

# Lubomir Kostal

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		<b>WWW</b>	<a href="http://www.biomed.cas.cz/~kostal">www.biomed.cas.cz/~kostal</a>
		<b>ResearcherID</b>	B-7468-2012
		<b>ORCID</b>	0000-0002-2708-6268
		<b>LinkedIn</b>	<a href="http://www.linkedin.com/in/lubomir-kostal">www.linkedin.com/in/lubomir-kostal</a>

## Research Interests

- Mathematical modeling of biological neural systems:
  - Applications of information theory and estimation theory to computational neuroscience
  - Energetic cost of information coding in single neurons and populations
  - Signal processing in insect sensory (olfactory) system
- Statistical measures of variability of stochastic processes

## Affiliation and Positions

<b>2014–</b>	<b>Group leader:</b> Laboratory of Computational Neuroscience, Institute of Physiology
<b>2011–2013</b>	Associated scientist, Institute of Physiology
<b>2007–2010</b>	Postdoc
<b>2004–2007</b>	PhD student, Institute of Physiology and Charles University Prague
<b>2004</b>	Assistant at the Department of Neurophysiology of Memory and Computational Neuroscience, Institute of Physiology

## Visiting and Temporal Positions

Long-term stay in the lab of Prof. Jean-Pierre Rospars, INRA, Versailles, France (doctoral and postdoc stay, intermittently **2005–2010**), team member in the projects: Barrande and ECO-NET 12644PF.

## Education

<b>2007</b>	PhD (biophysics), Charles University Prague and Institute of Physiology, Thesis: "Principles of information processing in neuronal models".
<b>2003</b>	MSc (physics), Faculty of Mathematics and Physics, Charles University Prague.

## Awards





























- 2017: Prize for the best paper (Institute of Physiology, CAS): Rajdl K, Lansky P, Kostal L (2017) Entropy factor for randomness quantification in neuronal data. *Neural Netw.*, **95**, 57–65.
- 2012: *Otto Wichterle Award*<sup>1</sup> by the Czech Academy of Sciences: "To stimulate and encourage selected, exceptionally outstanding, promising young scientists for their remarkable contributions to the advancement of scientific knowledge in a given area of science."
- 2011: Prize for the best paper (Institute of Physiology, CAS): Kostal L, Lansky P Pokora O (2011) Variability measures of positive random variables. *PLoS ONE*, **6**, e21998.
- 2010: Best poster presentation award (Kostal L: "Information capacity in the weak-signal approximation"), *Neural Coding 2010*, Limassol, Cyprus.
- 1997: *Students' Professional Activities (SPA)*: Winner of the nation-wide high-school student competition in Physics with the thesis: "Numerical solution of the geodesic equation in general relativity for the extreme Schwarzschild-de Sitter metric" (supervisor: Prof. J. Podolsky, Faculty of Mathematics and Physics, Charles University Prague).

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














<sup>1</sup>Detailed description:

<https://www.avcr.cz/en/academic-public/support-of-research/otto-wichterle-award/>

