

ANTHONY TSARBOPOULOS, Ph.D.

Mikras Asias 75, Athens 115 27

Tel: +30-210-7462702

E-mail: atsarbop@med.uoa.gr

EMPLOYMENT AND EDUCATION

Current Academic Position:

2013 - to date: Associate Professor, University of Athens Medical School, Department of Pharmacology, Athens 115 27, Greece.

Previous Positions:

2009 - 2013: Professor, University of Patras, Department of Pharmacy, Patras 265 04, Greece.

2003 - 2009: Associate Professor, University of Patras, Department of Pharmacy, Patras 265 04, Greece.

1998 - to date: Director of Bioanalytical Department, GAIA Research Center, The Goulandris Natural History Museum, Kifissia 145 62, Greece.

1987 - 1998: Group Leader in the Department of Structural Chemistry at Merck/Schering-Plough Research Institute, New Jersey, USA.

1985 - 1987: Senior Postdoctoral Fellow & Research Assistant Professor, Mayo Clinic, Mayo Graduate School of Medicine, Department of Pharmacology, MN, USA.

Education and Qualification:

1985: **Ph.D., Analytical Chemistry**, Michigan State University, Department of Chemistry, East Lansing, MI, USA.

1980: **BSc in Chemistry**, University of Athens, Department of Chemistry, Athens, Greece.

TRAINING – RESEARCH INTERESTS

2003 - to date: Drug Metabolism, Pharmacokinetic and Bioequivalence Studies of Pharmaceutical Compounds. Identification of candidate biomarkers by Metabolomics MS approaches and MALDI Imaging MS.

2003 - to date: Detection and monitoring of noncovalent protein-ligand and protein-protein interactions under physiological conditions, which are responsible for certain diseases such as Alzheimer's Disease (AD). Mapping of these noncovalent complexes, identification of binding sites and design of novel inhibitors for AD.

1998 - 2003: Analysis and structure identification of bioactive compounds derived from natural products with methods based on chromatography and mass spectrometry. Development of analytical methodology for the detection, identification and monitoring of Estrogen Disruptors.

1987 - 1998: Analysis of Pharmaceutical Compounds, Natural Products and Biotechnology molecules with methods based on chromatography and mass spectrometry. Drug Metabolism and Pharmacokinetic studies of pharmaceutical compounds. Structure validation of recombinant protein products as part of the drug's submission procedures for FDA approval (IND, NDA and structure certificate files). Detection and identification of post-translational modifications in recombinant proteins.

1985 - 1987: Training in advanced analytical techniques and development of methodologies for solving biomedical problems (Mayo Medical School). Writeup and submission of research proposals to US funding agencies (NIH). Teaching undergraduate and graduate special courses to Mayo Medical School students.

TEACHING

2013 - to date: Undergraduate course in Pharmacology/ Drug Metabolism - Pharmacokinetics, University of Athens Medical School, Athens, Greece.

2003 - 2013: Postgraduate (MSc) courses in:

- Modern methods of macromolecules analysis,
- Applied pharmaceutical analysis,
- Drug level assessment in biological samples

MSc Program, Department of Pharmacy, University of Patras, Patras, Greece.

2009 - 2013: Postgraduate course in the inter-departmental postgraduate program “Medicinal Chemistry: Design and Development of Pharmaceutical Products”, MSc Program, University of Patras, Patras, Greece.

2003 - 2013: Undergraduate courses in:

- Instrumental Pharmaceutical Analysis
- Organic Spectroscopy and Mass Spectrometry,
- Separation Techniques and Electrochemical Analysis

BSc Program, Department of Pharmacy, University of Patras, Patras, Greece.

1985 - 1987: Undergraduate and Graduate courses for Mayo Medical School students from the Departments of Pharmacology and Biochemistry, Mayo Clinic & Graduate School of Medicine, MN, USA. *Title:* “Advanced analytical techniques for structural analysis of pharmaceuticals and measurement of drug levels in biological fluids”.

RESEARCH ACTIVITIES

Research Grants:

Participation in 20 Research projects funded by EU, National as well as Private Funding Agencies.

