

Curriculum Vitae

Personal Data

Full name	Nikolaos Karalis
Father's name	Gerasimos
Date of Birth	11 th May 1986
Nationality	Greek
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Education

Ph.D. candidate in Neuroscience (2013 - present)

Topic: "Mechanisms of memory consolidation in the hippocampal and cortical circuits"

Advisor: Prof. Dr. Anton Sirota

Faculty of Medicine, Ludwig-Maximilians-Universität München

M.Sc.: Neurasmus Joint Master Degree program in Neuroscience (2011 – 2013)

1st year: Charité University Medicine, Berlin – International Graduate Program Medical Neurosciences

2nd year: Université Bordeaux II – Master Biologie, Santé - Neurosciences and Neuropsychopharmacology

M.Sc. Thesis: "Neuronal Signatures of Fear Memory" Grade: 18 (scale of 20) Ranking : 1/5

B.Sc. / M.Sc.: School of Applied Mathematics and Physical Sciences,

National Technical University of Athens (NTUA) – 2011

G.P.A.: 7,42 (scale of 10) Majors: Computational Mathematics, Statistics

M.Sc. Thesis: "EEG analysis of meditative states" Grade: 10 (scale of 10)

High School Diploma: "Apolytirio Eniaiou Lykeiou" - Ekpaideytiria "O Platon" 2004

Grade: Excellent (18.9 scale of 20)

Publications

- Courtin J, Chaudun F, Rozeske R, **Karalis N**, Gonzalez-Campo C, Wurtz H, Abdi A, Baufreton J, Bienvenu T, Herry C
«Prefrontal parvalbumin interneurons shape neuronal activity to drive fear expression»
Nature, 2013
- Courtin J, **Karalis N**, Gonzalez-Campo C, Wurtz H, Herry C
«Persistence of amygdala gamma oscillations during extinction learning predicts spontaneous fear recovery»
Neurobiology of Learning and Memory, 2013
- **Karalis N**, Karanasiou I, Uzunoglu N, & Braboszcz C
«Effects of Himalayan tradition meditation during a SSVEP study»
Neuroscience Letters, 500, 2011
- Falagas ME, Peppas G, Matthaïou DK, Karageorgopoulos DE, **Karalis N**, Theocharis G
«Effect of meteorological variables on the incidence of lower urinary tract infections».
European Journal of Clinical Microbiology and Infectious Diseases, 2009
- **Karalis, N** «Combinatorial and Statistical Analysis of Keno Game», **CUMC Annual, 2007**
- **Karalis N**, Aliaga R, Arnold R, Wu W. «Maple Graph Theory Package»
Mitacs Industrial Math Summer School Proceedings, 2007

Invited Talks

- 2015:** “High-density electrophysiological characterization of the hippocampal and cortical network activity in the awake and sleeping mouse” [11th Meeting of the German Neuroscience Society 2015]
- 2014:** “Neurophysiological correlates of rodent communication” [Animal Communication Workshop]
- 2013:** “Neuronal signatures of fear memory” [Neurasmus Workshop]
- 2013:** “Neuronal signatures of fear memory” [Neurasmus Orientation Week 2013]
- 2011:** “Short term effects of Himalayan Tradition meditation in a multi subject SSVEP study” [Breaking Convention]
- 2007:** “Combinatorial and Statistical Analysis of Keno Game” [Canadian Undergraduate Mathematics Conference]