## Publications in Journals<sup>2</sup>



- \* 43. Barta, T. , Monsempès, C., Demondion, E., Chatterjee, A., Kostal, L.  & Lucas, P.  (2024) Stimulus duration encoding occurs early in the moth olfactory pathway. *Commun. Biol.*, **7**, 1252.
- 42. Kostal, L.  & Kovacova, K. (2024) Estimation of firing rate from instantaneous interspike intervals. *Neurosci. Res.*, (in press).
- \* 41. Barta, T.  & Kostal, L.  (2024) Shared input and recurrency in neural networks for metabolically efficient information transmission. *PLoS Comput. Biol.*, **20**, e1011896.
- \* 40. Rajdl, K.  & Kostal, L. (2023) Estimation of the instantaneous spike train variability. *Chaos Solit. Fractals*, **177**, 114280.
- 39. Lee, H., Kostal, L., Kanzaki, R. & Kobayashi, R.  (2023) Spike frequency adaptation facilitates the encoding of input gradient in insect olfactory projection neurons. *Biosystems*, **223**, 104802.
- 38. Tomar, R.  & Kostal, L. (2021) Variability and Randomness of the Instantaneous Firing Rate. *Front. Comput. Neurosci.*, **15**, 620410.
- 37. Barta, T.  & Kostal, L. (2021) Regular spiking in high conductance states: The essential role of inhibition. *Phys. Rev. E*, **103**, 022408.
- 36. Rajdl, K. , Lansky, P. & Kostal, L. (2020) Fano factor: a potentially useful information. *Front. Comput. Neurosci.*, **14**, 569049.
- 35. Ascione, G., D'Onofrio, G., Kostal, L. & Pirozzi, E.  (2020) An optimal Gauss-Markov approximation for a process with stochastic drift and applications. *Stoch. Proc. Appl.*, **130**, 6481–6514.
- \* 34. Barta, T.  & Kostal, L. (2019) The effect of inhibition on rate code efficiency indicators. *PLoS Comput. Biol.*, **15**, e1007545.
- \* 33. Kostal, L.  & Kobayashi, R. (2019) Critical size of neural population for reliable information transmission. *Phys. Rev. E (Rapid Commun.)*, **100**, 050401(R).
- 32. Levakova, M. , Kostal, L., Monsempès, C., Lucas, P. & Kobayashi, R. (2019) Adaptive integrate-and-fire model reproduces the dynamics of olfactory receptor neuron responses in moth. *J. R. Soc. Interface*, **16**, 20190246.
- \* 31. Levakova, M. , Kostal, L., Monsempès, C., Jacob, V. & Lucas, P. (2018) Moth olfactory receptor neurons adjust their encoding efficiency to temporal statistics of pheromone fluctuations. *PLoS Comput. Biol.*, **14**, e1006586.
- \* 30. Kostal, L. , Lansky, P. & Stiber, M. (2018) Statistics of inverse interspike intervals: the instantaneous firing rate revisited. *Chaos*, **28**, 106305.
- 29. Kostal, L.  & D'Onofrio, G. (2018) Coordinate invariance as a fundamental constraint on the form of stimulus-specific information measures. *Biol. Cybern.*, **112**, 13–23.
- \* 28. Rajdl, K. , Lansky, P. & Kostal, L. (2017) Entropy factor for randomness quantification in neuronal data. *Neural Netw.*, **95**, 57–65.
- 27. Levakova, M. , Tamborrino, M., Kostal, L. & Lansky, P. (2017) Accuracy of rate coding: When shorter time window and higher spontaneous activity help. *Phys. Rev. E*, **95**, 022310.
- 26. Levakova, M. , Tamborrino, M., Kostal, L. & Lansky, P. (2016) Presynaptic spontaneous activity enhances the accuracy of latency coding. *Neural Comput.*, **28**, 2162–2180.
- \* 25. Kostal, L.  (2016) Stimulus reference frame and neural coding precision. *J. Math. Psychol.*, **71**, 22–27.
- 24. Kostal, L.  & Lansky, P. (2016) Coding accuracy on the psychophysical scale. *Sci. Rep.*, **6**, 23810.
- 23. Kostal, L.  & Shinomoto, S. (2016) Efficient information transfer by Poisson neurons. *Math. Biosci. Eng.*, **13**, 509–520.
- 22. Kostal, L.  & Kobayashi, R. (2015) Optimal decoding and information transmission in Hodgkin-Huxley neurons under metabolic cost constraints. *BioSystems*, **136**, 3–10.
- \* 21. Kostal, L. , Lansky, P. & Pilarski, S. (2015) Performance breakdown in optimal stimulus decoding. *J. Neural Eng.*, **12**, 036012.
- 20. Kostal, L.  & Lansky, P. (2015) Coding accuracy is not fully determined by the neuronal model. *Neural Comput.*, **27**, 1051–1057.
- 19. Koyama, S.  & Kostal, L. (2014) The effect of interspike interval statistics on the information gain under the rate coding hypothesis. *Math. Biosci. Eng.*, **11**, 63–80.

<sup>2</sup>Representative publications marked with '\*'.

