BIOGRAPHICAL SKETCH

NAME: Zisimopoulou, Paraskevi

POSITION TITLE: Head of Lab, Researcher

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Wuerzburg, Germany	BSc	1994	Biology
University of Wuerzburg, Germany	MSc	1997	Biology
Institute for Biochemistry, University of Wuerzburg, Germany	Dr. rer. nat.	2001	Biochemistry
Institute for Clinical Neurobiology, University of Wuerzburg, Germany	Postdoctoral	2001-03	Neuroscience
Department of Neurobiology, Hellenic Pasteur Institute, Athens, Greece	Senior Postdoc	2004-17	Neurobiology
Laboratory of Molecular Neurobiology and Immunology, Hellenic Pasteur Institute, Athens, Greece	Senior Researcher	Since 2018	Neurobiology and immunology

Employment

Jan. 1997 – Dec. 1997: Scientific auxiliary employee at the Institute for Biochemistry, University of Wuerzburg, Germany

Jan. 1998 – Sep. 1998: Scholarship holder of the Graduiertenkolleg: „Regulation of Cell Growth“

Oct. 1998 – Dec. 2003: Scientific employee at the University of Wuerzburg, Germany

Jan. 2004 – Dec. 2017: Scientific employee at the Hellenic Pasteur Institute, Greece

Since Jan. 2018: Permanent position Researcher Grade B at the Hellenic Pasteur Institute, Greece

Experience

Oct. 2001 – Dec. 2003: Postdoc at the Institute for Clinical Neurobiology, University of Wuerzburg, Germany

Jan. 2004 – Dec. 2017: Senior Postdoc at the Hellenic Pasteur Institute, Athens, Greece

Since Jan. 2018: Researcher (Grade B), Head of the Laboratory of Molecular Neurobiology and Immunology, Hellenic Pasteur Institute, Athens, Greece

Honors

1997: Scholarship, International Student Office, University of Wuerzburg, Germany

1998: Scholarship, Graduiertenkolleg: „Regulation of Cell Growth“, DFG, Germany

2007: Award, 11th International Conference on Myasthenia Gravis and Related Disorders. May 13 - 16, 2007, Chicago. Recombinant domains of AChR subunits as immunoadsorbents for the development of an antigen-specific Myasthenia Gravis therapy

2012: Award, 12th International Conference on Myasthenia Gravis and Related Disorders, May 21 – 23, 2012, The New York Academy of Sciences, New York. A multinational study on the detection of autoantibodies to the novel antigen LRP4, in double seronegative Myasthenia Gravis patient sera

Contribution to Science

Nicotinic acetylcholine receptors. My research interests at the Laboratory of Molecular Neurobiology and Immunology involves the study of both muscle- and neuronal-type nicotinic acetylcholine receptors. I participated in obtaining functional domains of these receptors with properties similar to those of the native proteins from several heterologous expression systems for further functional studies. More specifically, I designed the constructs, optimized the purification protocols studied the performed the pharmacology of these recombinant proteins and other members of the laboratory performed the crystallization trials in order to resolve the structure of these molecules.

a) Design and expression of human alpha7 nicotinic acetylcholine receptor extracellular domain mutants with enhanced solubility and ligand-binding properties. Zouridakis M, **Zisimopoulou P**, Eliopoulos E, Poulas K, Tzartos SJ. Biochim Biophys Acta. 2009 Feb;1794(2):355-66. doi: 10.1016/j.bbapap.2008.11.002.

b) Expression of water-soluble, ligand-binding concatameric extracellular domains of the human neuronal nicotinic receptor alpha4 and beta2 subunits in the yeast Pichia pastoris: glycosylation is not required for ligand binding. Stergiou C, **Zisimopoulou P**, Tzartos SJ. J Biol Chem. 2011 Mar 18;286(11):8884-92. doi: 10.1074/jbc.M110.171645.

c) Expression of human AChR extracellular domain mutants with improved characteristics. Lazaridis K, **Zisimopoulou P**, Giastas P, Bitzopoulou K, Evangelakou P, Sideri A, Tzartos SJ. Int J Biol Macromol. 2014 Feb;63:210-7. doi: 10.1016/j.ijbiomac.2013.11.003.

d) Purification and functional characterization of a truncated human α4β2 nicotinic acetylcholine receptor. Kouvatsos N, Niarchos A, **Zisimopoulou P**, Eliopoulos E, Poulas K, Tzartos S. Int J Biol Macromol. 2014 Sep;70:320-6. doi: 10.1016/j.ijbiomac.2014.06.058.

