon¹, Timo L.M. ten Hagen¹
  ¹Erasmus MC, Rotterdam, Netherlands. ²Kansas State University, Manhattan, Kansas, USA

  **Talk 8** Reduced Toxicities by Extracorporeal Removal of Thermosensitive Liposomal Doxorubicin
  Dieter Haemmerich¹, Dan Newton¹, Anjan Motamarry¹, A Marissa Wolfe¹, Krishna K. Ramajayan¹, Miguel T. Troncoso¹, Kristine Deleon-Pennell¹, Thomas Benton¹, Yuri Peterson¹, Pegah Faridi¹, Punit Prakash¹, Katherine Twombly¹
  ¹Medical Univ. of South Carolina, Charleston, SC, USA. ²Kansas 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 Korangath¹, Lu Jin¹, Chun-Ting Yang¹, Sean Healy¹, Xin Guo¹, Suqi Ke¹, Chen Hu¹, Kathleen Gabrielson¹, Jeremy Foote¹, Robert Clarke², Robert Ivkov¹
  ¹Johns Hopkins University, Baltimore, Maryland, USA. ²The Hormel Institute, University of Minnesota, Minneapolis, Minnesota, USA. ³University of Alabama, Tuscaloosa, Alabama, USA
Talk 10 Magnetic Hyperthermia Therapy in Combination with Chemoradiation for the Treatment of Glioblastoma
Dr Maria Anastasiadou PhD1, Daniel Rivera BS1,2, Dr Alexandros Bouras MD1,2, Tori Channenchuk MS1, Alexander Schupper MD1, Caroline Rizea BS1, Gabrielle Price MS1, Dr Hayden Carlton PhD1, Dr Robert Ivkov PhD1,2,5,6, Dr Constantinos G Hadjipanayis MD, PhD1,2
1Icahn School of Medicine at Mount Sinai, Department of Neurological Surgery, New York, NY, USA. 2University of Pittsburgh, Department of Neurological Surgery, Pittsburgh, PA, USA. 3Johns Hopkins University, Department of Radiation Oncology and Molecular Radiation Sciences, Baltimore, MD, USA. 4Johns Hopkins University School of Medicine, Department of Oncology, Baltimore, MD, USA. 5Johns Hopkins University, Department of Mechanical Engineering, Whiting School of Engineering, Baltimore, MD, USA. 6Johns 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. Jenkins1, Gabriel Fletcher2, Deborah Okyere3, Jingyi Chen2, David Huitink2, Robert J. Griffin1
1University of Arkansas for Medical Sciences, Little Rock, AR, USA. 2University of Arkansas, Fayetteville, AR, USA

09:00 - 11:00 LITT Session
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's1, Avesh Jangam Master's2, Anirudh Sharma3, Brad Zacharia4, Constantinos Hadjipanayis5, Robert Ivkov1, Anilchandra Attaluri1
1Pennsylvania State University, Harrisburg, Pennsylvania, USA. 2Pennsylvania State University, Harrisburg, Pennsylvania, USA. 3The Johns Hopkins University School of Medicine, Baltimore, Maryland, USA. 4Pennsylvania State Health, Hershey, Pennsylvania, USA. 5University 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 MS1, Ariel T Gonzalez BS1, Aditya A Mohan BS1, Emily C Lerner MHS1, Dr. Ethan S Srinivasan MD2, Dr. Joshua D Jackson MD, PhD1, Dr. Peter E Fecci MD, PhD1
1Duke University School of Medicine, Durham, NC, USA. 2Department of Neurosurgery, Johns Hopkins Hospital, Baltimore, MD, USA. 3Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA. 4Preston 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 BS¹, Pakawat Chongsathidkiet MD¹, Yang Liu PhD¹, Ren Odion BS¹, Ethan Srinivasan MD¹,², Aden Haskell-Mendoza BS¹, Ryan Edwards¹, Adian Canning BS¹, Gavin Willoughby¹, Joseph Hinton¹, Stephen Norton PhD¹, Tuan Vo-Dinh PhD¹, Peter Fecci MD, PhD¹
¹Duke University, Durham, NC, USA. ²Johns Hopkins, Baltimore, MD, USA

