

CURRICULUM VITAE

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EDUCATION

Johns Hopkins University School of Medicine, Baltimore, MD, USA 2014-2015

Hopkins-Libra Visiting Scholar

SILAC Proteomics (LC-MS/MS) of proteins methylated on R/K during myoblast differentiation, Advisor, Prof.A. Pandey

Columbia University College of Physicians and Surgeons, New York, NY, USA

Ruth Kirschstein National Research Service Award Post-Doctoral Fellow, 2000 to 2003

Identification of novel MDM2/p53/ZNF217 mechanisms in cancer

New York Medical College, Valhalla, New York 1995-2000

Ph.D. (Honors) in the Department of Biochemistry and Molecular Biology, June of 2000

Dissertation: "Activation of the Transcription of the Rat Tyrosine Hydroxylase Gene via Overlapping Sp1/Egr1 Motifs," Advisor, Prof. E.L. Sabban.

M.S (Honors) in the Department of Biochemistry and Molecular Biology, 1989- 1992

Thesis: "Site-Directed Mutagenesis of Conserved Amino Acids as a Tool for Probing the Structure and Function of Proteins," Advisor, Prof. Joseph Wu.

Manhattan College, Riverdale, New York, NY 1982-1987

B.S in the Departments of Biology and Chemistry, February 1987

Dean's list: 1982-1983

RESEARCH INTERESTS

Biochemistry, Biophysics and Molecular Biology

Phenotypic Switching (PS), the alteration of multiprotein complex composition in signaling ensembles) pervades cell fate decisions in cancer growth, neurological diseases, stress, and aging: PS is chiefly

mediated by altered protein-protein network interactions that are driven by mutations, PTMs, altered signaling, protein overexpression and cellular sub-compartmentalization and is finely tuned by protein conformational changes induced by the above signals. I am interested in elucidating shared principles operating in these disparate entities: Specifically, how protein structure and sequence drive PS. The focus is on the identification, analysis (and ultimately in targeting) protein interaction network interfaces in the aforementioned processes. I pursue these goals by employing experimental stem, cancer cell culture models, a differentiation model, as well as theoretical methods. Specifically, the following general aims are pursued:

- Isolation and characterization of protein complexes and protein-protein interaction networks in differentiation, cancer, aging, stemness and stress. Identification of hubs in above networks and discovery of potential targets.
- Identification of post-translational modifications in proteins and their networks in the above processes.
- Identification of novel SLiMs in proteins of the above processes and of zinc-finger protein mechanisms in the above processes.
- Application of mathematical approaches such as automaton and complex systems dynamics theories to the analysis and design theory of cell MAPK signaling networks in above processes (collaboration with the Mathematics Department, Aristotle University).

CURRENT RESEARCH

1. Elucidation of protein Arginine and Lysine methylome networks in the C2C12 mouse model of myoblast to myotube differentiation, in stress and in cancer models. Computational/Experimental identification and analysis of short linear amino acid motifs (SLiMs) adjacent to RGG motifs in protein Arginine methylation substrates in the C2C12 differentiation model from SILAC proteomic and computational data. Construction of a database of protein Arginine/Lysine methylation and phosphorylation. Collaboration with Professors A. Pandey, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA and G. Amoutzias, University of Thessaly, Greece. Available at: <http://bioinf.bio.uth.gr/methyl-prometheus/#/>
2. Identification of K/R methylome networks in aging adult human stem cells
3. Functional mechanisms of ZNF217 transcription factor multiprotein complexes in differentiation, cancer and aging. Methylation-driven oncogenic mechanisms of the E3 ubiquitin ligase MDM2/ZNF217 multiprotein complexes. Identification of short linear motifs and other sequence elements that regulate protein-protein interactions of 8-zinc transcription factors
4. Computational analysis and design theory of MAPK signaling networks using mathematical approaches such as dynamical systems, automaton and group theories (collaboration with the Mathematics Department, Aristotle University).
5. Expression and regulation of stemness factors (ZNF217, NANOG etc) in differentiation, cancer and aging.

PAST RESEARCH

1. *Network-based Analysis of Transcription in Immobilization Stress*, Collaboration with Dr. Esther L. Sabban, Professor, Department of Biochemistry and Molecular Biology, New York Medical College, Valhalla, New York, USA. Role: Co-Investigator. 2009-2013.

Discovered and re-constructed transcriptional networks that are co-activated with the early growth response transcription factor 1 (Egr1) in acute and in repeated immobilization (IMO) stress in the rat adrenal medulla. Identified the Stat3 transcription factor as a novel stress-

activated gene in short-term stress and the prolactin releasing hormone (Prlh11) and chromogranin B (Chgb) genes in prolonged stress, using network properties.

2. *A Network Approach to Cyclin A1 Oncogenesis-Molecular analysis of differentiation mechanisms in acute promyelocytic leukemia (APL)*. Role: Principal Investigator, 2005-2007

Researched oncogenic functions of the germ cell-specific cyclin A1 protein using biochemical and computational approaches. Also, established the combined use of sub-pharmacological levels of all-trans retinoic acid (ATRA) and inhibitors of CDK1/2 as more effective inhibitors of acute promyelocytic leukemia cell growth. Collaborator: Dr. Debra Wolgemuth, Dpt. Of Genetics and Development, Columbia University, New York, USA.

3. *Development of the CONRAD metastasis genes and text-mining database and Cancer Testis (CTag) Gene Expression Functional analysis, 2007-2012*. Role: Co- Investigator/ Bioanalyst, 2007-2009.

Developed and used the "Conrad" metastasis gene database in collaboration with the Ludwig Institute for Cancer Research, and New York Branch at Memorial Sloan Kettering Cancer Center, and the Hilton Metastasis Initiative, the Hilton Foundation.

HONORS, AWARDS AND RECOGNITIONS

- Recipient of a Libra-Hopkins Fellowship, Department of Biological Chemistry, Institute for Genetic Medicine and Institute for Cell Engineering, Johns Hopkins University School of Medicine, Baltimore USA, 2014-2015.
- Recipient of Young Investigator Research Awards # 88132, 87711 and 90924, Aristotle University of Thessaloniki, 2011-2014.
- Recipient of the Conrad N. Hilton (CNHF) Foundation/ the Hilton-Ludwig Metastasis Initiative Award, 2007-2011.
- Ruth L. Kirschstein National Research Service Award (#CA09503-16, 17) in Molecular, Cellular and Developmental Biology of Cancer, 2001-2003.
- Research Fellowship in Cancer Prevention, Institute for Cancer Prevention, formerly American Health Foundation, 1999 -2000.
- Graduate Research Fellowship, New York Medical College, 1995-1999.
- Second Place Award, Third Departmental Student Forum, New York Medical College Department of Biochemistry and Molecular Biology, May 1996.
- Third Place Award, Ninth Annual Graduate Student Forum, New York Medical College, March 1996.
- Dean's list, Manhattan College, Riverdale, New York, 1982-1984.

RESEARCH GRANTS AND CONTRACTS

Aristotle University of Thessaloniki

Sole Principal Investigator, "Regulation of MDM2 Function by the Putative Oxidase Transcription Factor, ZNF217/p110b in Cancer Cell Culture Models", Program, "Support for Young Investigators", # 90924, Aristotle University of Thessaloniki, 2012-2014, €4,000.