- \* 18. Kostal, L. , Lansky, P. & Pokora, O. (2013) Measures of statistical dispersion based on Shannon and Fisher information concepts. *Inform. Sciences*, **235**, 214–223.
- 17. Kostal, L. , Lansky, P. (2013) Information capacity and its approximations under metabolic cost in a simple homogeneous population of neurons. *BioSystems*, **112**, 265–275.
- 16. Kostal, L. , Lansky, P. & McDonnell, M. D. (2013) Metabolic cost of neuronal information in an empirical stimulus-response model. *Biol. Cybern.*, **107**, 355–365.
- 15. Kostal, L. & Pokora, O.  (2012) Nonparametric estimation of information-based measures of statistical dispersion. *Entropy*, **14**, 1221–1233.
- 14. Kostal, L.  (2012) Approximate information capacity of the perfect integrate-and-fire neuron using the temporal code. *Brain Res.*, **1434**, 136–141.
- 13. Kostal, L. , Lansky, P. & Pokora, O. (2011) Variability measures of positive random variables. *PLoS ONE*, **6**, e21998.
- \* 12. Kostal, L.  (2010) Information capacity in the weak-signal approximation. *Phys. Rev. E*, **82**, 026115.
- 11. Kostal, L. , Marsalek, P. (2010) Neuronal jitter: can we measure the spike timing dispersion differently? *Chin. J. Physiol.*, **53**, 454–464.
- 10. Kostal, L. , Lansky, P. (2010) Information transfer with small-amplitude signals. *Phys. Rev. E (Rapid Commun.)*, **81**, 050901(R).
- 9. Kostal, L. , Lansky, P. (2008) Randomness of spontaneous activity and information transfer in neurons. *Physiol. Res.*, **57**, S133–S138.
- \* 8. Kostal, L., Lansky, P. & Rospars, J.-P.  (2008) Efficient olfactory coding in the pheromone receptor neuron of a moth. *PLoS Comput. Biol.*, **4**, e1000053.
- 7. Kostal, L. , Lansky, P. & Rospars, J.-P. (2007) Encoding of pheromone intensity by dynamic activation of pheromone receptors. *Neurocomputing*, **70**, 1759–1763.
- \* 6. Kostal, L. , Lansky, P. & Rospars, J.-P. (2007) Review: Neuronal coding and spiking randomness. *Eur. J. Neurosci.*, **26**, 2693–2701.
- 5. Kostal, L. , Lansky, P. (2007) Variability and randomness in stationary neuronal activity. *BioSystems*, **89**, 44–49.
- 4. Kostal, L. , Lansky, P. & Zucca, C. (2007) Randomness and variability of the neuronal activity described by the Ornstein-Uhlenbeck model. *Netw. Comput. Neural Syst.*, **18**, 63–75.
- 3. Kostal, L. , Lansky, P. (2006) Classification of stationary neuronal activity according to its information rate. *Netw. Comput. Neural Syst.*, **17**, 193–210.
- 2. Kostal, L. , Lansky, P. (2006) Similarity of interspike interval distributions and information gain in a stationary neuronal firing. *Biol. Cybern.*, **94**, 157–167.
- 1. Duchamp-Viret, P., Kostal, L., Chaput, M., Lansky, P. & Rospars, J.-P.  (2005) Patterns of spontaneous activity in single rat olfactory receptor neurons are different in normally breathing and tracheotomized animals. *J. Neurobiol.*, **65**, 97–114.

Web of Science: 451 citations, *h*-index: 12  
 Google Scholar: 721 citations, *h*-index: 16

## Publications in Books and Peer-reviewed Proceedings, Editorials

- 5. Christodoulou, C., Kostal, L. & Sacerdote, L. (2020) Editorial, Special issue of *BioSystems* on Selected papers presented at the Thirteenth International Workshop on Neural Coding, Torino, Italy, 2018. *BioSystems*, **187**, 104049.
- 4. Kostal, L., Sacerdote, L. & Tamborrino, M. (2019) Special Issue: Neural Coding 2018. *Math. Biosci. Eng.*, **16**, 8214–8216.
- 3. Christodoulou, C. , Kostal, L. & Büschges, A. (2017) Editorial, Special issue of *BioSystems* on Selected papers presented at the Twelveth International Workshop on Neural Coding, Cologne, Germany, 2016. *BioSystems*, **161**, 1–2.
- 2. Kostal, L. , Lansky, P. & Pokora, O. (2012) How regular is neuronal activity? In *ESANN 2012: The 20th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning*. ESANN, Bruges, Belgium, pp. 495–500.