Talk 16 Adapting Laser Interstitial Thermal Therapy (LITT) for Treatment of Intracranial Lesions in Dogs
Dr. Christopher L Mariani DVM, PhD¹, Dr. Peter E Fecci MD, PhD²
¹North Carolina State University, Raleigh, NC, USA. ²Duke University, Durham, NC, USA

11:00 - 11:30 Break | Aviary Foyer

11:30 - 12:30 Keynote - Alireza Shamshirsaz
Chair(s): Alireza Mohammadi
Title: Past, present and future of fetal surgery | Kon Tiki Ballroom

12:30 - 14:00 Lunch | Beach

14:00 - 16:30 Biology Session 1
Chair(s): Arlene Oei, Allison Payne | Kon Tiki Ballroom

Talk 17 APPLYING OPTIMAL STEREOTACTIC DOSES OF RADIATION WITH HYPERTERMIA TO TREAT SOLID TUMORS IN A PRECLINICAL IN VIVO MODEL
Mr Folefac C. Asonganyi, Ms. Biomedical Sciences¹, Mr Priyanshu N Sinha, Ms. Biomedical Engineering¹, Mateusz K. Sitarz, Ph.D.², Prof Niels Bassler, Ph.D.², Prof Michael R.Horsman, Ph.D.¹
¹Department of Experimental Clinical Oncology, Aarhus University Hospital, Aarhus, Denmark. ²Department 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 PhD¹, Arlene L. Oei PhD¹,²,³,⁴
¹Precision Medicine in Oncology (PrMiO), Department of Pathology, Erasmus MC Cancer Institute, Rotterdam, Netherlands. ²Department of Radiotherapy Oncology, Amsterdam UMC, location University of Amsterdam, Amsterdam, Netherlands. ³Center for Experimental and Molecular Medicine (CEMM), Laboratory for Experimental Oncology and Radiobiology (LEXOR), Amsterdam, Netherlands. ⁴Cancer 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 PhD1,2, Rogier van Oossanen1, Ioannis Androulakis1, Kristina Djanashvili PhD3, Antonia G. Denkova PhD3, Gerard C. van Rhoon PhD1,2
1Erasmus MC Cancer Institute, Dept. Radiotherapy, Rotterdam, Netherlands. 2Delft University of Technology, Dept. Radiation Science and Technology, Delft, Netherlands. 3Delft University of Technology, Dept. Biotechnology, Delft, Netherlands

Talk 22 RF-hyperthermia to modulate tumor interstitial fluid pressure: an in vivo pilot study
Anna Bottiglieri PhD1, Malea Williams2, Santosh K. Mandal2, Jun Ying Tan3, Aabila Tharzeen4, Jungkwun Kim3, Balasubramaniam Natarajan3, Rahul A. Sheth3, Punit Prakash4
1Kansas State University, Manhattan, Kansas, USA. 2Department of Interventional Radiology, The University of Texas MD Anderson Cancer Center, Houston, Texas, USA. 3Department of Electrical and Computer Engineering, Kansas State University, Manhattan, Kansas, USA. 4Department of Electrical Engineering, University of North Texas, Denton, Texas, USA. 5Department of Electrical Engineering, Chalmers University of Technology, Gothenburg, Sweden. 6Department of Radiation Oncology, Erasmus MC Cancer Institute, Rotterdam, Netherlands. 7Department of Radiation Oncology, Universitätsklinikum Erlangen, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany. 8Department of Radiation Oncology, Charité-Universitätsmedizin Berlin, Berlin, Germany. 9Experimental Clinical Oncology - Department of Oncology, Aarhus University Hospital, Aarhus, Denmark. 10Department of Medical Biology, Amsterdam University Medical Centers, University of Amsterdam, Amsterdam,