Invited Presentations:

Invited Presentations in US/EU/Asian Universities (20), and International Conferences (27).

Scientific Societies:

American Chemical Society, American Society for Mass Spectrometry, Protein Society, Hellenic Proteomics Society, Hellenic Mass Spectrometry Society (Founding Member, President 2010-2012), Hellenic Pharmacology Society.

Manuscript Reviewer:

Analytical Chemistry, Biochemistry, Journal of American Society for Mass Spectrometry, Journal of Mass Spectrometry, Bioanalysis, Journal of Pharmaceutical and Biomedical Analysis (JPBA), European Respiratory Journal, Journal of Agricultural and Food Chemistry, Journal of Pharmacology and Pharmaceutical Science (JPPS), and ACS Symposium Series.

Publications in Refereed Scientific Journals: 86

Presentations in International Conferences: > 148

Independent Citations: >1500; h-index (ISI WOS®): 22

SELECTED PUBLICATIONS

1. M. Bourdenx, N.S. Koulakiotis, D. Sanoudou, E. Bezar, B. Dehay and **A. Tsarbopoulos**, “Protein aggregation and neurodegeneration in prototypical neurodegenerative diseases: examples of amyloidopathies, tauopathies and synucleinopathies”, *Progress in Neurobiology*, **2016**, in press (doi:10.1016/j.pneurobio.2015.07.003) [Epub ahead of print].
2. E. Pittenauer, E. Rados, N.S. Koulakiotis, **A. Tsarbopoulos** and G. Allmaier, “Processed stigmas of *Crocus Sativus L.* imaged by MALDI-based MS”, *Proteomics* **2016**, 16, 1726-1730.
3. A.V. Ferlemi, P.G. Mermigki, O.E. Makri, D. Anagnostopoulos, N.S. Koulakiotis, M. Margarity, **A. Tsarbopoulos**, C.D. Georgakopoulos and F.N. Lamari, “Cerebral area differential redox response of neonatal rats to selenite-induced oxidative stress and to concurrent administration of highbush blueberry leaf polyphenols”, *Neurochemical Research* **2015**, 40(11), 2280-2292.
4. N.S. Koulakiotis, E. Gikas, G. Iatrou, F.N. Lamari and **A. Tsarbopoulos**, “Quantitation of Crocins and Picrocrocin in Saffron by HPLC: Application to Quality Control and Phytochemical Differentiation from Other *Crocus Taxa*”, *Planta Medica* **2015**, 81, 606-612.
5. E. Pittenauer, N.S. Koulakiotis, **A. Tsarbopoulos** and G. Allmaier, “In-Chain Neutral Hydrocarbon Loss from Crocin Apocarotenoid Ester Glycosides and the Crocetin Aglycon (*Crocus sativus L.*) by ESI Multistage MS”, *J. Mass Spectrom.* **2013**, 48, 1299-1307.