Conference Abstracts

- 2015:** «High-density electrophysiological characterization of the hippocampal and cortical network activity in the awake and sleeping mouse»
Karalis N, Blanco-Hernandez E, Sirota A [11th Meeting of the German Neuroscience Society 2015]
- 2015:** «Multichannel extracellular recordings in freely behaving rodents»
Resnik E, Karalis N, Schwesig G, Sirota A [Center of Competence in Neuroengineering Meeting 2015]
- 2014:** «Synchronized prefrontal-amygdala 4Hz oscillations mediate fear behavior»
Karalis N, Courtin, J, Dejean C, Chaudun F, Rozeske R, Wurtz H, Herry C [SFN Meeting 2014]
- 2014:** «Prefrontal circuits of contextual fear discrimination and generalization»
Rozeske R, Khoder S, Chaudun F, Karalis N, Wurtz H, Herry C [SFN Meeting 2014]
- 2014:** «Towards the dissection of the olfactory sampling strategies during exploratory activity and the related network activity in the olfactory bulb neural circuits »
Blanco-Hernandez E, Graboski J, Karalis N, Sirota A [Olfaction SPP 5th Annual Meeting].
- 2014:** «Long-range synchronization of prefrontal-amygdala neuronal circuits during fear behavior»
Karalis N, Courtin, J, Dejean C, Chaudun F, Rozeske R, Wurtz H, Herry C [FENS Meeting 2014]
- 2014:** «Prefrontal Circuits of Contextual Fear Discrimination»
Rozeske R, Chaudun F, Khoder S, Karalis N, Wurtz H, Herry C [FENS Meeting 2014]
- 2014:** «Medial prefrontal cortex neuronal ensembles encode conditioned fear behavior »
Dejean C, Courtin, J, Karalis N, Wurtz H, Herry C [FENS Meeting 2014]
- 2014:** «Synchronized prefrontal-amygdala 4Hz oscillations mediate fear behavior»
Karalis N, Courtin, J, Dejean C, Chaudun F, Rozeske R, Wurtz H, Herry C [NIN Interneurons Summer School 2014]
- 2013:** “Prefrontal Cortex 4Hz Rhythm Shapes Neuronal Signatures of Fear Expression”
Dejean C*, Courtin J*, Karalis N*, Wurtz H, Herry C [4th GDR Congress].
- 2013:** “Increased prelimbic neuronal activity is associated with contextual fear discrimination”
Rozeske R, Karalis N, Khoder S, Herry C [4th GDR Congress]
- 2011:** “Effects of Himalayan tradition meditation during a SSVEP study”
[Meeting of the Society of Applied Neurosciences 2011]
- 2010:** “Short term effects of Vipassanā meditation in a single subject SSVEP study”
[4th Congress for Electrical Engineering Students]
- 2006:** “Grid Computing” [Poster presentation at the TEE Research and Technology Days]

Scholarships and Grants

- 2015:** University of Tartu – INCF travel grant
- 2014:** British Neuroscience Association travel grant
- 2013:** Hellenic Pasteur Institute travel grant
- 2011:** Erasmus Mundus scholarship (2011 – 2013) for the Neurasmus Joint Master degree program in Neuroscience
- 2011:** Thomaideio grant (NTUA) for active participation in conference.
- 2010:** COST Grant (5th International Summer School on Emerging Technologies in Biomedicine)
- 2010:** University of Pennsylvania Grant
- 2010:** Centrum Wiskunde & Informatica (CWI) (Study group Mathematics with Industry)
- 2009:** Erasmus scholarship (Research exchange)
- 2009:** 8th EEGLAB Workshop, Aspet, France
- 2008:** Danish Center for Applied Mathematics and Mechanics (DCAMM)
- 2008:** University of Crete
- 2008:** Pacific Institute for the Mathematical Sciences (PIMS) grant
- 2007:** MITACS scholarship
- 2006:** FORTH scholarship
- 2006:** Athens Information Technology (AIT) scholarship
- 2006:** National Science Foundation (NSF) scholarship (Arizona Winter School 2006)