14:00 - 16:30 Clinical Session 1
Chair(s): Rudi Wessalowski, Hans Crezee

Talk 23 A midterm evaluation of HYPERBOOST (Hyperthermia boosting the effect of Radiotherapy)
Hans Crezee PhD1,2, Sergio Curto PhD3, Hana Dobsocek Trefna PhD4, Rainer Fietkau MD, PhD5, Benjamin Frey PhD5, Udo Gaipl PhD5, Pirouz Ghadjar MD, PhD6, Michael Robert Horsman PhD7, Petra Kok PhD1,2, Przemek M. Krawczyk8,2, Thoralf Niendorf PhD9, Oliver J. Ott1, Pierfrancesco Pavoni10, Gerard C. van Rhoon PhD1, Oliver Rieisterer MD, PhD11,12, Stephan Scheidegger PhD13, MartinBen Wadepohl14, Ben J. Slotman MD, PhD15,2
1Department of Radiation Oncology, Amsterdam University Medical Centers, University of Amsterdam, Amsterdam, Netherlands. 2Cancer Center Amsterdam, Amsterdam, Netherlands. 3Department of Radiation Oncology, Erasmus MC Cancer Institute, Rotterdam, Netherlands. 4Department of Electrical Engineering, Chalmers University of Technology, Gothenburg, Sweden. 5Department of Radiation Oncology, Universitätsklinikum Erlangen, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany. 6Department of Radiation Oncology, Charité-Universitätsmedizin Berlin, Berlin, Germany. 7Experimental Clinical Oncology - Department of Oncology, Aarhus University Hospital, Aarhus, Denmark. 8Department of Medical Biology, Amsterdam University Medical Centers, University of Amsterdam, Amsterdam,
Talk 24 Regional hyperthermia as salvage treatment added to radiation in malignant pediatric tumors

MD Ruediger Wessalowski MD1, Hana Dobsicek-Trefna PhD2, Christiane Matuschek MD1, Katrin Harder1, Oliver Mils1, Farid Ziaee MD1, Christiane Staude MD1, Ronald Richter MD3, Gerard van Rhoon PhD4, Wilfried Budach MD1

1Heinrich-Heine-University, Medical Faculty, Düsseldorf, Germany. 2Chalmers University of Technology, Department of Electrical Engineering, Göteborg, Sweden. 3University Hospital Essen, WPE, Essen, Germany. 4Erasmus MC Cancer Institute, Rotterdam, Netherlands

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

Dr. Ashley E Mason PhD1,2, Dr. Charles Raison MD, MA3,4, Dr. Wendy Hartogensis PhD5, Dr. Chelsea J Siwik PhD5, Dr. Leena Pandya ND5, Ms. Anoushka Chowdhary BA1, Dr. Rhonda Patrick PhD6, Dr. Patricia J Moran PhD1, Ms. Claudine Anglo BS1, Ms. Stefanie Roberts BS1, Dr. Osnat Lupesko-Persky PhD1, Dr. Christopher A Lowry PhD7, Dr. Frederick M Hecht MD1,8

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

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

Dr Markus Notter MD1, Dr Andreas R. Thomsen MD1,2, Prof. Dr. Peter Vaupel MD2,3

1Lindenhofspital, Bern, Bern, Switzerland. 2University Medical Center Freiburg, Freiburg, Germany. 3German 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 MSc1,2, Drs. Elisabeth D. Geijsen MD1, Dr. Akke Bakker PhD1, Dr. Jorg R. Oddens MD, PhD1, Dr. H. Petra Kok PhD1, Dr. Theo M. de Reijke MD, PhD1, Dr. Hans Crezee PhD1
1Amsterdam UMC, location University of Amsterdam, Department of Radiation Oncology, Amsterdam, North Holland, Netherlands. 
2Amsterdam 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 PhD1, prof Grerard C van Rhoon PhD1, Prof Maarten Paulides PhD3, Dr Clemens Bos PhD3, PhD Roel Deckers PhD3, Dr Juan Hernandez Tamames PhD3, Dr Lambertus W Bartels PhD3, Dr Hans Crezee PhD3, Dr Petra Kok PhD4, Dr Arlene L Oei PhD4, Prof Maurice Heemels PhD2, Dr Sergio Curto PhD1
1Erasmus MC, Rotterdam, Netherlands. 2TUe, Eindhoven, Netherlands. 3UMCU, Utrecht, Netherlands. 4AUMC, Amsterdam, Netherlands

