

CURRICULUM VITAE

Ágnes Kandrács

PERSONAL INFORMATION

Occupation: Assistant Research Fellow (specialisation: electrophysiology)

Workplace: Research Centre for Natural Sciences

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EDUCATION

2014 – 2020 *Roska Tamás Doctoral School of Sciences and Technology*, Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

2012 – 2014 **Info-Bionics Engineering MSc**, *Specialisation in Bionic Interfaces*, Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

2008 – 2012 **Molecular Bionics BSc**, Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

2004 – 2008 *High School Leaving Certificate*, **Specialisation in mathematics**, Fráter György Catholic High School, Miskolc (Hungary)

CURRENT AND PREVIOUS POSITIONS

2017 – *Assistant Research Fellow*, Research Centre for Natural Sciences, Budapest (Hungary)

2014 – 2017 *Scientific Assistant*, Research Centre for Natural Sciences, Hungarian Academy of Sciences, Budapest (Hungary)

2011 – 2012 *Internship*, Research Centre for Natural Sciences, Hungarian Academy of Sciences, Budapest (Hungary)

GRANTS AND AWARDS

2019 *ICNP Publications Award*, Research Centre for Natural Sciences

2019 *EFOP PhD Student Research Grant*, Pázmány Péter Catholic University (1-year fellowship)

2018 *EFOP PhD Student Research Grant*, Pázmány Péter Catholic University (1-year fellowship)

2017 *PhD Candidate Excellence Grant*, Pázmány Péter Catholic University (1-year fellowship)

- 2016 *The Best Poster Award, From Medicine to Bionics 3rd European PhD Conference, Budapest (Hungary)*
- 2016 *PhD Student Excellence Grant, Pázmány Péter Catholic University (1-year fellowship)*
- 2015 *PhD Student Excellence Grant, Pázmány Péter Catholic University (1-year fellowship)*
- 2014 *PhD Student Excellence Grant, Pázmány Péter Catholic University (1-year fellowship)*

MEMBERSHIP TO SCIENTIFIC SOCIETIES

Hungarian Neuroscience Society (MITT, member)

SUPERVISION AND MENTORING

2020 *Supervision of 3 Bachelor students with successful thesis defence*

TEACHING

Lecturer

Organic Chemistry (BSc), Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

Introduction to Programming (BSc), Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

Basic Mathematics (BSc), Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

Database Systems (BSc), Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

Introduction to Physics (BSc), Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)

Electrophysiological Methods for the Study of the Nervous and Muscular systems (MSc), FIT-PPCU

Referee

2016, 2019 *Reviewing a Bachelor's and 2 Master's theses.*

SCIENTIFIC EVALUATION AND REVIEWING ACTIVITIES

2019 *Committee member at the Student Conference, Research Centre for Natural Sciences, Budapest, Hungary*

2014-2016 *Committee member at Tutored Research Projects for bachelor and master students, Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Budapest (Hungary)*

MAJOR COLLABORATIONS

Human Epilepsy Studies, with Dr Loránd Erőss from the National Institute of Clinical Neurosciences, Budapest, Hungary

PUBLICATIONS

Márton G, Tóth EZ, Wittner L, Fiáth R, Pinke D, Orbán G, Meszéna D, Pál I, Győri EL, Bereczki Z, Kandrás Á, Hofer KT, Pongrácz A, Ulbert I, Tóth K. The neural tissue around SU-8 implants: A quantitative in vivo biocompatibility study. (2020) MATERIALS SCIENCE & ENGINEERING C 110870 DOI: 10.1016/j.msec.2020.110870, Citations: 1

Contribution: I have applied Neuronal Nuclei-immunostaining and Glial Fibrillary Acidic Protein-immunostaining on rat brain slices.

Kandrás Á, Hofer KT, Tóth K, Tóth EZ, Entz L, Bagó AG, Erőss L, Jordán Z, Nagy G, Fabó D, Ulbert I, Wittner L. Presence of synchrony generating hubs in the human epileptic neocortex. (2019) JOURNAL OF PHYSIOLOGY 597(23):5639-5670 DOI: 10.1113/JP278499, Citations: 1

Contribution: I participated in the planning and optimisation of experiments and data analysis algorithms. I performed in vitro extracellular recordings on human cortical slices. I have processed the obtained data, including local field potential and single-unit activity analysis and spike sorting. I did the statistical analysis. I have written the paper with the contribution of the corresponding author.

Tóth K, Hofer KT, Kandrás Á, Entz L, Bagó A, Erőss L, Jordán Z, Nagy G, Sólyom A, Fabó D, Ulbert I, Wittner L. Hyperexcitability of the network contributes to synchronisation processes in the human epileptic neocortex. (2018) JOURNAL OF PHYSIOLOGY 596(2):317-342 DOI:10.1113/JP275413, Citations: 8

Contribution: I participated in the extracellular and intracellular recordings of human brain slices. I also participated in the data analysis of epileptic patients.

Hofer KT, Kandrás Á, Ulbert I, Pál I, Szabó C, Héja L, Wittner L. The hippocampal CA3 region can generate two distinct types of sharp wave-ripple complexes, in vitro. (2014) HIPPOCAMPUS 25(2):169-186 DOI: 10.1002/hipo.22361, Citations: 10

Contribution: I performed a time-frequency analysis of the detected synchronous events to characterise high-frequency oscillations.

