*In Silico* Solutions for Advanced Electroceuticals

# Sim4Life Workshop 2018

Monday, November 5, 18:30 – 21:00
Marriott Marquis Hotel, 333 W Harbor Drive, San Diego, CA 92101
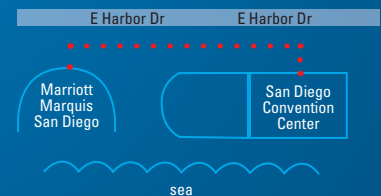Room: "Pacific Ballroom 14"

## Agenda

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|---|---|
| 18:30 – 18:50 | Welcome<br>*Michael Oberle, ZMT Zurich MedTech AG, Switzerland* |
| 18:50 – 19:20 | A Computational Framework for the Design and Optimization of Neurotechnologies to Restore Voluntary Motor Control after Paralysis<br>Keynote Speaker: Marco Capogrosso, University of Fribourg, Switzerland |
| 19:20 – 19:35 | Virtual Population 4.0 – First Generation of Neuro-functionalized Computational Anatomical Models<br>*Silvia Farcito, IT'IS Foundation, Switzerland* |
| 19:35 – 19:50 | Computational Modeling of Neurostimulation in Sim4Life<br>*Antonino Mario Cassarà, IT'IS Foundation, Switzerland* |
| 19:50 – 20:10 | o$^2$S$^2$PARC – The Online Platform for All Computational Modeling of PNS Neuromodulation and Organ Physiological Response in the NIH SPARC Initiative<br>*Esra Neufeld, IT'IS Foundation, Switzerland* |
| 20:10 – 20:35 | A Multiscale Modeling Framework to Understand and Optimize Ultrasound Neuromodulation<br>*Théo Lemaire, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland* |
| 20:35 – 20:45 | Sim4Life Roadmap: Selected Features of Upcoming Releases<br>*Habib Bousleiman, ZMT Zurich MedTech AG, Switzerland* |

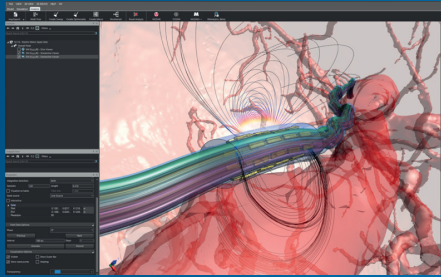To register, please send an email to s4l-sales@zmt.swiss

### Directions to the Sim4Life Workshop

Mariott Marquis San Diego
333 W Harbor Drive
San Diego, CA 92101
Room: "Pacific Ballroom 14"

The hotel is within 5 minutes
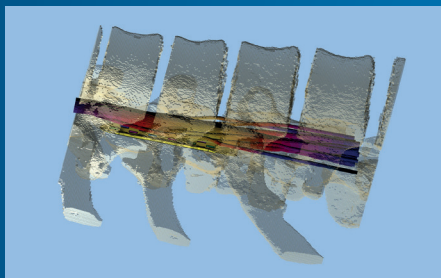walking distance from the main venue.



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## NEW MODULES AND FUNCTIONALITIES



### Sim4Life NEURO

Sim4Life NEURO provides the fastest and most versatile way for neuronal dynamics simulations, a prerequisite for any reliable simulations incorporating complex neuro-functionalized anatomical human models. Scientists and engineers can conduct realistic investigations of intended or unintended effects of neurostimulation, which have been induced by exposure to electric or magnetic fields.
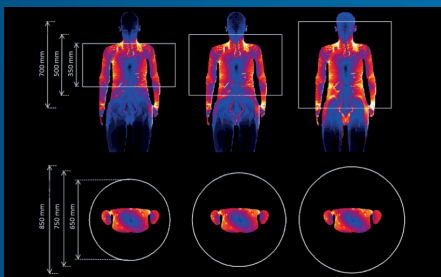


### Sim4Life Optimizer and Parameter Sweeper

The Sim4Life Optimizer and Parameter Sweeper frameworks provide the most effective solution for optimization of virtual prototypes of real-world devices, medical treatments, or safety evaluations. Target applications include the optimization of electrode geometries, excitation patterns, and modeling of strength-duration curves. In combination with high-resolution, neuro-functionalized, computational anatomical phantoms, stimulation parameters and devices can be personalized for increased stimulation selectivity, while avoiding undesirable side effects.



### Virtual Population V4.0: Neuro-Functionalized Models

Yoon-sun is the second adult female computational model of the IT'IS Virtual Population and an important extension of the existing European ViP towards better representation of the global population. The model is the successful result of the Swiss-Korean collaborative project NEUROMAN. It heralds a new era of next-generation quality and resolution in segmentation, manifested in detailed models of organs, vessel trees, peripheral nerves, and other small structures – from head to toe!



### MRIxVIP and IMAnalytics

MRIxVIP contains precomputed standard libraries of radiofrequency (RF)-induced electromagnetic field distributions inside the human body, resulting from exposure to a representative set of RF birdcage coils used in MRI scanners for 1.5T and 3T. The integration of the libraries with the IMAnalytics enables users to scale-up Tier 2 and 3 evaluations of implants according to ISO/TS 10974 without loss of full data traceability. Device evaluation in hours instead of months!

Those are just some of the many new features that will be available in the Sim4Life V4.2 release!
To learn more, visit our website www.zmt.swiss or come visit us at booth 3825 at Neuroscience 2018.

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