

Mariam - Eleni Oraiopoulou, PhD

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Curriculum Vitae

Current Appointment

Collaborating Researcher at the Computational Bio-Medicine Laboratory (CBML) at the Institute of Computer Science (ICS) of the Foundation for Research & Technology – Hellas (FORTH)

Post-doctoral Fellow, Laboratory for Biophotonics and Molecular Imaging (LBMI), Institute of Electronic Structure and Laser (IESL) of the Foundation for Research & Technology – Hellas (FORTH)

Research Interests

Neurobiology of the Central Nervous System. In particular, establishment of human brain cancer *in vitro-in vivo-in silico* models and translation of imaging biomarkers in interplay with mathematical modeling. Also, electrophysiology of the neuroglial network.

h-index: 4

Citations: 27

Nationality: Greek

Date of birth: 13/02/1989, Athens

A. Education

2015-2018: PhD in (Computational) Neurosciences – NeuroOncology

School of Medicine, University of Crete, GR-70013, Heraklion, Crete, Greece

Institute of Computer Science, Foundation for Research and Technology – Hellas (ICS-FORTH), GR-70013, Heraklion, Crete, Greece

2012-2014: Master Degree in Brain and Mind Sciences

Interdisciplinary Graduate Programme organized by University of Crete and Athens, School of Medicine, University of Crete, GR-70013, Heraklion, Crete, Greece

Grade: 8.45 “Very Good”

2010-2011: Master Degree in Biological Applications and Technology

Department of Biological Applications and Technology, School of Health Sciences, University Campus of Ioannina, GR- 45110, Ioannina, Greece

2006-2010: Bachelor Degree in Biological Applications and Technology

Department of Biological Applications and Technology, School of Health Sciences, University Campus of Ioannina, GR- 45110, Ioannina, Greece

Grade: 7.83 “Very Good” (*maximum 10% of graduates*)

2003-2006: High School Diploma

Municipality of Eretria, GR- 34008, Eretria, Evia, Greece

Grade: 18.1 “Excellent”

B. Languages

Greek: Native

English: Certificate in Advanced English, University of Cambridge

French: Diplôme d'études en langue française (DELFI, A1-B2), Ministère français de l'Éducation Nationale

C. Research Experience

02.2015-11.2018: PhD

"In silico tumor growth validation based on human brain cancer mouse models"

Faculty of Medicine, University of Crete

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

Supervisors:

1. A. Vakis, MD, PhD, Associate Professor of Neurology and Sensory Organs, University of Crete (vakisant@med.uoc.gr)

2. V. Sakkalis, Principal Researcher, Institute of Computer Science _FORTH (ICS-FORTH) (sakkalis@ics.forth.gr)

3. Mavroudis Dimitrios, MD, PhD, Professor of Medical Oncology, University of Crete (mavrudis@med.uoc.gr)

In brief: The project combines the use of patient-specific computer based models and both *in vitro* and *in vivo* brain cancer models, including patient-derived models and clinical studies. Tissue from naïve patients with (high grade) brain cancer is excised, as routinely done. Part of this tissue is used for the orthotopic/heterotopic transplantation of immunodeficient mice. Samples from the same tissue are also used for 3D cell cultures generation. These cultures are pharmaceutically screened with chemotherapeutic agents and also scanned to image physiologic biomarkers with advanced imaging modalities. All data collected are translated and used to initialize, parametrize and validate glioma growth computational algorithms.

- **Trainees:** 5 lab rotations, 2 undergraduate theses and 1 postgraduate thesis were guided
- **Invited Lectures:** Neurosurgery Course (A. Vakis, Medical School), Brain Connectivity Analysis Using EEG/MEG (V. Sakkalis, Medical School), Bioinformatics and Simulation of Physiological Systems (Tsiqnakis Manolis, Department of Informatics Engineering)

09.2013-11.2014: Master Thesis

"Magnetic Resonance Imaging (MRI) in human brain cancer: the physiology underneath and perspectives"

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

Supervisors:

1. K. Marias, Principal Researcher, Institute of Computer Science _FORTH (ICS-FORTH) (kmarias@ics.forth.gr)

2. V. Sakkalis, Principal Researcher, Institute of Computer Science _FORTH (ICS-FORTH) (sakkalis@ics.forth.gr)

3. I. Charalampopoulos, Associate Professor of Pharmacology, University of Crete (gharalab@med.uoc.gr)

In brief: *In silico* estimations regarding Dynamic Contrast-Enhanced MRI (DCE-MRI) biomarkers and the effect of vasculature in human glioblastoma (GB). Computational models used for patient-specific tumor growth prediction and whole-body tracer kinetics estimation in putative lesions.