14:00 - 16:30 Neuro-Oncology Session
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 MD1, Emily C Lerner MHS2, Aden P Haskell-Mendoza MS2, Ryan M Edwards BA2, Lucas P Wachsmuth BS2, Dr. Joshua D Jackson MD, PhD1, Dr. David Huie MD, MS1, Dr. Peter E Fecci MD, PhD4
1Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA. 2Duke University School of Medicine, Durham, NC, USA. 3Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA. 4Preston 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 Frison 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 MS1, Dr. Ethan S Srinivasan MD2,1, Emily C Lerner MHS1, Ryan M Edwards BA1, Allison M. Schwalb BS1, Dr. Joshua D Jackson MD, PhD1, Dr. Andrew A Hardigan MD, PhD1, Dr. Eugene J Vaios MD, MBA4, Dr. Peter E Fecci MD, PhD5

1Duke University School of Medicine, Durham, NC, USA. 2Department of Neurosurgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA. 3Department of Neurosurgery, Duke University Medical Center, Durham, NC, USA. 4Department of Radiation Oncology, Duke University Medical Center, Durham, NC, USA. 5Preston 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 MD1, William Leidig2, Omar H Butt MD, PhD2, Tehila Kaisman-Elbaz MD, PhD1, Matthew Grabowski MD1, Ruth G Nakiwala Katumba MPH3, Tanner M Johans MD, PhD2, Milan G Chheda MD2, Jian L Campian MD, PhD2,3, Jon T Willie MD, PhD2, Jiayi Huang MD2, Eric C Leuthardt MD2, Albert H Kim MD, PhD2, Alireza M Mohammadi MD1

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

16:30 - 19:00 STM Awards Presentations/Ceremony and Poster Session & Mixer 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 αPD-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.,1 Nicole DeSouza B.S.,1 Danielle Quaranto M.S.,1 Tara Jarboe M.S.,1 Michelle Carnazza B.S.,1 Thomas Gagliardi1, Joseph Conti1, Raj K Tiwari Ph.D.,1 Jan Geliebter Ph.D.,1 Mark D Hurwitz M.D.1,2

1New York Medical College, Valhalla, NY, USA. 2Westchester Medical Center, Valhalla, NY, USA
Poster 3 Temperature impact on B16-F10 melanoma in vitro model: mapping the carcinogenic phenotype and morphological characterization
Nicole DeSouza B.S.1, Danielle Quaranto M.S.1, Kaci Kopec B.S.1, Tara Jarboe M.S.1, Michelle Carnazza B.S.1, Thomas Gagliardi1, Joseph Conti1, Raj K Tiwari Ph.D.1, Jan Geliebter Ph.D.1, Mark D Hurwitz2,1
1New York Medical College, Valhalla, NY, USA. 2Westchester Medical Center, Valhalla, NY, USA

Poster 4 Thermal Therapeutic Efficacy of Multifunctional Biomembrane-Coated Hybrid Nanoparticles
Gabriel J Fletcher1, Samir V Jenkins2, Geletu Qing1, Deborah Okyere1, Jingyi Chen1, Robert J Griffin2, David Huitink1
1University of Arkansas, Fayetteville, AR, USA. 2University 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 Dame1, Jordan T Grow1, Steven P Allen PhD1, Henrik Odeen PhD2, Christopher R Dillon PhD1
1Brigham Young University, Provo, UT, USA. 2University of Utah, Salt Lake City, UT, USA

19:00 - 22:00 Robinson Award Dinner
**WEDNESDAY, APRIL 26TH**

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**Nanotechnology Session 2**

