Dimitar Kostadinov, PhD

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EDUCATION

2015 ***Harvard University***, Cambridge, MA, USA
Ph.D., Neuroscience

2009 ***McGill University***, Montréal, QC, Canada
B.Sc., Physiology (*First Class Honours*)

RESEARCH POSITIONS

2023- **Group Leader, Wellcome Trust Career Development Award Fellow**
Centre for Developmental Neurobiology, *King's College London*

2015-23 **Postdoctoral Research Fellow**
Wolfson Institute for Biomedical Research, *University College London*
Supervisor: Michael Häusser
Population coding in the cerebellum during goal-directed behaviour

2009-15 **Graduate student**
Center for Brain Science, *Harvard University*
Supervisor: Joshua R. Sanes
Mechanism and function of dendritic self-avoidance in the mammalian nervous system

2008-9 **Research Assistant**
Department of Physiology, *McGill University*
Supervisor: Ellis Cooper
Activity-dependent tuning of voltage-gated ion channels in sympathetic neurons

HONOURS AND AWARDS

2023 Career Developmental Award Fellowship, *Wellcome Trust*
2020 Early Career Neuroscience Prize, *UCL*
2016-18 Long-Term Postdoctoral Fellowship, *EMBO*
2012-15 NRSA Individual Predoctoral Fellowship, *NIH*
2012 Meselson Prize, *Harvard University*
2006 Student-Athlete Academic Honour Roll, *McGill University*

PUBLICATIONS

2022 **Kostadinov D**, Häusser M
Reward signals in the cerebellum: origins, targets, and functional implications
Neuron 110(8): 1290-1303.

2021 Sezener E*, Grabska-Barwińska A*, **Kostadinov D***, Beau M, Krishnagopal S, Budden D, Hutter M, Veness J, Botvinick M, Clopath C, Häusser M, Latham PE
A rapid and efficient learning rule for biological neural circuits
bioRxiv preprint. ***Equal contribution**

Steinmetz NA*, Aydin Ç*, Lebedeva A*, Okun M*, Pachitariu M*,…**Kostadinov D**,…Harris TD
Neuropixels 2.0: A miniaturized high-density probe for stable, long-term brain recordings
Science 372(6539). (16th of 39 authors)

2019 **Kostadinov D**, Beau M, Blanco-Pozo M, Häusser M
Predictive and reactive reward signals conveyed by climbing fiber inputs to cerebellar Purkinje cells. ***Nature Neuroscience*** 22(6): 950-62.
Previewed article: J. Medina: Teaching the cerebellum about reward [link]

Kostadinov D, Mathy A, Clark BA
Dynamics of the Inferior Olive Oscillator and Cerebellar Function
In: Manto M, Gruol D, Schmahmann J, Koibuchi N, Sillitoe R (eds)
Handbook of the Cerebellum and Cerebellar Disorders. Springer, Cham.

2018 Ing-Esteves S, **Kostadinov D**, Marocha J, Sing AD, Joseph KS, Laboulaye MA, Sanes JR, Lefebvre JL
Combinatorial effects of alpha-and gamma-protocadherins on neuronal survival and dendritic self-avoidance. ***Journal of Neuroscience*** 38(11): 2713-29.

2017 Peng YR, Tran NM, Krishnaswamy A, **Kostadinov D**, Martersteck EM, Sanes JR
Satb1 regulates contactin 5 to pattern dendrites of a mammalian retinal ganglion cell
Neuron 95(4): 869-83.

2015 **Kostadinov D**, Sanes JR
Protocadherin-dependent dendritic self-avoidance regulates neural connectivity and circuit function. ***eLife*** 4: e08964.
Previewed article: A. Garrett and R. Burgess: Self-awareness in the retina [link]

2012 Lefebvre JL, **Kostadinov D**, Chen WV, Maniatis T, Sanes JR
Protocadherins mediate dendritic self-avoidance in the mammalian nervous system
Nature 488(7412): 517-21.

INVITED TALKS

2023 Johns Hopkins Cerebellum Seminars, *USA [virtual]*
Neurophysiologisches Seminar, *Universitätsklinikum Essen, Germany*

2022 Dendrites 2022: Dendritic anatomy, molecules, and function, *EMBO Workshop, Greece*
Institut du Cerveau – Paris Brain Institute (ICM), France
Wu Tsai Institute, *Yale University, USA [virtual]*
Center for Molecular and Behavioral Neuroscience, *Rutgers University, USA [virtual]*

