

Universität
Rostock



Traditio et Innovatio

Elaine

electrically active implants



SFB 1270

Conference 2024

March 20th – March 22nd

Information

DFG

Deutsche
Forschungsgemeinschaft

www.elaine.uni-rostock.de
elaine@uni-rostock.de



Organisational Remarks

Conference Chairs:

Prof. Dr.-Ing. Sascha Spors

Prof. Dr. Ursula van Rienen

Scientific Committee of the Conference:

Dr.-Ing. Revathi Appali

Dr.-Ing. Fiete Haack

PD Dr. Anika Jonitz-Heincke,

Dr. Mareike Fauser

Dr. Henrike Rebl

Dr. Abdullah Riaz

Dr. Denise Franz

Dr.-Ing. Christoph Niemann

Dr.-Ing. Wiebke Radlof

PD Dr. Nadja Engel

PD Dr.-Ing. Daniel Klüß

Conference Organisation:

Dr. Franziska Wendt

Dr. Paula Friedrichs

Jonas Severin

Dear participant,

Welcome to the 2nd Edition of Progress in Electrically Active Implants (ELAINE) for Tissue and Functional Regeneration. In the following, you will find some organisational information regarding the conference.

We look forward to a lively collaborative exchange on electrically active implants and we wish you an exciting conference.

Sascha Spors & Ursula van Rienen
Conference Chairs

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Universitätsmedizin
Rostock



UNIVERSITÄT GREIFSWALD
Wissen lockt. Seit 1456



UNIVERSITÄT
LEIPZIG



FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

JOHANNES GUTENBERG
UNIVERSITÄT MAINZ



General Information

- We take photos at the conference, and you agree to their subsequent use by attending the event.
- We do not take any liabilities for your wardrobe and other valuables. Please keep an eye on your belongings.
- Eduroam is available in the main university building and on campus. If you are unable to use eduroam, the coordination team will provide you with Wi-Fi access.

Information on the Conference Program

Day 1

Day 1 - Wednesday, March 20, 2024

Venue: *Auditorium, University Main Building,
Universitätsplatz 1, 18055 Rostock*

16:00 – 17:00 **Arrival and Registration**

17:00 – 17:15 **Elizabeth Prommer** (Rector University Rostock):
Welcome

17:15 – 18:00 **Rainer Adelung** (Chair of Functional
Nanomaterials, Kiel University): **Opening Talk**

18:30 – 22:00 Social Evening with DJ Paule Paulsen

The events on the first day will all take place in the auditorium (and neighboring rooms) of the main university building. Please note that the events on the others days will take place at a different location.

Drinks and the buffet are included in the conference fee on the first evening.

Day 2 - Thursday, March 21, 2024

Venue: *HS001 / SR014 / SR022, Albert-Einstein-Straße 26,
18059 Rostock*

08:00 – 09:00 **Arrival and Registration**

Session I - Multiscale Modeling for Electrically Active Implants and Implant Reliability

1st Chair: Bergita Ganse; 2nd Chair: Revathi Appali

- 09:00 – 09:45 **Bergita Ganse: Keynote** - Smart Implants for Bone Fracture Healing
- 09:45 – 10:00 Dennie Supriatna: Development of Scale Separation Maps for Multiscale Modelling of Electrically Active Implants
- 10:00 – 10:15 Karthik Sridhar: In-silico Investigation of Electrode-Tissue Interface Dynamics in Deep Brain Stimulation
- 10:15 – 10:30 Franziska Alt: Adjusting the Pores Geometry of 3D Printed Polycaprolactone Bone Graft Substitutes for Modulated Mechanical Integrity, Cell Ingrowth and Electrical Field Distribution
- 10:30 – 10:45 Nada Abroug: Coupling Mechanical Response to Swelling Effect in Hydrogels

10:45 – 11:15 **Coffee Break**

Session II - Technological Developments and Future Directions for the Development of Electrically Active Implants

1st Chair: Julia Glaum; 2nd Chair: Marc Reichenbach

- 11:15 – 12:00 **Julia Glaum: Keynote** - Microstructural design and chemical stability of piezoelectric BaTiO₃ ceramics in the context of load-bearing biomedical applications
- 12:00 – 12:15 Jacob Thönes: Data-Driven 3D Reconstruction for Absolute Electrical Impedance Tomography
- 12:15 – 12:30 Judith Evers: Effect of Polymer Electrode Coating on Local Field Potentials Recorded From Implanted Deep Brain Electrodes