**Chair(s):** Nicole Levi, Erica Vargas

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

Erica Monette M Vargas BS¹, Bradley Burden MS², Nicole Levi PhD¹, Scott Gayzik PhD²

¹Wake Forest University School of Medicine, Winston-Salem, NC, USA. ²Virginia 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 PhD¹, Dr. Dario B Rodrigues PhD², Prof. Paul R Stauffer MSEE, CCE¹, Janet Kwiatkowski², Dr. Omaditya Khanna MD¹, Dr. Kevin D Judy MD¹, Marty Overbeek Bloem³, Robert Goldstein FASM¹, Dr. Yan Yu PhD, MBA¹, Dr. Wenyin Shi MD, PhD¹, Dr. Mark D Hurwitz MD⁶

¹Thomas Jefferson University Hospital, Philadelphia, PA, USA. ²University of Maryland School of Medicine, Baltimore, MD, USA. ³MAE Group, Deerfield, NH, USA. ⁴Phoenix DeVentures, Morgan Hill, CA, USA. ⁵AMF LifeSystems, Auburn Hills, MI, USA. ⁶Westchester 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 PhD¹, Preethi Korangath PhD¹, Nageshwar Arepally², Anilchandra Attaluri PhD², Robert Ivkov PhD¹

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

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

MS Rupali Khatun¹, Dr. Soumick Chatterjee PhD², Dr. rer. nat. Manfred Schmid³, Prof. Dr. rer. nat. Christoph Bert⁴, Mr Martin wadepohl⁵, Prof. Dr. med. Rainer Fietkau⁶, Prof. Dr. Andreas Nünnberger⁷, Prof. Dr. Udo S. Gaipl⁸, PD Dr.-Ing Benjamin Frey⁹

¹Department of Radiation Oncology, Universitätsklinikum Erlangen, Erlangen, Bavaria, Germany. ²Data and Knowledge Engineering Group, Faculty of Computer Science, Otto von Guericke University Magdeburg, Magdeburg, Germany. ³Department of Radiation Oncology, Universitätsklinikum Erlangen, Erlangen, Germany. ⁴Department of Radiation Oncology, Universitätsklinikum Erlangen, Erlangen, Germany. ⁵Dr. Sennewald Medizintechnik GmbH, Munich, Germany

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

Morgan Sainsbury BS, MS¹, Elizabeth Norton BS, MS, MD¹, Somnath Singh BPharm, MPharm, PhD², Alekha Dash RPh, PhD², Peter Thomas Ph.D.¹, Venkatesh Govindarajan PhD¹, Brian Loggie MD, CM, FRCS, FACS¹

¹Creighton University School of Medicine, Omaha, NE, USA. ²Creighton 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 HYPERTERMIA 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 Franckena¹, Patrick Granton¹, Anton F. Rink¹, Juan Hernandez Tamames², Remi A. Nout¹, Sergio Curto¹

¹Erasmus MC Cancer Institute, dept. Radiation Oncology, Rotterdam, Netherlands. ²Erasmus MC, dept. of Radiology & Nuclear Medicine, Rotterdam, Netherlands

11:00 - 11:30  **Break**  | Aviary Foyer

11:30 - 12:30  **Keynote - Alex Huang**  | Kon Tiki Ballroom

Chair(s): Alireza Mohammadi

**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  
Chair(s): Lucas Wachsmuth, Ofer Reizes  |  Kon Tiki Ballroom

**Talk 51 Sex-specific differences in response to hyperthermia and radiotherapy in a mouse model of glioblastoma**
Dr. Jing Hao M.D. PhD., Dr. Defne Bayik Watson PhD., Dr. Peng Qi Ph.D., Dr. Haidong Huang PhD., Dr. Xiangzi Han MD. PhD., Dr. Justin Lathia PhD., Dr. Jennifer Yu MD. PhD.
1*Cleveland Clinic Lerner Institute, Cleveland, Ohio, USA. 2*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 PM. Dings Ph.D.
University of Arkansas for Medical Sciences, Little Rock, AR, USA

