

PERSONAL INFORMATION

Family name, First name: **SAVAKI, HELEN**

Nationality: **Greek**

URL for web site:

http://www.iacm.forth.gr/index_people.php?l=en&group=5&page=people&pageid=37

<http://brain-mind.med.uoc.gr/en/node/16>

EDUCATION

1968-74: School of Medicine, University of Athens, Greece (MD).

1972-73: Courses in Experimental Psychology, Athens Pierce College.

1973-76: Doctorate Thesis in Biochemistry, School of Medicine, University of Athens (SciD).

1976-78: Neuroscience courses, Foundation for Advanced Education in Sciences, NIH, USA.

1977-78: Biochemistry/Computer courses, George Washington University Washington DC, USA.

1977-78: NIH Radiation Courses for license by the U.S. Nuclear Regulatory Commission, USA.

MEMBERSHIPS

Society for Neuroscience, U.S.A (SFN)

The New York Academy of Sciences

Hellenic Society for Neuroscience

European Neuroscience Association (ENA)

International Brain Research Organization (IBRO)

International Society of Cerebral Blood Flow and Metabolism

International Neuropsychological Symposium (INS)

CURRENT POSITIONS

1994-present: Collaborating Researcher, Computational Neuroscience group, Institute of Applied and Computational Mathematics (IACM), Foundation for Research and Technology Hellas (FORTH) (<http://www.iacm.forth.gr>).

Sept 2018-present: Professor Emerita, Medical School University of Crete (<http://www.en.uoc.gr/courses/faculty-sciences-health/medical-school.html>)

Sept 2018-present: Full member of the Inter-Departmental Graduate Program in “Brain and Mind Sciences” (<http://brain-mind.med.uoc.gr/?q=node/9>)

PREVIOUS POSITIONS

1990-Sept 2018: Full Professor (tenure) of Physiology, Medical Faculty, University of Crete, Greece, teaching Human Physiology courses to Medical students, and Neuroscience courses to graduate students

2017-Aug 2018: Director of the Inter-Departmental Graduate Program in “Brain and Mind Sciences”

July-Sept. **1975**: Research Fellow, Dept. of Psychobiology, Medical School of Sao Paulo, Brazil.
Jan-April **1976**: Research Fellow, Dept. of Anaesthesiology, Columbia University, NY, USA.
1976-1979: Postdoctoral Research Fellow, Lab. Cerebral Metabolism, NIH, Bethesda, MD, USA.
1979-1980: Postdoctoral Research Fellow, Wellcome Surgical Institute, Glasgow University, U.K.
1980-1984: Postdoctoral Research Fellow, Group NB-INSERM u.114, College de France, Paris.
1984-1990: Associate Professor of Physiology, Medical Faculty, University of Crete, Greece.
1987, 1990, 2001: Chair of Dept. Basic Sciences, Medical Faculty, University of Crete.

FELLOWSHIPS, AWARDS, GRANTS

1968-1974: Six years **Fellowship** to study medicine, from Papadakis Foundation.
1975: Research Fellowship to work at the Dept. of Psychobiology, **Medical School of Sao Paulo**.
1976: Research Fellowship from the College of Physicians and Surgeons, **Columbia University NY**.
1976-1979: Research Fellowship from **NIH**, work at Lab. Cerebral Metabolism, **Bethesda, MD**.
1979-1980: One year Postdoctoral Research Fellowship from the **Wellcome Trust**, to work at the Wellcome Surgical Institute, Glasgow University, **UK**.
1980-1981: Postdoctoral Research Fellowship from the Institut National de la Sante et de la Recherche Medicale, to work at the **College de France**: Groupe NB-INSERM u-114.
1981-1983: Postdoctoral Research Fellowships from the (i) **European Science Foundation**, (ii) **Fondation Fyssen**, and (iii) **Ministere Francais des Relations Exterieures**, to continue working at the College de France.
1983-1985: **Cadre Position I** at Pharmuka-Labs, functioning as Research Consultant, while continued working at College de France, Groupe NB-INSERM u.114.
Oct.-Jan. **1987**: Visiting Scientist at **Johns Hopkins University**, USA, with **Fulbright fellowship**.
1987-1988: Principal Investigator, **Grant**8745012/004 from the Greek Ministry of Nat. Education.
1988-1989: Six months sabbatical from the University of Crete: 3 months at the Institut des Neurosciences, **University Pierre et Marie Curie** (Paris VI), and 3 months appointed as **Visiting Scientist** at **NIH, USA**.
1988-1989: Principal Investigator, **Grant** 86EΔ856 from the Greek General Secretariat of Research and Technology (GGRT).
1988-1989: Coordinator, ERASMUS **Grant** ICP-88-0008-G from the **European Community**.
1989-1990: Principal Investigator, **Grant** ΑΔ 2426 15/2/89 from GGRT & **Embassy of France**.
1989-1991: Co-Investigator, **Grant** 87 EΔ 34 from the **GSRT**.
1990-1992: Principal Investigator, **Grant** EO31, **Greek Ministry of Health**.
1990-1991: Coordinator, ERASMUS **Grant** ICP-90-G-0068 from the **European Community**.
1991-1993: Principal Investigator, **Grant** 89 EΔ401 from the **GSRT**.
1991-1993: Principal Investigator, **Grant** from the **Region of Crete**.
1993-1995: Principal Investigator, **Grant** 91EΔ863 from the **GSRT**.
1993-1996: Principal Investigator, Human Capital and Mobility **Grant** ERB4050PL 920809 (Fellowship Network) from the **European Community**.

