

THE 29TH EUROPEAN SYMPOSIUM ON ULTRASOUND CONTRAST IMAGING January 18-19, 2024 Rotterdam



Pre-program events

TUESDAY, 16 January 2024

13.00 PhD defence Luxi Wei: Volumetric Contrast-enhanced Echocardiography with Sparse Arrays
Location: Professor Andries Querido zaal, Erasmus MC, Dr. Molewaterplein 40, Rotterdam

WEDNESDAY, 17 January 2024

10.30 PhD defence Geraldi Wahyulaksana: High-frame-rate Contrast-Enhanced Echography
for Myocardial Perfusion Assessment
Location: Professor Andries Querido zaal, Erasmus MC, Dr. Molewaterplein 40, Rotterdam

Welcome drinks

WEDNESDAY, 17 January 2024

17.30 – 19.30 Welcome Drinks at the conference location: Mainport Hotel, Leuvehaven 77, Rotterdam
+ Registration

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January 18-19, 2024 Rotterdam



THURSDAY, 18 January 2024

08.00 – 09.00 Registration

Oral program

09.00 – 09.10 **Introduction and opening** by Rudolf de Boer, head Cardiology Erasmus MC, Rotterdam *Chairperson: Annemien van den Bosch*

09.10 – 10.10 **THERAPY: TOWARDS CLINICAL USE I** *Chairpersons: Annemien van den Bosch and Eleanor Stride*

Christy Holland (Inv.) Ultrasound image-guided catheter-directed therapy to treat peripheral arterial disease

Meaghan O'Reilly (Inv.) Magnetic resonance imaging of focused ultrasound-mediated blood-brain barrier opening in grey and white matter

Alfred Yu (Inv.) Life after a poke: how can sonoporation disrupt cellular development?

10.10 – 11.40 **Coffee & parallel poster sessions A + B**

11.40 – 12.30 **THERAPY: TOWARDS CLINICAL USE II** *Chairpersons: Christy Holland and Mike Averkiou*

Flordeliza Villanueva (Inv.) Adverse post-infarct cardiac remodelling is attenuated by ultrasound targeted microbubble cavitation-mediated delivery of anti-miR-92a

John Eisenbrey Evaluation of hepatocellular carcinoma microenvironment following microbubble and phase change droplet cavitation

Kirby Lattwein Microbubbles decorated with rt-PA enhance fibrin degradation within *Staphylococcus aureus* pacemaker lead biofilms

12.30 – 13.45 **LUNCH**

13.45 – 14.15 **THORAX LECTURE** *Chairperson: Klazina Kooiman*

Elisa Konofagou (Inv.) Immunomodulation and drug delivery using focused ultrasound and microbubbles towards the treatment of neurodegenerative disease and brain tumors

14.15 – 15.25 **IMAGING: NEW DIRECTIONS** *Chairpersons: Dan Adam and Michel Versluis*

Beat Kaufmann (Inv.) Contrast enhanced ultrasound molecular imaging for assessment of vascular inflammation in atherosclerosis

Guillaume Lajoinie (Inv.) Accurate contrast enhanced flow imaging simulations to accelerate the development of novel imaging strategies

Alexis Vivien Super Resolution Imaging with NanoDroplets (SRUI-NDs) in a chicken embryo model

Louise Denis Neonatal cerebral vascular reorganization during neurovascular interventions observed with Ultrasound Localization Microscopy

15.25 – 16.00 **Intermission**

16.00 – 17.20 **CLINICAL IMAGING** *Chairpersons: Folkert ten Cate and Ton van der Steen*

Rik Vos / Linda Feinstein Introduction to the ICUS society

Reinhard Kubale Early detection of post-interventional complications after EVAR: comparison of contrast-enhanced ultrasound (CEUS) and CTA

Caitlin Vink Reduced microvascular blood volume as a driver of coronary microvascular disease in patients with angina and non-obstructive coronary artery disease: the MICORDIS-study

Soufiane El Kadi Combining early MCE and strain imaging to predict final infarct size and left ventricular function in STEMI patients with MVO