Sole Principal Investigator, “Dissection of the Role of Kinase CDK4 in Coupling Multiplication and Differentiation in Cultured Acute Promyelocytic Leukemia Cells”, Program: “Support for Young Investigators”, # 88132 and 87711, Aristotle University of Thessaloniki, 2011-2012, €8,000.

Co-Principal Investigator, “Inferring the Function of Cancer Testis Genes and Proteins with Network Reverse Engineering”, Hilton-Ludwig Metastasis Initiative Scholar, Ludwig Institute for Cancer Research, New York, NY, USA, 2007-2012, \$83,000.

Ludwig Institute for Cancer Research

Project 1 Development of the CONRAD metastatic gene/ protein and text-mining database: Collaborators (a) Dr. Anna Divoli, Department of Medicine, Department of Human Genetics, Computation Institute, and Institute for Genomics and Systems Biology, University of Chicago, Chicago, IL, (b) professor Marketa Zvelebil, Bioinformatics and Systems Biology Group, Ludwig Institute for Cancer Research, UCL Branch London W1W 7BS, UK, 2008-2009. \$23,000

Project 2: Cancer Testis Gene Expression Functional analysis. Inferring the functions of cancer testis genes on chromosome X (CTag-X) genes and proteins ESO1 and MAGEC1 in neoplastic disease using experimental and computational biology approaches. Re-construction of their interaction and regulatory networks. Exploitation of network properties for inferring novel, tumor-specific markers, 2010-2012). Total support: \$60,000.

Columbia University

Associate Scientist, Department of Medicine: Role: Co-PI, 2005-2007, (PT-AAAE3622, \$500,000)

Project: “*Lung Epithelial-Mesenchymal Interactions in Adenocarcinoma Invasion*”, PI, C.A. Powell, Dept. of Medicine, Columbia University, PHS 398/2590. Role of the RANTES (CCL5) in lung cancer invasiveness: Molecular mechanisms of metastasis, interactions of stroma-tumor cells. Genome-wide co-regulatory transcriptional pathways (regulomics) in *TGFBR1* knockdown, human lung adenocarcinoma. Molecular analysis of the role of transforming growth factor receptor type II (*TGFBR2*) in lung adenocarcinoma invasiveness. Methods: siRNA/miRNA knockdown of *TGFBR2* mRNA and protein levels (confirmed by immunoblotting and real time qPCR): Analysis of invasive behavior in Matrigel. Dissection of the molecular mechanisms of enhanced differentiation by combined use of retinoic acid/CDK inhibitors in acute promyelocytic leukemia (APL) cells.

Ruth Kirschstein Fellow National Research Service Award (T32 CA09503-17, 2002-2003, \$32,000)

Project: “*Identification of metastasis-related proteins p40 and p35 in an ING1 tumor suppressor-associated, mSin3A nuclear complex*” Ruth Kirschstein Fellow National Research Service Award T32 CA09503-17, 06/01/02-06/01/03: (2002-2003), National Institutes of Health. Role of protein p35 in tumorigenesis: p35 is identical to the breast cancer metastasis protein 1, which participates in complexes with the tumor suppressor p33-ING1b/Sin3A/HDAC1 complex. P35/p40 complexes regulate cell growth via novel mechanisms that involve gap junction formation between cells and ultimately cancer cell spread. Methods: Using protein-specific affinity chromatography I isolated, identified and functionally studied proteins p40 and p35 (BRMS1) from tumor suppressor p33-ING1 protein complexes. Design, preparation and isolation of antibodies. Ectopic protein overexpression in bacteria and in cancer cells, Immunoblotting.

Ruth Kirschstein Fellow National Research Service Award (T32 CA09503-17, 06/01/02-06/01/03, National Institutes of Health, 2001-2002 \$42000).

Project: “Regulation of MDM2 Function by ZNF217/p110b”. The overall aim of this study, a continuation of the previous one, was to define mechanism(s) by which the oncogene MDM2 controls p53 acetylation and function by recruitment of an HDAC1/2/p110b complex. Specifically, it’s aims were to (1) identify the protein(s) in HDAC1 complexes from HeLaS cells that interact with MDM2, (2) evaluate the effect of the aforementioned interaction in controlling p53 acetylation levels catalyzed by p300/CBP and (3) define the effects on the function of p53 as a tumor suppressor protein by analyzing the influence of p110b/MDM2 on cell cycle arrest or apoptosis. Methods: MDM2-protein-specific affinity chromatography, 1 and 2-D electrophoresis, immunoblotting.

Ruth Kirschstein Fellow National Research Service Award (T32 CA09503-16, 06/01/01-06/01/02, National Institutes of Health, 2000-200, \$32000)

Project: “Isolation by MDM2-specific protein affinity chromatography of protein p110b from HDAC1/HeLa cell extracts and structure/function analysis”. In this project I used (a) isolation of FLAG-HDAC1 protein-specific native complexes from stably expressing HeLa cells and (b) purification of p110b from these complexes of p110b by GST-MDM2-specific affinity chromatography and I purified the p110b protein from an FLAG-HDAC1 complex with MDM2/HDAC1/2 that can deacetylate the p53 tumor suppressor protein thus inactivating it.

Industrial

American Cyanamid Company/ Lederle laboratories, 1992-1995

Co-Investigator, “Characterization of the Human β_3 -Adrenoreceptor Gene”. Program: Receptors with Seven-Membrane Spanning Regions, Pls: Emir Duzic and Tom Claus, Department of Cardiovascular Molecular Biology, American Cyanamid Company, 01/94-06/95.

Co-Investigator, “Identification of a Second Egr-1 Response Element within the ApoA1 Gene”. Program: Atherosclerosis/Liver-specific expression of the human Apolipoprotein AI gene, Pls: Edward J. Kilbourne and Sotirios K. Karathanasis, Department of Cardiovascular Molecular Biology, American Cyanamid Company, 06/93-06/94.

Molecular Biology Staff, “Construction of a Human Apolipoprotein [Apo (a)] Gene Promoter Luciferase Reporter”. Program: Promoter constructs for drug screening, Pls: Emir Duzic and Sotirios K. Karathanasis, Department of Cardiovascular Molecular Biology, American Cyanamid Company, 06/92-06/93.

Thyone Corporation (previously Health Maintenance Programs), 1987-1992

Formulations Chemist, “Preparation, purification and quality control analysis of vitamin and glutathione mixtures. Formulation, analysis and quality control of glutathione-based formulations”. Assisted in, scale-up development of preparations. Contributed to phase-I preclinical studies of pharmaceutical preparations by compiling, analyzing and preparing pharmacological data for submission to the FDA, Thyone Corporation, 1987-1992.