6. E. Gikas, F.N. Bazoti, M. Katsimardou, D. Anagnostopoulos, K. Papanikolaou, I. Inglezos, A. Skoutelis, G. Daikos and **A. Tsarbopoulos**, “Determination of colistin A and colistin B in human plasma by UPLC-ESI high resolution tandem MS: Application to a pharmacokinetic study”, *J. Pharm. Biomed. Analysis* **2013**, 83, 228-236.
7. F.N. Bazoti and **A. Tsarbopoulos**, “Post-translationally modified proteins: glycosylation and disulfide bond formation” chapter in the book entitled “*Characterization of Protein Therapeutics Using Mass Spectrometry*” (Chapter 4), Springer, New York, **2013**, 117-162.
8. E. Pittenauer, N.S. Koulakiotis, **A. Tsarbopoulos** and G. Allmaier, “In-Chain Neutral Hydrocarbon Loss from Crocin Apocarotenoid Ester Glycosides and the Crocetin Aglycon (*Crocus sativus L.*) by ESI Multistage MS”, *J. Mass Spectrom.* **2013**, 48, 1299-1307.
9. **A. Tsarbopoulos** and F.N. Bazoti, “Post-Translationally Modified Proteins: Glycosylation, Phosphorylation, and Disulfide Bond Formation” in “*Protein and Peptide Mass Spectrometry in Drug Discovery*”, Wiley, NY, **2012**, 321-369.
10. F.N. Bazoti, E. Gikas, A. Skoutelis and **A. Tsarbopoulos**, “Development and Validation of an Ultra Performance Liquid Chromatography – Tandem Mass Spectrometry Method for the Quantification of Daptomycin in Human Plasma”, *J. Pharm. Biomed. Analysis* **2011**, 56, 78-85.
11. P. Galanakis, F. Bazoti, J. Bergquist, K. Markides, G. Spyroulias and **A. Tsarbopoulos**, “Study of the Interaction between the Amyloid Beta Peptide A β (1-40) and Antioxidant Compounds by NMR Spectroscopy”, *Biopolymers:Peptide Science* **2011**, 96, 316-327.
12. E. Gikas, F.N. Bazoti, P. Fanourgiakis, E. Perivolioti, A. Roussidis, A. Skoutelis and **A. Tsarbopoulos**, “Simultaneous Quantification of Daptomycin and Rifampicin in Plasma by Ultra Performance Liquid Chromatography: Application to a Pharmacokinetic Study”, *J. Pharm. Biomed. Analysis* **2010**, 51, 901-906.
13. F.N. Bazoti, E. Gikas and **A. Tsarbopoulos**, “Simultaneous Quantification of Oleuropein and Its Metabolites in Rat Plasma by Liquid Chromatography Electrospray Ionization Tandem Mass Spectrometry”, *Biomed. Chromatogr.* **2010**, 24, 506-515.

