

Athina N. Markou



Assistant Professor

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EDUCATION

- 2004 BSc in "Chemistry", Department of Chemistry, National and Kapodistrian University of Athens
- 2006 MSc in "Clinical Chemistry", Department of Chemistry, National and Kapodistrian University of Athens (NKUA). Thesis title: Estimation of thyroid hormones reference values in healthy adults.
- 2010 Ph.D. in Analytical Chemistry, Department of Chemistry, NKUA. Thesis title: "Gene expression analysis of circulating tumor cells in peripheral blood of early breast cancer patients by using electronic microarrays."

APPOINTMENTS

- 2021 - today** Assistant Professor in Analytical Chemistry, Department of Chemistry, National and Kapodistrian University of Athens
- 2010 – 2021** Post-Doctoral Researcher, Analytical Chemistry Laboratory, Department of Chemistry, National and Kapodistrian University of Athens

RESEARCH FIELDS

i) Development and clinical applications of molecular assays based on PCR (ddPCR, Real-time PCR, drop-off PCR etc), ii) non-coding RNAs, iii) Isolation and molecular characterization of CTCs, iv) Development of highly sensitive and specific assays for mutations detection in liquid biopsy components, v) Wastewater epidemiology , vii) Development of specific assays for the evaluation of adulation in daily products.

EDUCATIONAL EXPERIENCE

UNDERGRADUATE COURSES

- Instrumental Analysis II (course/lab), Dept of Chemistry, NKUA
- Clinical Chemistry (course/lab), Dept of Chemistry and Pharmacy
- Molecular Diagnostics (course/Lab), Dept of Chemistry

GRADUATE COURSES

- Clinical Biochemistry-Molecular Diagnostics
- Oncology: From Oncogenesis to therapy
- Analytical Chemistry-Quality assurance

AWARDS / SCHOLARSHIPS

- Award for one of the 5 most highly cited papers published in Lung Cancer. (2013)
- Award for one of the 10 most cited Articles in Clinical Chemistry (2013)
- Three awards in Annual Meeting of American Association of Cancer Research (2008,2011,2012)
- One national scholarship (IKY 2015)
- Funding for research project to support Postdoctoral researchers (HFRI 2017)

RESEARCH GRANTS

- 2019-2021: Liquid biopsy for the early detection of clinical relapse in patients with operable early stage non-small cell lung cancer and evaluation of genetic heterogeneity (Total: NKUA: 180.000 €, Hellenic Foundation for Research and Innovation (H.F.R.I.).

REVIEWER OF SCIENTIFIC JOURNALS

Clinical Chemistry, BMC Cancer, Clinical Chemistry and Laboratory Medicine, British Journal of Cancer, Journal of Thoracic Disease, Expert Reviews in Molecular diagnostics, Cellular Physiology and Biochemistry, Thoracic Cancer, PLOS ONE, Archives of Medical Research, Cancers, Analytical Chemistry, Biomolecules, Frontiers in Oncology, Science of the Total Environment

PATENTS

Title of invention: "Method of Determining PIK3CA Mutational Status in a Sample", Inventors: Lianidou Evrykleia, Markou Athina. 7 patents have been granted under this invention in the major market areas such as USA, Europe, Japan, China, Canada, Hong Kong and Israel, according to the following publication numbers: EP3198026, US 15/501,457, CA2957396, ZL201580052321.9, IL250392, JP6770957 and HK1241934.

ADDITIONAL INFORMATION

- Presentations at conferences: **85**
- PI in 2 Research Programs
- Collaboration/Participation in **7** Research Programs
- Reviewer in Research Programs: **1**

SELECTED PUBLICATIONS

1: Markou AN, Londra D, Stergiopoulou D, Vamvakaris I, Potaris K, Pateras IS, Kotsakis A, Georgoulis V, Lianidou E. Preoperative Mutational Analysis of Circulating Tumor Cells (CTCs) and Plasma-cfDNA Provides Complementary Information for Early Prediction of Relapse: A Pilot Study in Early-Stage Non-Small Cell Lung Cancer. *Cancers (Basel)*. 2023 Mar 21;15(6):1877.