**Talk 53 Radiotherapy and hyperthermia of cervical cancer: Timing matters**
Xionge Mei MSc., H. Petra Kok PhD, Barbara C. Snoek PhD, Hans M. Rodermond BSc, Gregor G.W. van Bochove MSc., Caspar M. van Leeuwen PhD, Ekaterina S. Jordanova PhD, Nicolaas A.P. Franken PhD, Timo L.M. ten Hagen PhD, Johannes Crezee PhD, Louis Vermeulen PhD, Lukas J.A. Stalpers PhD, Arlene L. Oei PhD.
1Department of Radiotherapy Oncology, Amsterdam UMC, location University of Amsterdam, Amsterdam, Netherlands. 2Center for Experimental and Molecular Medicine (CEMM), Laboratory for Experimental Oncology and Radiobiology (LEXOR), Amsterdam, Netherlands. 3Cancer Center Amsterdam, Cancer Biology and Immunology, Amsterdam, Netherlands. 4Center for Gynecologic Oncology Amsterdam, Amsterdam UMC, Amsterdam, Netherlands. 5Precision Medicine in Oncology (PrMiO), Department of Pathology, Erasmus MC Cancer Institute, Rotterdam, Netherlands. 6Department 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, Mr Georges Hraoui MSc, Dr Mélanie Grondin PhD, Dr Sophie Breton PhD
1Université du Québec à Montréal, Montreal, Quebec, Canada. 2Université 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, Debbie K Ledezma Ph. D., Jie Chen Ph. D., Preethi B Balakrishnan Ph. D., Elizabeth E Sweeney Ph. D., Rohan Fernandes Ph. D.
1George Washington University, Washington, DC, USA. 2ArsenalBio, 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*

**Clinical Session 2**

14:00 - 16:30

**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 MSc1,2, Dr. Konstantinos Pateras PhD3, Dr. Akke Bakker PhD1, Dr. H. Petra Kok PhD1, Prof. Dr. Ben J. Slotman MD, PhD2, Dr. H. J. G. Desirée van den Bongard MD, PhD1, Dr. Hans Crezee PhD1

1Amsterdam UMC, location University of Amsterdam, Department of Radiation Oncology, Amsterdam, North Holland, Netherlands.
2Amsterdam UMC, location Vrije Universiteit Amsterdam, Department of Radiation Oncology, Amsterdam, North Holland, Netherlands.
3University 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 Muhammed A Hamza MD1, Ms Leah Chen2, Dr Justin Cohen MD1, Dr Dario Rodrigues PhD3, Dr Sina Mossahebi PhD2, Dr Nrusingh C Biswal PhD1, Dr Mark Zakhary PhD4, Dr Zeljko Vujaskovic MD PhD1, Dr Dan Kunprayoon MD1, Dr Zaker Rana MD1, Dr Jason K Molitoris MD PhD1

1University of Maryland Medical Center, Baltimore, MD, USA.
2Georgetown University, Washington D.C., Washington D.C., USA.
3University 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, PhD1, Justin Cohen MD2, Muhammed Hamza MD3, Sina Mossahebi PhD1, Mark Zakhary PhD1, Nrusingh Biswal PhD1, Kara Lehman CMD2, Dan Kunprayoon MD1, Zaker Rana MD1, Dario B Rodrigues PhD1

1University of Maryland School of Medicine, Baltimore, MD, USA.
2University 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 MD1, Dr. David G Silverman MD2, Dr Victor H Spitz MD1

1BTT Medical Institute, Aventura, Florida, USA. 2Yale 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, Justin Cohen MD, Santanu Samanta MD, Sina Mossahebi PhD, Nrusingh Biswal PhD, Mark Zakhary PhD, Dan Kunaprayoon MD, Zaker Rana MD, Jason K. Molitoris MD, PhD
University of Maryland School of Medicine, Baltimore, MD, USA.