Research Experience

- **2014 – now: PhD candidate - Ludwig-Maximilians-Universität München**
“Mechanisms of memory consolidation in the hippocampal and cortical circuits”
Faculty of Medicine, Advisor: Prof. Dr. Anton Sirota
- **2013 – 2014: PhD candidate - University of Tübingen**
“Mechanisms of memory consolidation in the hippocampal and cortical circuits”
Centre for Integrative Neuroscience, Advisor: Prof. Dr. Anton Sirota
- **2012 - 2013: M.Sc. Thesis «Neuronal Signatures of Fear Memory” - INSERM, Bordeaux**
“Neuronal Signatures of Fear Memory”
Neurocentre Magendie, Supervisor: Dr. Cyril Herry
- **2009 – 2011: M.Sc. Thesis – National Technical University of Athens (NTUA)**
“EEG Analysis of the neurophysiological effects of meditation on visual evoked potentials”
Microwaves and Fiber Optics Laboratory, Supervisors: Dr. Nikolaos Uzunoglou - Dr. Irene Karanasiou
- **2012: Lab Rotation - Charité - Universitätsmedizin Berlin**
“Comparison of cell counting techniques for the assessment of cell death in tissue slices”
Department of Experimental Neurosurgery, Supervisor: Dr. Ana Luisa Piña
- **2012: Lab Rotation - Charité - Universitätsmedizin Berlin**
“Effects of PEDF on primary neuronal cells after oxygen-glucose deprivation”
Department of Experimental Neurology, Supervisors: Dr. Ana Luisa Piña - Marietta Zille
- **2010: Summer research scholar - University of Pennsylvania**
Department of Psychiatry, Supervisor: Dr. Ruben Gur
- **2009: Erasmus exchange – M.Sc. Thesis - Université Paul Sabatier, Toulouse**
Centre de Recherche Cerveau et Cognition (CERCO), Supervisor: Dr. Arnaud Delorme
- **2008: Internship on Biostatistics - Alfa Institute of Biomedical Sciences (AIBS)**
Supervisors: Dr. Matthew E. Falagas - Dr. Dimitrios Matthaïou
- **2007: Graph theory research for MapleSoft – Simon Fraser University (SFU)**
“Algorithmic graph isomorphism determination”
Centre for Experimental and Constructive Mathematics (CECM), Supervisors: Dr. Michael Monagan - Mohammad Ghebleh
- **2005 – 2009: Grid Computing for CERN - National Technical University of Athens (NTUA)**
High Energy Physics Department
- **2004: Research program - National Technical University of Athens (NTUA)**
Athens Urban Transport Organization (OASA)

Experimental Techniques

Electrophysiology : *in-vivo* extracellular single-unit/LFP recordings (tetrodes/silicon probes – freely moving/head-fixed mice and rats), digital multiplexing electrophysiology, human EEG recordings, high-dimensional neural data analysis

Lab techniques : stereotaxic neurosurgeries, virus injections, cranial window, behavioral experimentation and analysis (mice/rats)

Circuit manipulation : optogenetics, deep brain stimulation (DBS), transcranial electric/direct current stimulation (TES/tDCS), electrical/chemical lesions, auditory/visual stimulation

Behavioral paradigms: auditory/contextual fear conditioning (freely behaving and head-fixed mice), spatial navigation (freely behaving mice/rats), novel object recognition, spatial memory, working memory

Histology : immunohistochemistry (slices and cell cultures), cryotome/vibratome, fluorescent/light microscopy

Cell cultures : primary neuronal and astroglial cell cultures (isolation/maintenance), oxygen-glucose deprivation

Computer Skills

Programming Languages: Matlab, Python, Julia, PHP, HTML (XML, CSS), SQL, Java, Javascript, C++, C, Prolog, Arduino

Mathematical Software: R, Maple, Mathematica, SPSS, LaTeX, Sage

Electronics: Circuit design and implementation, electrophysiology and behavioral equipment setup

Operating systems: Mac OS X, Linux, OpenBSD, Windows

Biology, Imaging and Other Software: OpenEphys, EEGLAB, Psychtoolbox, PsychoPy, Offline Sorter, Neuroexplorer, NEURON, ImageJ, CellProfiler, Cell[^]P, Columbus, Fritzing, Illustrator, OptiTrack Motive