- 1996-1998:** Principal Investigator, **Grant** 95 EΔ24 from the **GSRT**.
- 1998-2000:** Co-Investigator, **Grant** EPEAEK for the Crete Graduate Program “Neuroscience”, **Greek Ministry of Education**.
- 1998-2000:** Co-Investigator, **Grant** BIOTECH (**European Commission-** BIO4-CT98-0546).
- 1998-2001:** Principal-Investigator, **Human Frontier Science** Program (RG0039/1998-B).
- 1998-2001:** Coordinator, **Grant** 97EL-35 from the **GSRT**.
- 2002-2005:** Principal-Investigator, **Grant** Fifth Framework Quality of Life Program (**European Commission-** Directorate General XII, QLRT-2001-00746).
- 2002-2005:** Principal Investigator, **Grant** 01EΔ111 from the **GSRT**.
- 2006-2009:** Co-Investigator, **Grant** 03EΔ803 from the **GSRT**.
- 2006-2009:** Coordinator, **Grant European Commission** Sixth Framework IST-027574.
- 2014-2016:** Principal Investigator, **Grant** «ΑΡΙΣΤΕΙΑ-II» from the **GSRT**.

EXPERT CONTRACTOR

- 1998-1999:** Expert Contractor for Monitoring the **BIOMED-2** Program (European Commission-Directorate General XII).
- 1999-2000:** Expert Contractor for Evaluation of **Fifth Framework** Projects (European Commission QLEV-CT99-01137).
- 2000-2001:** Expert Contractor for Monitoring the **Quality of Life** Program (European Commission-Directorate General XII).
- 2010-2013:** Appointed by the European Research Council as **Referee in peer review evaluations**.
- 2010-present:** Expert Contractor for the **Seventh Research Framework** Program.

CONTRIBUTIONS TO EARLY CAREERS OF EXCELLENT RESEARCHERS

Present positions of selected ex-PhD students:

1. Antoine Girault, Research Director, Inserm, Paris
2. Vassilis Raos, Associate Professor, University of Crete
3. Georgia Gregoriou, Associate Professor, University of Crete
4. Sophia Bakola Research Fellow Monash University Melbourne Australia
5. Marina Kilintari. Postdoc Fellow University College London.

SELECTED PUBLICATIONS

Savaki HE, Kadekaro M, Jehle J, and Sokoloff L. Alpha- and beta-adrenoreceptor blockers have opposite effects on energy metabolism of the central auditory system. *Nature* 276:521-523, 1978.

Schwartz WJ, Smith CB, Davidsen L, Savaki H, Sokoloff L, Mata M, Fink DJ, and Gainer H. Metabolic mapping of functional activity in the hypothalamo-neurohypophysial system of the rat. *Science* 205:723-725, 1979.

McCulloch J, Savaki HE, McCulloch MC, and Sokoloff L. Specific distribution of metabolic alterations in cerebral cortex following apomorphine administration. *Nature* 282:303-305, 1979.

McCulloch J, Savaki HE, McCulloch MC, and Sokoloff L. Retina-dependent activation by apomorphine of metabolic activity in the superficial layer of the superior colliculus. *Science* 207:313-315, 1980.

Savaki HE, Davidsen L, Smith C, and Sokoloff L. Measurement of free glucose turnover in brain. *J Neurochem* 35:495-502, 1980.