1. Kostal, L.✉, Lansky, P. & Rospars, J.-P. (2008) The Adaptation of the Moth Pheromone Receptor Neuron to its Natural Stimulus. In Ricciardi, L., Buonocore, A. & Pirozzi, E. (eds.), *AIP Conference Proceedings, Collective Dynamics: Topics on Competition and Cooperation in the Biosciences: A Selection of Papers in the Proceedings of the BIOCOMP2007 International Conference*. AIP, Melville, New York, pp. 147–161.

### Invited Talks<sup>3</sup>

- 2023**      *Workshop on Stochastic Models of the Brain and related Topics*,  
University of Torino, Italy
- 2023**      Lecture at the University of Tokyo, Kashiwa, Japan
- 2019**      Lecture at the National Institute of Informatics, Tokyo, Japan
- 2017**      Lecture at the University of Naples Federico II, Naples, Italy
- 2016**      Lecture at the Institute for Stochastics, Johannes Kepler University, Linz, Austria
- 2016**      *Workshop on multitrack event-trains in neural, social, seismological, and financial data*,  
Karuzaiwa, Japan
- 2014**      *Biological and Bio-Inspired Information Theory*, Banff International Research Station, Canada
- 2014**      *Mathematical Modeling and Statistical Analysis in Neuroscience*,  
University of Copenhagen, Denmark
- 2014**      Lecture at RIKEN, Tokyo, Japan
- 2014**      Lecture at the National Institute of Informatics, Tokyo, Japan
- 2013**      *Matematické modely a aplikace*, Podlesí, Czech Republic
- 2013**      *CNS 2013 Workshop on Methods of Information Theory in Computational Neuroscience*,  
Paris, France
- 2013**      *Workshop on the Applications of Information Theory*, Ritsumeikan University, Japan
- 2013**      Lecture at the Kyoto University, Japan
- 2009**      *Workshop on Sensory Neuroinformatics*, Pilsen, Czech Republic

### External Funding (Grants and Fellowships)

- 2024–2026**    *Polymer memristor with neurosynaptic properties*,  
The Czech Science Foundation (GACR), principal co-investigator (≈ 41 086 EUR)
- 2022–2026**    *Breakthrough Technologies for the Future –*  
*Sensing, Digitisation, Artificial Intelligence and Quantum Technologies*,  
Strategy AV21 (Czech Academy of Sciences), team member
- 2020–2022**    *Optimality of neuronal communication: an information-theoretic perspective*,  
The Czech Science Foundation (GACR), principal investigator (≈ 309 480 EUR)
- 2020–2022**    *Stochastic Models and Methods for the Study of Olfaction*,  
International project between Austrian FWF and GACR, principal investigator (≈ 240 640 EUR)
- 2019–2020**    *Stochastic models and methods for the study of neuronal coding in the olfactory system*,  
Project MOBILITY (The Czech Republic and France), principal investigator (≈ 7 520 EUR)
- 2017–2018**    *Neural coding in the moth olfactory sensory system*,  
Project MOBILITY (The Czech Republic and France), principal investigator (≈ 7 880 EUR)
- 2017–2019**    *Neural coding precision and its adaptation to the stimulus statistics*,  
The Czech Science Foundation (GACR), principal investigator (≈ 218 800 EUR)
- 2017–2018**    *Perturbed stochastic point processes as a novel tool for neural coding analysis*,  
Project MOBILITY (The Czech Republic and Austria), team member (≈ 8 340 EUR)
- 2015–2017**    *Efficiency of information transfer and the role of energetic constraints in neuronal systems*,  
The Czech Science Foundation (GACR), principal investigator (≈ 264 000 EUR)
- 2015–2016**    *Statistical inference for perturbed stochastic processes with applications to neuroscience*,  
Project MOBILITY (The Czech Republic and Austria), team member (≈ 8 000 EUR)
- 2012–2013**    *Information beyond Shannon*, European Office of Aerospace Research and Development,  
support for the Information Beyond Shannon 2013 workshop, principal investigator
- 2012–2014**    *Information-theoretic analysis of stimulus coding in sensory neurons*,  
The Czech Science Foundation (GACR), principal investigator
- 2011–2012**    *Neural Coding*, Office of Naval Research Global,  
support for the Neural Coding 2012 workshop, principal investigator
- 2011–2013**    *The role of noise in neuronal information processing*,

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<sup>3</sup>Expenses covered by the inviting party.