Priscilla Machado The use of Subharmonic-Aided Pressure Estimation (SHAPE) and Shear Wave Elastography (SWE) of pancreatic adenocarcinoma patients undergoing chemotherapy with sonoporation to evaluate treatment response

Eva de Bock Contrast-enhanced ultrasound (CEUS) for a more accurate diagnosis of adenomyosis: a pilot study

18.30 – 22.30 **EVENING PROGRAM AT WERELDMUSEUM, Willemskade 25, Rotterdam (Incl. Dinner buffet)**
Gather at main lecture room at 18:15 to walk there together

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FRIDAY, 19 January 2024

07.30 – 08.00 Registration

Oral program

08.00 – 09.30 **PARALLEL SHORT ORAL SESSION I (poster room “Maas”) and SESSION II (main lecture room)**
N.B. Walking breakfast provided

09.30 – 09.50 **Intermission + hotel check-out**

09.50 – 11.10 **BUBBLE TECHNOLOGY** *Chairpersons: Guillaume Lajoinie and Mark Borden*

Outi Supponen (Inv.) Microbubble jetting from low-amplitude ultrasound driving.....
Tim Segers Are monodisperse phospholipid-coated microbubbles ‘mono-acoustic’?.....
Sander Spiekhout Characterizing the subharmonic ambient pressure sensitivity of single microbubbles.....
Sae Jang *In vivo* microbubble behavior in microvasculature under ultrasound excitation: a high speed, intravital study in rat cremaster muscle.....
Samir Cherkaoui *In vitro* use of microbubbles for cell therapy biomanufacturing.....

11.10 – 12.40 **Coffee & parallel poster sessions C + D**

12.40 – 13.50 **LUNCH**

13.50 – 14.20 **DUTCH HEART FOUNDATION LECTURE** *Chairperson: Rik Vos*

Pintong Huang (Inv.) Update on CEUS for carotid artery.....

14.20 – 14.40 **CLINICAL THERAPY** *Chairpersons: Rik Vos and Meaghan O'Reilly*

Michael Canney (Inv.) The development of a clinical implantable ultrasound system for disrupting the blood-brain barrier.....

14.40 – 15.00 **Intermission**

15.00 – 16.30 **COMPETITION: THERAPY/DRUG DELIVERY WITH ULTRASOUND-ACTIVATED CAVITATION NUCLEI**

..... *Chairpersons: Nico de Jong and Catharina de Lange Davies*

Louise Fournier Newly designed functionalized polymer microbubbles for the targeted treatment of stroke.....

Payton Martinez Modulating sterile inflammatory response in focused ultrasound and microbubble-mediated blood-brain barrier Opening: impact of microbubble size and sonication points.....

Marco Cattaneo Jetting behaviour of ultrasound-driven microbubbles in contact with a cell monolayer.....

Joel Paul Ramesh Balkaran Ultrasound and biodegradable cavitation nuclei for needle-free transdermal vaccination.....

Muhammad Wahab Amjad Ultrasound Targeted Microbubble Cavitation (UTMC) for the treatment of Myocardial Microvascular Obstruction (MVO).....

Bram Meijlink Microbubble-mediated endothelial cell-cell contact opening is induced by F-actin stress fiber severing and recoil.....

16.30 – 16.40 **CLOSING REMARKS** *Klazina Kooiman and Rik Vos*

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

+ FAREWELL DRINKS

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

Scientific board: **Mike Averkiou, Mark Borden, Olivier Couture, Beat Kaufmann, Eleanor Stride, Flordeliza Villanueva**

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Poster sessions THURSDAY, 18 January 2024

Thursday 10.10-11.40

POSTER SESSION A: MICROBUBBLE PRODUCTION AND ULTRASOUND IMAGING
..... *Chairperson: Mike Averkiou*

