

THE 28TH EUROPEAN SYMPOSIUM ON ULTRASOUND CONTRAST IMAGING January 19-20, 2023



28th ESUCI Rotterdam Bubble Conference Program

WEDNESDAY, 18 January 2023

- 13.00 PhD defense (Erasmus MC) Gonzalo Collado Lara: Radiotherapy Dosimetry with Ultrasound Contrast Agents
Location: Prof. Andries Querido zaal, Erasmus MC, Rotterdam
- 17.30 – 19.30 Welcome Drinks at the conference location: Mainport Hotel, Leuvehaven 77, Rotterdam
Registration

THURSDAY, 19 January 2023

Oral program

- 08.00 – 09.00** Registration
- 09.00 – 09.10** Introduction and opening Rudolf de Boer
- 09.10 – 10.15** **CLINICAL IMAGING** Chairpersons: Folkert ten Cate and Ton van der Steen
- Dirk-André Clevert The use of contrast-enhanced ultrasound in pregnant women.....
- Massimo Mischi Spatiotemporal analysis of ultrasound contrast-enhanced breast lesions for aiding the differentiation of malignant or benign .
- Flemming Forsberg Using a deep-learning model and lymphosonography to differentiate benign and malignant sentinel lymph nodes in patients with breast cancer
- 10.15 – 11.50** Coffee & Poster sessions A and B
10.15 – 10:37: Parallel poster sessions A (poster room 1) and B (poster room 2): 2 minutes pitches. After the pitches the Q&A is at the posters (audience selects winner)
- 11.50 – 12.45** **NEW DIRECTIONS** Chairpersons: Olivier Couture and Eleanor Stride
- Katia Parodi Ionoacoustics and Contrast agents: status and perspectives.....
- Gonzalo Collado Lara Ultrasound-based proton range verification with superheated nanodroplets
- Xucaï Chen Ischemia/Reperfusion (I/R) injury increased accumulation of perfluoropropane droplets in the microvasculature
- 12.45 – 13.45** **LUNCH**
- 13.45 – 14.15** **DUTCH HEART FOUNDATION LECTURE**..... Chairperson: Rik Vos
- Christy Holland Xenon microbubbles for cerebroprotection in a porcine model of intracerebral hemorrhage.....
- 14.15 – 15.15** **CLINICAL THERAPY** Chairpersons: Annemien van den Bosch and Flordeliza Villanueva
- Kullervo Hynynen Ultrasound enhanced drug delivery in brain: review of clinical progress
- John Eisenbrey Ultrasound-triggered microbubble destruction augmentation of tumor radioembolization.....
- Thomas Porter Ongoing Sonothrombolysis Trials in Acute ST Segment Elevation Myocardial Infarction.....
- 15.15 – 15.45** **Intermission**
- 15.45 – 17.05** **PRECLINICAL IMAGING** Chairpersons: Dan Adam and Mike Averkiou
- Olivier Couture The profound and unique path of the sole microbubble.....
- Geraldi Wahyulaksana High-frame-rate contrast-enhanced ultrasound porcine myocardial perfusion imaging with higher-order singular value decomposition
- Antoine Coudert Transcranial 3D Ultrasound Localization Microscopy in sheep brain
- Biao Huang Super-resolution imaging of myocardial microvasculature on an ex vivo pig model
- Costas Arvanitis Tracking Macrophages with Ultrasound for Cancer Diagnosis.....
- 18.30 – 22.30** **EVENING PROGRAM (Incl. Dinner buffet)**



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FRIDAY, 20 January 2023

07.30 – 08.00 Registration

07.30 – 09.00 **PARALLEL SHORT ORAL SESSION I (poster room 1) and SESSION II (poster room 2); walk-in breakfast provided**

Oral program

09.00 – 09.50 **BUBBLE TECHNOLOGY** *Chairpersons: Michel Versluis and Mark Borden*
 Tim Segers Microfluidic lipid-coated monodisperse microbubble formation
 Eleanor Stride What's in a name? Micro v. Nanobubbles in Ultrasound Imaging and Therapy
 Marco Cattaneo Viscosity measurements and rheology modelling of phospholipid-coated microbubbles

