

# MARIA TAMPAKAKI

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## Current Appointment

PhD student

University of Crete

Foundation for Research and Technology-Hellas (FORTH)

Date of birth: 30/09/1993, Heraklion Crete | Nationality: Greek

## EDUCATION

### 2023-PRESENT

**PhD in CANCER NEUROSCIENCE**, FACULTY OF MEDICINE, UNIVERSITY OF CRETE  
INSTITUTE OF COMPUTER SCIENCE, FORTH  
INSTITUTE OF ELECTRONIC STRUCTURE AND LASER, FORTH

### 2016-2020

**MSc in "BRAIN & MIND" SCIENCES**, SCHOOL OF MEDICINE, UNIVERSITY OF CRETE  
Interdisciplinary Graduate Programme in the Brain and Mind Sciences, organized by the School of Medicine and the departments of Computer Science, Physics, and Philosophy and Social Studies of the University of Crete as well as from the departments of Nursing and History and Philosophy of Sciences of the National and Kapodistrian University of Athens

### 2011-2016

**BSc in BIOLOGY**, DEPARTMENT OF BIOLOGY, UNIVERSITY OF CRETE  
Grade: 7.24/10, "Very Good"

### 2008-2011

**HIGH SCHOOL DIPLOMA**, "DOMINIKOS THEOTOKOPOULOS", 1<sup>ST</sup> HIGH SCHOOL OF MALEVIZI  
Municipality of Malevizi, Heraklion Crete  
Grade: 19/20, "Excellent"

## RESEARCH EXPERIENCE

### 12/2023 –

#### PhD THESIS

##### "THE ROLE OF PML IN NEUROGLIOMA PHYSIOLOGY"

University of Crete, Faculty of Medicine  
Foundation for Research and Technology-Hellas (FORTH)

##### Thesis Committee:

- Dr. V. Sakkalis, Research Director, Computational Bio-Medicine Lab, ICS, FORTH ([sakkalis@ics.forth.gr](mailto:sakkalis@ics.forth.gr))
- Dr. G. Zacharakis, Principal Researcher, Laboratory of Biophotonics and Molecular Imaging (LBMI), IESL, FORTH ([zahari@iesl.forth.gr](mailto:zahari@iesl.forth.gr))
- Prof. Emmanouil Froudarakis, Systems Neuroscience Lab, IMBB, FORTH ([frouman@imbb.forth.gr](mailto:frouman@imbb.forth.gr))

*Summary: Investigation the role of PML in Glioblastoma (GBM) physiology by examining its effects on glioma and neuro-glioma networks, including growth, invasion, and treatment responses. The project involves 2D/3D cell cultures, ex vivo brain slices, and in vivo engraftments to explore the interaction*

*between cancer cells and their microenvironment, supported by cancer-predictive mathematical models and advanced molecular imaging techniques for a deeper understanding of GBM progression.*

**9/2020-11/2023**

### **RESEARCH ASSOCIATE**

Computational Bio-Medicine Lab (CBML), Institute of Computer Science (ICS), FORTH

Laboratory for Bio-photonics and Molecular Imaging (LBMI), Institute of Electronic Structure and Laser (IESL), FORTH

*Summary: Development of 3D tumor spheroids and for chemotherapeutic agents testing. Computational modeling of the spatiotemporal evolution and physiological characteristics of Glioblastoma (GBM) cells based on in vitro biological models. Development of ex vivo retinal cultures for evaluation of ocular imaging biomarkers for neurodegenerative diseases using hybrid microscopy system technologies.*

**05/2018 – 03/2020**

### **MASTER THESIS**

#### **“IMAGE GUIDED BRAIN CANCER MODELING – THE ROLE OF PROMYELOCYTIC LEUKEMIA PROTEIN IN GLIOBLASTOMA PHYSIOLOGY”**

Computational Bio-Medicine Lab (CBML), Institute of Computer Science (ICS), Foundation for Research and Technology-Hellas (FORTH)

