

## Curriculum vitae

**Kestutis Maciunas**  
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### POSITION

Research fellow 2019 - until now  
Laboratory of intercellular communication research,  
Institute of Cardiology, Lithuanian University of Health Sciences  
Kaunas, Lithuania

Junior Research fellow 2014 - 2019  
Laboratory of Molecular Cardiology,  
Institute of Cardiology, Lithuanian University of Health Sciences  
Kaunas, Lithuania

Predoctoral research trainee 2013  
Albert Einstein college of Medicine, Department of Neuroscience  
New York, USA

IT specialist 2011-2012  
IT center of Lithuanian University of Health Sciences  
Kaunas, Lithuania

### EDUCATION

**Lithuanian University of Health Sciences** 2019  
Doctor of Biomedical Sciences; direction: biophysics  
Theme of thesis: *Modeling of gap junction channels and its application for research of neural and cardiomyocyte networks*  
Kaunas, Lithuania

**Kaunas University of Technology** 2014  
Master of Biomedical Engineering  
Theme of thesis: *Development of gap junction channels model and study of hysteresis*  
Kaunas, Lithuania

**Kaunas University of Technology** 2011  
Bachelor of Computer Science; specialization: computer systems engineering  
Kaunas, Lithuania

## AWARDS AND OTHER ACHIEVEMENTS

<b>Paul F. Cranefield student award, nominee</b> Society of general physiologists, New York, USA	2017
<b>LSMU Best Doctoral student 2016 award, winner</b> Lithuanian University of Health Sciences	2016
<b><i>World Federation of Scientists</i> scholarship</b> World Federation of Scientists, CERN, Geneva, Switzerland	2017
<b>Lithuanian Science Council scholarship</b> Lithuanian Scientific Council	2017

## RESEARCH EXPERIENCE

<b>Lithuanian University of Health Sciences, Kaunas, Lithuania</b> Researcher	2019 - until now
Mathematical modeling of cellular networks and research of arrhythmias	
<ul style="list-style-type: none"><li>– Investigation of gap junction gating effects on re-entry arrhythmia formation in atrio-ventricular node.</li><li>– Development of mathematical models for efficient large-scale simulations.</li><li>– Working with high performance computing (HPC), big data analysis, programming of visualization and computing algorithms using a video card processor (GPU) and a multi-core central processor (CPU).</li><li>– Application of machine learning and global optimization methods for search of gap junction model parameters from experiment data.</li><li>– Programming languages: C, C++, GLSL, CUDA, MATLAB, Python, TypeScript, etc.</li><li>– Programming libraries: Vulkan, OpenGL, OpenMP, OpenMPI, OpenBLAS, Tensorflow, Flask, React, and others.</li></ul>	

**Lithuanian University of Health Sciences, Kaunas, Lithuania**

Doctorate student; Supervisor: **Prof. Dr. Feliksas Bukauskas**, Prof. Dr. Vytas Verselis 2014-2019

Experimental and modeling studies on intercellular interactions in cellular networks

- Development of model of electrical impulse propagation in neuronal and cardiac tissues using Hodgkin/Huxley and Noble formalism in the combination with a gap junction channels models (Paulauskas et al., 2009, 2012, Snipas et al. 2016, Maciunas et al. 2016).
- The models were accelerated with parallel programming with multiple processor cores using OpenMP and CUDA technologies.
- Numerical experiments on the excitable cell networks.
- Working with a double whole cell voltage clamp methodology, fluorescent microscopy, cell cultivation.

**Albert Einstein College of Medicine, New York, USA.**

Internship; Supervisor: Prof. Dr. Feliksas Bukauskas 2013-07 – 2013-10

Studies on electrophysiology and modeling of gap junctions

- Training to work with a double whole cell patch clamp methodology.
- Programming of stochastic (S9SM), Markov (MC9SM) and dynamic (D9SM) models in MATLAB language.
- Evaluating of global optimization methods for parametrization of gap junctions based on conductivity-time and voltage-time data obtained during electrophysiological measurements.

### **Grants:**

- 2018, “Tarpląstelinės įtampos poveikio plyšinių jungčių kanalų laidumui tyrimas” (“Investigation of intercellular voltage effects on voltage gating of gap junction channels”), doctoral project, funded by Science fund of Lithuanian University of Health sciences
- 2017, “Tarpląstelinės įtampos ir cheminio poveikio elektrinio impulso sklidimui per plyšinių jungčių kanalus tyrimas” (“Investigation of intercellular voltage and chemical gating effects on electrical impulse propagation in gap junction channels”), doctoral project, funded by Science fund of Lithuanian University of Health sciences

### **Scientific projects:**

- 2018 – 2019 Project supported by European structural funds „Modeling voltage gating properties of gap junction channels, formed of connexin protein. (Koneksinas PP22/182)“. Position: researcher.
- 2015 – 2018 Project funded by the Scientific Council of Lithuania "*Structural-functional studies of the sensitivity of crack connections (PJ's); Simulation of the gateway features of PJ channels* (MIP-76/2015)". Position: researcher.

## Publications under preparation for journal:

“Heterotypic Cx43/Cx45 gap junction channel conductance depends on pulse rate and reduces entropy in cardiac tissue”

## Accepted conference thesis:

Thesis is accepted to upcoming high-level conference: European Society of Cardiology Congress 2022,

“Heterotypic Cx43/Cx45 gap junction channel conductance depends on pulse rate and could rescue from arrhythmogenic activity in cardiac tissue”

<https://www.escardio.org/Congresses-&-Events/ESC-Congress/Call-for-Science>

- Abstracts published in the abstract supplement of the *European Heart Journal* (Impact Factor 2020: 29.983)



ESC Congress <abstracts@escardio.org>

To: Kęstutis Maciūnas



Thu 5/5/2022 4:21 PM

Dear Doctor Maciunas,

**Congratulations!** We are delighted to inform you that your abstract has been accepted for presentation at ESC Congress 2022 taking place from Friday 26 to Monday 29 August 2022 in Barcelona, Spain.

All presenters are required to present their abstract(s) in person at the Congress at the scheduled day and time, as indicated on their agreement form(s).

In addition to your onsite presentation, your abstract will be featured on the online congress platform **Research Gateway**, the dedicated section to abstracts and clinical cases. Your research will benefit from great visibility throughout the congress and will be showcased to a wide international audience.

After the congress, your abstract will be published in the online abstract supplement of the **European Heart Journal**; and both the abstract and the presentation will be available on **ESC365, the cardiology knowledge hub**.

We also remind you that your abstract is now under the regulations of the ESC Embargo policy (as detailed below).

We thank you for your valuable contribution to the programme. Make the most of having your abstract accepted at ESC Congress 2022 by tweeting the good news - The hashtag to include in your tweets is #ESCCongress

Best regards,

Sent on behalf of

Professor Stephan Windecker

Chairperson, ESC Congress Programme Committee 2020-2022