09.50 – 11.15 **Coffee & Poster sessions C and D**
09.50 – 10:10: Parallel poster sessions C (poster room 1) and D (poster room 2): 2 minutes pitches. After the pitches the Q&A is at the posters (audience selects winner)

11.15 – 12.30 **THERAPY: Towards clinical use** *Chairpersons: Constantin Coussios and Christy Holland*
 Yuchen Wang The initial size of a monodisperse microbubble plays a large role in pore and tunnel formation in endothelial cells
 John Pacella Investigation of Cardioprotective Efficacy of Nitrofatty Acid Microbubbles (NFABs) in Rat Myocardial Ischemia Reperfusion Injury Model
 Kritika Singh Investigation of the ultrasound-mediated toxicity mechanisms of various sonosensitive drugs
 Flordeliza Villanueva Ultrasound-targeted microbubble cavitation delivers microRNA to tumor cells and the tumor microenvironment: Direct visualization using miRNAscope assay
 Payton Martinez MRI Guided Focused Ultrasound Drug Delivery to DIPG Tumors in a Mouse Model

12.30 – 13.30 **LUNCH**

13.30 – 14.00 **THORAX LECTURE** *Chairperson: Klazina Kooiman*
 Constantin Coussios CEeDD: Clinical Translation of Cavitation-Enhanced Oncological Drug Delivery from Sonosensitive Particles Guided by Passive Acoustic Mapping

14.00 – 15.30 **COMPETITION: CONTRAST ENHANCED ULTRASOUND IMAGING** *Chairpersons: Nico de Jong and Peter Burns*
 Connor Krolak Tumor perfusion quantification with parametric processing of contrast-enhanced ultrasound
 Louise Denis Sensing Ultrasound Localization Microscopy reveals glomeruli in living rats and humans
 Majorie van Helvert Ultrafast Contrast-Enhanced Ultrasound Velocimetry in the Abdominal Aorta Before and After Endovascular Aneurysm Repair: Preliminary Results
 Baptiste Heiles Fast 3D Nonlinear Sound-Sheet Imaging of Endogenous, Protein-based, and Synthetic Contrast Agents
 Luxi Wei In-vivo high frame rate contrast-enhanced volumetric vasculature imaging using a sparse array
 Kathyne Jayne Bautista Detecting tumors in acoustic angiography: a deep learning approach

15.30 – 15.45 **CLOSING REMARKS** *Klazina Kooiman and Rik Vos*

15.45 **ANNOUNCEMENT OF THE WINNERS OF THE COMPETITION AND POSTER PRIZES**

FAREWELL DRINKS

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Erasmus MC
ERASMUS
THORAX CENTRUM

Poster sessions Thursday 19 January 2023

Thursday 10.15-11.50

POSTER SESSION A: NEW DIRECTIONS TECHNOLOGYChairperson: Mark Borden

Poster room 1; with 2 min poster pitches from 10:15 – 10:37

- A1) Charlotte Nawijn Shell characterization of single microbubbles using a novel stress-strain analysis.....
- A2) Eleanor Stride Predicting the Spontaneous Vaporisation of Nanodroplets
- A3) Gazendra Shakya Time-resolved acoustic vaporization of droplet aggregates.....
- A4) Georges Chabouh Buckling and propulsion of monodisperse lipid coated microbubbles
- A5) Arisa Murakami Evaluation of microbubble control performance using electric fields
- A6) Simona Turco In-vitro investigation of the impact of monodisperse microbubble size on contrast-enhanced ultrasound super-localization imaging.....
- A7) Ali Rezaei Rheology of viscoelastic materials using ultrasound contrast agents.....
- A8) Hongchen Li Shape oscillation of a phospholipid-coated microbubble induced by ultrasound.....
- A9) Kathylyne Jayne Bautista Simulating the dual-frequency imaging response of microbubbles at clinically relevant depths
- A10) John Hossack Optical Validation of Normalized Singular Spectrum Area Measurement by Observing Adherent Microbubble Small Displacements.....
- A11) Biao Huang 3D super-resolution ultrasound imaging of deep cardiac microvasculature in an ex vivo porcine heart.....