Location: Poster room "Maas"; with 2-minute poster pitches starting at 10.10

- A1) Georges Chabouh 3D Ultrafast amplitude modulation for molecular ultrasound imaging of stationary microbubbles targeted to inflammation
- A2) Hadi Mirgolbabaee Ultrasound particle image velocimetry to investigate potential hemodynamic causes of limb thrombosis after endovascular aneurysm repair with the Anaconda endograft
- A3) Jing Yang Size-selected microbubbles for superharmonic imaging
- A4) Rienk Zorgdrager Waveform characteristics for AI-based ultrasound super-resolution using microbubbles
- A5) Shusei Kawara A capillary-scale microvascular phantom — demonstration of multi-stage vessel branching and 3D super-resolution ultrasound imaging
- A6) Mahsa Bataghva Multi-parametric assessment of contrast and molecular ultrasound to predict response to anti-PD-L1 immune checkpoint inhibitor
- A7) Jovana Katrinka Mavrak Comparison of a novel agitation method for microbubble production with established preparation technologies
- A8) Yuchen Wang Coalescence-free monodisperse microbubble produced at room temperature using Pluronic F68: acoustic response and shelf stability
- A9) Martin van den Broek Monodisperse targeted microbubbles: bound versus unbound
- A10) Jose Angel Navarro Becerra The effect of poly(ethylene glycol) configuration on microbubble pharmacokinetics

Thursday 10.10-11.40

POSTER SESSION B: CANCER THERAPY *Chairperson: Flordeliza Villanueva*

Location: Poster room "Haven"; with 2-minute poster pitches starting at 10.10 in the main lecture room

- B1) Mahsa Mokhlesabadi Differential sensitivity of F98 glioma tumors and adjacent healthy spinal cord tissue in response to focused ultrasound and microbubbles
- B2) Marie Roy Delivery of anti-cancer drugs using microbubble-assisted ultrasound in a 3D spheroid model
- B3) Moved to D11
- B4) Corinne Wessner Improving radiosensitization of intrahepatic cholangiocarcinoma and metastatic disease in the liver using a microbubble-based approach: initial results from a clinical trial
- B5) Hannah Bargh-Dawson Enhancement of radiation-induced cell death using ultrasound-stimulated microbubbles
- B6) Caroline Einen Effect of ultrasound and microbubbles on nanoparticle delivery and functional vasculature in three tumor models
- B7) Veronica Nordlund Uptake and microdistribution of doxorubicin in murine tumors treated with SonoVue and focused ultrasound
- B8) Jan van der Hoek Real-time catheter optimisation for radioembolisation using dynamic contrast enhanced ultrasound: proof-of-concept in an ex-vivo perfused porcine model
- B9) Albert Poortinga Antibubbles as a new method for ultrasound-triggered local drug delivery
- B10) Ana Baez Ultrasound and microbubble mediated T cell modulation

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Parallel short oral sessions FRIDAY, 19 January 2024

08.00 – 09.30

PARALLEL SHORT ORAL SESSION I: BIOLOGY/CLINICAL Moderator: Klazina Kooiman Poster room “Maas”

- I.1) Jonathan Kopechek Acoustofluidic-mediated transfection of T cells to improve manufacturing of cellular immunotherapies.....
- I.2) Jean-Michel Escoffre In-vivo IL-12 plasmid delivery using microbubble-assisted ultrasound in a mouse melanoma model
- I.3) Jane Song Comprehensive assessment of blood-brain-barrier opening and sterile inflammatory response: unraveling the therapeutic window
- I.4) Flemming Forsberg Sonoporation of pancreatic adenocarcinoma: interim analysis from a Phase II clinical trial
- I.5) Stephanie He Assessing sonoporation efficiency under controlled flow rates in *ex vivo* mesenteric arteries.....
- I.6) Farbod Tabesh Contrast-enhanced molecular imaging of endothelial PD-L1 as a key role in immune checkpoint therapy
- I.7) Tingting Wang Ultrasound localization microscopy in identifying symptomatic carotid plaque.....
- I.8) Marie Amate eATP release kinetics following microbubble cavitation in cultured HUVECs