*Evaluation Committee:*

1. Supervisor: V. Sakkalis, Principal Researcher, Computational Bio-Medicine Lab, ICS, FORTH ([sakkalis@ics.forth.gr](mailto:sakkalis@ics.forth.gr))
2. Evaluator: K. Sidiropoulou, Assistant Professor in Neurophysiology, Dept. of Biology, University of Crete ([sidirop@uoc.gr](mailto:sidirop@uoc.gr))
3. Evaluator: T. Maris, Assistant Professor of Medical Physics, Faculty of Medicine, University of Crete ([tmaris@med.uoc.gr](mailto:tmaris@med.uoc.gr))

*Summary: Computational modeling of the physiological characteristics of Glioblastoma (GBM) cells based on in vitro biological models. The physiological properties of genetically modified GBM cell lines are studied in vitro, in 2D and 3D cultures, and imaged with fluorescence pulse sources, aiming in new imaging biomarkers and therapeutic targets identification. Furthermore, the project involves the development of an ex vivo mouse brain slice protocol in order to study the invasive properties of the GB cells in their microenvironment of origin with the use of photoacoustic imaging.*

**10/2017 – 02/2018**

### **LAB ROTATION**

#### **“ANALYSIS OF MACAQUE PREFRONTAL CORTEX ELECTROPHYSIOLOGICAL RECORDINGS”**

Laboratory of Visual Cognition, Faculty of Medicine, University of Crete

*Supervisor:*

G.Gregoriou, Associate Professor, Medical School, University of Crete ([gregoriou@uoc.gr](mailto:gregoriou@uoc.gr))

*Summary: Off-line analysis in MATLAB of macaque prefrontal cortex (PFC) electrophysiological activity regarding the PFC relationship to attention. Basic training in macaque handling and behavioral training.*

**05/2017 – 09/2017**

### **LAB ROTATION**

#### **“IN VITRO/IN SILICO STUDY OF THE ROLE OF PHYSIOLOGICAL FACTORS AFFECTING TUMOR GROWTH IN PRIMARY GLIOBLASTOMA CELL LINES”**

Computational Bio-Medicine Lab (CBML), Institute of Computer Science (ICS), Foundation for Research and Technology-Hellas (FORTH)

*Supervisor:*

V. Sakkalis, Principal Researcher, Computational Bio-Medicine Lab, ICS, FORTH ([sakkalis@ics.forth.gr](mailto:sakkalis@ics.forth.gr))

*Summary: In Vitro/In Silico study of physiological characteristics of Glioblastoma (GB). Parametrization and validation of a hybrid discrete-continuous patient-specific computational model based on theoretical and experimental results.*

**09/2015 – 07/2016**

### **BACHELOR THESIS**

#### **“DIFFERENTIAL REGULATION OF COGNITIVE FUNCTIONS IN ADOLESCENT AND ADULT MICE”**

Neurophysiology and Behavior Lab, Dept. of Biology, University of Crete

*Supervisor:*

K. Sidiropoulou, Assistant Professor in Neurophysiology, Dept. of Biology, University of Crete ([sidirop@uoc.gr](mailto:sidirop@uoc.gr))

*Summary: Development of the Attentional Set-Shifting Task behavioral protocol in order to study the cognitive flexibility in adolescent and adult mice. Training in Standard Operating Procedures such as subcutaneous and intraperitoneal injections, transcatheter perfusion and brain tissue collection.*

**07/2015 – 09/2015**

### **INTERNSHIP**

Molecular and Cellular Cognition Lab, German Center for Neurodegenerative Diseases (DZNE), Research Center Caesar, Bonn, Germany

Supervisor:

D. Ehninger, Principal Investigator, Molecular and Cellular Cognition Lab, German Center for Neurodegenerative Diseases (DZNE), Research Center Caesar, Bonn, Germany ([dan.ehninger@dzne.de](mailto:dan.ehninger@dzne.de))

Summary: Brief training on basic Molecular Biology techniques (Western Blot, PCR etc.) and biological image analysis using Cell Profiler.