Thursday 10.15-11.50

POSTER SESSION B: NEW DIRECTIONS MIX TECHNOLOGY/BIOLOGY/CLINICAL Chairperson: Tim Segers

Poster room 2; with 2 min poster pitches from 10:15 – 10:37

- B1) Cara Esposito Does Mixing Iodinated Contrast Media and Microbubble-based Contrast Agent Have an Effect on Subharmonic Signals?
- B2) Daniel Suarez Escudero Quantifying the effect of acoustic parameters on cavitation activity from infused Definity® through the EkoSonic™ catheter ..
- B3) Ksenia Loskutova Biocompatibility of Cellulose Nanofiber-Coated Perfluoropentane Droplets.....
- B4) Lance De Koninck Targeted local hyperthermia with local and systemic injections of ultrasound contrast agents during HIFU
- B5) Matthieu Toulemonde Spatial and Temporal processing for ultrafast Power Doppler.....
- B6) Oliver Pattinson The Influence of Cell Rheology on Microbubble Induced Cell-Deformation Measured using Ultra-High Speed Digital Image Correlation.....
- B7) Shusei Kawara A Capillary-sized Microfluidic Phantom: A Platform for Studying Acoustic Cavitation in Microvessels
- B8) Soufiane El Kadi Sonothrombolysis after percutaneous coronary intervention in STEMI patients with increased risk for microvascular obstruction: a multicenter randomized controlled trial.....
- B9) Redouane Ternifi Implementation of Ultrasound Localization Microscopy (ULM) for in Vitro and ex Ovo Experiments.....
- B10) Matthew F. Bruce Ultrasound localization microscopy using non-sparse microbubble concentrations.....
- B11) Jacob McCall Visualizing the Angiogenesis of Glioblastoma in Mice Using Completely Non-Invasive Volumetric Ultrasound Localization Microscopy.....

Organised by: Rik Vos, Klazina Kooiman, Annemien van den Bosch, Folkert ten Cate, Nico de Jong

Scientific board: Mike Averkiou, Mark Borden, Paolo Colonna, Olivier Couture, Beat Kaufmann, Eleanor Stride



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Erasmus MC
Thorax Centrum

FRIDAY, 20 January 2023

07.30 – 08.00 Registration

Parallel short oral and poster sessions Friday 20 January 2023

07.30 – 09.00

PARALLEL SHORT ORAL SESSION I: BIOLOGY/CLINICAL Moderator: Klazina Kooiman Poster room 1

- IA) Flemming Forsberg Noninvasive Diagnosis of Chronic Exertional Compartment Syndrome with Subharmonic Aided Pressure Estimation and Shearwave Elastography
- IB) Yifan Jiang Unraveling Plasma Protein Corona by Ultrasonic Cavitation Augments Active-Transporting of Liposome in Solid Tumor
- IC) Marie Amate The effect of consecutive pulses on cell sonoporation in vitro
- ID) Quezia Lacerda Effect of tumor radiosensitization following administration of ultrasound sensitive Isonidamine-loaded oxygen microbubbles....
- IE) Marie Roy Acoustically mediated drug delivery in 3D spheroid model.....
- IF) Daniel Cadoux-Hudson Contrast-enhanced ultrasound imaging of displaced humeral fractures: Early results of a pragmatic single-centre study
- IG) John Pacella Fibrin-Targeted Phase Shift Microbubbles Outperformed Fibrin-Targeted Microbubbles in Microvascular Obstruction Treatment
- IH) Flordeliza Villanueva Ultrasound targeted microbubble cavitation-induced endothelial hyperpermeability is calcium-dependent.....

