

BIOLOGY-BIOCHEMISTRY

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NAME OF THE HEAD OF THE LABORATORY	Prof. Fotini Stylianopoulou

HEAD OF THE LABORATORY DETAILS

Fotini Stylianopoulou was born in Athens, Greece in 1948. She obtained her PhD in Neuro- and Biobehavioural Sciences from Stanford University, USA, in 1976, and has been a Professor of Biology in the University of Athens since 1985. Her research interests are in the area of cellular mechanisms underlying neuronal plasticity (using rodents as experimental animals), including sexual differentiation of the brain and the neurobiology of stress, particularly the effects of early experiences in programming adult behaviour.

HISTORY

The Biology-Biochemistry lab was founded in 1992 and Prof. Stylianopoulou has been its director since its foundation. 18 PhDs were conducted in it and more than 35 MSc students have been trained in molecular and cellular biology as well as behavioral techniques.

LABORATORY PERSONNEL

Name	Degree	Tel.Nr/Fax	e-mail
Teaching and Research Staff			
FOTINI STYLIANOPOULOU	PROFESSOR	00302107461467	fstilian@nurs.uoa.gr
ANTONIOS STAMATAKIS	ASSISTANT PROFESSOR	00302107461453	astam@nurs.uoa.gr
Phd Candidate Students			
ANASTASSIA DIAMANTOPOULOU	PhD Student	00302107461452	
ANDRONIKI RAFTOGIANNI	PhD Student	00302107461452	

CURRICULUM

Undergraduate Program (2010 - 2011)

Cell Biology, Winter Semester

Cell Biology laboratory exercises, Winter Semester

Biology of Behaviour, Spring Semester

Human Genetics, Spring Semester

Postgraduate Program 2009-2010

Psychoneuroendocrinology, Spring Semester

Biology of Cancer, Spring Semester

Methodology of Research, Spring Semester

Neurobiology (interdisciplinary MSc Molecular Medicine), Spring Semester

Molecular Bases of Genetic Diseases (interdisciplinary MSc Clinical Biochemistry & Molecular Diagnostics), Spring Semester

Introduction to Neuroscience (interdisciplinary MSc Cognitive Neuroscience), Winter Semester

Core course in Neuroscience (interdisciplinary MSc "Brain and Mind"), Winter Semester

RESEARCH ACTIVITY

- Neurobiology of Behaviour
- Effects of early life experiences on brain development and function
- Neurobiology of stress responses
- Cellular and molecular mechanisms of learning and memory
- Sexual differentiation of the brain
- Use of growth factors and neural stem cells for the repair of nervous tissue damage following injury and neurodegeneration

RESEARCH INFRASTRUCTURE

- Animal behavior analysis system: Ethovision software on two PC workstations equipped with analogue and digital videocameras
- Image analysis system (Image ProPlus) connected to an optical microscope

- Fluorescent microscope
- Optical microscope
- Deep-freezers
- Centrifuges
- PCR-apparatus
- In-situ hybridization chamber
- Incubation chamber
- Western blot apparatus
- Nucleic acid Electrophoresis apparatus

RESEARCH PROJECTS

1. Effects of early experiences on the development of the brain and on its neurochemistry and function (including behavior) during adulthood.
2. Neurobiology of stress
3. Neurobiology of maternal behavior
4. Investigation of the neuroprotective potential of IGF-I and neural stem cell transplantation in animal models of neurodegenerative diseases

PUBLICATIONS during the last 10 years

Bolaris, S., Bozas, E., Benekou, A., Philippidis, H., and Stylianopoulou, F. "In utero radiation-induced apoptosis and p53 gene expression in the developing rat brain" *International Journal of Radiation Biology* 77(1), 71-81, 2001

Benekou, A., Bolaris, S., Kazanis, E., Bozas, E., Philippidis, H., and Stylianopoulou, F. "In utero radiation-induced changes in growth factor levels in the developing rat brain" *International Journal of Radiation Biology* 77(1), 83-93, 2001

Giannakopoulou, M., Bozas, E., Philipidis, H., and Stylianopoulou, F. "Protooncogene c-fos involvement in the molecular mechanism of rat brain sexual differentiation" *Neuroendocrinology* 73(6), 387-396, 2001.