- The Czech Science Foundation (GACR), team member
- 2007–2009** *Signal processing in olfactory flux detector*,  
Grant Agency of the Academy of Sciences of the Czech Republic, principal investigator
- 2005** *Marie-Curie fellowship at INRA*, Versailles, France:  
project No. HPMT-CT-2001-00244: "Chemical Communication in Insects"
- 2004–2008** *Principles of information processing in neurons and their application*, Project Information Society,  
Academy of Sciences of the Czech Republic, team member

## Pedagogical Activities<sup>4</sup>

- Supervisor of diploma thesis in the master programme *Mathematical Modelling in Physics and Technology*, Faculty of Mathematics and Physics, Charles University, Prague
- Supervisor in the PhD programme *Biomedical Informatics*, First Faculty of Medicine, Charles University, Prague
- Co-supervisor in the PhD programme *Probability, Statistics and Mathematical Modelling*, Faculty of Science, Masaryk University, Brno
- University of Geneva and Lemanic Neuroscience Doctoral School: member of the PhD thesis committee (external expert)
- Teaching in the post-gradual course "Progress in Neurosciences" (PhD programme Neurosciences, *Doctoral Study Programmes in Biomedicine*): a joint programme between the Charles University and the Czech Academy of Sciences
- **Theses supervised:**
  - Tomas Barta:  
MSc. (2016–2018): *"Information-theoretic properties of selected stochastic neuronal models"*  
PhD. (2019–2023): *"Neuronal coding and metabolic cost of information"*
  - Rimjhim Tomar:  
PhD. (2019–): *"Statistical models of information processing in neuronal systems"*
  - Kristyna Kovacova:  
MSc. (2020–2022): *"Coding of pheromone signal by olfactory receptor neurons in *Agrotis ipsilon*"*  
PhD. (2022–): *"Metabolic cost and information coding in neuronal networks"*

## Professional Service

- **Editorial duties**
  - *Neural Processing Letters*: member of the Editorial Board since 2016
  - *BioSystems*: associate editor of the *Neural Coding 2016* and *Neural Coding 2018* special issues
  - *Mathematical Biosciences and Engineering*: associate editor of the *Neural Coding 2018* special issue
- **External assessor**
  - *The French National Research Agency (ANR)*: project reviewer
  - *The Agency for the Evaluation of Universities and Research Centers (ANVUR)*, Italy: peer reviewer
  - *The National Science Centre (NCN)*, Poland: project reviewer
  - *The Czech Science Foundation (GACR)*: member of the evaluation panel *P103 Cybernetics and information processing* (2017–2020)
- **Reviewer for scientific journals and proceedings**  
*Biological Cybernetics; BioSystems; Brain Research; Brazilian Journal of Probability and Statistics; Entropy; Frontiers in Computational Neuroscience; IEEE Journal on Selected Areas in Communications, Mathematical Biosciences and Engineering; IEEE Transactions on Molecular, Biological, and Multi-Scale Communications; IEEE Transactions on NanoBioscience; IEEE Wireless Communications and Networking Conference; Journal of Neural Engineering; Journal of Theoretical Biology; Neural Computation; Neural Networks; Neural Processing Letters; Neurocomputing; Physical Review E; PLoS Computational Biology; PLoS ONE; Scientific Reports*

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<sup>4</sup>The Czech Academy of Sciences is a non-university public research institution, the pedagogical activities are not mandatory.