OTHER

Participation in Conferences and Workshops

*11th Forum of European Neuroscience (FENS), Berlin, Germany, Jul 7th-11th, 2018

*FENS Regional Meeting, Pécs, Hungary, Sept 20th-23rd, 2017

Hungarian Neuroscience Meeting for Undergraduate Students, Graduate Students and Junior Post-Docs (HuNDoc), Budapest, Hungary, Jan 20th, 2016

* International conferences

*From Medicine to Bionics 3rd European PhD Conference, Budapest, Hungary, Nov 17th, 2016

*10th Forum of European Neuroscience (FENS), Copenhagen, Denmark, Jul 2th-6th, 2016

*International Brain Research Organization (IBRO) Workshop, Budapest, Hungary, Jan 21st-22nd, 2016

Hungarian Neuroscience Meeting for Undergraduate Students, Graduate Students and Junior Post-Docs (HuNDoc), Budapest, Hungary, Jan 20th, 2016

*Neuronus IBRO & IRUN Neuroscience Forum, Krakow, Poland, Apr 17th-19th, 2015

15th Biannual Conference of the Hungarian Neuroscience Society, Budapest, Hungary, Jan 22nd-23rd, 2015

*9th Forum of European Neuroscience (FENS), Milano, Italy, Jul 5th-9th, 2014

*International Brain Research Organization (IBRO) Workshop, Debrecen, Hungary, Jan 15th-17th, 2014

Selected conference publications (10 examples on a total of 25)

Kandráscs Á, Hofer KT, Tóth K, Győri E, Bagó A, Erőss L, Entz L, Jordán Z, Nagy G, Fabó D, Ulbert I, Wittner L. "Synchronisation evoked by the GABA(A) receptor antagonist bicuculline in the human neocortex, in vitro." 11th Forum of European Neuroscience, Berlin, Germany, Jul. 7th-11th, 2018. (poster)

Hofer KT, Tóth K, Kandráscs Á, Bagó A, Erőss L, Entz L, Jordán Z, Fabó D, Ulbert I, Wittner L. "High-frequency oscillations in human neocortical slices." 11th Forum of European Neuroscience, Berlin, Germany, Jul. 7th-11th, 2018. (poster)

Kandráscs Á, "Electrophysiological analysis of synchronisation applying bicuculline in the human neocortex in vitro" in PhD Proceedings Annual Issues of the Doctoral School, Faculty of Information Technology and Bionics, Pázmány Péter Catholic University 2017. Prószéky G, Szolgay P Eds. Budapest: Pázmány University ePress, 2017, pp 24-24. (presentation)

Hofer KT, Tóth K, Kandráscs Á, Szabó Cs, Bagó A, Erőss L, Entz L, Fabó D, Ulbert I, Wittner L. Heterogeneous neuronal firing patterns during human neocortical population activity in vitro. FENS Regional Meeting, Pécs, Hungary, Sept 20th-23rd, 2017. (poster)

Kandráscs Á, "The effect of the GABAA receptor antagonist Bicuculline on human neocortex in vitro" in PhD Proceedings Annual Issues of the Doctoral School, Faculty of Information Technology and Bionics, Pázmány Péter Catholic University - 2016. Prószéky G, Szolgay P Eds. Budapest: Pázmány University ePress, 2016, pp 51- 54. (presentation)

Kandráscs Á, Hofer KT, Tóth K, Győri E, Bagó A, Erőss L, Entz L, Ulbert I, Wittner L. "Investigation of the role of GABAergic inhibition in epileptic human neocortex." From Medicine to Bionics 3rd European PhD Conference, Budapest, Hungary, Nov 17th, 2016. (poster)

Hofer KT, Tóth K, Kandráscs Á, Szabó C, Bagó A, Erőss L, Entz L, Ulbert I, Wittner L. "Heterogeneous neuronal firing patterns during human neocortical population activity

in vitro" HuNDoc Hungarian Neuroscience Meeting for Undergraduate Students, Graduate Students and Junior Post-Docs, Budapest, Hungary, Jan 20th, 2016. (presentation)

Tóth K, Hofer KT, Kandrács Á, Szabó C, Bagó A, Erőss L, Entz L, Ulbert I, Wittner L. "Patterns of synchronous population activity in the neocortex of patients with epilepsy or tumor, in vitro." Neuronus IBRO & IRUN Neuroscience Forum, Krakow, Poland, Apr. 17th-19th, 2015. (poster)

Hofer KT, Kandrács Á, Ulbert I, Pál I, Szabó Cs, Héja L, Wittner L. "The hippocampal CA3 region can generate two types of sharp wave-ripple complexes, in vitro." 9th Forum of European Neuroscience, Milano, Italy, Jul. 5th-9th, 2014. (poster)

Hofer K, Tóth K, Kandrács Á, Szabó Cs, Bagó A, Erőss L, Entz L, Ulbert I, Wittner L. "Patterns of synchronous population activity in the neocortex of patients with epilepsy or tumor, in vitro." Society for Neuroscience (SfN) annual meeting, San Diego, USA, Nov. 9th-13th, 2013. (poster)

Science exhibitions

2019 Brain Awareness Week, Budapest, Hungary - *Interactive Brain-Computer Interface (BCI) Demo: We have introduced a computer game controlled with an Emotiv Neuroheadset to the general public. They had a chance to play with the game during the expo.*

2018 Hungarian Science Fair, Budapest, Hungary - *Poster presentation of my work to the public*

2018 Long Night of Research, Budapest, Hungary - *Interactive BCI Demo*

2018 Brain Awareness Week, Budapest, Hungary - *Interactive BCI Demo*

2018 EDUCATIO, International Education Expo, Budapest, Hungary - *Interactive BCI Demo*

2016 Bionic Contest for High-School Students, Budapest, Hungary (*Coordination*)

Other activities

Organisation of meetings in the lab.

Organisation of team building events in the lab.

Tutoring (from primary school to undergraduate students).

Voluntary work at Migration Aid (collection and distribution of donations, guiding)