03/2015 – 06/2015

### LAB ROTATION

Neurophysiology and Behavior Lab, Dept. of Biology, University of Crete

Supervisor:

K. Sidiropoulou, Assistant Professor in Neurophysiology, Dept. of Biology, University of Crete ([sidirop@uoc.gr](mailto:sidirop@uoc.gr))

Summary: Video Analysis of behavioral experiments using JWatcher. Basic training in electrophysiological recordings, animal handling, animal house facilities and laboratory safety.

2012

### LAB ROTATION

Natural History Museum of Crete

Supervisor:

P. Lympirakis, Curator of Vertebrates at the Natural History Museum of Crete ([lyberis@nhmc.uoc.gr](mailto:lyberis@nhmc.uoc.gr))

Summary: Species classification of birds and small mammals.

## WORKSHOPS AND SUMMERSCHOOLS

- 27/02/2023-03/03/2023: Retinal Explants Workshop in the framework of “Dynamic” FET open Horizon 2020 grant, Tuebingen , Germany
- 03-05/07/2023: 1<sup>st</sup> Summer School in the framework of “Dynamic” FET open Horizon 2020 grant in Chania, Greece
- 04/2021 – 06/2021: 7<sup>th</sup> International Course for the Care and Use of Laboratory Animals: Mice, Rats, Zebrafish (FELASA ID: 051/15)
- 07/2019: 4th ESMI Imaging Summer School TOPIM-TECH, Chania, Greece

## PUBLICATIONS

- Mavrakis K., Divaris G. **Tampakaki M.**, Khan SN., Dholakia K., Zacharakis G., “**Optically generated droplet beams improve optoacoustic imaging of choroid thickness as an Alzheimer’s disease biomarker**”. npj Nanophoton. 1, 42 (2024). <https://doi.org/10.1038/s44310-024-00036-3>
- Mylonakis M., Marakis E., Zacharopoulos A., **Tampakaki M.**, Papamatheakis J., Papazoglou D., Zacharakis G. , “**A novel adaptive optics illumination device for in vivo imaging of fluorescently labeled specimens**”, Proc. SPIE 12630, Advances in Microscopic Imaging IV, 1263008, European Conferences on Biomedical Optics (ECBO), 2023, <https://doi.org/10.1117/12.2670906>
- Tampakaki M.**, Oraiopoulou M.E., Tzamali E., Tzedakis G., Makatounakis T., Zacharakis G., Papamatheakis J., Sakkalis V., “**PML Differentially Regulates Growth and Invasion in Brain Cancer**”, International Journal of Molecular Sciences. 2021; 22(12):6289. <https://doi.org/10.3390/ijms22126289>
- Oraiopoulou M.E., **Tampakaki M.**, Tzamali E., Tamiolakis T., Makatounakis V., Vakis F. A., Zacharakis G., Sakkalis V., Papamatheakis J., “**A 3D tumor spheroid model for the T98G Glioblastoma cell line phenotypic characterization**”, Tissue and Cell, Elsevier, 2019

## PARTICIPATION IN CONFERENCES

### Oral Presentations

- Tampakaki M.**, Oraiopoulou M. E., Tzamali E., Tzedakis G., Psycharakis S., Zacharakis G., Sakkalis V., Papamatheakis J., “**Studying the role of PML in GB using in silico cancer predictive models and advanced molecular imaging techniques**”, Clinical and Translational Oncology Conference 2020, Virtual Edition
- Tampakaki M.**, “**PML and Neoplasia - The Role of PML in Glioblastoma Evolution**”, Clinical and Translational Oncology Conference 2019, Heraklion, Greece
- Tampakaki M.**, Oraiopoulou M.E., Psycharakis S., Tzamali E., Zacharakis G., Sakkalis V., Vakis A., Papamatheakis J., “**The Physiological Effects of the Promyelocytic Leukemia Protein on the U87MG Glioblastoma Cell Line**”, 33<sup>rd</sup> Annual Congress Hellenic Neurosurgical Society & 4<sup>th</sup> Congress SeENS 2019, Southeast Europe Neurosurgical Society, Thessaloniki, Greece

