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(2,593 citations, h-index:
19)

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EDUCATION

- 1997 Bachelor's in Chemistry, Department of Chemistry, University of Athens, Greece
- 1998 Master of Science (MSc), Department of Biochemistry, School of Medical Sciences, University of Bristol, UK / In vivo monitoring secretory granule behavior using recombinant fluorescent proteins
- 2003 PhD in Chemistry / Department of Chemistry, University of Athens, Greece / Development of diagnostic assays based on the polymerase chain reaction (PCR) and the chemiluminescence detection for the quantification of prostate cancer biomarkers in peripheral blood.

RESEARCH FIELDS

The central focus of my research has been on studying the molecular mechanisms of secretion and degradation for the protein α -synuclein, which is of particular importance in the pathobiology, pathology propagation and disease progression of Parkinson's Disease and other related neurodegenerative conditions collectively called synucleinopathies. Significant contributions in this field were **(i)** the discovery that part of cytoplasmic α -synuclein is secreted in association with exosomes, small vesicles of endocytic origin that have been implicated in cell-to-cell communication, and **(ii)** the elucidation of an inter-neuronal mechanism for α -synuclein secretion *in vivo* that is tightly controlled by the neurotransmitter GABA. The major research directions of my lab are: **(a)** the identification of the oligomeric α -synuclein species that burden the proteasome degradation system; **(b)** the investigation of the interactions of α -synuclein and its oligomeric forms with free fatty acids in a cellular context; **(c)** the elucidation of key players in the secretory pathway of α -synuclein in cellular and animal models with emphasis on the operation of voltage-gated Ca^{2+} channels and ATP-dependent K^{+} channels. Important questions to address towards this direction include which molecules could trigger α -synuclein release, how neurons crosstalk in a certain brain area to accomplish this release and how such mechanisms are modified or become compromised under pathological conditions. Towards this direction, I have established an *in vivo* brain microdialysis approach coupled with an ultra-sensitive in-house ELISA to monitor and pharmacologically manipulate α -synuclein secretion in mouse brain parenchyma; **(d)** the role of α -synuclein in neuroinflammation which is a major component of Parkinson's disease pathobiology with emphasis on the effects of α -synuclein assemblies in microglia and astrocyte activation; **(e)** the development of sensitive and specific assays as tools to evaluate the potential use of certain biomolecules as biomarkers for the diagnosis or staging of human disease.

EDUCATIONAL EXPERIENCE

UNDERGRADUATE COURSES

- Biochemistry I/ Υποχρεωτικό/ Department of Chemistry /
- Biochemistry II (+ Laboratory practicals) / Επιλογής / Department of Chemistry

GRADUATE COURSES

- Graduate Programme: “Clinical Biochemistry – Molecular Diagnostics” / Topic of lecture: “DNA hybridization assays”

AWARDS

- 1st Novartis Award for Poster Presentation, 17th Joint Meeting of the British Endocrine Societies, Edinburgh, UK (1998)
- Youth Travel Fund (YTF) Grant, EMBO-FEBS workshop on Amyloid formation, Florence, Italy (2006)
- Travel Grant, 1st International Meeting on “ α -Synuclein in Health and Disease”, Lozanne, Switzerland (2008)
- George Papanikolaou Award from the National and Kapodistrian University of Athens for the best research article entitled: “Cell-derived α -synuclein oligomeric species are targeted to, and impair, the 26S proteasome.” (2009)
- Scholarship for the participation in the 23rd Biennial ISN Meeting, Athens, Greece (2011)
- Best Oral presentation, BRFAA Summit Meeting, Athens, Greece (2011)
- Included in the 10 best candidates (from the 143) applied to the competition of innovation of the Hellenic Association of Pharmaceutical Companies (SFEE) (2013)
- Travel grant for the meeting “Grand Challenges in Parkinson’s Disease: Focus in alpha-synuclein”, Grand Rapids, Michigan, USA (2015)
- Travel grant, “7th ISN Special Neurochemistry Conference on SYNAPTIC FUNCTION AND DYSFUNCTION IN BRAIN DISEASES”, Coimbra, Portugal (2016)

RESEARCH GRANTS

- Rapid Response Innovation Award: “In vivo assessment of alpha-synuclein secretion” / Funding agent: Michael J. Fox Foundation, USA / Role: PI / Budget: 75,000 \$ / 2008 – 2009
- Investigation of the mechanisms involved in alpha-synuclein secretion in vivo” / Funding agent: Michael J. Fox Foundation, USA / Role: PI / Budget: 150,000 \$ / 2010 – 2012
- “Investigation of the mechanisms involved in alpha-synuclein secretion in vivo” (Follow up grant) / Funding agent: Michael J. Fox Foundation, USA / Role: PI / Budget: 150,000 \$ / 2012 – 2014
- “Identification and targeting of the Ca^{2+} channels that selectively regulate α -synuclein release” / Funding agent: Michael J. Fox Foundation, USA / Role: PI / Budget: 100,000 \$ / 2018 – 2019
- “Targeting secretion and misfolding of α -synuclein to reduce transmission of pathology in Parkinson’s disease: An interdisciplinary approach coupling neurobiology with biotechnology” / Funding agent: Hellenic Foundation for Research and Innovation (HFRI) and General Secretariat of Research and Technology (GSRT) / Role: PI / Budget: 180,000 Euro / 2018 – 2021
- “Investigation of α -synuclein transport and release to uncover the cause of Parkinson’s Disease pathogenesis” / Funding agent: Hellenic Foundation for Research and Innovation (HFRI) and General Secretariat of Research and Technology (GSRT) / Role: PI / Budget: 180,000 Euro / 2020 – 2023
- “Systematic development and commercial exploitation of novel aggregation inhibitors of the protein α -synuclein” / Funding agent: General Secretariat of Research and Technology (GSRT) and EYDE-ETAK / Role: co-PI / Budget: 103,246 Euro / 2021-2023