14. E. Gikas, F.N. Bazoti, P. Fanourgiakis, E. Perivolioti, A. Roussidis, A. Skoutelis and **A. Tsarbopoulos**, “Development and Validation of a UPLC-UV Method for the Determination of Daptomycin in Rabbit Plasma”, *Biomed. Chromatogr.* **2010**, 24, 522-527.
15. F.N. Bazoti, J. Bergquist, K. Markides and **A. Tsarbopoulos**, “Localization of the Binding Site in the Non-Covalent Interaction between Amyloid- β Peptide (1-40) and Oleuropein Using Electrospray Ionization FTICR Mass Spectrometry”, *J. Am. Soc. Mass Spectrom.* **2008**, 19, 1078-1085. (Article illustrated in the cover page of the issue).
16. A. Agalias, P. Magiatis, A.L. Skaltsounis, E. Mikros, **A. Tsarbopoulos**, E. Gikas, I. Spanos and T. Manios “A New Process for the Management of Olive Oil Mill Waste Water and Recovery of Natural Antioxidants”, *J. Agric. Food Chem.* **2007**, 55, 2671-2676.
17. F.N. Bazoti, J. Bergquist, K. Markides and **A. Tsarbopoulos**, “Detection of the Non-Covalent Complex between Amyloid- β Peptide (1-40) and Oleuropein using Electrospray Ionization Mass Spectrometry”, *J. Am. Soc. Mass Spectrom.* **2006**, 17, 568-575.
18. S.S. Petropoulou, P. Siskos and **A. Tsarbopoulos**, “Development and Validation of a Gas Chromatographic – Tandem Mass Spectrometric Method for the Determination of Carbofuran, Carbaryl and their Main Metabolites in Human Plasma”, *Anal. and Bioanal. Chem.* **2006**, 385 (8), 1444-1456.
19. F.N. Bazoti, E. Gikas, L. Skaltsounis and **A. Tsarbopoulos**, “Development of a Liquid Chromatography Electrospray Tandem Mass Spectrometry (LC-ESI MS/MS) Method for the Quantification of Bioactive Substances present in Olive Oil Mill Waste Waters”, *Anal. Chim. Acta* **2006**, 573-574, 258-266.
20. S.S. Petropoulou, E. Gikas, **A. Tsarbopoulos** and P. Siskos, “Gas Chromatographic-Tandem Mass Spectrometric Method for the Quantitation of Carbofuran, Carbaryl and their Main Metabolites in Applicators’ Urine”, *J. Chromatogr. A* **2006**, 1108, 99-110.
21. F.N. Bazoti, **A. Tsarbopoulos**, K. Markides and J. Bergquist, “Study of the Non-Covalent Interaction between Amyloid- β Peptide and Melatonin using Electrospray Ionization Mass Spectrometry”, *J. Mass Spectrom.* **2005**, 40, 182-192.
22. E. Gikas, P. Kormali, D. Tsiipi and **A. Tsarbopoulos**, “Development of a Rapid and Sensitive SPE-LC-ESI MS/MS Method for the Determination of Chloramphenicol in Seafood”, *J. Agric. Food Chem.* **2004**, 52, 1025-1030.
23. C.C. Kumar, H. Nie, L. Armstrong, R. Zhang, S.V. Kumar and **A. Tsarbopoulos**, “Chloramine T-induced Structural and Biochemical Changes in Echistatin”, *FEBS Letters* **1998**, 429, 239-248.
24. D.L. Sali, R. Ingram, M. Wendel, D. Gupta, C. McNemar, **A. Tsarbopoulos**, J.W. Chen, Z. Hong, R. Chase, C. Risano, R. Zhang, N. Yao, A.D. Kwong, L. Ramanathan, H.V. Le and P.C. Weber, “Serine Protease of Hepatitis C Virus Expressed in Insect Cells as the NS3/4A Complex”, *Biochemistry* **1998**, 37, 3392-3401.
25. M.N. Pflumm, S.C. Gruber, **A. Tsarbopoulos**, D. Wylie, B.N. Pramanik, J.N. Bausch and S.T. Patel, “Isolation and Characterization of an Acetylated Impurity in *E. coli*-derived Recombinant Human Interleukin-10 Drug Substance”, *Pharm. Res.* **1997**, 14, 833-836.
26. M. Wiekowski, D. Prosser, S. Taremi, **A. Tsarbopoulos**, C.H. Jenh, C.C. Chou, D. Lundell, P. Zavodny and S. Narula, “Characterization of Potential Antagonists to Human Interleukin-5 Demonstrates their Crossreactivity with the Receptors for Interleukin-3 and GM-CSF”, *Eur. J. Biochem.* **1997**, 246, 625-632.
27. A.K. Ganguly, B.N. Pramanik, E. C. Huang, S. Liberles, L. Heimark, Y.H. Liu, **A. Tsarbopoulos**, R.J. Doll, A.G. Taveras, S. Remiszewski, M.E. Snow, Y.-S. Wang, B. Vibulhan, D. Cesarz, J.E. Brown, J. del Rosario, L. James, P. Kirschmeier, and V. Girijavallabhan, “Detection and Structural Characterization of Ras Oncoprotein-Inhibitors