Papaioannou, A., Gerozissis, K., Prokopiou, A., Bolaris, S., and Stylianopoulou, F. "Sex differences in the effects of neonatal handling on the animal's response to stress and the vulnerability for depressive behaviour" *Behavioural Brain Research* 129, 131-139, 2002.

Papaioannou, A., Alikaridis, F., Bolaris, S., and Stylianopoulou, F. "Effects of neonatal handling on basal and stress-induced monoamine levels in the male and female rat brain" *Neuroscience* 114, 195-206, 2002.

Papaioannou, A., Stylianopoulou, F. "Early Experiences Affect Adaptability and the propensity for Psychosomatic Problems". *International Congress Series*, 1241, 189-195, 2002.

- Kazanis I., Bozas, E., Philippidis, H., and Stylianopoulou, F. "Neuroprotective effects of insulin-like growth factor I (IGF-I) following a penetrating brain injury in rats" *Brain Research*, 991, 34-45, 2003.
- Mantelas A., Stamatakis A., Kazanis I., Philippidis H., and Stylianopoulou F. "Control of neuronal nitric oxide synthase and brain derived neurotrophic factor levels by GABA-A receptors in the developing rat cortex". *Developmental Brain Research*, 145, 185-195, 2003.
- Kazanis I., Giannakopoulou M., Philippidis H., and Stylianopoulou F. "Alterations in IGF-I, BDNF and NT-3 levels following experimental brain trauma and the effect of IGF-I administration". *Experimental Neurology* 186(2), 221-34, 2004.
- Panagiotaropoulos T., Papaioannou A., Pondiki S., Prokopiou A., Stylianopoulou F., and Gerozissis K. "Effect of neonatal handling and sex on basal and chronic stress-induced corticosterone and leptin secretion" *Neuroendocrinology* 79(2),109-18, 2004.
- Panagiotaropoulos T., Pondiki S., Papaioannou A., Stamatakis A., Alikaridis F., Gerozissis K., and Stylianopoulou F. "Neonatal handling and gender modulate brain monoamines and plasma corticosterone levels following repeated stressors in adulthood". *Neuroendocrinology*, 80(3), 181-91, 2004.
- Garoflos E., Panagiotaropoulos T., Pondiki S., Stamatakis A., Philippidis H. and Stylianopoulou F. "Cellular mechanisms underlying the effects of an early experience on cognitive abilities and affective states". *Ann Gen Hosp Psychiatry*, 4(1), 8, 2005
- Garoflos E., Stamatakis A., Mantelas A., Philippidis H. and Stylianopoulou F. "Cellular mechanisms underlying an effect of "early handling" on pCREB and BDNF in the neonatal rat hippocampus" *Brain Res.* 1052 (2), 187-95, 2005
- Fragkuli A., Hearn C., Errington M., Cooke S., Grigoriou M., Bliss T., Stylianopoulou F. and Pachnis V. "Loss of forebrain cholinergic neurons and impairment in spatial learning and memory in LHX7-deficient mice". *Eur. J. Neurosci.*, 21(11), 2923-38, 2005
- Fragkouli A., Stamatakis A., Zographos E., Pachnis V. and Stylianopoulou F. "Sexually dimorphic effects of the *lhx7* null mutation on forebrain cholinergic function". *Neuroscience*,137(4):1153-1164, 2006.
- Mantelas A, Stamatakis A, Fameli M, Stylianopoulou F. "Sex differences in the control of neuronal nitric oxide synthase by GABA-A receptors in the developing rat diencephalon." *Brain Res.*, 1149:38-49, 2007.
- Garoflos E, Stamatakis A, Pondiki S, Apostolou A, Philippidis H, Stylianopoulou F. "Cellular mechanisms underlying the effect of a single exposure to neonatal handling on neurotrophin-3 in the brain of 1-day-old rats." *Neuroscience* 148(2):349-58, 2007.
- Stamatakis A., Pondiki S., Kitraki E., Diamantopoulou A., Panagiotaropoulos T., Raftogianni A., Stylianopoulou F. "Effect of neonatal handling on adult rat spatial learning and memory following acute stress." *Stress*, 11(2):148-159, 2008.
- Garoflos E, Stamatakis A, Raftogianni A, Pondiki S, Stylianopoulou F. "Neonatal handling on the first postnatal day leads to increased maternal behavior and fos levels in the brain of the newborn rat." *Dev Psychobiol.* 50(7):704-13, 2008.
- Savvaki M., Panagiotaropoulos T., Stamatakis A., Sargiannidou I., Karatzioula P., Watanabe K., Stylianopoulou F., Karagogeos D., Kleopas K. "Impairment of learning and memory in