Workshops and Summer Schools

- 2015: 3rd Baltic-Nordic Summer School on Neuroinformatics, University of Tartu, Estonia
- 2015: Optogenetics Workshop SPP1665, Ruhr University Bochum, Germany
- 2015: Grant writing workshop, LMU Graduate School, Munich
- 2015: 7th G-Node Winter Course in Neural Data Analysis, LMU, Munich, Germany
- 2015: Academic presentation workshop, LMU Graduate School, Munich
- 2014: NIN Interneuron Summer School, Amsterdam
- 2014: Understanding Sleep: Novel Perspectives in Neurosciences, European Sleep Research Society, Milan
- 2014: Educational course on manuscript and grant writing, Milan, Italy
- 2014: Optogenetics: controlling the brain with light, University of Oxford
- 2014: International Course on Animal Communication, University of Tübingen
- 2014: Practical course optical imaging in Neuroscience, University of Tübingen
- 2013: Models of Synaptic Plasticity Doctoral Course, University of Tübingen
- 2013: 1st Live Cell Imaging and Electrophysiology Workshop, Pasteur Institute, Athens
- 2013: 11th Summer Course on Computational Neuroscience, Göttingen
- 2013: Neurasmus Workshop, Coimbra
- 2013: 5th G-Node Winter Course in Neural Data Analysis, LMU, Munich
- 2013: Brain-Computer Interface workshop and hands-on seminar, INRIA, Bordeaux
- 2012: Super Resolution Imaging Techniques Workshop, Bordeaux Imaging Center
- 2012: Neurasmus Workshop, Barcelona
- 2012: Mathematical Cell Biology Graduate Summer Course, University of British Columbia, Vancouver
- 2012: Cerebral Ischemia: in vivo and in vitro models (Methods Course), Dept. Of Exp. Neurology, Charité, Berlin
- 2012: FELASA category B training (License for carrying out experimental procedures on living animals), Charité, Berlin
- 2010: 5th International Summer School on Emerging Technologies in Biomedicine, Patras
- 2010: Summer Program in Computational Neuroscience, University of Pennsylvania, Philadelphia
- 2010: Study Group Mathematics with Industry, Amsterdam
- 2009: 8th EEGLAB Workshop, Aspet
- 2008: Modern Methods in Industrial Mathematics Ph.D. Course, Technical University of Denmark, Copenhagen
- 2008: 66th European Study Group with Industry, Technical University of Denmark, Copenhagen
- 2008: Mathematics Summer School, University of Crete
- 2008: Graduate Industrial Mathematics Modeling Camp, University of Regina
- 2008: Industrial Problem Solving Workshop, University of Regina
- 2008: 2nd Workshop for Drug Design, National Hellenic Research Foundation, Athens
- 2007: MITACS Industrial Math Summer School, Simon Fraser University, Vancouver
- 2006: Arizona Winter School "Computational Aspects of Algebra and Arithmetic", Tucson, Arizona
- 2006: Introduction to Grid Computing, Athens
- 2006: "Next Generation Computing Systems" AIT Summer School, Athens
- 2006: BEST Robotics Summer School, Athens
- 2001-2004: Participation in national mathematical competitions

Conferences

- 2015: Bernstein Conference, Heidelberg
- 2015: Cutting Edge Technologies, Munich
- 2015: Bernstein Retreat and Virtual Reality Workshop, Tutzing
- 2015: 11th Meeting of the German Neuroscience Society, Göttingen
- 2015: Center of Competence on Neuroengineering Meeting, Technical University of Munich
- 2014: 44th Annual Meeting of the Society for Neuroscience, Washington, DC
- 2014: 9th FENS Forum of Neuroscience, Milan
- 2013: Bernstein Conference, Tübingen
- 2013: 1st European Neuroscience Conference by Doctoral Students, Bordeaux
- 2013: European Neuroscience Campus Annual Meeting, Bordeaux
- 2012: 8th FENS Forum of Neuroscience, Barcelona
- 2012: ENC Network Annual Joint Meeting, Barcelona
- 2012: Erasmus Mundus Association General Assembly, Prague
- 2012: 7th International Symposium on Neuroprotection and Neurorepair, Potsdam
- 2011: Berlin Brain Days
- 2011: 22nd European Students Conference on Regenerative Medicine, Berlin
- 2011: Society of Applied Neuroscience meeting, Thessaloniki
- 2011: Breaking Convention, University of Kent
- 2011: 34th European Conference on Visual Perception, Toulouse
- 2011: 25th Annual Hellenic Congress of Neurosurgery, Athens
- 2011: 25th Annual Hellenic Congress of Neurology, Athens
- 2010: 4th Congress for Electrical Engineering Students, Patras
- 2009: The Brain: Function, Imaging and Repair, Athens
- 2007: Canadian Undergraduate Mathematics Conference, Simon Fraser University, Vancouver
- 2006: Euroconference "Which Mathematics for Biology?", FORTH, University of Crete