Session II

- 12:30 – 12:45 Christian Polley: Tailoring a Hard-To-Soft Transition Interface on 3D Porous Titanium Alloy Scaffolds
- 12:45 – 13:00 Marco Stubbe: Measurement of the Electrical Potential in the Articular Cartilage Using Implanted Electrodes

13:00 – 14:00 **Lunch**

Session III - Role of Molecular Signaling in Biophysical Stimulation for Regenerative Medicine

1st Chair: Sahba Mobini; 2nd Chair: Hermann Seitz

- 14:00 – 14:45 **Sahba Mobini: Keynote** - Novel Applications of Low Intensity Bioelectrical Stimulation
- 14:45 – 15:00 Henrike Rebl: Intracellular Signaling Processes and Cell Migration after Physical Stimulation
- 15:00 – 15:15 Poh Soo Lee: Defining the Effects of Electric Field Stimulations and Oxygen Tension Interplay on Osteogenic Differentiation of Human Mesenchymal Stromal Cells
- 15:15 – 15:30 Franziska Dorn: The Nanomorphology of Neural Stem Cells Investigated by Scanning Ion Conductance Microscopy
- 15:30 – 15:45 Henning Kellermann: Influence of Electrical Stimulation on the Proliferation and Differentiation of Murine Adult Neural Stem Cells in Vitro

15:45 – 17:15 **Poster Session**

Information for Authors: The required size of your poster is DIN A0. Posters can be put on the board **starting by Thursday, March 21, 09:00 h and latest by 15:00 h**. For fixing the poster to the poster board, you can use pins, which are provided on site at the registration desk.

Authors are required to stand by their posters during the whole poster session, and to remove their posters from the boards after the session. Posters left on the boards after the session will not be returned to the authors.

18:30 – 22:00 **Excursion on a Boat with Live Music by Saxophonist Lydia Harder**

The starting point of the excursion is the boat landing stage at the City Harbour (Schiffsanleger am Stadthafen). The closest public transport stop is "Lange Straße". You can also park on site at the "Am Stadthafen" parking area. The "Rostocker 7" has its own landing stage from which it departs (see site plan).

One free drink and the buffet are included in the conference fee on the second evening. You have to pay for the other drinks yourself.

You will receive the free drink with the voucher you received when you registered.

VOUCHER

for a free drink

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Source: www.rostocker-flotte.de/strandlinie-rostock-warnemuende.html

Day 3 - Friday, March 22, 2024

Venue: HS001 / SR014 / SR022, Albert-Einstein-Straße 26,
18059 Rostock

Session IV - Innovations and Therapeutic Applications of Neurostimulators for Deep Brain Stimulation and Neuronal Disorders

1st Chair: Jens Volkmann; 2nd Chair: Judith Evers

- 09:00 – 09:45 **Jens Volkmann: Keynote** - Spatiotemporal retuning of motor disease networks by deep brain stimulation
- 09:45 – 10:00 Fabiana Kragelund: Impact of Deep Brain Stimulation on Neuronal Network Mechanisms in Generalised Dystonia
- 10:00 – 10:15 Konstantinos Spiliotis: Data-Driven Identification of Neural Activity Patterns
- 10:15 – 10:30 Sarah Pfeisinger: Subthalamic Nucleus Deep Brain Stimulation Induces Functional Deficits in Forebrain Norepinephrinergetic Neurotransmission in a Parkinson's Disease Model
- 10:30 – 10:45 Meike Statz: Quantification of Motor Symptoms Using Automated Gait Analysis in a Parkinson Rat Model

10:45 – 11:15 **Sascha Spors: Closing Words and Farewell**

We hope to see you at the 3rd Edition of Progress in Electrically Active Implants (ELAINE) for Tissue and Functional Regeneration in 2028. Until then, we look forward to providing you with news from our CRC 1270 ELAINE. The QR code will direct you to our LinkedIn profile where you can follow us to stay updated.