Development of a therapeutic approach for myasthenia gravis. Later on, in the same laboratory, I developed a specific therapeutic approach for myasthenia gravis. This approach was based on the ex vivo purification of patients’ plasma through immunoadsorption columns, which contained immobilized recombinant proteins on a suitable matrix. The immobilized proteins had been analyzed by a series of experiments for their ability, specificity and safety of specificity to be used as immunoadsorbents. This approach presents an antigen-specific treatment for myasthenia gravis and a model for similar treatments for autoimmune disorders.

a) Antigen-specific apheresis of human anti-acetylcholine receptor autoantibodies from myasthenia gravis patients' sera using Escherichia coli-expressed receptor domains. **Zisimopoulou P**, Lagoumintzis G, Poulas K, Tzartos SJ. J Neuroimmunol. 2008 Aug 30;200(1-2):133-41. doi: 10.1016/j.jneuroim.2008.06.002.

b) Scale up and safety parameters of antigen specific immunoadsorption of human anti-acetylcholine receptor antibodies. Lagoumintzis G, **Zisimopoulou P**, Trakas N, Grapsa E, Poulas K, Tzartos SJ. J Neuroimmunol. 2014 Feb 15;267(1-2):1-6. doi: 10.1016/j.jneuroim.2013.11.001.

c) Expression of extracellular domains of muscle specific kinase (MuSK) and use as immunoadsorbents for the development of an antigen-specific therapy. Skriapa L, **Zisimopoulou P**, Trakas N, Grapsa E, Tzartos SJ. J Neuroimmunol. 2014 Nov 15;276(1-2):150-8. doi: 10.1016/j.jneuroim.2014.09.013.

Development of diagnostic procedures in neurological autoimmune disorders. During the last years, my research interests are mainly focused on the development of novel tests for the diagnosis of myasthenia gravis, neuromyelitis optica (NMO) and other neuroimmune diseases.

I accomplished to develop a hypersensitive RIA test for AChR and MuSK antibodies that detect ~10 times lower concentrations of the respective antibodies (patent no. 20100100240 21/4/2010). In addition, I developed a highly reliable diagnostic technique for the detection of LRP4 autoantibodies (with Cell Based Assay, CBA) and coordinated a large study in collaboration with myasthenia gravis clinics from 10 different European countries. Interestingly, this diagnostic technique revealed high LRP4 autoantibodies in patients with amyotrophic lateral sclerosis, at concentrations similar to those of myasthenia LRP4 antibodies. Furthermore, different CBAs for the detection of MuSK and muscle type nAChR autoantibodies were established in my lab, facilitating the diagnosis of myasthenia performed by the Diagnostic Services of HPI. Finally, I was involved in the identification of a novel autoantigen in patients with NMO, or similar symptoms (NMOsd), namely aquaporin 1 and autoantibodies against aquaporins 8 and 9 in patients with Sjögren's syndrome.

a) Development of a highly sensitive diagnostic assay for muscle-specific tyrosine kinase (MuSK) autoantibodies in myasthenia gravis. Trakas N, **Zisimopoulou P**, Tzartos SJ. J Neuroimmunol. 2011 Dec 15;240-241:79-86. doi: 10.1016/j.jneuroim.2011.09.007.

b) Anti-aquaporin-1 autoantibodies in patients with neuromyelitis optica spectrum disorders. Tzartos JS, Stergiou C, Kilidireas K, **Zisimopoulou P**, Thomaidis T, Tzartos SJ. PLoS One. 2013 Sep 23;8(9):e74773. doi: 10.1371/journal.pone.0074773.