Awards

- 2010:** “*Thomaideio Award*” for conference presentation from National Technical University of Athens for the “Short term effects of Vipassanā meditation in a single subject SSVEP study” presentation.
- 2008:** “*Thomaideio Award*” for best journal publication from National Technical University of Athens for the “Effect of meteorological variables on the incidence of lower urinary tract infections” publication.

Teaching Experience

- 2015:** Tutor at the 7th G-Node Winter Course in Neural Data Analysis
- 2012:** “Speaking to the public”, Charité University Hospital, Berlin
- 2004 – 2012:** Private and group tutor (university and high school students), Athens

Volunteering Work

- 2014 – today:** Society for Neuroscience – Find a Neuroscientist program
- 2012 – today:** Scholarpedia Assistant Editor
- 2012 - today:** Writer/Editorial board of the “CNS Charité Neuroscience Newsletter”
- 2012 – 2013:** Neurasmus course representative at the Erasmus Mundus Association (EMA)
- 2011:** Volunteering for EDASA (Forest Wildfire Protection), Athens, Greece
- 2011 – today:** TED talks translator
- 2010:** JeffHOPE student-run free clinics, Philadelphia, PA, USA
- 2010:** Books Through Bars, Philadelphia, PA, USA
- 2009 – today:** Photographer in various artistic events
- 2008 – today:** American Mathematical Society's (AMS) poster series “Mathematical Moments” translator
- 2007:** Teaching computer skills to immigrants at the Underground Free University, Athens, Greece
- 2005:** European Youth Week 2005, Athens, Greece
- 2004 – 2006:** Organizer and invigilator at the national mathematical competitions “Thales”, “Euclid” and “Archimedes” organized by the Hellenic Mathematical Society (HMS)
- 2004:** Team coordinator, guide and invigilator at the International Mathematical Olympiad (IMO) 2004
- 2004:** Team coordinator, guide and invigilator at the International Informatics Olympiad (IOI) 2004

Memberships

- 2014 – today:** Society for Neuroscience
- 2013 – today:** Bernstein Center for Computational Neuroscience
- 2013 – today:** Neurasmus Alumni Association
- 2012 – today:** Neuroscience in Bordeaux Association
- 2012 – today:** Federation of European Neuroscience Societies
- 2012 – today:** Hellenic Society for Neurosciences
- 2011 – today:** “School of Applied Mathematics and Physics” Alumni Association
- 2004 – today:** Hellenic Mathematical Society

Languages

Language	Level		Certification
Greek	Mother Tongue		
English	Fluent	C2	Cambridge First Certificate in English (2001)
German	Intermediate	C1	Zentrale Mittelstufenprüfung (2002) Zertifikat Deutsch als Fremdsprache (2000)
Spanish	Intermediate	B2	
French	Intermediate	B2	

Professional Experience

- 2011-2012:** Civic Consulting (Research assistance), Berlin, Germany
- 2011:** Greek Population Census
- 2010 – 2012:** Founder of tutoring and career counseling organization
- 2009 – 2011:** Photographer (freelance, Demotix agency)
- 2010:** Hellenic Post
- 2007 – 2011:** Animateur
- 2004:** Hellenic Telecommunications Organization (OTE)
- 2004:** Athens Urban Transportation Organization (OASA)