2021 Centre for Developmental Neurobiology*, King's College London, UK [virtual]*
Department of Neurobiology, *Northwestern University, USA [virtual]*
Department of Cell and Developmental Biology, *UCL, UK [virtual]*
SickKids Hospital and Department of Physiology, *University of Toronto, Canada [virtual]*
Department of Neuroscience, Physiology, and Pharmacology, *UCL, UK [virtual]*

2020 Early Career Neuroscience Prize Symposium, *UCL, UK [virtual]*
Cortex Club, *University of Oxford, UK*

2019 Google DeepMind, *Google, UK*
Neuroscience Department, *Institute Pasteur, France*
The Cerebellum in Health and Disease, *Gordon Research Seminar, Switzerland*
10th International Meeting of the SRCA, *University of Sheffield, UK*
Wolfson Institute for Biomedical Research Retreat, *UCL, UK*
Division of Medicine Retreat, *UCL, UK*

2018 Department of Physiology, *McGill University, Canada*

2016 NeuroTuscany, *Monticastelli Pisano, Italy*

2012 Program in Neuroscience Retreat, *Harvard University, USA*

SELECTED CONFERENCE PRESENTATIONS

2023 *Gordon Research Conference: Cerebellum, USA*
Fast and slow learning signals in cerebellar climbing fibers shaped by differential brain-wide inputs to olivary neurons
6th French Cerebellum Days, France
Fast and slow learning signals in cerebellar climbing fibers shaped by differential brain-wide inputs to olivary neurons

2022 *Society for Neuroscience Annual Meeting, USA*
Fast and slow learning signals in cerebellar climbing fibers shaped by differential brain-wide inputs to olivary neurons
EMBO Workshop: Dendrites 2022, Greece
Dendritic gated networks: A rapid and efficient learning rule for biological neural circuits

2021 *Society for Neuroscience Annual Meeting, USA [virtual]*
Fast and slow learning signals mediated by climbing fiber inputs to cerebellar Purkinje cells

2019 *Gordon Research Conference: Cerebellum, Switzerland*
Dynamic coordination of climbing fiber input to cerebellar Purkinje cell populations during learning

2018 *Society for Neuroscience Annual Meeting, USA*
Dynamic coordination of climbing fiber input to Purkinje cell populations during goal-directed action

2017 *Society for Neuroscience Annual Meeting, USA*
Probing the functional interactions between neural populations in the cerebellar cortex and deep nuclei of awake behaving mice

Gordon Research Conference: Cerebellum, USA
Population coding in the Purkinje cell network during execution of goal-directed action

2014 *Society for Neuroscience Annual Meeting, USA*
Roles of Protocadherin-mediated self-avoidance in retinal circuit function

Cold Spring Harbor Meetings: Neuronal Circuits, USA
The role of Protocadherin-mediated self-avoidance in retinal circuit function

2012 *Society for Neuroscience Annual Meeting, USA*
Gamma-Protocadherins pattern starburst amacrine dendrites by self-avoidance

2009 *Society for Neuroscience Annual Meeting, USA*
Developing postsynaptic neurons require functional presynaptic innervation to tune voltage-gated currents and fire action potentials at appropriate frequencies

TEACHING EXPERIENCE

2018-19 Course assistant, *Neuropixels Training Course, UCL*
2015 Guest Lecturer, *Cellular Basis of Brain Function, UCL*
2013 Teaching Fellow, *Systems Neuroscience, Harvard University*
2011 Teaching Fellow, *Neurobiology of Behavior, Harvard University*
2008-9 Teaching Assistant, *Mammalian Physiology, McGill University*

STUDENT MENTORSHIP

Supervision of PhD students

2017- Maxime Beau, UCL (thesis project)
2012 Olivia Ho-Shing, Harvard University (rotation project)

Supervision of MSc students

2019-20 Gabriela Martinez, CentraleSupélec (currently Business Intelligence Engineer, Amazon)
Michael Maibach, UCL (currently PhD student, McGill University)
2017-18 Yooni Chung, UCL (currently Data Engineer, Pirical)
Hassan Bassam, UCL (currently PhD student, Max Planck School of Cognition)
2016-17 Marta Blanco-Pozo, UCL (currently PhD student, Oxford University)

Supervision of undergraduate students

2021-23 Sam Clothier, UCL (recipient of Physiological Society Summer Studentship)
2020-21 Mátyás Váradi, UCL (currently PhD student, Cambridge University)
2017-18 Margaret Conde Parades, UCL (recipient of Physiological Society Summer Studentship)

PROFESSIONAL SERVICE AND ENGAGEMENT

2017- Member, *Physiological Society*
2015- Ad-hoc reviewer: *Cell, eLife, Journal of Neuroscience, Nature Neuroscience, Neuron, PLOS Biology, PNAS, Scientific Reports*
2009- Member, *Society for Neuroscience*