c) A comprehensive analysis of the epidemiology and clinical characteristics of anti-LRP4 in myasthenia gravis. **Zisimopoulou P**, Evangelakou P, Tzartos J, Lazaridis K, Zouvelou V, Mantegazza R, Antozzi C, Andreetta F, Evoli A, Deymeer F, Saruhan-Direskeneli G, Durmus H, Brenner T, Vaknin A, Berrih-Aknin S, Frenkian Cuvelier M, Stojkovic T, DeBaets M, Losen M, Martinez-Martinez P, Kleopa KA, Zamba-Papanicolaou E, Kyriakides T, Kostera-Pruszczyk A, Szczudlik P, Szyluk B, Lavrnic D, Basta I, Peric S, Tallaksen C, Maniaol A, Tzartos SJ. J Autoimmun. 2014 Aug;52:139-45. doi: 10.1016/j.jaut.2013.12.004.

d) LRP4 antibodies in serum and CSF from amyotrophic lateral sclerosis patients. Tzartos JS, **Zisimopoulou P**, Rentzos M, Karandreas N, Zouvelou V, Evangelakou P, Tsonis A, Thomaidis T, Lauria G, Andreetta F, Mantegazza R, Tzartos SJ. Ann Clin Transl Neurol. 2014 Feb;1(2):80-7. doi: 10.1002/acn3.26.

e) MuSK autoantibodies in myasthenia gravis detected by cell based assay--A multinational study. Tsonis AI, **Zisimopoulou P**, Lazaridis K, Tzartos J, Matsigkou E, Zouvelou V, Mantegazza R, Antozzi C, Andreetta F, Evoli A, Deymeer F, Saruhan-Direskeneli G, Durmus H, Brenner T, Vaknin A, Berrih-Aknin S, Behin A, Sharshar T, De Baets M, Losen M, Martinez-Martinez P, Kleopa KA, Zamba-Papanicolaou E, Kyriakides T, Kostera-Pruszczyk A, Szczudlik P, Szyluk B, Lavrnic D, Basta I, Peric S, Tallaksen C, Maniaol A, Casasnovas

Pons C, Pitha J, Jakubíkova M, Hanisch F, Tzartos SJ. J Neuroimmunol. 2015 Jul 15;284:10-7. doi: 10.1016/j.jneuroim.2015.04.015.

f) Antibodies to aquaporins are frequent in patients with primary Sjögren's syndrome. Tzartos JS, Stergiou C, Daoussis D, **Zisimopoulou P**, Andonopoulos AP, Zolota V, Tzartos SJ. Rheumatology (Oxford). 2017 Dec 1;56(12):2114-2122. doi: 10.1093/rheumatology/kex328.

Complete List of Published Work in:

https://pubmed.ncbi.nlm.nih.gov/?term=Zisimopoulou+P&sort=date

Ongoing Research Support

PI, Operational Program Competitiveness, Entrepreneurship and Innovation, European Union and Greek national funds, Biomarkers in autoimmune neurological dieseases, NeuroMarkers, MIS 5032815, 2018-2021

Co-Investigator, Operational Program Competitiveness, Entrepreneurship and Innovation, European Union and Greek national funds, Effectiveness of terrestrial and marine plant extracts for the prevention and treatment of parasite infections (Microcotyle spp, Myxosporea) and of myxobacteriosis in cultured Sea bream (Sparus aurata L.), AltMedSea-bream, MIS 5055881, 2020-2022

Co-Investigator, Stavros Niarchos Foundation, Development of innovative biological products and services for infectious and neurodegenerative diseases, 2017-2021

Completed Research Support

PI, Bilateral R&D Cooperation between Greece and Israel, Development of tools for Understanding and Diagnosis of Neuroimmune Disorders, NeuroID/3257, 2013-2015

Co-Investigator

EU Grants:

FP7. Neurotransmitter Cys-loop receptors: structure, function and disease. 2008-13

FP7. Fight-MG. Myasthenias, a group of immune mediated neurological diseases: from etiology to therapy. 2009-13

FP7-Regpot. Development of a center of excellence in Neurosignaling. 2010-13

Grants from other international sources

AFM. Characterization of autoantibody subgroups in myasthenia gravis. 2006-07

MDA USA. Antigen-specific therapeutic autoantibody depletion in myasthenia gravis. 2010-12

MDA USA. Diagnosis and characterization of LRP4-MG, a novel myasthenia gravis subtype. 2013-16

AFM. Diagnosis, prevalence and characterization of a novel myasthenia gravis subtype, LRP4-MG. 2013-15

Grants from Greek sources:

ARISTEIA, Myasthenia Gravis, 2012-15