08.00 – 09.30

PARALLEL SHORT ORAL SESSION II: TECHNOLOGY Moderator: Rik Vos Main lecture room

- II.1) Georges Chabouh Whole organ volumetric sensing ultrasound localization microscopy for characterization of kidney structure.....
- II.2) Jocelyne Rivera Single-bubble measurement of absolute drug loading on protein-conjugated microbubbles
- II.3) Hongchen Li Shape oscillation and microstreaming profile of a phospholipid-coated wall-attached microbubble
- II.4) Sara Keller Quantitative evaluation of anti-biofilm cavitation activity seeded from microbubbles or solid gas-stabilizing nuclei by passive acoustic mapping
- II.5) Charlotte Nawijn Shell characterization of single microbubbles using a novel stress-strain analysis.....
- II.6) Cameron Smith Characterisation of gas vesicles as cavitation nuclei for ultrasound therapy using passive acoustic mapping and high-speed Optical Imaging
- II.7) Yichuang Han Left ventricular vector flow imaging: *in vivo* comparison of echoPIV against 4D flow MRI.....
- II.8) Ashkan Ghanbarzadeh-Dagheyani Ultrasound velocimetry of blood flow in a helical stent *in vivo*

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Poster sessions FRIDAY, 19 January 2024

Friday 11.10 – 12.40

POSTER SESSION C: MICROBUBBLE AND DROPLET TECHNOLOGY..... Chairperson: *Olivier Couture*
Location: Poster room “Maas”; with 2-minute poster pitches starting at 11.10

C1) Andréa Feasson	Optical investigation of the dynamics of ultrasound contrast agents during insonification in the kHz range
C2) Hedar Al Terke	A new approach to assess the mechanical properties and gas permeability of microbubbles
C3) Damien Fouan	Enhanced control of cavitation phenomena in ultrasound mediated drug delivery using monodisperse microbubbles
C4) Withdrawal / cancelled
C5) Fleur Vialle	Dynamics of ultrasound-driven coated microbubbles confined in viscoelastic tubes
C6) Richard Lane	Resolving sonoluminescent flux per bubble in multi-bubble sonoluminescence using photon number statistics
C7) Samuele Fiorini	The role of the compression phase of ultrasound waves in acoustic droplet vaporization
C8) Anunay Prasanna	Acoustic vaporization of droplet aggregations
C9) Christopher Campbell	Characterisation of perfluoropentane droplets: nitric oxide capacity and acoustic droplet vaporisation threshold
C10) Kirsten O'Brien	Bone cell response to perfluoropentane nanodroplets for bone repair

Friday 11.10-12.40

POSTER SESSION D: CARDIOVASCULAR AND NEW THERAPY DIRECTIONS

..... Chairperson: *Annemien van den Bosch*
Location: Poster room “Haven”; with 2-minute poster pitches starting at 11.10 in the main lecture room

D1) Sam Sloan	Design of an <i>ex vivo</i> perfusion chamber for studying the effects of microbubble-enhanced ultrasound-mediated drug delivery to Bone
D2) Grace Conway	Ultrasound-targeted microbubble cavitation-mediated blood-brain barrier opening for drug delivery in Alzheimer's disease
D3) Colm O'Reilly	Feasibility of ultrasound-mediated oral biopharmaceutical delivery: in-vitro gastrointestinal stability of microbubbles.....
D4) Davide De Grandi	Microbubble mediated mechanical removal of oral biofilms in-vitro.....
D5) Aaron Crowther	The antibiofilm effects of nitric oxide donors in combination with an ultrasound-responsive system for the treatment of chronic wound infections
D6) Anurag Paranjape	Mechanisms regulating ultrasound targeted microbubble cavitation-induced endothelial hyperpermeability
D7) Asli Akin	Contrast ultrasound-mediated targeted delivery of cardioprotective factors in ischemia reperfusion injury of the heart
D8) Zoe Katz	Influence of extracellular matrix stiffness on endothelial sonoporation under flow conditions.....
D9) Wei-chen Lo	Ultrasound-stimulated microbubble mediated modulation of endothelial immunogenicity
D10) Yanjun Xie	Sonothrombolysis in a murine model of deep vein thrombosis using microfluidically produced microbubbles.....
D11) Dawid Przystupski	Reversal of doxorubicin resistance in human colon cancer cells using microbubble-assisted sonoporation.....

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