Talk 62 Development of Magnetic Hyperthermia for the Systemic Treatment of Endometriosis
College of Pharmacy, Oregon State University, Portland, OR, USA.
Division of Reproductive and Developmental Sciences, Oregon National Primate Research Center, Oregon Health & Science University, Beaverton, OR, USA.
Dotter Interventional Institute, Department of Interventional Radiology, Oregon Health & Science University, Portland, OR, USA.
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, Gerard C. van Rhoon, Maarten Paulides, Clemens Bos, Roel Deckers, Juan Hernandez Tamames, Lambertus W. Bartels, Hans Crezee, Petra Kok, Timo ten Hagen, Arlene Oei, Maurice Heemels
Erasmus MC Cancer Institute, Rotterdam, Netherlands.
Eindhoven University of Technology, Eindhoven, Netherlands.
Cancer Center Amsterdam, Imaging and Biomarkers, Amsterdam, Netherlands.
Amsterdam UMC, location University of Amsterdam, Center for Experimental and Molecular Medicine, Laboratory for Experimental Oncology and Radiobiology, Amsterdam, Netherlands.

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

Talk 64 Impact quantification of tissue property and perfusion uncertainties on hyperthermia treatment planning using polynomial chaos expansion.
Jort Groen MSc, dr. Johannes Crezee PhD, dr. Hanneke van Laarhoven PhD, dr. Maarten Bijlsma PhD, dr. Petra Kok PhD
Amsterdam UMC location University of Amsterdam, Radiation Oncology, Amsterdam, Netherlands.
Cancer Center Amsterdam, Cancer biology and immunology, Treatment and quality of life, Amsterdam, Netherlands.
Cancer Center Amsterdam, Imaging and Biomarkers, Amsterdam, Netherlands.
Amsterdam UMC, location University of Amsterdam, Department of Medical Oncology, Amsterdam, Netherlands.
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 Chamani1, Marla Pyle1, Tej Shrestha PhD1, Anna Bottiglieri PhD1, Stefan H Bossmann PhD2, Subhrajit Saha PhD2, Rahul A Sheth MD1, Punit Prakash PhD1
1Kansas State University, Manhattan, Kansas, USA. 2University of Kansas Medical Center, Kansas city, Kansas, USA. 3University 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.1,2, Jakob Ödén PhD3, Johannes Crezee PhD4,5, Andrea Lorenzo Polo M. Sc.5, H. Petra Kok PhD4,6
1Amsterdam UMC location University of Amsterdam, Radiation Oncology, Amsterdam, Noord Holland, Netherlands. 2Cancer Center Amsterdam, Cancer biology and immunology, Treatment and quality of life, Amsterdam, Noord Holland, Netherlands. 3RaySearch Laboratories AB, Stockholm, Sweden. 4Amsterdam UMC location University of Amsterdam, Radiation Oncology, Amsterdam, Netherlands. 5Cancer Center Amsterdam, Cancer biology and immunology, Treatment and quality of life, Amsterdam, Netherlands. 6Cancer 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 PhD1, Mr. Avesh Jangam2, Mr. Julian L.Y. Shen3, Mr. Aiman Ahmed2, Mr. Nageshwar Arepally2, Mr. Benjamin Rodriguez1, Mr. Joseph Borrello3, Dr. Alexandros Bouras MD4, Dr. Lawrence Kleinberg MD5, Dr. Kai Ding PhD5, Dr. Constantinos G Hadjipanayis MD, PhD5, Dr. Dara L Kraitchman DVM, PhD5, Dr. Robert Ivkov PhD1, Dr. Anilchandra Attaluri PhD2
1Johns Hopkins University School of Medicine, Baltimore, MD, USA. 2Pennsylvania State University, Harrisburg, PA, USA. 3Mount Sinai School of Medicine, New York, NY, USA. 4University of Pittsburgh Medical Center, Pittsburgh, PA, USA. 5Johns Hopkins Medicine, Baltimore, MD, USA