Savaki HE, Kadekaro M, McCulloch J, and Sokoloff L. The central noradrenergic system in the rat: metabolic mapping with alpha-adrenergic blocking agents. *Brain Res* 234:65-79, 1982.

Savaki HE, Macpherson H, and McCulloch J. Alterations in local cerebral glucose utilization during hemorrhagic hypotension in the rat. *Circ Res* 50:633-644, 1982.

Savaki HE, Desban M, Glowinski J, and Besson MJ. Local cerebral glucose consumption in the rat. I. Effects of halothane anesthesia. *J Comp Neurol* 213:36-45, 1983.

Savaki HE, Desban M, Glowinski J, and Besson MJ. Local cerebral glucose consumption in the rat. II. Effects of unilateral substantia nigra stimulation in conscious and in halothane-anesthetized animals. *J Comp Neurol* 213:46-65, 1983.

Savaki HE, Graham DI, and McCulloch J. Differential effects of locus coeruleus lesions upon metabolic activity in CNS nuclei involved in cardiovascular regulation. *Brain Res* 271:109-114, 1983.

Savaki HE, Girault JA, Desban M, Glowinski J, and Besson MJ. Local cerebral metabolic effects induced by nigral stimulation following ventromedial thalamic lesions. I: Basal ganglia and related motor structures. *Brain Res Bull* 12:609-616, 1984.

Savaki HE, Graham DI, Grome JJ, and McCulloch J. Functional consequences of unilateral lesion of the locus coeruleus: a quantitative [¹⁴C]2-deoxyglucose investigation. *Brain Res* 292:239-249, 1984.

Savaki HE, Girault JA, Desban M, Glowinski J, and Besson MJ. Local cerebral metabolic effects induced by nigral stimulation following ventromedial thalamic lesions. II: Sensory motor, reticular and limbic systems. *Brain Res Bull* 14:287-296, 1985.

Savaki HE, Girault JA, Spampinato U, Truong NA, Glowinski J, and Besson MJ. Release of newly synthesized 3H-dopamine in the striatum: an adaptation of the push-pull cannula method to awake restrained and anesthetized rats. *Brain Res Bull* 16:149-154, 1986.

Girault JA, Spampinato U, Savaki HE, Glowinski J, and Besson MJ. In vivo release of [³H]gamma-aminobutyric acid in the rat neostriatum--I. Characterization and topographical heterogeneity of the effects of dopaminergic and cholinergic agents. *Neuroscience* 19:1101-1108, 1986.

Savaki HE, Pizarro P, Dermon C, and Arsenis S. Deoxyglucose analysis of the specific topographic functional interrelations between substantia nigra and globus pallidus. *Brain Res Bull* 21:855-863, 1988.

Dermon CR, Pizarro P, Georgopoulos P, and Savaki HE. Bilateral alterations in local cerebral glucose utilization following intranigral application of the GABAergic agonist muscimol. *J Neurosci* 10:2861-2878, 1990.

Dermon CR, Tzagoonissakis M, and Savaki HE. Bilateral cerebral metabolic effects of pharmacological manipulation of the substantia nigra in the rat: unilateral intranigral application of the putative excitatory neurotransmitter substance P. *Neuroscience* 50:795-809, 1992.

Savaki HE, Kennedy C, Sokoloff L, and Mishkin M. Visually guided reaching with the forelimb contralateral to a "blind" hemisphere: a metabolic mapping study in monkeys. *J Neurosci* 13:2772-2789, 1993.

Raos VC, and Savaki HE. Functional anatomy of the thalamic *reticular* nucleus as revealed with the [¹⁴C]deoxyglucose method following electrical stimulation and electrolytic lesion. *Neuroscience* 68:287-297, 1995.

Raos VC, Dermon CR, and Savaki HE. Functional anatomy of the thalamic *centrolateral* nucleus as revealed with the [¹⁴C]deoxyglucose method following electrical stimulation and electrolytic lesion. *Neuroscience* 68:299-313, 1995.

Savaki HE, Kennedy C, Sokoloff L, and Mishkin M. Visually guided reaching with the forelimb contralateral to a "blind" hemisphere in the monkey: contribution of the cerebellum. *Neuroscience* 75:143-159, 1996.

Savaki HE, Raos VC, and Dalezios Y. Spatial cortical patterns of metabolic activity in monkeys performing a visually guided reaching task with one forelimb. *Neuroscience* 76:1007-1034, 1997.