Grants Pending

Fondation Sante, Research in biomedical Sciences 2019: Submitted Proposal:
Identification of demethylase enzymes protein partners specific for H3K9me3 involved in adult stem cell (SC) aging

PUBLICATIONS

Note: Five important publications are marked with an asterisk

Refereed Journals

1. *Tsakona D, Galliou PA, Papanikolaou NA (2018) Identification with SILAC Proteomics of Novel Short Linear Motifs in Demethylase Enzymes Regulated During Myoblast Differentiation. *Cell Dev Biol* 7: 198. DOI: 10.4172/2168-9296.1000198.*
2. G. Tsolkas, D. Komninou, E. Briasoulis, E. Hatzimichael and N.A. Papanikolaou, "A Novel Therapeutic Approach in Acute Promyelocytic Leukemia with All-trans retinoic Acid and Cyclin-dependent Kinase Inhibitors", *Clinical Cancer Drugs* (2018) 5: 50. doi.org/10.2174/2212697X05666180713164713
3. *Fliatoura V, Vlastaridis P, Doudoumi C, Mossialos D, Iliopoulos I, Papanikolaou N.A., Amoutzias GD, (2019), Meth-Phos-Prometheus: A webserver for the prediction of protein methylation and phosphorylation sites, their rheostats, clusters and higher order combinatorial switches. [Accepted, *Bioinformatics*]
4. Tsolkas G, Komninou D and Papanikolaou N.A. "Differentiation of acute promyelocytic leukemia cells by all-trans retinoic acid and a cyclin-dependent kinase inhibitor involves dissociation of a CDK4/C/EBP ϵ complex", 2018, *J Biochem Cell Biol* 1: 103. DOI: 10.4172/jbcb.1000103
5. Tsolkas G, Komninou D and Papanikolaou N.A. "Cyclin A1 expression is reciprocally controlled by the transcription factor ZNF217 and miRNAs in invasive breast and prostate cancer cells: An *in silico* analysis", 2018, *J Biochem Cell Biol* 1: 104.
6. *Nikolaos I. Kalosidis, Aegli Mantsou and Nikolaos A. Papanikolaou, "From driver mutations to driver protein cancer networks: Why we need a new paradigm", *Cancer Studies*, 2018; 2(1):1 (Invited manuscript). DOI:10.2174/2212697X05666180713164713□
7. *Mantsou A, Koutsogiannouli E, Papavassiliou AG and Papanikolaou NA "Regulation of Expression of the *p21^{CIP}* gene by the Transcription Factor ZNF217 and MDM2", *Biochemistry and Cell Biology*, 2016, 94(6): 560-568, 10.1139/bcb-2016-0026. doi.org/10.1139/bcb-2016-0026
8. *Papanikolaou NA, Tillinger A, Liu X., and Sabban, E. "A Systems Approach identifies co-Signaling Molecules of Early Growth Response Transcription Factor in Immobilization Stress". (2014), *BMC Systems Biology* 2014, 8:100. doi.org/10.1186/s12918-014-0100-8
9. Valentinos Kounnis, Georgios Chondrogiannis, Michalis D. Mantzaris, Nikolaos A. Papanikolaou, et al. "Microcystin LR is a new candidate molecule for the development of novel therapeutics against pancreatic cancer specifically expressing the OATP1B3 transporter". *Anticancer Research*, November 2015 vol. 35 no. 11 5857-5865.
10. Koutsogiannouli, E., Papavassiliou, A. G. and Papanikolaou, N. A. (2013), Complexity in Cancer Biology: Is Systems Biology the Answer? *Cancer Medicine* 2013; 2(2): 164-177. doi.org/10.1002/cam4.62
11. Ziouti F, Gbandi E, and Papanikolaou NA, "Chromatin and Eukaryotic Gene Silencing-Part II", *Mediterranean Oncology Journal*, 2012: 34-38.

12. Gbandi E, Ziouti F and Papanikolaou NA, "Rb Chromatin and Gene Silencing - Part I" *Mediterranean Oncology Journal*, 2012, 1:30-34.
13. Ntemka A, Iliadis F, Papanikolaou NA and Grekas D "A Network-Centric Analysis of Genetic Predisposition in Diabetic nephropathy". *Hippokratia* 2011, 15, 3: 232-237.
14. Papanikolaou NA, "Mechanism-based Rational Targeting in Acute promyelocytic Leukemia". *In Vivo*. 2010, 24: 21-28.
15. Papanikolaou NA, Papavassiliou AG. Protein Complex, Gene, and Regulatory Modules in Cancer Heterogeneity. *Mol Med*. 2008 Jul 25, 14(9-10): 543-545. Published online 2008 July 25. doi: 10.2119/2008-00083 PMID: 18654660.
16. Borczuk AC, Papanikolaou N, Toonkel RL, Sole M, Gorenstein LA, Ginsburg ME, Sonett JR, Friedman RA, Powell CA. Lung adenocarcinoma invasion in TGFbetaRII-deficient cells is mediated by CCL5/RANTES. *Oncogene*. 2008 Jan 17;27(4):557-64. Epub 2007 Jul 23.
17. Nikolaev, A., Papanikolaou, N. A, Li, M. Qin, J. and Gu W. (2004). Identification of a novel breast metastasis-1 (BRMS1)-homologue protein p40 as a component of the mSin3A/p33ING1b/HDAC1 deacetylase complex. *Bioch. Biophys. Res. Commun.* 323, 1216-1222.
18. Papanikolaou, N.A. Vasilescu ER, and N. Suci-Foca (2004). Novel Single Nucleotide Polymorphisms in the Human Immune Inhibitory Immunoglobulin-like T cell Receptor type 4 (ILT4). *Human Immunology*, 65, 700-705.
19. Papanikolaou, N.A. Histone Deacetylase Complexes in Neoplasias (Review in Greek, English Abstract), *Forum of Clinical Oncology* Vol 2(B) No3/4, 239-248 (2003).
20. El-Bayoumy K, Rose D.P., Papanikolaou N, Leszczynska J, Swamy M.V., Rao C.V., "Cyclooxygenase-2 expression Influences the Growth of Human Large and Small Cell Lung Carcinoma Lines in Athymic Mice: Impact of an Organoselenium Compound on Growth Regulation," *Int. J. of Oncol.*, Vol 20, No 3, pp. 557-561, 2002.
21. Papanikolaou N.A., and Sabban, E.L., "Ability of Egr1 to activate tyrosine hydroxylase transcription in PC12 Cells: Cross-Talk with AP-1 Factors," *J. Biol. Chem.* Vol. 275, pp. 26683-26689, 2000.
22. Papanikolaou, N.A., and Sabban, E.L., "Sp1/Egr1 Motif: A New Candidate in the Regulation of Rat Tyrosine Hydroxylase Transcription by Immobilization Stress," *J. Neurochem*, Vol. 73, pp. 433-436, 1999.
23. Chang-Xi Zu, Roche, C. J., Papanicolaou, N.A., DiPietrantonio, A, and Yuk-Ching Tse-Dinh., "Site-Directed Mutagenesis of Conserved Aspartates, Glutamates and Arginines in the Active Site of *Escherichia coli* DNA Topoisomerase I," *J. Biol. Chem.* Vol. 273, pp. 8783-8789, 1998.
24. Hsieh, T.C., Aguero-Rosenfeld, M.E., Wu, J.M, Ng, C., Papanikolaou, N.A., Varde, S.A., Schwartz, I., Pizzolo, J.G., Melamed, M., Horowitz, H.W., Nadelman, R.B., and Wormser, G.P., " Cellular Changes and Induction of Apoptosis in Human Promyelocytic HL-60 Cells Infected with the Agent of Human Granulocytic Erlichiosis (HGE)," *Biochemical and Biophysical Research Communications* Vol. 232, pp. 298-303, 1997.

