

Mariam - Eleni Oraiopoulou, PhD

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Curriculum Vitae

Current Appointment

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

Research Interests

Neurobiology of the Central Nervous System (CNS). In particular, pathophysiology of the human brain cancer in interplay with imaging biomarkers and *in silico* modeling. Also, electrophysiology and histology of the mammalian brain regarding neurodegenerative diseases and dysfunctional circuitry.

Nationality: Greek

Date of birth: 13/02/1989, Athens

A. Education

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

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

Grade: 8.45 “Very Good”

Studies in Brain and Mind Graduate Programme in the University of Crete have duration of at least 2 years, the curriculum is equivalent to (at least) **120 ECTS**, while the 2nd year optionally includes a Postgraduate Thesis

2006-2011: Bachelor Degree in Biological Applications and Technology

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

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

Studies in the School of Biological Applications and Technology in the University of Ioannina have duration of 5 years, the curriculum is equivalent to **300 ECTS**, while the 5th year includes a two-semester diplomatic research

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 (DEL F I, A1-B2), Ministre 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, Assistant 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
- **Lectures:** 8 lectures were given in the courses Neurosurgery (A. Vakis, Medical School), Brain Connectivity Analysis Using EEG/MEG (V. Sakkalis, Medical School), Bioinformatics and Simulation of Physiological Systems (Tsiknakis Manolis, Department of Informatics Engineering)
- **Other:** Writing and approval of the scientific protocol by the General Hospital of Heraklion Scientific Committee (Protocol number: 442120205-2018) as regards the bioethical procedures and the protocols used.

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, Assistant 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, Faculty 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. Immunocytochemistry 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 Science and Technology, University of Ioannina

Supervisors:

1. A. Troganis, Associate 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 Science and Technology, University of Ioannina

Supervisor: I. Leonardos, Professor, Animal Biology with emphasis on Ichthyology, University of Ioannina (ileonard@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

08.2018-12.2018: Post Graduate Fellowship funded by FORTH

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)

01.2017-07.2017: Post Graduate Fellowship funded by FORTH

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

01.2016-12.2016: Post Graduate Fellowship funded by FORTH

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

10.2013-12.2014: Post Graduate Fellowship funded by FORTH

E. Publications (4/5 published)

Oraiopoulou M.E., Tampakaki M., Tzamali E., Tamiolakis T., Makatounakis V., Vakis F. A., Zacharakis G., Sakkalis V., Papamatheakis J., ***“The T98G Glioblastoma cell line phenotypic characterization”***, Tissue and Cell, Elsevier, **2018**. (under review)

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

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

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

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 (3)

S. E. Psycharakis, E. Liapis, A. Zacharopoulos, **M.-E. Oraipoulou**, 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)**", EMBC, 2018.

Spanakis M., **Oraipoulou M.E.**, Tzamali E., Sakkalis V., Maris T. G., Papadaki E., Karantanas 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

Liasko R., Anastasiadou Ch., Ntakis A., **Oraipoulou 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 (conference proceedings, 2012)

Oral Presentations (6)

- Stylianos Psycharakis, **Mariam-Eleni Oraipoulou**, 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
- **Ωραιπούλου M.E.** (2017) "Computational prediction of the invasive pattern observed in primary and secondary Glioblastoma spheroids" Conference of Clinical and Translational Oncology, Heraklion, Greece
- **Ωραιπούλου M.E.**, Τζαμαλή Ε., Παπαματθαϊάκης Ι., Σακκαλής Ε., Μανωλίτση Κ., Βάκης Α. (2017) "ΝΕΟ ΜΟΝΤΕΛΟ ΕΡΜΗΝΕΙΑΣ ΤΗΣ ΔΙΗΘΗΤΙΚΗΣ ΣΥΜΠΕΡΙΦΟΡΑΣ ΤΟΥ ΓΛΟΙΟΒΛΑΣΤΩΜΑΤΟΣ: IN VITRO ΜΕΛΕΤΗ" 31^ο Πανελλήνιο Συνέδριο Νευροχειρουργικής, Ιωάννινα, Ελλάδα
- Tseravelakis G., Avtzi S., Tsagkaraki M., **Oraipoulou M.E.**, Papamatheakis J., Zacharakis G. (2017) "Hybrid PhotoAcoustic and Confocal Laser Scanning Microscopy" 12th Annual Meeting, European Molecular Imaging Meeting, Cologne, Germany
- Κουγεντάκης Γ., Μανωλίτση Κ., **Ωραιπούλου M.E.**, Παπαματθαϊάκης Ι., Βάκης Α. (2016) "ΠΑΡΟΥΣΙΑ ΜΕΤΑΣΤΑΤΙΚΩΝ ΚΥΤΤΑΡΩΝ ΣΤΟ ΑΙΜΑ ΑΣΘΕΝΩΝ ΠΑΣΧΟΝΤΩΝ ΑΠΟ ΓΛΟΙΟΒΛΑΣΤΩΜΑ. ΠΡΟΔΡΟΜΗ (Πρόδρομη παρουσίαση μικρής σειράς 6 περιστατικών)." 30^ο Πανελλήνιο Συνέδριο Νευροχειρουργικής, Βόλος, Ελλάδα
- **Ωραιπούλου M.E.**, Παπαματθαϊάκης Ι., Ζαχαράκης Ι., Σακκαλής Ε., Μανωλίτση Κ., Βάκης Α. (2016) "ΠΑΡΑΣΚΕΥΗ ΖΩΙΚΩΝ ΜΟΝΤΕΛΩΝ ΚΑΙ ΠΡΩΤΟΓΕΝΩΝ ΚΥΤΤΑΡΟΚΑΛΛΙΕΡΓΕΙΩΝ ΑΠΟ ΙΣΤΟΛΟΓΙΚΗ ΔΕΙΓΜΑΤΟΛΗΨΙΑ ΑΣΘΕΝΩΝ ΜΕ ΓΛΟΙΟΒΛΑΣΤΩΜΑ (Πρόδρομη ανακοίνωση)" 30^ο Πανελλήνιο Συνέδριο Νευροχειρουργικής, Βόλος, Ελλάδα
Winning prize of best free announcement

