



Creating the Basis for
Tailored Therapies

7th TRM Forum on Computer Simulation and Experimental Assessment of Cardiac Function



Lugano, Switzerland
December 1-3, 2013

Sponsored by the Theo-Rossi-di-Montelera (TRM) Foundation
Forum Organizers: Nathalie Virag and Lukas Kappenberger

In collaboration with Rolf Krause (USI) and Angelo Auricchio (CCT)

Sunday, December 1, 2013

Welcome Dinner at Villa Castagnola 19:00-22:00

Monday, December 2, 2013

From Computer to Bedside:
How predictive are computer models?



Departure from Villa Castagnola to USI Campus (walking) 8:30

Welcome and Introduction 9:00-9:30
Lukas Kappenberger, Nathalie Virag (TRM Foundation), Tiziano Moccetti (CCT)

Patient Specific Modeling 9:30-12:00
Sessions Chairs: Frits Prinzen & Nathalie Virag

Patient specific modeling: How good do we have to be? 9:30-9:50
Molly Maleckar (Oslo Norway)

Understanding CRT outcomes using patient-specific models of dyssynchronous heart failure 9:50-10:10
Andrew McCulloch (San Diego, USA)

Simulation of non-contact mapping 10:10-10:30
Vincent Jacquemet (Montreal, Canada)

Coffee Break 10:30-11:00

Recreating atrial rotors in silico 11:00-11:20
Edward Vigmond (Bordeaux, France)

Difficulties and progress in the quantitative assessment of the substrate for atrial fibrillation 11:20-11:40
Ulrich Schotten (Maastricht, The Netherlands)

Simulating the effects of drugs and genetic defects on atrial electrophysiology 11:40-12:00
Gunnar Seemann (Karlsruhe, Germany)

Lunch Break and Posters 12:00-13:30

Predict the Effect of Cardiac Therapies 13:30-17:00
Sessions Chairs: Lukas Kappenberger & Angelo Auricchio

Prediction of effect of cardiac therapies 13:30-13:50
Tammo Delhaas (Maastricht, The Netherlands)

The nonlinear mixing of normal conduction in normal tissue and slow conduction in uncoupled tissue 13:50-14:10
Jan Kucera (Bern, Switzerland)

Atrial fibrillation rate as a tool for assessing outcome in patients with AF or heart failure 14:10-14:30
Pyotr Platonov (Lund, Sweden)

Drug-induced post-repolarization refractoriness as an antiarrhythmic principle and its possible underlying mechanism/s 14:30-14:50
Michael Franz (Washington DC, USA)

Coffee Break 14:50-15:30

Patient-specific modeling to predict CRT outcome 15:30-15:50
Mark Potse (Lugano, Switzerland)

Lumped parameter modeling of mechanical dyssynchrony to identify the substrate(s) amenable to CRT 15:50-16:10
Joost Lumens (Maastricht, The Netherlands)

Imaging of cardiac mechanics for optimal CRT application 16:10-16:30
Frits Prinzen (Maastricht, The Netherlands)

Wrap up 16:30-17:00
Lukas Kappenberger, Nathalie Virag (TRM Foundation)

Meet in the Lobby of Villa Castagnola for departure to the Surprise Dinner 19:00

Tuesday, December 3, 2013



**From Bedside to Computer:
How much data do we need ?**

Departure from Villa Castagnola to USI Campus (walking) 8:30

Signal Analysis and Arrhythmia Diagnostics 9:00-11:30
Sessions Chairs: Adriaan van Oosterom & Natalia Trayanova

Divining the drivers of multi-wavelet reentry: delineating the spatial distribution of dynamic circuits 9:00-9:20
Peter Spector (Vermont, USA)

Adaptive tracking of atrial fibrillation ECG oscillations 9:20-9:40
Jean-Marc Vesin (Lausanne, Switzerland)

Variabilities of ventricular rate response and of arterial blood pressure values in atrial fibrillation 9:40-10:00
Sergio Cerutti (Milano, Italy)

Coffee Break 10:00-10:30

An atrioventricular node model of the ventricular response during atrial fibrillation: model building and applications 10:30-10:50
Leif Sörnmo (Lund, Sweden)

Post-extrasystolic potentiation of blood pressure: Non-invasive assessment of myocardial Ca⁺⁺ handling 10:50-11:10
Georg Schmidt (Münich, Germany)

Statistical modelling of the drug-induced ECG changes - comparison of cross-over and parallel investigations 11:10-11:30
Marek Malik (London, UK)

Lunch Break and Posters 11:30-13:00

From Imaging to Cardiac Function 13:00-16:30
Sessions Chairs: Michael Franz & Marek Malik

Atrial fibrosis and arrhythmias: a patient-specific approach 13:00-13:20
Natalia Trayanova (Baltimore, USA)

Three-dimensional left ventricular segmentation from MRI images for patient-specific modelling purposes 13:20-13:40
Enrico Caiani (Milano, Italy)

Towards tissue-accurate 3D histology of the heart 13:40-14:00
Peter Kohl (Oxford, UK)

Pro-fibrillatory remodeling of failing human heart: excitation-contraction coupling, metabolism, signaling 14:00-14:20
Igor Efimov (St Louis, USA)

Coffee Break 14:20-15:00

Electrophysiologic substrate and cardiac resynchronization therapy (CRT) in heart failure patients: Insights from noninvasive ECG imaging (ECGI) 15:00-15:20
Yoram Rudy (St Louis, USA)

A comparison of the performances of electrocardiographic imaging based on the epicardial potential field and the EDL type of sources 15:20-15:40
Adriaan van Oosterom (Nijmegen, The Netherlands)

Electromechanical characterization in heart failure patients with abnormal QRS 15:40-16:00
Wilco Kroon (Lugano, Switzerland)

Closing Remarks and Outlook 16:00-16:30
Lukas Kappenberger, Nathalie Virag (TRM Foundation), Rolf Krause (USI), Angelo Auricchio (CCT)

Meet in the Lobby of Villa Castagnola for departure to the Serata Ticinese Dinner 19:00

Wednesday, December 4, 2013 **Aula Magna**

First European Conference for Standardization of Advanced ECG Analysis in Arrhythmia Diagnostics 8:00-14:30

2013 Focus: Quantification of the Atrial Fibrillation Substrate Complexity Conference

Chairs: *Lukas Kappenberger, Ulrich Schotten*
Endorsed by: European Heart Rhythm Association (EHRA), the German Competence Network of Atrial Fibrillation (AFNET) and the ESC Working Group for e-cardiology.

This conference is open for TRM participants.
Detailed program: <http://af-complexity.ics.usi.ch>

Sponsor & Forum Organizers



This Forum is sponsored by the Theo-Rossi-di-Montelera (TRM) Foundation, thanks to the generosity and "avant-garde" spirit of late Contessa Ida Rossi di Montelera.

It is organized by Prof. Lukas Kappenberger (president TRM foundation) and Dr. Nathalie Virag (member TRM foundation) from the Lausanne Heart Group.



It is hosted by the Università della Svizzera Italiana (USI) and the Cardiocentro Ticino (CCT).

Università della Svizzera italiana

Facoltà di scienze informatiche

Institute of Computational Science ICS



Location

The TRM forum will be held in Lugano. Speakers will stay at the Grand Hotel Villa Castagnola. Presentations and discussions will take place in the main lecture hall "Aula Magna" on the campus of USI. Walking from Villa Castagnola to USI takes 15-10 minutes.



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