Under Review/Submitted/In preparation

25. Nikolaos A. Papanikolaou, Grigoris Amoutzias, Min-Sik Kim, Sartaj Ahmad Mir, Raiha Tahir and Akhilesh Pandey, Systematic discovery of proteins methylated on arginines and lysines during myogenesis with SILAC proteomics and identification of short linear motifs, *Biochem and Biophys Res Com*, 2019. Submitted

26. Papanikolaou NA, Xitiroglou P, Pantelidou P, Jungbluth A and Old, L, "Cancer testis antigen network-based identification of PDX1, RANBP2 and TLE1 increased expression in synovial sarcomas", *American Journal of Pathology*, 2019. [In preparation]
27. Kalosidis N and Papanikolaou N.A. "Design principles of MAPK signaling networks using automaton and group theories", *Computational Systems Biology*, In preparation. The small GTPases Rab22A and Rab6A engage in functional interactions with HIF α in MDA-MB-231 breast cancer cells under hypoxia. 2019, In preparation
28. Papanikolaou N.A. "The small GTPases Rab22A and Rab6A engage in functional interactions with HIF α in MDA-MB-231 breast cancer cells under hypoxia". 2019 In preparation

Refereed Conference Proceedings

2013-2019

1. Galliou, P. A., Verrou, K. M., Papaioannou, M., Papanikolaou, N. A., Koliakos, G., Phosphorylation mapping of laminin γ 1-chain: Kinases in association with active sites and cancer mutations. 70th Hellenic Society for Biochemistry and Molecular Biology Annual Meeting, Athens, Greece, 70^o συνέδριο της Ελληνικής Εταιρείας Βιοχημείας και Μοριακής Βιολογίας, Ίδρυμα Ευγενίδου, Αθήνα, Ελλάδα, 29/11/2019-01/12/2019.
2. Galliou, P. A., Verrou, K. M., Papaioannou, M., Papanikolaou, N. A., Koliakos, G., Phosphorylation mapping of laminin γ 1-chain: Kinases in association with active sites and cancer mutations. 7th Panhellenic Forum of Young Scientists, 7^o Πανελλήνιο Forum Νέων Επιστημών της Ελληνικής Εταιρείας Βιοχημείας και Μοριακής Βιολογίας, Ίδρυμα Ευγενίδου, Αθήνα, Ελλάδα, 28/11/2019.
3. Tsakona D., Galliou P.A., Papanikolaou N.A. (2019) Bioinformatic inference of a novel functional link between PKA and the transcription factor ZNF217. Hellenic Bioinformatics, 12th International Conference, Heraklion, Crete, Greece.
4. Tsakona D., Galliou P.A., Papanikolaou N.A. (2019) Identification of intrinsically disordered regions and shortlinear motifs in the human transcription factor ZNF217. Hellenic Society for Biological Sciences, 41thAnnual Conference, May 2019, Katerini, Greece.
5. Tsakona D, Galliou P.A. and Papanikolaou N.A., 2019. Enrichment of Deleterious mutations in intrinsically disordered regions (IDRs) and short linear motifs (SLiMs) in the human transcription factor ZNF217 May 2019 Conference: 41st Conference of Hellenic Society for Biological Sciences, Katerini, Greece
6. Tsakona D, Galliou PA, Papanikolaou NA (2018) Identification of Short Linear Motifs In Demethylase Enzymes Regulated During Myoblast Differentiation With SILAC Proteomics, 8th Scientific Conference, School of Medicine, Abstract 14-16 March, 2019, Thessaloniki, Greece.
7. Tsakona D., Papanikolaou N.A. (2018) Analysis of intrinsically disordered regions of human transcription factor ZNF217. Hellenic Society for Biochemistry and Molecular Biology, 69th Annual Conference, November 2018, Larissa, Greece.
8. Mantsou A., Papanikolaou N. The E3 ubiquitin ligase MDM2 is a target of methylation on lysines, 38th Symposium, Hellenic Society for Biological Sciences, Abstract 26-28 May, 2016, Kavala, Greece

9. Nikolaos A. Papanikolaou, Min-Sik Kim, Sartaj Ahmad Mir, Raiha Tahir and Akhilesh Pandey, Profiling Arginine methylation during myoblast differentiation using SILAC, Hellenic Society for Biochemistry and Molecular Biology 66th Annual Conference, December 2015
10. Kounnis V, G. Chondrogiannis, M.D. Mantzaris, D. Fokas, N.A. Papanikolaou, I. Sainis, E. Briasoulis et al. Pancreatic Cancer Cells Expressing the OATP1B3 Transporter show promising sensitivity to the highly cytotoxic microcystin-LR molecule. *European Journal of Cancer Volume 50, Supplement 6*, November 2014, Pages 86, 26th EORTC – NCI – AACR Symposium on Molecular Targets and Cancer Therapeutics
11. Papanikolaou Nikolaos A, Koutsogiannouli Evangelia, Papavassiliou Athanasios, Functional Interactions between Mouse Double Minute 2 Protein and a putative oxidase, *Hellenic Society for Biochemistry and Molecular Biology 64th Annual Conference*, December 2013

2011

5. Koutsogiannouli E, Papavassiliou A and Papanikolaou N.A. Isolation and Characterization of novel protein p110b in a CoREST/HDAC1/2 complex, Chemistry Conference, September 2011
6. Koutsogiannouli E, Papavassiliou AG. Gu W. and Papanikolaou N.A. Regulation of p53 Function by a p110b/MDM2/HDAC Complex. *The Hellenic Society for Biochemistry and Molecular Biology*, December 2011
7. Koutsogiannouli E, Haitoglou K, Papageorgiou G and Papanikolaou N.A. Oncogenic Mechanisms of a p110b Multiprotein Complex. *Hellenic Medical Society Conference*, September 2011
8. Triantafyllou E, Tzimagiorgis G, Haitoglou K and Papanikolaou N.A. Correlation between Cyclin A expression and miRNA-335 in breast and prostate lung cancer cell lines. *ESFIE Conference*, 2012
9. Constantinidou S and Papanikolaou N. A. *In silico* analysis of the secondary structure of testis cancer protein MAGEC1, *Conference of the Medical School, Aristotle University of Thessaloniki*, 2011
10. Tsolkas G. Vavatsi-Christaki N. Kosmopoulou I. Papanikolaou N.A. Synergistic induction of differentiation in acute promyelocytic leukemia cells by low levels of all-trans Retinoic acid and CDK inhibitors. Conference: *The Hellenic Society for Biochemistry and Molecular Biology*, December 2011
11. Tsolkas G, Koutsogiannouli EA, Tzimagiorgis G, Haitoglou K, Xytiroglou M and Papanikolaou N.A, miRNA-mediated regulation of cyclin A1 expression, Conference: *The Hellenic Society for Biochemistry and Molecular Biology*, December 2011
12. Tsolkas G and Papanikolaou N. A. A Study on the Role of Retinoic Acid and Cyclin-dependent Kinase Inhibitors on the Differentiation of Acute Promyelocytic Leukemia, *Hellenic Medical Society*, Thessaloniki, 2011