07.30 – 09.00

PARALLEL SHORT ORAL SESSION II: TECHNOLOGY Moderator: Rik Vos Poster room 2

- IIA) Bingxue Wang Localisation and tracking of bubbles in a volume using a 1D unfocused linear transducer array and Volumetric Information Projection Super Resolution Ultrasound (VIP-SRUS).....
- IIB) Laura Taylor On the Sequence of Motion Correction and SVD in Super-Resolution Ultrasound
- IIC) Sander Spiekhout Ambient pressure changes can modulate the subharmonic response of individual contrast bubbles
- IID) Sophie Heymans Radiation-induced nanodroplet vaporization for proton range verification: first in vivo proof of concept.....
- IIE) Agisilaos Matalliotakis Comparison of amplitude modulation and cross amplitude modulation pressure fields through a monodisperse microbubble Cloud
- IIF) Nathan Blanken A physically realistic simulation framework for contrast enhanced ultrasound imaging
- IIG) Marcelo Lerendegui BUFF: BUbble Flow Field – A tool for simulating ultrasound imaging of vascular flow with microbubbles
- IIH) Ashkan Ghanbarzadeh-Dagheyan A Method To Characterize 3D Flow in Helical Stents Using 2D Contrast-Enhanced Ultrasound

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Friday 09.50-11.15

POSTER SESSION C: NEW CAVITATION NUCLEI Chairperson: Olivier Couture

Poster room 1; with 2 min poster pitches from 09:50 – 10:10

C2) Benjamin van Elburg	Ambient pressure dependent scattering of shell-tuned monodisperse microbubbles
C3) Brian Oeffinger	Creating Positively Charged Surfactant Microbubbles for Loading Negatively Charged Therapeutics
C4) Christopher Campbell	Optimising the manufacture of lipid-shelled perfluorocarbon nanodroplets through varying sonication parameters
C5) Hiroshi Kida	Carrier-free messenger RNA delivery into cells using albumin-based nanobubbles and a home-made sonoprotector
C6) Tingting Wang	Collagenase-Loaded Nanoparticles Enhance Ultrasound Imaging-Guided Sonodynamic Therapy via Digesting Stromal Barriers
C7) Kirsten O'Brien	Tailoring Perfluoropentane Nanodroplet Formulation Parameters for Increased Reproducibility Using Sonication
C8) Roman Barmin	Enhancing acoustic response and drug loading of polymeric microbubbles by tailoring synthesis components
C9) François Yu	Ultrasound targeted drug loaded microbubbles for oncolytic virotherapy of breast cancer
C10) Philip Durham	Reloadable depots and focused ultrasound extend longevity of non-invasively delivered molecules in the brain

Friday 09.50-11.15

POSTER SESSION D: NEW DIRECTIONS BIOLOGY/CLINICAL Chairperson: Mike Averkiou

Poster room 2; with 2 min poster pitches from 09:50 – 10:10

D1) Julia Blöck	In vitro sonoporation using hard shell PBCA-MB under various US intensities
D2) Jifan Chen	Direct Electrophysiological Response of Human Brain Endothelial Cell mediated by Ultrasound and Microbubbles
D3) Junlin Chen	Polymeric microbubble-based mRNA delivery mediated by focused ultrasound in cancer: comparing Co-formulation and Co-administration
D4) Sandrine Kerneis	Sonoporation of the round window membrane on a sheep model: A safety study
D5) Luna Hu	Real-time Monitoring of Cellular Response to Ultrasound and Microbubbles in an in vitro Brain Microvascular Endothelial Model
D6) Grace Conway	Understanding the Mechanisms of Ultrasound-Targeted Microbubble Cavitation-Mediated Blood Brain Barrier Opening
D8) Bram Meijlink	Microbubble-mediated induced vascular leakage in a vessel-on-a-chip model
D9) William Lim Kee Chang	Molecular Size Threshold of Drug Delivery to the Brain using a Rapid Short-Pulse Ultrasound Sequence

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