REVIEWER OF SCIENTIFIC JOURNALS

BMC Neuroscience, Journal of Clinical Investigation, Cellular and Molecular Neurobiology, Movement Disorders, Journal of Neuroscience Methods, Journal of Neuroscience, Journal of Neurochemistry, Experimental Gerontology, Brain Research, Microchimica Acta, Journal of Neuroimmunology, Journal of Neuroinflammation, JPD Parkinson’s Disease, Molecular Neurobiology, Journal of Extracellular Vesicles

EDITOR OF BOOKS AND SPECIAL VOLUMES

Guest co-editor for the Special Issue “Recent Advances in alpha-Synuclein Neurobiology in Health and Disease”, Biomolecules (March, 2022)

ADDITIONAL INFORMATION

- Presentations at conferences: **18**
- Supervision of doctoral theses: **4 (in progress)**
- Supervision of graduate students: **3**
- Supervision of undergraduate students: **16**
- PI in **6** Research Programs
- Collaboration/Participation in **9** Research Programs
- Reviewer in Research Programs: **3**

SELECTED PUBLICATIONS (link OF PUBLICATIONS)

<https://www.scopus.com/authid/detail.uri?authorId=24554161200>

1. Xylaki M, Boumpourea I, Kokotou MG, Marras T, Papadimitriou G, Kloukina I, Magrioti V, Kokotos G, Vekrellis K, Emmanouilidou E. (2020) Changes in the cellular fatty acid profile drive the proteasomal degradation of α -synuclein and enhance neuronal survival. **Faseb J.** 34(11):15123-15145.
2. Emmanouilidou E*, Minakaki G, Keramioti MV, Xylaki M, Balafas E, Chrysanthou-Piterou M, Kloukina I, Vekrellis K. (2016) GABA transmission via ATP-dependent K⁺ channels regulates α -synuclein secretion in mouse striatum. *Brain* 139:871-90. (*: corresponding author)
3. Emmanouilidou E., Melachroinou K., Roumeliotis T., Garbis S.D., Maria Ntzouni M., Margaritis L.H., Stefanis L., Vekrellis K., Cell-produced Alpha-Synuclein Is Secreted in a Calcium-dependent fashion by Exosomes and Impacts Neuronal Survival. **Journal of Neuroscience** 30, 6838, 2010.
4. Emmanouilidou E., Stefanis L., and Vekrellis K., Cell-derived α -synuclein oligomeric species are targeted to, and impair, the 26S proteasome. **Neurobiology of Aging**, 31, 953, 2010.
5. Emmanouilidou E., Elenis D., Papisilekas T., Stranjalis G., Gerozissis K., Ioannou P.C., and Vekrellis K. Assessment of α -synuclein secretion in mouse and human brain parenchyma. **PLoS ONE** 6 (7), e22225, 2011.
6. Emmanouilidou E., Papagiannakis N, Kouloulia S, Galaziou A, Antonellou R, Papadimitriou D, Athanasiadou A, Bozi M, Koros C, Maniati M, Vekrellis K, Ioannou PC, Stefanis L (2020) Peripheral alpha-synuclein levels in patients with genetic and nongenetic forms of Parkinson’s Disease. **Parkinsonism & Related Disorders**, 73:35-40.
7. Karampetsou M, Vasia Sykioti VS, Leandrou E, Melachroinou K, Lambiris A, Giannelos A, Emmanouilidou E and Vekrellis K (2020) Intrastratial Administration of Exosome-Associated Pathological Alpha-Synuclein Is Not Sufficient by Itself to Cause Pathology Transmission. **Front. Neurosci.** doi.org/10.3389/fnins.2020.00246
8. Stefanis L, Emmanouilidou E., Pantazopoulou M, Kirik D, Vekrellis K, Tofaris GK (2019) How is alpha-synuclein cleared from the cell? **J Neurochem.** 150(5):577-590 (Review)
9. Emmanouilidou E., Vekrellis K. (2016) Exocytosis and spreading of normal and aberrant α -synuclein. **Brain Pathol.**, doi: 10.1111/bpa.12373 (Review).
10. Vekrellis K, Xilouri M, Emmanouilidou E., Rideout HJ, Stefanis L (2011) Pathological roles of α -synuclein in neurological disorders. **Lancet Neurol.** 10(11):1015-25 (Review).