2005-2010

13. Andrej Tillinger, Xiaoping Liu, Nikolaos A Papanikolaou, Lidia I Serova, Esther L Sabban. Analysis of Signaling Pathways Triggering Transcriptional Changes in Adrenal Medulla with Single and Repeated Stress. *Experimental Biology 2009 (Biochemistry/Molecular Biology, ASBMB)*, ABSTRACT ID: 5197
14. Papanikolaou N.A. "Rational Targeting of Acute Promyelocytic Leukemia with combined ATRA and CDK inhibitors" 2005, 18th annual Gene Center Symposium on Chemical Biology:

Intervention in Cells based on Chemical Principles, Hunter College Chemistry Department, Friday January 14th, 2005

15. Papanikolaou, N. A., Toonkel E., Sole, M., Lachman, S., and Powell, C.A. "Invasion of human lung Adenocarcinoma Induced by TGF β R2 Suppression may be Mediated by Upregulation of RANTES". Abstract, *Keystone Symposia on Quantitative Biology* 2007

1998-2004

16. Flavia Piazza, Nikolaos Papanikolaou, Luigi Scotto, John Manavalan, Raffaello Cortesini, and Nicole Suci-Foca. "Signaling properties of inhibitory receptors ILT3 and ILT4 in tolerogenic dendritic cells". Abstract, American Association of Immunology 2004 Annual Meeting, *Experimental Biology* (EB 2004), Washington, D.C., April 17-21, 2004
17. Sabban E.L., Nankova B.B., Serova L.I., and Papanikolaou N.A., "Different transcriptional mechanisms activating gene expression of catecholamine biosynthetic enzymes depending on duration or repetition of stress," *FASEB J.* vol. 14, No 8, pp. 685 May 11, 2000
18. Papanikolaou, N.A., and Sabban, E.L., "The Sp-1/Egr-1 motif of the tyrosine hydroxylase promoter may be involved in its transcriptional regulation by stress," *FASEB J.*, Vol. 13, No. 5, pp. A792-A793 Part 2 Suppl. Mar 15, 1999
19. Papanikolaou, N.A., and Sabban, E.L., "Sp1/Egr1: A New Functional Element in the Regulation of Tyrosine Hydroxylase Transcription" *Experimental Biology*, Vol. 618.4, pp.230, 1999
20. Sabban, E.L, Nankova, B., Serova, L., Kvetnansky, R., and Papanikolaou, N. "Multiple Signaling Pathways in the Molecular Regulation of the Catecholamine Biosynthetic Enzymes by Stress," *Chromaffin Cell Biology*. Bergen, Norway, 1999
21. Papanikolaou, N.A., and Sabban, E.L., "Transcriptional Mechanisms in Stress-elicited Activation of Tyrosine Hydroxylase Gene Expression: Role of AP-1 and SP-1 Motifs" in: Mechanisms of Transcription, *Cold Spring Harbor Symposia for Quantitative Biology*, Abstract, June 3-8, 1998
22. Papanikolaou, N.A., and Sabban, E.L., "Mapping of Tyrosine Hydroxylase and Dopamine Hydroxylase Enhancer Elements Involved in Immobilization Stress by DNase-I Footprinting" *11th Annual Graduate Forum*, New York Medical College, Abstract, June 1998
23. Papanikolaou, N.A., and Sabban, E.L., Promoter Elements involved in the Transcriptional Regulation of Rat Tyrosine Hydroxylase by Immobilization Stress. *Society for Neuroscience*, Abstract, Washington, DC. 1998

1992-1998

24. Papanikolaou, N.A., and Sabban, E.L., "Inhibition of Nuclear Protein Binding to the AP-1 Motif in the Tyrosine Hydroxylase Promoter by a Triplex-forming Oligonucleotide" *10th Annual Graduate Forum Abstract*, New York Medical College, May 1997
25. Papanikolaou, N.A., Nankova, B., Sabban, E. L., "Triplex Forming Oligonucleotide to the AP-1 Site on the Rat Tyrosine Hydroxylase Promoter," *Society for Neuroscience*, Vol. 235.12, p120, 1996
26. Papanikolaou, N.A., and Tse Dinh, Y.C., "Effect of Site-Directed Mutagenesis on E. Coli Topoisomerase-I Enzymatic Activity" *9th Annual Graduate Forum Abstract*, New York Medical College, May 1996

27. Duzic, E., Claus, Tom. & Papanikolaou, N.A. Characterization of the human β_3 -Adrenoreceptor and glucagon genes and their receptors, *Lederle Labs Publications*, 1994
28. Kilbourne, E, J., Papanikolaou, N.A., and Karathanasis, S. K. Identification of a Second Egr-1 Response Element within the ApoA1 Gene, *Lederle Labs Publications*, 1993
29. Duzic, E., Papanikolaou N.A., & Karathanasis S. K. Construction of a Human Apolipoprotein [Apo (A1)] Gene Promoter Luciferase Reporters, *Lederle Labs Publications*, 1993
30. Harnish, D.C., Ferris, E., Potla, L., Papanikolaou, N.A., & Karathanasis, S. "Construction and Validation of Genetically Engineered HepG2 Cells Containing the Luciferase Gene under the control of the ApoA1 Regulatory Region", *Lederle Labs Publications*, 1993
31. Papanikolaou, N.A, Activation of the Transcription of the Rat Tyrosine Hydroxylase Gene via Overlapping Sp1/Egr1 Motifs (*Ph.D. Dissertation; Advisor: Dr. Esther L. Sabban*), 2000
32. Duzic, E., Papanikolaou N.A., & Karathanasis S. K. Construction of a Human β_3 -Adrenoreceptor Gene Promoter Luciferase Reporter, *Lederle Labs Report*, June 30, 1994
33. Papanikolaou NA, Site-Directed Mutagenesis of Conserved Amino Acids as a Tool for Probing the Structure and Function of Proteins (*M.S. Literature Review Thesis, New York Medical College; Advisor: Dr. Joseph Wu*), 1992

Book Chapters & Books

1. Papanikolaou, N.A. "Oncogenes and Tumor Suppressor Genes: Mechanisms, in *Biology of Cancer*", Chapter 6, pp. 67-73 (Hellenic Academy of Oncology, EAKO), 2007, Role: AUTHOR
2. Papanikolaou, N.A. "mTOR, Proteasome and PARP1, in *Biology of Cancer*", Chapter 15, pp. 177-183, (Hellenic Academy of Oncology, EAKO), 2007, Role: AUTHOR
3. Sabban, E. L. Nankova, B. B. Serova, L. I. Kvetnansky, R.; Papanikolaou, N. A. Nakashima, A. (2002). "Dynamics of Transcriptional events in Stress-triggered Regulation of Adrenal Catecholamine Biosynthetic Enzymes, *Catecholamine Research: From Molecular Insights to Clinical Medicine*" (Advances in Behavioral Biology) -US-ISBN: 9780306474033 (Hard cover book) (*Editor: Kluwer/Plenum Academic Publishers*), Vol 53, pages 321-324, Role: AUTHOR
4. Marks' Medical Biochemistry, 2104 Edition, Laboratory of Biological Chemistry, Department of Medicine, Aristotle University of Thessaloniki, Macedonia, Greece: Multi-author translation in Greek, 2014, Role: TRANSLATOR
5. Triantafyllidis K. "The Genetic Origins of the Greeks" Kyriakidis Publications, 2018, Role: EDITOR
6. Τριανταφυλλιδης Κ, «Η Γενετική Προέλευση των Ελλήνων» Εκδόσεις Κυριακίδη, 2019, Role: EDITOR