### Abstracts/Posters

- Tampakaki M.**, Tzamali E., Makrygiannaki E. Tzedakis G., Mylonakis M., Marakis E., Sidiropoulou K., Sakkalis V., Papamatheakis J., Zacharakis G., “**A Tripartite Approach through In Vitro, Ex Vivo, and In Silico Modelling for Deeper Understanding of Glioblastoma**”, 19<sup>th</sup> European Molecular Imaging Meeting (EMIM), 2024, Porto, Portugal

2. **Tampakaki M.**, Tzamali E., Tzedakis G., Zacharakis G., Sakkalis V., Papamatheakis J., *"PML-driven glioblastoma pathophysiology: Insights from experimental models and computational simulations"*, 1<sup>st</sup> Heidelberg Conference on Cancer Neuroscience, **2023**, Hedelberg, Germany
3. **Tampakaki M.**, Tzamali E., Tzedakis G., Makrygiannaki E., Mylonakis M., Marakis E., Zacharakis G., Sakkalis V., Papamatheakis J., *"Brain cancer evolution under the prism of intra tumoral heterogeneity"*, 18<sup>th</sup> European Molecular Imaging Meeting (EMIM), **2023**, Salzburg, Austria
4. Makrygiannaki E., **Tampakaki M.**, Tzamali E., Zacharakis G., Sidiropoulou K., Sakkalis V., Papamatheakis J., *"Modeling PML-mediated Glioblastoma Growth Dynamics: Insights from Spheroid-Based Studies and Brain Tissue Slice Implantation"*, 2<sup>nd</sup> International Conference on Nanotechnologies and Bionanoscience "NanoBio 2023", **2023**, Heraklion Crete, Greece
5. **Tampakaki M.**, Tserevelakis G.J., Katsoli A-A., Tzamali E., Sakkalis V., Papamatheakis J., Sidiropoulou K., Zacharakis G., *"Ex vivo hybrid imaging of human brain cancer"*, European Molecular Imaging Meeting (EMIM), 15-18 March, **2022**, Thessaloniki, Greece
6. **Tampakaki M.**, Oraiopoulou M.E., Tzamali E., Tzedakis G., Psycharakis S., Zacharakis G., Sakkalis V., Papamatheakis J., *"In Vitro-In Silico Integration of PML-mediated Glioblastoma Evolution"*, 15<sup>th</sup> European Molecular Imaging Meeting (EMIM), 2020, Virtual Edition
7. **Tampakaki M.**, Oraiopoulou M.E., Psycharakis S., Tzamali E., Zacharakis G., Sakkalis V., Papamatheakis J., *"The role of Promyelocytic Leukemia protein pathways in brain cancer"*, 12<sup>th</sup> FORTH Retreat, ICE-HT, 2019, Patras, Greece
8. **Tampakaki M.**, Oraiopoulou M.E., Tzamali E., Zacharakis G., Sakkalis V., Papamatheakis J., *"The effect of pathological developmental pathways in human brain cancer physiology"*, 28<sup>th</sup> meeting of the Hellenic Society for Neuroscience", 2019, Heraklion, Greece
9. **Tampakaki M.**, Oraiopoulou M.E., Psycharakis S., Tzamali E., Sakkalis V., Zacharakis G., Papamatheakis J., *"The role of PML in Glioblastoma physiology"*, 4<sup>th</sup> ESMI Imaging Summer School TOPIM-TECH, 2019, Chania, Greece
10. **Tampakaki M.**, Oraiopoulou M.E., Psycharakis S., Tzamali E., Sakkalis V., Zacharakis G., Papamatheakis J., *"Light Sheet Fluorescence Microscopy imaging of Promyelocytic Leukemia protein physiologic effects on the U87MG Glioblastoma cell line"*, 14<sup>th</sup> European Molecular Imaging Meeting (EMIM), 2019, Glasgow, Scotland, UK

## SKILLS AND ACCREDITATIONS

### FELASA

ID: 051/15

Functions: A, B, C, D

Mice, Rats, Zebrafish

### Languages

Greek: Native

English: Certificate of Proficiency (ECPE-C2),

University of Michigan and Edexcel, Level 5

German: Goethe-Zertifikat, B2

### Other Skills and Interests

Driving License Category B

Classical and contemporary dance, Theater