- Complexes by Electrospray Mass Spectrometry”, *Bioorganic and Medicinal Chemistry* **1997**, 5, 817-820.
28. G. Gitlin, **A. Tsarbopoulos**, S.T. Patel, W. Sydor, B.N. Pramanik, S. Jacobs. L. Westreich, S. Mittelman and J.N. Bausch, “Isolation and Characterization of a Monomethionine Sulfoxide Variant of Interferon α -2b”, *Pharm. Res.* **1996**, 13 (5), 762-769.
 29. M. Karas, U. Bahr, K. Strupat, F. Hillenkamp, **A. Tsarbopoulos** and B. Pramanik, “Matrix Dependence of Metastable Fragmentation of Glycoproteins in MALDI TOF Mass Spectrometry”, *Anal. Chem.* **1995**, 67, 675-679.
 30. **A. Tsarbopoulos**, M. Karas, K. Strupat, B. Pramanik, T.L. Nagabhushan and F. Hillenkamp, “Comparative Mapping of Recombinant Proteins and Glycoproteins by Plasma Desorption and Matrix-Assisted Laser Desorption/Ionization Mass Spectrometry”, *Anal. Chem.* **1994**, 66, 2062-2070.
 31. **A. Tsarbopoulos**, B. Pramanik, J. Labdon, P. Reichert, G. Gitlin, S. Patel, V. Sardana, T.L. Nagabhushan and P.P. Trotta, “Isolation and Characterization of a Resistant Core Peptide of Recombinant Human Granulocyte-Macrophage Colony-Stimulating Factor (GM-CSF); Confirmation of the GM-CSF Amino Acid Sequence by Mass Spectrometry”, *Protein Science* **1993**, 2, 1948-1958.
 32. A.K. Ganguly, B.N. Pramanik, E. Huang, **A. Tsarbopoulos**, V.M. Girijavallabhan and S. Liberles, “Studies of the *Ras*-GDP and *Ras*-GTP Noncovalent Complexes by Electrospray Mass Spectrometry”, *Tetrahedron* **1993**, 49 (36), 7985-7996. (*This paper was included in the special issue dedicated to Nobel Laureate Professor Sir Derek Barton*).
 33. M.D. Gross, M. Gosnell, **A. Tsarbopoulos** and W. Hunziker, “A Functional and Degenerate Pair of EF Hands Contains the Very High Affinity Calcium-binding Site of Calbindin-D_{28k}”, *J. Biol. Chem.* **1993**, 268 (28), 20917-20922.
 34. N. Murgolo, W.T. Windsor, A. Hruza, P. Reichert, **A. Tsarbopoulos**, S. Baldwin, E. Huang, B. Pramanik, S. Ealick and P.P. Trotta, “A Homology Model for Human Interferon α -2b”, *PROTEINS: Structure, Function, and Genetics* **1993**, 17, 62-74.
 35. A.K. Ganguly, B.N. Pramanik, **A. Tsarbopoulos**, T.R. Covey, E. Huang and S.A. Fuhrman, “Mass Spectrometric Detection of the Noncovalent GDP-bound Conformational State of the Human H-Ras Protein”, *J. Am. Chem. Soc.* **1992**, 114, 6559-6560. (*This publication was cited in the CHEMTRACKS-ORGANIC CHEMISTRY (5:386-388; 1992) as one of the top and most exciting, ground-breaking research articles*).
 36. W.T. Windsor, R. Syto, **A. Tsarbopoulos**, R. Zhang, J. Durkin, S. Baldwin, S. Paliwal, P. Mui, B. Pramanik, P.P. Trotta and S.H. Tindall, “Disulfide Bond Assignments and Secondary Structure Analysis of Human and Murine Interleukin 10”, *Biochemistry* **1993**, 32, 8807-8815.
 37. **A. Tsarbopoulos**, G.R. Her, B.N. Pramanik, P.P. Trotta and T.L. Nagabhushan, “Application of Plasma Desorption Mass Spectrometry to Molecular Weight Determination of Human Interleukin-4 Secreted by a Chinese Hamster Ovary Cell Line”, *Anal. Chem.* **1992**, 64, 2303-2305.
 38. **A. Tsarbopoulos**, G.W. Becker, J.L. Occolowitz and I. Jardine, “Peptide and Protein Mapping by ²⁵²Cf-Plasma Desorption Mass Spectrometry”, *Anal. Biochem.* **1988**, 171, 113-123.
 39. B. Pramanik, **A. Tsarbopoulos**, J.E. Labdon, M. Czarniecki, T.L. Nagabhushan and P.P. Trotta, “Demonstration of a 1-3 Disulfide Bond in a Synthetic Nonapeptide Derived from the Signal Sequence and N-terminus of Human γ -Interferon”, *Biochem. Biophys. Res. Commun.* **1988**, 157, 836-843.
 40. I. Jardine, G.S. Scanlan, **A. Tsarbopoulos** and D.J. Liberato, “Plasma Desorption Mass Spectrometry of Peptides Adsorbed on Nitrocellulose from a Glutathione Matrix”, *Anal. Chem.* **1988**, 60, 1086-1088.