CONFERENCE PROCEEDINGS

American Society for Neurochemistry, Abstracts, 1996-1999

American Association for Cancer Research, San Francisco, CA, 2000

2005, 18th annual Gene Center Symposium on Chemical Biology: *Intervention in cells based on Chemical principles*, Hunter College Chemistry department, Friday January 14th, 2005

PRESENTATIONS

Invited Talks

- Papanikolaou, N.A., "From Driver Mutations to Driver Cancer Networks: Why We Need A New Paradigm, Hellenic Society for Therapeutic Oncology, 2018
- Papanikolaou, N.A., "Targeting of tumorigenic networks of protein interactions in cancer", Hellenic Society for Therapeutic Oncology, 2017
- Papanikolaou, N.A., "Profiling arginine methylation during myoblast differentiation using SILAC Proteomics", Hellenic Association for Biochemistry and Molecular Biology, Annual Conference, Ioannina, Greece, 25 November, 2016
- Papanikolaou, N.A., 5th International Conference on Computational Systems Biology", Philadelphia, USA. August 22-23, 2016
- Papanikolaou, N.A., Colloquium on Emerging Metabolomics-2016, Conference Proceedings, Las Vegas, Nevada, USA, July 25-27, 2016
- Papanikolaou, N.A., 3rd World Hellenic Biomedical Association Summer School in Medical & Biosciences Research & Management, May 17-25, 2014
- Papanikolaou, N.A., Division of Gastroenterology, SUNY at Stony Brook Medical School, 2010-2015
- Papanikolaou, N.A., "Interactions of MDM2 with a putative oxidase" Hellenic Association for Biochemistry and Molecular Biology, Evgenides Institute, Athens Greece, 6-8 December 2013
- Papanikolaou, N.A., Workshop "From Chemical to Systems Biology" 1st FP7-SEEDRUG, Dpts of Chemistry, Pharmacy and Medicine, University of Patras. 10-12 May, 2012
- Papanikolaou, N.A., 13th Medicinal Chemistry Conference, Dpts of Chemistry, Pharmacy and Medicine, University of Patras, 9 May, 2012
- Papanikolaou, N.A., "The Putative Oxidase p110b/ZNF217 Interacts with MDM2 in Lung Cancer Cells", 62nd Conference of the Hellenic Society for Biochemistry and Molecular Biology, Evgenidis Foundation, 9-11 December, 2011
- Papanikolaou, N.A., 6th Conference of the Hellenic Society for Computational Biology and Bioinformatics (HSCBB11), University of Patras, 7-9 October, 2011
- Papanikolaou, N.A., Laboratory of Clinical Oncology, University of Patras School of Medicine, Greece, 29 May
- Papanikolaou, N.A., 6th Scientific Symposium of the Medical School, Aristotle University of Thessaloniki, Greece. 7-9 April, 2011
- Papanikolaou, N. A. 4th Panhellenic Conference of Medical Biochemistry, Thessaloniki, 1-2 March 2011
- Papanikolaou, N.A., "Synergistic Induction of differentiation of acute promyelocytic leukemia cells by low levels of all-trans retinoic acid and a CDK inhibitor", Dpt. Of Clinical Hematology, University of Ioannina School of Medicine, Greece. 12 December, 2010

Papanikolaou, N.A., "Interactions of a Putative Oxidase p110b/ZNF217 with MDM2 in Lung Cancer Cells", Division of Gastroenterology, SUNY, Stony Brook Medical School, 4 May, 2009

Papanikolaou, N.A., Biannual Training Seminars of the Hellenic Academy of Oncology (EAKO). Session taught: Cancer Biology. Lecture A: *Oncogenes and Tumor Suppressor genes: Mechanisms*. Lecture B. *MTOR, Proteasome, PARP1*, 2007-2013

Papanikolaou, N.A., "Exploiting the Properties of Transcription Factor Oncogenes for Therapeutic applications", Division of Molecular Medicine, Mount Sinai Medical Center, New York, NY, 2005

Papanikolaou, N.A., "Rational Targeting of Acute Promyelocytic Leukemia with combined ATRA and CDK inhibitors", Hunter College, CUNY, Dept. of Chemistry and Genomics Center. Title., April 10, 2005

Papanikolaou, N.A., "Converting an Oncogene into a Differentiating Agent", SUNY, Stony Brook, Section for Cancer Prevention, Dept. of Medicine. April 15, 2005

Papanikolaou, N.A., "Tumor suppression by the p1NG/p40/mSin3A/HDAC1/2 Complex", Queens College of the City University of New York, Department of Biology, May 12 2004.

Papanikolaou, N.A., "P53 deacetylation by MDM2-mediated recruitment of HDAC1/CoREST complexes", Institute for Cancer Prevention, Section of Molecular Carcinogenesis., 2003

ACADEMIC TEACHING EXPERIENCE

Faculty, Graduate *in silico* Course, "DNA and Protein Analysis", Department of Medicine, Aristotle University of Thessaloniki, 2013-Present

Faculty, Graduate Course, "Gene Expression", Fall semester. Aristotle, University of Thessaloniki School of Medicine, Graduate Program, 2012 – 2013

Faculty, Biochemistry Laboratories for Medical Students (three semester course), Aristotle University of Thessaloniki, 2009-Present

Faculty, Graduate course, "Molecular Biology and its Applications in Medicine, Fall semester, Aristotle University of Thessaloniki, 2009-Present

Faculty, Introduction to Chemistry and Biochemistry, Fall semester, to 1st year Medical Students, Aristotle University of Thessaloniki, 2009-Present

Faculty, Hellenic Academy of Oncology (EAKO). Course: *Cancer Biology*, 2007-Present

Adjunct Instructor of Biology, *General Biology 1 and 2*, Manhattanville College, Purchase, NY, 1999-2000

Graduate Instructor in Medical Biochemistry, Department of Biochemistry and Molecular Biology, New York Medical College, 1998-1999

PROFESSIONAL ACTIVITIES AND SERVICE

Technical committees, Department of Medicine, Aristotle University of Thessaloniki

- Committee on Strategic Planning (2019-)

- General Committee for Academic Affairs of the Department of Medicine, Aristotle University of Thessaloniki (2011-2018).
- Academic Committee (3-member), faculty appointments, 2011-Present
- Committee, restructuring of the medical curriculum, 2014-Present.
- Bioinformatics laboratory curriculum, Biological Chemistry, 2013-2014
- Committee, biochemistry entrance examinations of the School of Dentistry, Aristotle University of Thessaloniki 2010-2013.
- Hellenic Academy for Oncology, 2006-Present.