Dalezios Y, Gregoriou GG, and Savaki HE. Metabolic activity patterns in the monkey visual cortex as revealed by spectral analysis. *J Cereb Blood Flow Metab* 19:401-416, 1999.

Savaki HE. Sokoloff's 14C-deoxyglucose method. *Brain Res Bull* 50:405-407, 1999.

Gregoriou GG, and Savaki HE. The intraparietal cortex: subregions involved in fixation, saccades, and in the visual and somatosensory guidance of reaching. *J Cereb Blood Flow Metab* 21:671-682, 2001.

Moschovakis AK, Gregoriou GG, and Savaki HE. Functional imaging of the primate superior colliculus during saccades to visual targets. *Nature Neurosci* 4:1026-1031, 2001.

Gregoriou GG, and Savaki HE. When vision guides movement: a functional imaging study of the monkey brain. *Neuroimage* 19:959-967, 2003.

Moschovakis AK, Gregoriou GG, Ugolini G, Doldan M, Graf W, Guldin W, Hadjidimitrakis K, and Savaki HE. Oculomotor areas of the primate frontal lobes: a transneuronal transfer of rabies virus and [¹⁴C]-2-deoxyglucose functional imaging study. *J Neurosci* 24:5726-5740, 2004.

Raos V, Evangelioi MN, and Savaki HE. Observation of action: grasping with the mind's hand. *Neuroimage* 23:193-201, 2004.

Gregoriou GG, Luppino G, Matelli M, and Savaki HE. Frontal cortical areas of the monkey brain engaged in reaching behavior: a ¹⁴C-deoxyglucose imaging study. *Neuroimage* 27:442-464, 2005.

Bakola S, Gregoriou GG, Moschovakis AK, and Savaki HE. Functional imaging of the intraparietal cortex during saccades to visual and memorized targets. *Neuroimage* 31:1637-1649, 2006.

Bakola S, Gregoriou GG, Moschovakis AK, Raos V, and Savaki HE. Saccade-related information in the superior temporal motion complex: quantitative functional mapping in the monkey. *J Neurosci* 27: 2224-2229, 2007.

Raos V, Evangelioi MN, and Savaki HE. Mental simulation of action in the service of action perception. *J Neurosci* 27:12675-12683, 2007.

Evangelioi MN, Raos V, Galletti C, and Savaki HE. Functional imaging of the parietal cortex during action execution and observation. *Cereb Cortex* 19:624-639, 2009.

Savaki HE, Gregoriou GG, Bakola S, Raos V, Moschovakis AK. The place code of saccade metrics in the lateral bank of the intraparietal sulcus. *J. Neurosci* 30:1118-1127, 2010.

Stamos AV, Savaki HE, Raos V. The spinal substrate of the suppression of action during action observation. *J. Neurosci* 30:11605-11, 2010.

Savaki HE. How do we understand the actions of others? By mental simulation, NOT mirroring. *Cognitive Critique*, 2:99-140, 2010.

Kilintari M, Raos V, Savaki HE Grasping in the dark activates early visual cortices. *Cereb Cortex* 21:949-63, 2011.

Hourdakis E, Savaki H.E, Trahanias P Computational modeling of cortical pathways involved in action execution and action observation. *Neurocomputing* 74:1135-1155, 2011

Kilintari M, Raos V, Savaki HE. Involvement of the superior temporal cortex in action execution and action observation. *J. Neurosci* 34:8999-9011, 2014.

Raos V, Kilintari M, Savaki HE. Viewing a forelimb induces widespread cortical activations. *Neuroimage*.89:122-142, 2014.

Savaki HE, Gregoriou GG, Bakola S Moschovakis AK: Topography of visuomotor parameters in the frontal and premotor eye fields *Cereb Cortex* 25:3095-3106, 2015.

Raos V, Savaki HE. Perception of actions performed by external agents presupposes knowledge about the relationship between action and effect. *NeuroImage* 132:261-73, 2016.

Raos V, Savaki HE. The Role of the Prefrontal Cortex in Action Perception. *Cereb Cortex* 27:4677-4690, 2017.

Simos P, Kavroulakis E, Maris T, Papadaki E, Boursianis T, Kalaitzakis G, Savaki HE. Neural foundations of overt and covert actions. *NeuroImage* 152:482-496, 2017.

Savaki HE, Raos V. Action perception and motor imagery: Mental practice of action. *Progr Neurobiol*, 175:107-125, 2019.