02-07.2013: Lab-rotation

"Single neuron description in the rat Superior Colliculus (SC)"

Laboratory of Cellular Physiology, Department of Basic Sciences _ Physiology Group, School of Medicine, University of Crete

Supervisor: Y. Dalezios, Assistant Professor of Physiology, University of Crete and Computational Neuroscience group, Applied and Computational Mathematics (IACM) _ FORTH (dalezios@med.uoc.gr)

In brief: Stereotactic brain surgery with *in vivo* extracellular recording and juxtacellular labeling of single neurons. Transcardial fixation of the rat brain and slicing using vibratome. Immunohistochemistry for electron microscopy. Embedding and visualization of the labeled structures. Drawing using light microscopy. Digitization and full reconstruction of the neurons. Off-line analysis of electrophysiological data. Experience in the University's Animal Facility.

2010-2011: Diploma Thesis

"Study and Investigation of metabolites via Nuclear Magnetic Resonance (NMR)"

Laboratory of Physical Chemistry, Department of Biological Applications and Technology, School of Health Sciences, University of Ioannina

Supervisors:

1. A. Troganis, Professor of Physical Chemistry of Biological Systems and Nuclear Magnetic Resonance Applications, University of Ioannina (atrogani@cc.uoi.gr)

2. C. Psarropoulou, Professor of Animal Physiology, University of Ioannina (cpsarrop@uoi.gr)

In brief: Diplomatic research investigating the metabolic effect of dictamnus tea ingestion in human urinary samples via NMR. Biological fluid sampling and preparing for NMR experiments. NMR spectra analysis. Metabolic content identification and statistical analysis. Determination of total phenolic and flavonoid concentration.

2008-2010: Voluntarily participation in zoologic scientific projects as an undergraduate student

Zoology Laboratory, Department of Biological Applications and Technology, School of Health Sciences, University of Ioannina

Supervisor: I. Leonardos, Professor, Animal Biology with emphasis on Ichthyology, University of Ioannina (leonard@cc.uoi.gr)

In brief: Research training in Animal Biology regarding field sampling, population dynamics, artificial inter-species reproduction, histology, Leica stereomicroscopy, capturing photos and data statistical analysis of several marine species.


D. Scholarships/Awards

08.2017-07.2018: General Secretariat for Research and Technology (GSRT) and Hellenic Foundation for Research and Innovation (HFRI) (Scholarship Code: 130178/I2/31-7-2017)


06.2016: Winning prize of the best free announcement in the 30th Panhellenic Conference of Neurosurgery


03.2015-12.2015: Trainee / Associated Researcher Fellowship funded by FORTH


E. Publications

J5 - Oraiopoulou M.E., Tampakaki M., Tzamali E., Tamiolakis T., Makatounakis V., Vakis F. A., Zacharakis G., Sakkalis V., and Papamatheakis J., **"A 3D tumor spheroid model for the T98G Glioblastoma cell line phenotypic characterization"**, Tissue and Cell, Elsevier, **2019**, Vol. 59, pp. 39-43 (issue cover image) 

J4 - Oraiopoulou M.E., Tzamali E., Tzedakis G., Liapis E., Zacharakis G., Vakis A., Papamatheakis J., Sakkalis V., **"Integrating in vitro experiments with in silico approaches for Glioblastoma invasion: the role of cell-to-cell adhesion heterogeneity"**, Scientific Reports, **2018**, 8(1): p. 16200 


J3 - M.-E. Oraiopoulou, E. Tzamali, G. Tzedakis, A. Vakis, J. Papamatheakis, and V. Sakkalis, **"In Vitro/In Silico Study on the Role of Doubling Time Heterogeneity among Primary Glioblastoma Cell Lines"**, BioMed Research International, **2017**. vol. 2017, Article ID 8569328, 12 pages 


J2 - Takis G.P., Oraiopoulou M.E., Konidaris C., Troganis N.A., **"¹H-NMR based metabolomics study for the detection of the human urine profile metabolic effects of Origanum Dictamnus ingestion"**, Food and Function, **2016**. 7: p. 4104-4115 

J1 - Oraiopoulou M.E. and Roniotis A., Tzamali E., Kontopodis E., Van Cauter S., Sakkalis E., Marias K., **"A proposed paradigm shift in initializing cancer predictive models with DCE-MRI based PK parameters: A feasibility study"**, Cancer Inform, **2015**. 14(Suppl 4): p. 7-18 

F. Participation in Conferences

Conference Papers

C4 - S.E. Psycharakis, E. Liapis, A. Zacharopoulos, M.E. Oraiopoulou, C. Aivalioti, V. Sakkalis, J. Papamatheakis, J. Ripoll, G. Zacharakis. **"High resolution 3D imaging of primary and secondary tumor spheroids using multicolor multi-angle Light Sheet Fluorescence Microscopy (LSFM)"**, Proc. SPIE 11076, Advances in Microscopic Imaging II, **2019**. 