2: Zafeiriadou A, Kollias I, Londra T, Tsaroucha E, Georgoulis V, Kotsakis A, Lianidou E, Markou A. Metabolism-Related Gene Expression in Circulating Tumor Cells from Patients with Early Stage Non-Small Cell Lung Cancer. *Cancers (Basel)*. 2022 Jun 30;14(13):3237.

3: Markou A, Londra D, Tserpeli V, Kollias I, Tsaroucha E, Vamvakaris I, Potaris K, Pateras I, Kotsakis A, Georgoulis V, Lianidou E. DNA methylation analysis of tumor suppressor genes in liquid biopsy components of early stage NSCLC: a promising tool for early detection. *Clin Epigenetics*. 2022 May 10;14(1):61.

4: Markou AN, Smilkou S, Tsaroucha E, Lianidou E. The Effect of Genomic DNA Contamination on the Detection of Circulating Long Non-Coding RNAs: The Paradigm of *MALAT1*. *Diagnostics*

(Basel). 2021 Jun 25;11(7):1160.

5: Markou A, Tzanikou E, Kallergi G, Pantazaka E, Georgoulis V, Kotsakis A, Lianidou E. Evaluation of Monocarboxylate Transporter 4 (*MCT4*) Expression and Its Prognostic Significance in Circulating Tumor Cells From Patients With Early Stage Non-Small-Cell Lung Cancer. *Front Cell Dev Biol.* 2021 Apr 22;9:641978.

6: Markou A, Tzanikou E, Strati A, Zavridou M, Mastoraki S, Bournakis E, Lianidou E. *PIM-1* Is Overexpressed at a High Frequency in Circulating Tumor Cells from Metastatic Castration-Resistant Prostate Cancer Patients. *Cancers (Basel).* 2020 May 8;12(5):1188.

7: Markou A, Tzanikou E, Ladas I, Makrigiorgos GM, Lianidou E. Nuclease-Assisted Minor Allele Enrichment Using Overlapping Probes-Assisted Amplification-Refractory Mutation System: An Approach for the Improvement of Amplification-Refractory Mutation System-Polymerase Chain Reaction Specificity in Liquid Biopsies. *Anal Chem.* 2019 Oct 15;91(20):13105-13111.

8: Markou A, Lazaridou M, Paraskevopoulos P, Chen S, Świerczewska M, Budna J, Kuske A, Gorges TM, Joosse SA, Kroneis T, Zabel M, Sedlmayr P, Alix-Panabières C, Pantel K, Lianidou ES. Multiplex Gene Expression Profiling of In Vivo Isolated Circulating Tumor Cells in High-Risk Prostate Cancer Patients. *ClinChem.* 2018 Feb;64(2):297-306.

9: Markou A, Zavridou M, Sourvinou I, Yousef G, Kounelis S, Malamos N, Georgoulis V, Lianidou E. Direct Comparison of Metastasis-Related miRNAs Expression Levels in Circulating Tumor Cells, Corresponding Plasma, and Primary Tumors of Breast Cancer Patients. *Clin Chem.* 2016 Jul;62(7):1002-11.

10: Markou A, Farkona S, Schiza C, Efstathiou T, Kounelis S, Malamos N, Georgoulis V, Lianidou E. PIK3CA mutational status in circulating tumor cells can change during disease recurrence or progression in patients with breast cancer. *Clin Cancer Res.* 2014 Nov 15;20(22):5823-34.

11: Markou A, Sourvinou I, Vorkas PA, Yousef GM, Lianidou E. Clinical evaluation of microRNA expression profiling in non small cell lung cancer. *Lung Cancer.* 2013 Sep;81(3):388-396.

12: Markou A, Yousef GM, Stathopoulos E, Georgoulis V, Lianidou E. Prognostic significance of metastasis-related microRNAs in early breast cancer patients with a long follow-up. *Clin Chem.* 2014 Jan;60(1):197-205.

13: Markou A, Strati A, Malamos N, Georgoulis V, Lianidou ES. Molecular characterization of circulating tumor cells in breast cancer by a liquid bead array hybridization assay. *Clin Chem.* 2011 Mar;57(3):421-30.

14: Markou A, Tsaroucha EG, Kaklamanis L, Fotinou M, Georgoulis V, Lianidou ES. Prognostic value of mature microRNA-21 and microRNA-205 overexpression in non-small cell lung cancer by quantitative real-time RT-PCR. *Clin Chem.* 2008 Oct;54(10):1696-704.