16:30 - 17:00 Break | Aviary Foyer

17:00 - 18:00 STM Presidential Symposium - Quality of Life
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  Sponsor Exhibits  |  Board Room

08:00 - 12:00  Registration  |  Kon Tiki Foyer

08:00 - 09:00  Breakfast  |  Aviary Foyer

09:00 - 11:00  Nanotechnology Session 3
Chair(s): Robert Ivkov, Hayden Carlton

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, Marzieh Salimi PhD, Gabriela Bentolila, Nageshwar Arepally, Anirudh Sharma PhD, Adnan Bibic PhD, Matt Newgren, Patrick Goodwill PhD, Anilchandra Attaluri PhD, Jeff W. M. Bulte PhD, Preethi Korangath PhD, Robert Ivkov PhD
1The Johns Hopkins School of Medicine, Baltimore, MD, USA. 2Penn State Harrisburg, Middletown, PA, USA. 3Kennedy Krieger Institute, Baltimore, MD, USA. 4Magnetic Insight, Alameda, CA, USA

Talk 71 Heating power of dual-material radioactive magnetic nanoparticles for thermobrachytherapy
Rogier van Oossanen, Alexandra Maier, Antonia G. Denkova PhD, Jeremy Godart PhD, Kristina Djanashvili PhD, Gerard C. van Rhoon PhD
1Erasmus MC Cancer Institute, Dept. Radiotherapy, Rotterdam, Netherlands. 2TU Delft, Dept. Biotechnology, Delft, Netherlands. 3TU 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, Joshua Vanname MS, Dr. Hayden Carlton PhD, Dr. Robert Ivkov PHD, Dr. Anilchandra Attaluri PHD
1Penn State Harrisburg, Middletown, Pennsylvania, USA. 2The Johns Hopkins University School of Medicine, Baltimore, Maryland, USA. 3Johns 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, Dr. Irma Shamata Ph.d, Dr David Kakulia Ph.D, Dr. Fridon Shubitidze Ph.D
1Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia, Tbilisi, Georgia. 2Dartmouth College, Hanover, NH, USA

* SITA Winner
Talk 74 Magnetic hyperthermia treatment planning for glioblastoma
Dr. Anirudh Sharma1, Mr. Julian L.Y. Shen2, Mr. Avesh A. Jangam2, Dr. Kai Ding PhD2, Dr. Anilchandra Attaluri PhD2, Dr. Lawrence Kleinberg MD3, Dr. Constantinos Hadjipanayis MD, PhD4, Dr. Robert Ivkov PhD1, Dr. Dara L. Kraitchman DVM, PhD1
1Johns Hopkins University School of Medicine, Baltimore, MD, USA.
2Pennsylvania State University, Harrisburg, PA, USA. 3Johns Hopkins Medicine, Baltimore, MD, USA. 4University 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 Olejnizczak 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 PhD1, Professor Marta Cavagnero PhD2, Professor Chris Diederich PhD3, Senior Lecturer Lourdes Farrugia PhD4, Professor Gal Shafirstein D.Sc.5
1Medtronic, Louisville, CO, USA. 2Sapienza University, Rome, Italy. 3UCSF, San Francisco, CA, USA. 4University of Malta, Msida, Malta. 5Roswell 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 Gupta¹, Tamas Heffter², Peter D Jones¹, Muhammad Zubair¹, Paul Neubauer³, Emery Williams³, I-Chow Hsu¹, E. Clif Burdette³, Chris J. Diederich¹
¹University of California San Francisco, San Francisco, CA, USA.
²Acoustic MedSystems, Savoy, IL, USA

Talk 82 HeatSYNC 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 MsC¹, Dr. Laura Farina PhD², Prof. Marta Cavagnaro PhD¹
¹Department of Information Engineering, Electronics and Telecommunications, Sapienza University of Rome, Rome, Italy.
²Endowave Ltd, Galway, Ireland

11:00 - 13:00 STM Business Lunch | Kon Tiki Ballroom

13:00 - 13:30 Closing Comments & Adjourn | Kon Tiki Ballroom