Professional Society Memberships

- American Society for Biochemistry and Molecular Biology, 1997-Present
- American Chemical Society, 1983-Present
- New York Academy of Sciences, 1985-Present
- Hellenic Academy of Oncology, 2006-Present
- Hellenic Society for Computational Biology and Bioinformatics, 2009-Present
- Systems Biology for Medical Research (SBMR), 2012-Present

SPECIAL TRAINING

Training in advanced PCR techniques, Catholic University, Washington DC, 1992

American Society for Neurochemistry, Abstracts, 1996-1999

American Association for Cancer Research, San Francisco, CA, 2000

Certification in Clinical training, "Protection of Human Participants in Biomedical and Behavioral Research", Columbia University, 2001

18th annual Gene Center Symposium on Chemical Biology: Intervention in cells based on Chemical principles, Hunter College Chemistry department, Friday January 14th, 2005.

SUPERVISION OF STUDENTS AND TECHNICIANS

Current Students

ARISTOTLE UNIVERSITY

Supervisor, Dimitra Tsakona, Project: "Disorder analysis and identification of short linear motifs, SLiMs, in ZNF217 and in proteins with eight zinc fingers". Undergraduate Dissertation

Supervisor, Georgios Karolidis, Project: "Expression analysis of stemness transcription factor ZNF217 in aging". Undergraduate Dissertation, (graduated, August 2018)

Supervisor, Maria Karakota, Project: "Expression of stemness factors in cells of monocyte origin: Stem cells and aging". Ph.D. Thesis.

Supervisor, Nikolaos I. Kalosidis, Project: "Design principles of MAPK signaling networks using automaton and group theories" (volunteer medical student).

Past Students

COLUMBIA UNIVERSITY

Supervisor, Katherine Fantauzzo, Rotating Ph.D. student, “Characterization of effects on differentiation/proliferation by combined all-trans retinoic acid (ATRA) and olomoucine administration to acute promyelocytic (APL) cells in vitro”, Spring 2004-Summer 2004. Dept. of Genetics & Development, Columbia University, Laboratory of Dr. Debra Wolgemuth

Advisor, Leah Roberts, MS student, “Molecular characterization of cell cycle effects by ATRA/olomoucine-induced differentiation of APL cells in vitro”, (Dropped out). Dept. of Genetics & Development, Columbia University, Laboratory of Dr. Debra Wolgemuth

Supervisor, Roberto Niesa, Ph.D. Student, “Role of cyclinA1 in APL tumorigenesis”, Ph.D. (Dropped out of Dept. of Genetics & Development), Columbia University, Laboratory of Dr. Debra Wolgemuth, 2004-2005

Supervisor, Dr. Rebecca Toonkel, M.D., Resident, Dept. of Medicine, Dept. of Medicine, Columbia University, Laboratory of Dr. Charles A. Powell. 2006–2007

Supervisor, Shivani Lachhman,, Technician, Dept. of Medicine, Laboratory of Dr. Charles A. Powell. Dept. of Medicine, Columbia University, 2005-2007

Supervisor, Marieta Sole, Technician, Dept. of Medicine, Laboratory of Dr. Charles A. Powell. Dept. of Medicine, Columbia University, 2005-2007

Supervisor, Kivil Sungur, Technician, Dept. of Medicine, Laboratory of Dr. Charles A. Powell. Dept. of Medicine, Columbia University, 2005-2007

ARISTOTLE UNIVERSITY, DEPARTMENT OF MEDICINE

Ph.D. DISSERTATIONS

Advisor, Grigorios Tsolkas, “Synergistic Induction of Differentiation in Acute Promyelocytic Cells by sub-pharmacological Doses of all-trans retinoic acid and inhibitors of cyc;in-dependent kinases”. Laboratory of Biological Chemistry, Aristotle University of Thessaloniki, Thessaloniki, Greece. Awarded, June 2012. Current position: Post-doctoral fellow, Dept. of Bioengineering, King’s College, University of London, UK.

Co-advisor, Valentinos Kounnis, “Development of Anticancer Molecules exhibiting Inhibition of Protein Phosphatases I and II with Specificity against Tumors Expressing Transmembrane Carriers of Organic Anions Specific for Microcystin LR” Section of Pathology, Department of Medicine, University of Ioannina, Ioannina, Greece , June 2013.

MASTERS DISSERTATIONS

ARISTOTLE UNIVERSITY, DEPARTMENT OF MEDICINE

Co-advisor, Eviropidis Stephanidis, “Novel Response Markers to the Administration of Infiximab in Patients with Inflammatory Bowel Disease”, Department of Medicine, June 2014.

Advisor, Evangelia Koutsogiannouli, “Isolation and characterization of the putative demethylase p110b protein by MDM2-specific affinity chromatography” Dept. of Biological Chemistry, June 2012. Current position: Post-doctoral fellow, University of Dusseldorf Medical School, Germany.

BACHELOR’S DISSERTATIONS

Advisor, Aigli Mantsou, Bachelor's dissertation, "Regulation of expression of the p21^{CIP1} gene by MDM2 and the transcription factor ZNF217", June 2015

Co-advisor, Vasiliki Fliatoura, Bachelor's dissertation, "Prediction of methylation sites in eukaryotic proteins using machine learning algorithms", June 2018

Co-advisor, Georgios-Pangiotis Tsionos, Bachelor's dissertation, "Prediction of phosphorylation sites in rat proteins with machinelearning methods", June 2018

Advisor, Georgios Karolidis, "Analysis of the levels of stemness transcription factor ZNF217 in young and old monocytes", June 2018

Co-Advisor, Maria Karakota, "On the Levels of Stemness Factors in Monocyte Cells", June 2018

Advisor, Dimitra Tsakona, Bachelor's dissertation. "Disorder analysis and identification of short linear motifs (SLiMs), in ZNF217 and in proteins with eight zinc fingers", October 2019

SUPERVISOR TO LABORATORY ASSISTANTS/ POST-DOCTORAL STUDENTS

Bernadette Joe, bioinformatics projects (in Silico Biology), the Hilton Metastasis Initiative, Ludwig Institute for Cancer Research, 2007-2009.

Grigorios Tsolkas, Project: A study on the effects of all-trans retinoic acid and of cyclin-dependent kinase inhibitors on acute leukemia cell differentiation. Dept. of Biological Chemistry, Medical School, Aristotle University of Thessaloniki, 2009-2013.

Aegli Mantsou, Project: Interactions of putative oxidase p110b with MDM2 in Cancer, 2013-2014.

WORKSHOPS

Bi-annual postdoctoral and medical colloquiums of the Hellenic Academy of Oncology/ΕΟΠΕ. Unit taught: "Biology of Cancer", Subject: A. "Mechanisms of oncogene and tumor suppressor genes". B. MTOR, "Proteasome, PARP1", 2007-Present.

ADDENDUM

Skills and Qualifications

Expert in biochemical and biophysical analysis: Characterization of amino acid methylation in proteins using SILAC/MS/MS proteomics, immunoprecipitation and protein-protein interactions analysis. Application of combined CRISPR/RNAi in identification of multiprotein complexes and of novel partners of oncoproteins under different conditions (phenotypic switching). Experienced with CRISPR/RNAi screens in cancer models *in vitro* and / or *in vivo* using matrigel and other assays.

Expert molecular biology skills and experienced in immunofluorescence, transgene mutagenesis / expression, western blot, and Q-PCR. Significant impact in field of study as demonstrated by publications in top tier peer-reviewed research journals. Strong computational and mathematical biology skills.

Developed/applied biological and biochemical endpoint assays to gain mechanistic insights into the consequences of gene knockdown or inhibition and protein overexpression in cells (ZNF217, Egr1 etc).

