Rakovoliou Elena Biologist

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Professional Summary

Ph.D. candidate in Medical School, University of Ioannina specializing in stem cell biology, vascular morphogenesis, and molecular signaling. Determining the VEGF-induced circuit regulating vasculogenesis during vessel engineering by employing phosphoproteomics, single cell RNAseq, single cell ATACseq and bioinformatics. Dedicated to driving translational research through strong analytical skills and collaborative teamwork.

Education

Phd in Medical School University of Ioannina, Greece,
Biomedical Research Institute (BRI)-Foundation for Research and Technology (FORTH)
2023 – present
Dissertation: "Molecular Mechanisms of Vascular Morphogenesis"
Funded by 5th HFRI Call for PhD Candidates – Ranked 2nd nationally
Collaboration: Max Planck Institute of Biochemistry, Mann-Lab/ BSRC Alexander Fleming
Supervisors: Prof. Theodore Fotsis, Rsc.A Carol Murphy

Master Degree in Molecular Cellular Biology & Biotechnology, University of Ioannina, Greece, Biomedical Research Institute (BRI)-Foundation for Research and Technology (FORTH)
2020 – 2022
Grade: 8,36/10 | Dissertation: "The role of ARF6 in human embryonic stem cell pluripotency and differentiation"
Grade od dissertation: 10/10
Supervisors: Prof. Theodore Fotsis, Rsc.A Carol Murphy

Integrated BSc, MSc (level 7 of the National and European Qualifications Framework-300 ECTS), Department of Biological Applications and Technologies, University of Ioannina,
Biomedical Research Institute (BRI)-Foundation for Research and Technology (FORTH)
2015 – 2020
Grade: 7,27/10 | Dissertation: "The role of ARF6 protein in the Action A signalling pathway",
Grade of dissertation: 10/10
Supervisors: Prof. Theodore Fotsis, Rsc.A Carol Murphy

Languages

Greek
Mother tongue

English
C2 level - University of Michigan ECPE (working language in the laboratory)

German
B2 level - Goethe Zetifikat

Skills

Personal Traits:
Creative, well-organized, adaptable, and goal-oriented; able to learn new skills quickly and persistently.

Interpersonal Skills:
Collaborative, positive, and responsible team player with strong problem-solving abilities.

Research experience

Project: "Molecular Mechanisms of Vessel Morphogenesis" (15009), Phd Student at the Biomedical Research Institute (BRI) in Fotsis-Murphy Lab
03/2024 – 07/2024 | Ioannina, Greece

- Investigating molecular mechanisms of vascular morphogenesis using hESCs and endothelial cells.

Scholarships / Awards

HFRI PhD Scholarship (5th Call) – Ranked 2nd in Proposal Evaluation, Hellenic Foundation for Research and Innovation,
Competitive 3-year funding awarded for doctoral research on "Molecular Mechanisms of Vascular Morphogenesis" under the 5th HFRI Call for PhD Candidates (Proposal No. 19452)
07/2024

Best poster award at 14th FORTH Retreat,
Molecular Mechanisms of Vessel Morphogenesis
10/2024
Elena Rakovoliou#, Maria Markou#, Eleni Bagli, Sofia Bellou, Theodore Fotsis and Carol Murphy

Member of the Hellenic Society of Biochemistry & Molecular Biology since 2022, 2022-present

Best poster presentation at 72nd Annual Conference of the Hellenic Society of Biochemistry & Molecular Biology (HSBMB),
"The role of ARF6 in human embryonic stem cell pluripotent and differentiation"
12/2022
Elena Rakovoliou, Angelos Papadopoulos, Maria Markou, Nikoleta Kostopoulou, Eleni Bagli, Sofia Bellou, Theodore Fotsis and Carol Murphy

Publications

The role of ARF6 in stem cell differentiation
Rakovoliou E#, Papadopoulos A#, Markou M, Bellou S, Apostolidi A, Bagli E, Heath J, Fotsis T, and Murphy C
Manuscript in preparation for submission to Stem Cell Reports.

The role of ARF6 in Activin A signalling
Papadopoulos A, Apostolidi A, **Rakovoliou E**, Bellou S, Markou M, Bagli E, Margariti M, Kyrkou A, Chira P, Tschari E, Chavrier P, Heath J, Fotsis T, and Murphy C
Manuscript in preparation for submission to J. Cell Science

Conferences / Presentations

75th Annual Conference of the Hellenic Society of Biochemistry & Molecular Biology (HSBMB), Poster: "Integrative Multi-Omics Analysis of VEGF-Driven Vasculogenesis from Human Pluripotent Stem Cells"
12/2025 | Athens, Greece

TERMIS-EU 2025 Congress (Tissue Engineering and Regenerative Medicine International Society, European Chapter),
Poster: "Molecular mechanisms of vessel morphogenesis"

74th Annual Conference of the Hellenic Society of Biochemistry & Molecular Biology (HSBMB), Posters: "Molecular Mechanisms of Vascular Morphogenesis", "The interaction of vascular cells and flow in vasculogenesis"

14th FORTH Retreat 2024,
Poster: "Molecular Mechanisms of Vessel Morphogenesis"
10/2024 | Ancient Olympia, Greece
*Awarded as best poster presentation-pitching at 14th FORTH Retreat

73rd Annual Conference of the Hellenic Society of Biochemistry & Molecular Biology (HSBMB),
Poster: "Activin A Signalling in Human Pluripotent Stem Cells"
12/2023 | Athens, Greece
Travel Grant awarded

72nd Annual Conference of the Hellenic Society of Biochemistry & Molecular Biology (HSBMB), Poster: "The role of ARF6 in human embryonic stem cell pluripotency and differentiation"
12/2022 | Patras, Greece
*Awarded as best poster presentation at 72nd Conference of HSBMB

- VEGF-A–induced transcriptomics, chromatin accessibility, and phosphoproteomics; role of flow and mural cells in vascular differentiation; project management and dissemination.
- Collaboration: Max Planck Institute of Biochemistry (Mann Lab).

