

Research Positions

2024 - Present **Postdoctoral Research Associate, Icahn School of Medicine**
Advisor: Evan Schaffer

2022 **Visiting Researcher, North Carolina State University**
Advisor: Charles E. Smith

2019 - 2024 **Graduate Research Fellow, Charles University, Prague**
Advisor: Lubomir Kostal

2018 - 2019 **Research Assistant, Institute of Physiology, Prague**
Advisor: Lubomir Kostal

2017 **Research Intern, International Centre for Theoretical Science, Bengaluru**
Advisor: G Bard Ermentrout

2015 **Research Intern, National Network for Mathematical and Computational Biology, IISC**
Advisor: Guruprasad Samanta

Academic Education

2024 **PhD, Charles University**
Advisor: Lubomir Kostal

Department of Computational Neuroscience, Institute of Physiology, CAS, CZ & Biomedical Informatics, Second Medical Faculty, Charles University, Praha, CZ
Thesis topic: Statistical models of information processing in neuronal systems

2017 **MSc. Mathematics, Indian Institute of Technology Madras (IITM), India**
Thesis topic: Lindstrom-Gessel-Viennot Lemma and Its Applications in Combinatorial Mathematics

2014 **BSc. (Hons.) Mathematics, Miranda House, University of Delhi, India**

Publications

Tomar, R., Clemencon, P., Demondion, E., Monsempes, C., Lucas, P., Kostal, L. (*manuscript in preparation*) Odor Background Increases the Pheromone Coding Efficiency in Moth Olfactory Neurons

Tomar, R., Smith, C. E., Lansky, P. (2022). A Simple Neuronal Model with Intrinsic Saturation of the Firing Frequency, *Biosystems*, 222, 104780.

Tomar, R. and Kostal, L. (2021). Variability and Randomness of the Instantaneous Firing Rate, *Frontiers in Computational Neuroscience*, 15, p46

Tomar, R. (2019). Methods of Firing Rate Estimation, *Biosystems*, 183

Invited Talks

2022 **Association for Women in Mathematics Student Seminar Series**
Department of Mathematics, University of Pittsburgh,

"The Neural Coding Problem and the Role of Instantaneous Firing Rate"

2022 **International Conference on Mathematical Neuroscience (ICMNS)**

Invited as a young speaker in the mini-symposium "Stochastic Models for neuronal activity"

Research Visits

2022 **Visiting Researcher, Department of Statistics, North Carolina State University**

Duration: January 15th 2022- February 09th 2022; Supervisor Professor Charles E. Smith

Grants/Scholarships

2022 **HR Mobility Award by Institute of Physiology. 3000 EUR**

To cover a short-term stay at the lab of Professor Charles E. Smith at the North Carolina State University for the project "A Simple Neuronal Model with Intrinsic Saturation of the Firing Frequency"

2021 **Grant Agency of Charles University (GAUK) 26500 EUR**

For the project titled "Coding and Response Adaptation in the Olfactory Receptor Neurons"

2020 **FENS-IBRO/PERC Travel Grant 750 EUR**

For the presentation in the Federation of European Neuroscience Society 2020 forum

2019 **Institute of Physiology Best poster award**

Second place at the biannual PhD conference of the institute of physiology

2017 **International Centre of Theoretical Sciences fellowship**

Towards the project executed at ICTS with Dr G Bard Ermentrout

2016 **National Network of Mathematical and Computational Biology fellowship**

Towards the project with Dr G P Samantha through the NNMCB Network

Conferences

2022 **31st Annual Computational Neuroscience Meeting (CNS22), Melbourne, Australia**

2022 **Federation of European Neuroscience Society (FENS22), Paris, France**

2022 **International Conference on Mathematical Neuroscience (ICMNS), Online**

2021 **Neural Coding Conference, Online**

2021 **Biannual PhD Conference of the Institute of Physiology, CAS**

2021 **European Neuroscience Conference for Doctoral Students (ENCODS), Online**

2020 **Neuromatch 2.0, Online**

2020 **Federation of European Neuroscience Society (FENS), Online**

2019 **Biannual PhD Conference of the Institute of Physiology, CAS, Prague, CZ**

Courses

2022 **Neuromatch Academy Summer School**

Topic: Deep learning methods in Neuroscience, Online

2021 **Neuromatch Academy Summer School**

Topic: Computational Neuroscience, Online

2017 **Workshop on Physical and Systems Biology**

Dynamics of Complex Systems, International Centre of Theoretical Sciences, IN

2017 **Mathematical Biology Summer School**

Dynamics of Complex Systems, International Centre of Theoretical Sciences, IN

Other Experiences

2023 **Organising Volunteer, Neuromatch Academy**

2023 **Organising Committee Member, Early Career Researchers Association IPhys**

2022 **Organising Member, Annual PhD Conference of the Institute of Physiology**

2020 **Organising Volunteer, Neuromatch Academy**

2020 **Member, 500 Women Scientists**

2020 **Reviewer for the journal Biosystems**

Language Skills

English: Proficient (IELTS score: 8.5), Hindi: Native, Czech: A2

Coding Skills

R (proficient), Python (intermediate), XPP (proficient), Mathematica (intermediate), LaTeX (proficient)

References

Dr Evan Schaffer, Icahn School of Medicine at Mount Sinai

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Dr Lubomir Kostal, Institute of Physiology, CAS

kostal@biomed.cas.cz

Dr Charles E. Smith, Department of Statistics, North Carolina State University, NC, USA

bmasmith@ncsu.edu