RESEARCH ACCOMPLISHMENTS & EXPERIENCE

Aristotle University of Thessaloniki, Laboratory Of Biological Chemistry, Department Of Medicine, Section Of Health Sciences, Thessaloniki, Greece

Associate Professor, 2019- (Pending confirmation by Aristotle U Legal Service)

- Co-developed a neural network webserver (Methyl-Prometheus) that predicts Lysine and Arginine methylation sites at the proteome level, from primary amino acid sequence alone; uses the latest human and mouse methyl-proteomic datasets. Note: Methyl-Prometheus is freely available at <http://bioinf.bio.uth.gr/methyl-prometheus>, University of Thessaly and Aristotle University of Thessaloniki, 2017-2018
- Proteomics (MS and affinity chromatography)-based identification of methylated Arginines and Lysines (R/K) in proteins in a mouse differentiation model; Identification of novel short linear motifs (SliMs) on proteins in above model; Regulation of protein-protein interactions by protein R/K methylation. Collaboration with Professors A. Pandey, Johns Hopkins University School of Medicine, Baltimore, USA and G. Amoutzias, University of Thessaly, Greece (2015-2018)
- Extension of above approaches to role of K/R methylation networks in the aging process of adult stem cells (Ongoing)

Dept. of Biological Chemistry, Institute for Genetic Medicine, Johns Hopkins University School of Medicine, Baltimore, USA

Hopkins-Libra Fellow

October 2014-October 2015

- Identified differentially methylated proteins on arginine and lysine using MS-based, SILAC proteomics in the mouse C2C12 myoblasts- to- myocytes differentiation model. Discovered trimethylation of a methylase during differentiation.

Department of Medicine, Section of Health Sciences, Laboratory of Biological Chemistry Aristotle University of Thessaloniki, Thessaloniki, Greece

Assistant Professor (tenured)

2013-2019

- Discovered two novel oncogenic mechanisms of the ZNF217 transcription factor and the MDM2 E3 ubiquitin ligase. Discovered novel motifs (SLiMs) in proteins that undergo arginine/Lysine methylation in the C2C12 differentiation model in collaboration with Professor Akhilesh Pandey of the Johns Hopkins University School of Medicine, USA and Professor Grigorios Amoutzias of Thessaly University in Greece. Re-constructed protein Arginine/Lysine methylome networks in ectoderm-derived tissues. Used network theory on cancer testis antigen genes, CTag, and discovered oncogenic proteins involved in sarcomas: Research funding 60,000 Euros from the Ludwig Institute for Cancer Research, Aristotle University and Hopkins-Libra Foundation.
- Teaching biochemistry, medical biochemistry, molecular biology, biological networks analysis, proteomics of cancer, protein chemistry and biochemistry and applications of mathematical automaton and group theories in analyzing biological networks.

Assistant Professor (Tenure track)

2009-2013

- Established a novel *in vitro* pharmacological approach to treat acute promyelocytic leukemia using sub-micromolar concentrations of all-trans retinoic acid (ATRA) and cyclin-dependent kinase (CDK) inhibitors. The new method takes advantage of the observation that in the presence of low levels of a CDK inhibitor, ATRA is as effective at inducing leukemic cell differentiation as (typically toxic) micromolar levels, required in therapy regimens. Identified novel oncogenes and tumor suppressor genes using cancer testis genes (CTAGs) microarray data mining and their network properties.

Teaching interests in biochemistry and molecular biology, proteomics of cancer and biological/biochemical networks.

Ludwig Institute for Cancer Research, New York Branch of Human Cancer Immunology at Memorial Sloan-Kettering Cancer Center, New York, NY

Bioanalyst

July 2007-July 2009

- Re-constructed cancer networks of cancer testis genes and proteins CTAG1B and MAGEC1 and identified novel links and potential leads.
- Constructed and curated the “CONRAD” metastatic genes database.

Institute for Cancer Genetics, Departments of Medicine, Genetics and Development and Pathology, Columbia University, 630 W 168th St, New York, NY 10032

Associate Research Scientist

2003-2007

- Demonstrated that low levels of expression of TGFβII receptor signaling synergize with CCL5 (RANTES) in lung adenocarcinoma progression and invasion.
- Identified novel oncogenic mechanism of Cyclin A1 in acute promyelocytic leukemia (APL).

Ruth Kirschstein National Research Service Award Post-doctoral Fellow in Molecular, Cellular and Developmental Biology of Cancer

2000-2003

- Discovered novel oncogenic mechanisms of p53, MDM2 and BRMS1.
- Identified and characterized chromatin modifying oncogenic proteins and transcription factors such as ZNF217 in multiprotein complexes from cultured tumor cells by affinity chromatography.

New York Medical College, Department of Biochemistry and Molecular Biology

Graduate Fellow in Biochemistry and Molecular Biology

1995-2000

- Discovered a new Egr1 binding motif on the promoter of the rat tyrosine hydroxylase (TH) gene.
- Discovered that interaction of the immediate early transcription factor Egr1 with its cognate site on the promoter is the critical event that initiates transcription of TH in the IMO stress response in the rat adrenal.
- Discovered that in addition to Egr1, transcription factor Stat3 expression is activated in short-term stress and prolactin releasing hormone (Prlh11) and chromogranin B (Chgb) in long-term stress.
- Discovered new gene/protein hubs to the MAPK signaling pathway in short- and long-term IMO stress response networks.

American Cyanamid Company, Lederle Laboratories, Department of Cardiovascular Molecular Biology, Pearl River, NY

Molecular Biologist

1992-1995

- Cloned and characterized the human β -3-adrenoreceptor gene. Program: Receptors with Seven Membrane Spanning Regions". Role: Assistant.
- Identified transacting factors influencing human apolipoprotein A1 gene expression in response to inflammatory cytokines. Role: Co-investigator.
- Characterized expression of the human ApoAI gene promoter and identified a second Egr1 Response Element within the Human ApoAI Gene. Program: Atherosclerosis/Liver-specific expression of the human Apolipoprotein AI Gene. Role: Co-Investigator.
- Established Human Apolipoprotein (ApoAI), human 5- α -hydroxylase and β -3-adrenoreceptor, Gene Promoter Luciferase Reporter plasmids for drug screening and testing. Program: Promoter Constructs for Drug Screening. Role: Assistant.
- Synthesized and characterized oligonucleotides on an ABI synthesizer for use in cloning and expression experiments. Role: Assistant.
- Analyzed protein-DNA interactions by EMSA and DNase-I footprinting on human promoter constructs. Role: Assistant.

New York Medical College, Valhalla, New York

1987-1992

M.S. in the Department of Biochemistry and Molecular Biology, June of 2000

Thyone Corporation, Chemistry and Quality Control Division, Elmsford, NY

Formulations Chemist

1987-1992

- Assisted in the formulation and encapsulation of vitamin and antioxidant recipes.
- Performed chemical analysis and quality control of chemical formulations with HPLC.
- Wrote the pharmacology section for Phase I pre-clinical studies on the role of glutathione in HIV infection.

Albert Einstein College of Medicine Department of Microbiology, Bronx, NY

Graduate Assistant

1987-1988

Assistant in Dr. Rogler's Microbiology lab