C3 - S. E. Psycharakis, E. Liapis, A. Zacharopoulos, M.-E. Oraiopoulou, J. Papamatheakis, V. Sakkalis, and G. Zacharakis, **"High resolution volumetric imaging of primary and secondary tumor spheroids using multi-angle Light Sheet Fluorescence Microscopy (LSFM)"**, 40th Annual International Conference of the IEEE in Engineering in Medicine and Biology Society (EMBC), **2018**. 

C2 - Spanakis M., Oraiopoulou M.E., Tzamali E., Sakkalis V., Maris T. G., Papadaki E., Karantanis A., Marias K., **"P16.33AN IN SILICO ESTIMATION OF THE PHARMACOKINETIC PROFILE AND THE**

DISPOSITION OF GD-DTPA IN BRAIN TUMOR LESIONS OF DIFFERENT VASCULATURE THROUGH PBPK MODELS, Neuro-Oncology, **2014**. 16(Suppl 2): p. ii85-ii86

C1 - Liasko R., Anastasiadou Ch., Ntakis A., **Oraiopoulou M.E.**, and Leonardos I. D., **“Does the rostral dimorphism affect the life traits of Hippolyte sapphica (crustacea: decapoda: caridea)?”**, 10th Colloquium Crustacean Decapoda Mediterranean, Athens, Greece, **2012**.

Oral Presentations

O4 - “The Temozolomide-Doxorubicin paradox in Glioblastoma preclinical drug screening”, 33rd Annual Congress of Hellenic Neurosurgical Society, Thessaloniki, Greece (**2019**)

O3 - “Computational prediction of the invasive pattern observed in primary and secondary Glioblastoma spheroids”, Conference of Clinical and Translational Oncology, Heraklion, Greece (**2017**)

O2 - “ΝΕΟ ΜΟΝΤΕΛΟ ΕΡΜΗΝΕΙΑΣ ΤΗΣ ΔΙΗΘΗΤΙΚΗΣ ΣΥΜΠΕΡΙΦΟΡΑΣ ΤΟΥ ΓΛΟΙΟΒΛΑΣΤΩΜΑΤΟΣ: *IN VITRO* ΜΕΛΕΤΗ”, 31^o Πανελλήνιο Συνέδριο Νευροχειρουργικής, Ιωάννινα, Ελλάδα (**2017**)

O1 - “ΠΑΡΑΣΚΕΥΗ ΖΩΙΚΩΝ ΜΟΝΤΕΛΩΝ ΚΑΙ ΠΡΩΤΟΓΕΝΩΝ ΚΥΤΤΑΡΟΚΑΛΛΙΕΡΓΕΙΩΝ ΑΠΟ ΙΣΤΟΛΟΓΙΚΗ ΔΕΙΓΜΑΤΟΛΗΨΙΑ ΑΣΘΕΝΩΝ ΜΕ ΓΛΟΙΟΒΛΑΣΤΩΜΑ (Πρόδρομη ανακοίνωση)”, 30^o Πανελλήνιο Συνέδριο Νευροχειρουργικής, Βόλος, Ελλάδα (**1st Prize Award, 2016**)

Abstracts/ Posters

A19 - M. Tampakaki, **M.E. Oraiopoulou**, E. Tzamali, G. Zacharakis, V. Sakkalis, J. Papamatheakis (**2019**) “The effect of the pathological developmental pathways in human brain cancer physiology”, 28th meeting of the Hellenic Society for Neuroscience (HSFN), Heraklion, Greece

A18 - **M.E. Oraiopoulou**, E. Tzamali, S. Psycharakis, E. Parasiraki, G. Tzedakis, AF. Vakis, V. Sakkalis, J. Papamatheakis, and G. Zacharakis (**2019**) “Physiological description of patient-derived Glioblastoma cells using fluorescence imaging,” 4th ESMI Imaging technology summer workshop TOPIM TECH, MAICH-Chania, Greece

A17 - M. Tampakaki, **M.E. Oraiopoulou**, S. Psycharakis, E. Tzamali, V. Sakkalis, G. Zacharakis, and J. Papamatheakis, “The Role of PML in Glioblastoma Physiology” (**2019**) 4th ESMI Imaging technology summer workshop TOPIM TECH, MAICH-Chania, Greece