Research Assistant at the Biomedical Research Institute (BRI) in Fotsis-Muphy Lab
10/2023 – 01/2024 | Ioannina, Greece
Brain Precision TAEDR-0535850
Participating in RNA-seq and proteomic analyses of endothelial and mural cells differentiated from hiPSCs of Parkinson's disease patients and controls within the *Brain Precision* program.

Project: "Development of novel therapeutic strategies against Parkinsons disease" (MIS 5095050), Research Assistant at the Biomedical Research Institute (BRI) in Fotsis-Murphy Lab
10/2023 – 03/2024 | Ioannina, Greece
Performed differentiation of hiPSCs to vascular progenitor cells under chemically defined protocol

Research Assistant at the Biomedical Research Institute (BRI) in Fotsis-Murphy Lab
06/2023 – 10/2023 | Ioannina, Greece
Project "Development of targeted therapeutic approaches against Parkinson's disease", (T2EDK-00852) with code IPS 5095050, acronym : PANTHER

Collaboration of Fotsis-Murphy Lab with Tzakos Lab,
Research Assistant at the Biomedical Research Institute (BRI)
10/2022 – 05/2023 | Ioannina, Greece
Microbiome Application Infrastructure in a Food System (FOODBIOMES-PI)
Investigated the effects of phenolic compounds and cereal extracts on cancer cell behavior using IncuCyte live-cell imaging, Confocal Imaging and flow cytometry.

Assistant teacher at the University of Ioannina
03/2022 – 09/2022 | Ioannina, Greece
Reference number: 13891/2022 and Cod. Project ELKE 83087 in the field of "Biology"
Supported courses in Biology and Clinical Chemistry; assisted in laboratory training for undergraduate students.

Assistant teacher at the University of Ioannina
07/2021 – 01/2022 | Ioannina, Greece
Ref. number 5087291 and Cod. Project ELKE: 82921 in the field of "Clinical Chemistry"
Supported courses in Biology and Clinical Chemistry; assisted in laboratory training for undergraduate students.

Summer Internship,
Biomedical Research Institute, BRI-FORTH, Ioannina, Greece
07/2019 – 08/2019 | Ioannina, Greece
Training course in general laboratory techniques in molecular and cellular biology

Voluntary supervision of laboratory technicians, Blood Donation Laboratories - Hematology and Biopathology Department of Serres General Hospital
12/2018 – 01/2019 | Serres, Greece

Voluntary supervision of laboratory technicians,
Hippocrates Ioannina Standard Diagnostic Center
07/2018 – 07/2018 | Ioannina, Greece

9th Young Scientists Forum of Hellenic Society of Biochemistry & Molecular Biology (HSBMB), Invited speaker for oral presentation: "The role of ARF6 in human embryonic stem cell and differentiation"
12/2022 | Patras, Greece

13th FORTH Retreat 2022, Poster: "The role of ARF6 in human embryonic stem cell pluripotency and differentiation"
07/2022 | Heraklion, Greece

Laboratory Experience-Techniques

Cell Biology:
- Human embryonic stem cell (hESC) expertise | culture | differentiation of hESC to vascular progenitor cells, mesendoderm, endoderm, ectoderm
- Extensive experience in culturing of transformed and immortalised cells (HEK-293) | Transfection
- Isolation and culture of primary endothelial cells (HUVECs)

Molecular Biology:
- Western blotting (Azzure Spot Imaging Systems)
- Indirect Immunofluorescence
- quantitative Reverse Transcription-Polymerase Chain Reaction (qRT-PCR)
- Polymerase Chain Reaction (PCR)
- Cloning of the target gene in pECFP vectors (constructs made: pECFP-SMAP1, SMAP1-pECFP, untagged SMAP1),
- Fluorescence Resonance Energy Transfer (FRET)
- Endocytosis assays

Advanced Technologies:
- Single-cell RNAseq & single-cell ATACseq (sample prep) (Loupe Browser)
- Proteomics: phospho/total, (R, DIANN, Perseus)
- Flow cytometry (BDFACSAriaIII)
- Flow cytometry cell sorting (BDFACSAriaIII) (independent operation)

Imaging
- Confocal microscopy (Leica TCS SP5 II confocal microscope, TIRF Micriscope Nikon Microphot 84) | Imaging, Quantification
- Live Cell Imaging (IncuCyte ZOOM System)
- Fluorescence microscopy

Data Analysis
- GraphPad Prism
- ImageJ
- Cytoscape
- Perseus
- DIANN
- R (beginner)