

## Biochemist/Computational Biologist



### **PECZE László, Ph.D.**

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### **CARRIER**

#### **Jan 2016 –30. Nov 2017 Sr. Scientist**

University of Fribourg, Dept. Medicine Anatomy, Fribourg, Switzerland.

Responsibilities: - conceptualizing mathematical solutions for biologically relevant questions,

- project management (between labs of Switzerland, Turkey and Hungary)
- writing simulations (MATLAB) for:
  - Ca<sup>2+</sup> oscillations,
  - stem cell distribution in cancer,
  - biological pattern formations,
  - mitochondrial dynamics
  - pharmacokinetics of cisplatin based on experimental data
  - saltatory propagation of action potentials.
- statistical analysis with R and MATLAB, Prism
- writing scientific publications

Key Achievement: - 6 accepted publication as main author

#### **Jan 2011 – Dec 2016 PostDoc**

University of Fribourg, Dept. Medicine, Fribourg, Switzerland, Prof. Beat Schwaller's lab

Responsibilities: - designing and performing in vitro experiments:

- Ca<sup>2+</sup> imaging, confocal microscopy
- immunohistochemistry, optical microscopy
- cell viability assays
- mouse autopsy and establishing primary cell cultures
- building up mathematical models
- data analysis in Excel, R, Prism, ImageJ
- writing scientific articles,
- teaching duties in Histology
- supervising bachelor students

Key Achievement: - several scientific publication

#### **Jun 2009 – Dec 2010 Project Manager**

Pharmacoidea Ltd./University of Szeged, Dept. of Pharmaceutical Technology, Szeged, Hungary

Responsibilities: - developing a protein-binding assay for drug discovery in Alzheimer's disease

- testing natural plant extracts,
- data analysis

Key Achievement: - contribution to the development of MentalFitol™ products

#### **Febr 2006 - May2009 Lab Manager**

Acheuron Ltd./Hungarian Academy of Sciences, Institute of Biochemistry, Szeged, Hungary

Responsibilities: - screening of drug candidates with an indicator cell lines,  
- performing and designing in vivo experiments (pain tests)  
- organizing the work in the lab (1 technician and 3 master students),  
- dose-response data analysis with Prism,  
- writing study reports and patterns

Key Achievement: - finding natural pain-receptor inhibitors

## EDUCATION

2014-2015 Statistical Master course ( R ), University of Fribourg, Switzerland

2000-2004 PhD, Environmental Toxicology and Statistics; Department of Public Health, University of Szeged, Hungary

-Evaluation of epidemiological, environmental and toxicological data (SPSS)

-Evaluation of EEG recordings (Neurosys)

2001-2002 Statistical course University of Szeged (SPSS),

1995-2000 Studies in Life Sciences-spec. Biotechnology, University of Szeged, Szeged, Hungary

1991-1995 Gymnasium, Szeged, Hungary

## SKILLS

### - Programming and simulations in MATLAB

- simulations using ordinary, partial and stochastic differential equations,
- enzyme kinetics models,
- Gillespie algorithm,
- gene expression models
- reaction-diffusion models.
- pharmacokinetics and compartment models

### - Data analysis and statistics using R and SPSS:

- descriptive statistics,
- hypothesis testing,
- parameter estimation,
- statistical probes
- analysis of variance,
- survival analysis,
- linear regression,
- permutation tests,
- bootstrapping,
- cluster analysis
- maximum likelihood approaches,
- generalized linear models,
- linear mixed effects models,
- Bayesian statistics

### - Biology techniques including:

- Work with bacterial and mammalian cell cultures including cell lines and preparation of primary cell cultures (keratinocytes, neurons, mesothelial cells, fibroblasts)
- transient and stable transfection methods
- ELISA, immunohistochemistry, optical microscopy
- cell monitoring using Incucyte system and fluorescent proteins
- Ca<sup>2+</sup> imaging, confocal microscopy

- molecular biology: cloning, PCR
- work with laboratory animals (mice, rats) –Swiss certification: LTK modul1

## SPOKEN LANGUAGES

English-fluent, French-conversational, Hungarian-native

## SELECTED PUBLICATIONS (27 ARTICLES IN TOTAL)

Mustafa Nazıroğlu, Bilal Çiğ, Walter Blum, Csaba Vizler, Annamaria Marton, Robert Katona, Katalin Josvay, Beat Schwaller, Zoltan Olah, **László Pecze\***: Targeting breast cancer cells by MRS1477, a positive allosteric modulator of TRPV1 channels PLOS One IF:3.5

**László Pecze\***, Béla Viskolc, Zoltán Oláh: *The Molecular Surgery concept: A focus on TRPV1+ pain-sensing neurons* Review. Frontiers in Physiology IF:4.0

Michaël Dougoud, Christian Mazza, Laura Vinckenbosch, Beat Schwaller, **László Pecze\***: *The Effect of Gap Junctional Coupling on the Spatiotemporal Patterns of Ca<sup>2+</sup> Signals and the Harmonization of Ca<sup>2+</sup>-related Cellular Responses* PLoS Computational Biology 12(12):e1005295 12/2016 IF: 5.4

**László Pecze\***, Walter Blum, Beat Schwaller: *Routes of Ca<sup>2+</sup> Shuttling during Ca<sup>2+</sup> Oscillations; Focus on the Role of Mitochondrial Ca<sup>2+</sup> Handling and Cytosolic Ca<sup>2+</sup> Buffers.* Journal of Biochemical Chemistry 290(47):28214-30 09/2015 IF: 4.8

**László Pecze\***, Beat Schwaller: *Characterization and modeling of Ca<sup>2+</sup> oscillations in mouse primary mesothelial cells.* Biochimica Biophysica Acta–Molecular Cell Research. 1853(3):632-45 03/2015 IF: 5.1

\*corresponding author

## AWARDS

Best Poster Award, Mathematical and Computational Modeling in Live Sciences, 2015, Rigi-Kulm, Switzerland

Golden Rose Poster Award on the 5<sup>th</sup> International Congress on Cell Membranes and Oxidative Stress Focus on Calcium Signaling and TRP Channels, 2014, Isparta, Turkey