Posters (9)

- **M-E Oraipoulou**, 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
- **M.E. Oraipoulou**, 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 **Mariam-Eleni Oraipoulou** both as a poster and a speed talk)
- E. Parasiraki, **M.E. Oraipoulou**, 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 **Mariam-Eleni Oraipoulou** both as a poster and a speed talk)

- **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
- 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
- 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
- **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
- Spanakis M., **Oraiopoulou M.E.**, Tzamali E., Sakkalis V., Maris T. G., Papadaki E., Karantanas 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.
(presented by **Mariam-Eleni Oraiopoulou**)
- **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 Neuroscience Society jointly with FP7 REGPOT NEUROSIGN, Athens, Greece.

G. Summer Schools

- 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. Conferences Attended

International

1. 13th European Molecular Imaging Meeting (EMIM), San Sebastian, Spain, **2018**
2. Chemical Biology of Disease Meeting, Heraklion, Greece, **2017**
3. 11th European Association of Neuro-Oncology (EANO) Meeting, Turin, Italy, **2014**
4. 12th Conference of Medicinal Chemistry (researcher honored: Dr. James D. Watson), University of Patras, **2011**
5. 1st Annual Neuroscience Symposium, “Stem Cells and the Nervous System: stem cell niches, transplantation, biotechnology”, organized jointly by the Medical Schools of the John Hopkins university and the University of Patras, **2010**

National

1. Conference of Clinical and Translational Oncology, Heraklion, Greece, **2017**
2. 31^o Πανελλήνιο Συνέδριο Νευροχειρουργικής, ΕΝΧΕ, Ιωάννινα, **2017**
3. 30^o Πανελλήνιο Συνέδριο Νευροχειρουργικής, ΕΝΧΕ, Βόλος, **2016**
4. 18^o Παγκύπριο Συνέδριο, «Κρίση και Εξαρτήσεις», ΚΕΝΘΕΑ, Πανεπιστήμιο Κύπρου, **2013**
5. 4^o Πανελλήνιο Συνέδριο Ελληνικής Εταιρείας Ελέγχου Λοιμώξεων, Αθήνα, **2011**

6. 2^o Επιστημονικό Συνέδριο, "Τεχνολογικές Εξελίξεις και Διδακτικές Εφαρμογές στην ΤΕΕ. Καινοτομικές δράσεις και προοπτικές ανάπτυξης", Ανώτατη Σχολή Παιδαγωγικής και Τεχνολογικής Εκπαίδευσης (Α.Σ.ΠΑΙ.Τ.Ε.), Αθήνα, **2011**
7. 4th Hellenic Congress of Hospital Dentistry, Hellenic Society of Hospital Dentistry, Athens, **2011**
8. 1st Congress of the Hellenic Society of Oral Medicine and Pathology, Athens, **2009**
9. 1st Scientific Conference in Early Intervention in Psychosis-Prevention, Treatment and Development of Services, «Psychiatric reform and early intervention in psychosis», Ioannina, **2007**
10. 59th National Conference of Biochemistry and Molecular Biology, Athens, Greece, **2007**

I. Workshops Attended

1. Scientific Writing Workshop « Journal Analysis : Maximizing the chances of getting your work published AND Building a Research Paper (using models like Swales and Feak's CARS to model and write articles)», Department of Chemistry, University of Crete, Heraklion, **2015**
2. Half-day Workshop «Applications of Physiomics' Virtual Tumour to Immunotherapy and Translational Science», Physiomics PLC, Hersonissos, Crete, **2015**
3. Workshop «Attention and Consciousness», University of Crete, Department of Philosophy and Social Studies, Interdisciplinary Graduate Programme in the Brain and Mind Sciences, Rethymno, **2014**
4. «Laboratory Safety» Seminar, IMBB-FORTH, FORTH, Heraklion, **2014**
5. Ημερίδα «Νευροβιολογία και Παιδοψυχιατρική: Από τη θεωρία στην πράξη», Α' Ψυχιατρική Κλινική, Πανεπιστήμιο Αθηνών, Αθήνα, **2012**
6. Επιμορφωτικό Σεμινάριο με θέμα: «Μαθησιακές δυσκολίες στην Εκπαίδευση», Ανώτατη Σχολή Παιδαγωγικής και Τεχνολογικής Εκπαίδευσης (Α.Σ.ΠΑΙ.Τ.Ε.), Αθήνα, **2009**
7. Εκπαιδευτική Ημερίδα «Εξέλιξη και Βιολογία», Τμήμα Βιολογικών Εφαρμογών και Τεχνολογιών, Πανεπιστήμιο Ιωαννίνων, **2008**

J. 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**[®] regarding drug pharmacokinetics and pharmacodynamics in virtual populations

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

K. 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 (13 years, classic, contemporary, traditional and latin), Theater (3 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