A16 - Tampakaki M., **Oraiopoulou M.E.**, Sakkalis V., Zacharakis G., Vakis A., Papamatheakis J. (**2019**) “The physiological effects of the promyelocytic leukemia protein on Glioblastoma”, 33rd Annual Congress of Hellenic Neurosurgical Society, Thessaloniki, Greece

A15 - **M.E. Oraiopoulou**, S.E. Psycharakis, E. Parasiraki, E. Tzamali, G. Tzedakis, A.F. Vakis, V. Sakkalis, J. Papamatheakis, G. Zacharakis (**2019**) “Light sheet fluorescence microscopy of the Temozolomide-Doxorubicin paradox in Glioblastoma in vitro preclinical drug screening”, 14th European Molecular Imaging Meeting (EMIM), Glasgow, UK

A14 - M. Tampakaki, **M.E. Oraiopoulou**, S.E. Psycharakis, E. Tzamali, V. Sakkalis, G. Zacharakis, J. Papamatheakis (**2019**) “Light sheet fluorescence microscopy of promyelocytic leukemia protein physiologic effects on the U87MG Glioblastoma cell line” , 14th European Molecular Imaging Meeting (EMIM), Glasgow, UK

A13 - S. Psycharakis, **M.E. Oraiopoulou**, E. Liapis, A. Zacharopoulos, J. Papamatheakis, V. Sakkalis and G. Zacharakis (**2018**) “Imaging cancer development and therapeutic response on patient-derived live cell organoids using multi-projection light sheet fluorescence microscopy”, World Molecular Imaging Congress, Seattle, WA, USA

A12 - **M-E Oraiopoulou**, S E Psycharakis, E Parasiraki, E Tzamali, G Tzedakis, A F Vakis, V Sakkalis, J Papamatheakis, G Zacharakis (**2018**) “Light sheet fluorescence microscopy imaging of primary Glioblastoma 3D cultures treated with Temozolomide and Doxorubicin”, 13th European Molecular Imaging Meeting (EMIM), San Sebastian, Spain

A11 - Stylianos Psycharakis, **Mariam-Eleni Oraiopoulou**, Evangelos Liapis, Athanasios Zacharopoulos, Joseph Papamatheakis, Vangelis Sakkalis and Giannis Zacharakis (**2018**) “Imaging cancer development

and therapeutic response on patient-derived live cell organoids using multi-projection light sheet fluorescence microscopy” World Molecular Imaging Congress, Seattle, WA, USA

A10 - **M.E. Oraiopoulou**, E. Tzamali, G. Tzedakis, E. Liapis, G. Zacharakis, A. Vakis, V. Sakkalis, J. Papamatheakis (2017) “Unforeseen invasive morphology observed in primary Glioblastoma cell line spheroids”, Chemical Biology of Disease Meeting, Heraklion, Greece (*presented by M.E. Oraiopoulou both as a poster and a speed talk*)

A9 - E. Parasiraki, **M.E. Oraiopoulou**, S. Psycharakis, V. Sakkalis, A. Vakis, G. Zacharakis, J. Papamatheakis (2017) “Glioblastoma preclinical drug screening in 2D and 3D primary cultures”, Chemical Biology of Disease Meeting, Heraklion, Greece (*presented by M.E. Oraiopoulou both as a poster and a speed talk*)

A8 - Tserevelakis G., Avtzi S., Tsagkaraki M., **Oraiopoulou M.E.**, Papamatheakis J., Zacharakis G. (2017) “Hybrid PhotoAcoustic and Confocal Laser Scanning Microscopy”, 12th Annual Meeting, European Molecular Imaging Meeting, Cologne, Germany

A7 - **M.E. Oraiopoulou**, S. Psycharakis, E. Tzamali, V. Sakkalis, A. Vakis, J. Papamatheakis, G. Zacharakis (2016) “Imaging pathophysiologic parameters of primary Glioblastoma spheroids with light sheet microscopy towards theranostic heuristics”, 11th annual event of the European Technology Platform on Nanomedicine, Heraklion, Greece co-organized by ETPN and FORTH – IESL

A6 - Κουγεντάκης Γ., Μανωλίτση Κ., **Ωραιοπούλου Μ.Ε.**, Παπαματθαϊάκης Ι., Βάκης Α. (2016) “ΠΑΡΟΥΣΙΑ ΜΕΤΑΣΤΑΤΙΚΩΝ ΚΥΤΤΑΡΩΝ ΣΤΟ ΑΙΜΑ ΑΣΘΕΝΩΝ ΠΑΣΧΟΝΤΩΝ ΑΠΟ ΓΛΙΟΒΛΑΣΤΩΜΑ. (Πρόδρομη παρουσίαση μικρής σειράς 6 περιστατικών).”, 30^ο Πανελλήνιο Συνέδριο Νευροχειρουργικής, Βόλος, Ελλάδα