■ **Organization of workshops and conferences, committee memberships**

- *CNS 2020: Workshop on Methods of Information Theory in Computational Neuroscience*  
(Online, 21–22, 2020)  
<http://lizier.me/joseph/conferences/202007-CNS2020-ITW/>  
member of the organizing committee
- *Neural Coding 2020*  
(Bothell (Seattle), USA, July 27–31, 2020)  
<https://sites.uw.edu/nc2020/>  
member of the scientific committee
- *The 28th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN 2020*  
(Bruges, Belgium, April 22–24, 2020)  
<http://www.esann.org/>  
member of the technical program committee
- *Latin American Workshop on Computational Neuroscience*  
(Sao Joao del-Rei, Brazil, September 18–20, 2019)  
<http://www.lawcn.com.br/>  
member of the program committee
- *CNS 2019: Workshop on Methods of Information Theory in Computational Neuroscience*  
(Barcelona, Spain, July 16–17, 2019)  
[www.biomed.cas.cz/~kostal/uploads/CNS2019-ITW](http://www.biomed.cas.cz/~kostal/uploads/CNS2019-ITW)  
chair of the organizing committee
- *5th International Conference on Mathematical NeuroScience, ICNMS 2019*  
(Copenhagen, Denmark, June 23–16, 2019)  
<http://icmns2018.inria.fr/>  
member of the scientific committee
- *The 27th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN 2019*  
(Bruges, Belgium, April 24–26, 2019)  
<http://www.esann.org/>  
member of the technical program committee
- *Neural Coding 2018*  
(Torino, Italy, September 9–14, 2018)  
<http://www.neuralcoding2018.unito.it/>  
member of the scientific committee
- *CNS 2018: Workshop on Methods of Information Theory in Computational Neuroscience*  
(Seattle, USA, July 17–18, 2018)  
<http://lizier.me/joseph/conferences/201807-CNS2018-ITW/>  
member of the organizing committee
- *International Conference on Mathematical NeuroScience, ICNMS 2018*  
(Antibes, Juan les Pins, France, June 10–13, 2018)  
<http://icmns2018.inria.fr/>  
member of the program committee
- *The 26th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN 2018*  
(Bruges, Belgium, April 25–27, 2018)  
<http://www.esann.org/>  
member of the technical program committee

- CNS 2017: *Workshop on Methods of Information Theory in Computational Neuroscience* (Antwerp, Belgium, July 19–20, 2017)  
<http://lizier.me/joseph/conferences/201707-CNS2017-ITW/>  
member of the organizing committee
- CNS 2016: *Workshop on Methods of Information Theory in Computational Neuroscience* (Jeju, South Korea, July 6–7, 2016)  
<http://lizier.me/joseph/conferences/201607-CNS2016-ITW/>  
member of the organizing committee
- CNS 2015: *Workshop on Methods of Information Theory in Computational Neuroscience* (Prague, July 22–23, 2015)  
[www.biomed.cas.cz/~kostal/uploads/CNS2015-ITW](http://www.biomed.cas.cz/~kostal/uploads/CNS2015-ITW)  
main organizer (jointly with A. Dimitrov, M. Gastpar, T. Sharpee, S. Schultz)
- *Neural Coding 2014* (Versailles, France, October 6–10, 2014)  
member of the organising committee
- *Information beyond Shannon 2013* (Prague, July 3–4, 2013)  
[www.biomed.cas.cz/~kostal/uploads/IBS2013](http://www.biomed.cas.cz/~kostal/uploads/IBS2013)  
main organizer
- *Neural Coding 2012* (Prague, September 2–7, 2012)  
[www.biomed.cas.cz/~kostal/uploads/NC2012/](http://www.biomed.cas.cz/~kostal/uploads/NC2012/)  
main organizer (jointly with P. Lansky)

## Skills

### ■ Technical skills

- Expertise: R, Linux, LaTeX, Scripting languages, Wolfram Mathematica, Vim
- Proficiency: Python, Fortran, C++

### ■ Languages

- English (full professional proficiency)
- German (limited working proficiency)

## Outreach

### ■ Popularization of science and lectures for public

- Interviews for Czech Radio Vltava and Leonardo in 2008, 2012;
- Media coverage of the Otto Wichterle prize reception: main news programme of Czech TV (June 13, 2012) and interview for Radio Impuls
- Media coverage of the Neural Coding 2012 workshop (news programme on Czech TV CT24)
- Brain Awareness Week 2018: public lecture at the main building of the Czech Academy of Sciences
- Lecture at the public library in Nymburk (2022).

### ■ Educational collaboration

- Initiated (jointly with Dr. R. Kobayashi) the *Memorandum of Understanding* between the *Institute of Physiology of the Czech Academy of Sciences, Czech Republic*, and the *National Institute of Informatics, Japan*, in the area of research and education in the fields of artificial intelligence and computational neuroscience (signed by the directors in 2016)