TAG-1 deficient mice associated with shorter CNS internodes and disrupted juxtaparanodes.” *Molecular Cellular Neuroscience*, 39(3):478-90, 2008.

Panagiotaropoulos T., Diamantopoulou A., Stamatakis A., Dimitropoulou M., Stylianopoulou F. “Learning of a T-maze by rat pups when contact with the mother is either permitted or denied.” *Neurobiology of Learning and Memory*, 91(1):2-12, 2009.

Fragkouli A, Pachnis V, Stylianopoulou F. “ Sex differences in water maze performance and cortical neurotrophin levels of LHX7 null mutant mice.” *Neuroscience*, 158(4):1224-33, 2009.

Kiosterakis G., Stamatakis A., Diamantopoulou A., Fameli M, Stylianopoulou F. “Long-term effects of neonatal handling on mu-opioid receptor levels in the brain of the offspring.” *Dev. Psychobiology*, 51(5):439-449, 2009.

Stamatakis A., Toutountzi E., Fragioudaki K, Kouvelas ED, Stylianopoulou F, Mitsacos A. “Selective effects of neonatal handling on rat brain NMDA receptor.” *Neuroscience*, 164(4):1457-67, 2009.

Miltiadous P., Stamatakis A., Stylianopoulou F. “Neuroprotective effects of IGF-I following kainic acid-induced hippocampal degeneration in the rat.” *Cellular & Molecular Neurobiology* 30(3):347-360, 2010.

Fragopoulou A.F., Miltiadous P., Stamatakis A., Stylianopoulou F., Koussoulakos S. and Margaritis L.H. “Whole body exposure with GSM 900 MHz affects spatial memory in mice.” *Pathophysiology*, 17(3):179-87, 2010.

Kotronoulas G, Stamatakis A, Stylianopoulou F. “Hormones, hormonal agents, and neuropeptides involved in the neuroendocrine regulation of sleep in humans.” *Hormones* 8(4):232-48, 2010.

Kouroupi G, Lavdas AA, Gaitanou M, Thomaidou D, Stylianopoulou F, Matsas R. “Lentivirus-mediated expression of insulin-like growth factor-I promotes neural stem/precursor cell proliferation and enhances their potential to generate neurons.” *J Neurochem.* 115(2):460-74, 2010.

Savvaki M, Theodorakis K, Zoupi L, Stamatakis A, Tivodar S, Kyriacou K, Stylianopoulou F, Karagogeos D. “The expression of TAG-1 in glial cells is sufficient for the formation of the juxtaparanodal complex and the phenotypic rescue of tag-1 homozygous mutants in the CNS.” *J Neurosci.* 30(42):13943-54, 2010.

Thanopoulou K, Fragkouli A, Stylianopoulou F, Georgopoulos S. “Scavenger receptor class B type I (SR-BI) regulates perivascular macrophages and modifies amyloid pathology in an Alzheimer mouse model.” *Proc Natl Acad Sci U S A* 107(48):20816-21, 2010.

Ntzouni MP, Stamatakis A, Stylianopoulou F, Margaritis LH. Short-term memory in mice is affected by mobile phone radiation. *Pathophysiology*, 18(3):193-199, 2011.

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