A5 - E. Parasiraki, **M.E. Oraiopoulou**, V. Sakkalis, A. Vakis, G. Zacharakis, J. Papamatheakis (2016) “Drug screening in 2D and 3D primary glioblastoma cell cultures: A preliminary study”, 67th National Conference of the Hellenic Society of Biochemistry and Molecular Biology (HSBMB), Ioannina, Greece

A4 - E. Parasiraki, **M.E. Oraiopoulou**, S. Psycharakis, V. Sakkalis, A. Vakis, G. Zacharakis, J. Papamatheakis (2016) “Comparing primary to cell line glioblastoma cells in 2D and 3D cultures: A preliminary study”, EMBO summer workshop, Spetses, Greece

A3 - **M.E. Oraiopoulou**, S. Avtzi, S. Psycharakis, E. Tzamali, V. Sakkalis, J. Papamatheakis, A. Vakis, G. Zacharakis (2016) “Imaging glioblastoma pathophysiology on animal and 3D cell culture models to improve in silico predictability”, 1st ESMI Imaging technology summer workshop TOPIM TECH, MAICh-Chania, Greece

A2 - Spanakis M., **Oraiopoulou M.E.**, Tzamali E., Sakkalis V., Maris T. G., Papadaki E., Karantanis A., Marias K. (2014) “AN IN SILICO ESTIMATION OF THE PHARMACOKINETIC PROFILE AND THE DISPOSITION OF GD-DTPA IN BRAIN TUMOR LESIONS OF DIFFERENT VASCULATURE THROUGH PBPK MODELS”, 11th European Association of Neuro-Oncology (EANO) meeting, Turin, Italy

A1 - **Oraiopoulou M.E.**, Theodorou I., Tzanou A., and Dalezios Y. (2013) “IDENTIFICATION OF AN INTRALAMINAR BIPOLAR NEURON THAT RESPONDS TO VISUAL STIMULI IN THE RAT SUPERIOR COLLICULUS”, 26th Meeting of the Hellenic Society for Neuroscience (HSFN) jointly with FP7 REGPOT NEUROSIGN, Athens, Greece.

G. Summer Schools

- 4th Technology Summer Conference of the European Society for Molecular Imaging – ESMI, TOPIM TECH on “Resolution Revolution”, July 01-06, MAICh, Chania, Greece, **2019**
- 5th International Lab Animal Course of the Federation of European Laboratory Animal Science Associations (FELASA) on “Care and Use of Laboratory Animals: mice, rats and zebrafish”, June 4-15, University of Crete (Biology Department) and IMBB-FORTH, Heraklion, Greece, **2018**
- 1st Technology Summer Conference of the European Society for Molecular Imaging – ESMI, TOPIM TECH on “MULTIPARAMETRIC IMAGING”, July 10 – 15, MAICh, Chania, Greece, **2016**

- Biophotonics and Molecular Imaging (BiMI) Summer School, July 27 - 31, IESL- FORTH and Department of Biology, University of Crete, Heraklion, Greece, **2015**

H. Computer Skills

Excellent knowledge of **Microsoft Office tools** (Word, PowerPoint, and Excel)

Very good knowledge of electrophysiological data processing in **EEGLAB** (Matlab) and in **Spike2** software

Good knowledge of graphics software (**CanvasII, Fiji, Photoshop**)

Familiar with statistical software (**GraphPad**)

Experience in **MATLAB, C++** and **Python** programming environment and in simulator platform **SIMCYP®**

Other programs experienced (**SPSS** and **Simca-P**, molecular imaging software **PyMOL**)

I. Other Skills and Abilities

Certificate in FELASA (functions A, B, C and D)

Laboratory Safety knowledge regarding **Fire Safety, Safe use of chemicals - Chemical waste, and Safety issues in experiments with living organisms**

Red Cross **First Aid License** for citizens

Driving license Category B

Organizational: joined recreational radio student group at university (2 years) / organization of music festivals

Artistic – Sports: Dancing (15 years, classic, contemporary, traditional and latin), Theater (5 years), Swimming (2 years), Tae kwon do (4 years), Yoga, Cycling, Philatelist, Manufacturing wooden furniture

Voluntary: joined educational trips for bird-watching and demographic data collection with Hellenic Ornithological Society