



Dimitra Thomaidou

Head of the [Neural Stem Cells and Neuro-Imaging Group](#)

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## About

I received my BSc degree in Biology from the University of Athens in 1989 and my PhD in Neuroscience from the University of Patras in 1994. I continued to post-doctoral studies initially in University College London (UCL) and then in Rockefeller University New York, with scientific focus on cell cycle regulation and neurogenesis during nervous system development. I returned back to Greece in 1999 awarded with the prestigious “Career Award” Program as a senior post-doc in the Lab of Cellular and Molecular Neurobiology of HPI. In 2002 I was elected as Associate Researcher in the Lab of Cellular and Molecular Neurobiology and in 2006 I was promoted to Senior Researcher level. During my tenure in the Lab of Cellular and Molecular Neurobiology I introduced and developed a significant number of cutting-edge scientific approaches including sophisticated cell cycle analysis, primary Neural Stem Cell (NSC) cultures from embryonic and adult brain, construction of recombinant viral vectors expressing or silencing neuronal proteins and Confocal Microscopy. In 2012, after being awarded a Greek Ministry of Education Excellence (Aristeia-II) Grant, I created my independent Group ([Neural Stem Cells and Neuro-Imaging](#)) in the Neurobiology Department of HPI. The research interests of my group are focusing on the exploitation of the mechanisms of action of novel genes/ miRNAs in conferring neuronal differentiation and the assessment of their properties *in vitro* and *in vivo* in animal models of neurodegeneration/neuroinflammation. To this end we have constructed a palette of recombinant viral vectors expressing neurogenic proteins/ miRNAs, to genetically modify embryonic and adult-derived NSC cultures and directly reprogram astrocytes and embryonic fibroblasts to the neuronal lineage. Our findings indicate that forced expression of selected neurogenic proteins/miRNAs in astrocytes results to their reprogramming towards production of mature neuronal subtypes both *in vitro* but also *in vivo* following brain trauma. We are currently expanding these studies by introducing high-throughput genetic and epigenetic analysis, long time live cell imaging approaches to follow the reprogramming route and track the lineage trees of reprogrammed cells towards subtype specific functional induced-neurons (iNs) *in vitro* and 2-photon microscopy intravital imaging into the cortex to *in vivo* explore the regenerative potential of neurogenic proteins/miRNAs in directing the reprogramming of activated astroglia following brain injury and neuroinflammation. In parallel, I am co-heading HPI [Light Microscopy Unit](#) and have played an instrumental role in the establishment of the Unit, acquisition of latest technology imaging systems and development of state-of-the-art imaging approaches (*in vivo* microscopy, long time live cell imaging, CNS intravital imaging), which have been transferred to HPI scientists.

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## Major Achievements

Setting up Neural Stem Cell culture technology in HPI (*Politis et al., PNAS 2007; Katsimpardi et al., Stem Cells, 2008*).

Establishing technology of recombinant viral vectors, over-expressing or silencing neurogenic molecules, construction and production (*Katsimpardi et al., Stem Cells, 2008*) - *Collaboration with the laboratory of the virologist Dr. Pierre Charneau in Institut Pasteur Paris – Supported by Program Grand Program Horizontal “Stem Cells”*.

Establishing direct reprogramming technology using neurogenic proteins and miRs -Ministry of Education “Aristeia II” Grant, AstroTrace 3713 Dr. D. Thomaidou PI –(*Aravantinou et al., Stem Cell Reports, 2015*).

Participation as WP leader in REGPOT-2010 ‘Neurosign’ Program (2012-2014) – Responsible for acquisition and set-up of new Multiphoton Confocal Microscope System in HPI Imaging Unit

Establishing novel cutting-edge technologies in the Imaging Unit including advanced Confocal microscopy, Multiphoton Confocal microscopy and long time live cell imaging combined with cell tracking - *Collaboration with the laboratory of Prof. B. Berninger for transfer of knowledge on long time live cell imaging and cell tracking.*

Transfer of knowledge and development of Multiphoton Intravital Imaging of the CNS in HPI (the first Imaging Unit in Greece having an intravital imaging platform in place) - *Collaboration with the laboratory of Prof. F. Kirchhoff for transfer of knowledge on intravital imaging.*

Wide network of collaborations both in Greece (*ie. Responsible Scientist from HPI in Biolmaging-GR Infrastructure Grant*), in EU (*Drs. P-M Lledo, P. Charneau, P. Navarro in IPP; Prof. M. Goetz, Helmholtz Inst. Munchen; Prof. F. Kirchhoff, Univ. Saarland; Prof. B. Berninger, Univ. of Mainz*) and in USA (*Prof. K. Akassoglou, UCSF*).

Organization of multiple educational activities including 2 Advanced Imaging workshops (*2004-2005*) and 1 digital image processing workshop (*2013, in collaboration with Dr. Boleti*), as well as a Live Cell Imaging and Electrophysiology workshop (*October 2013*).

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## Publications

[Updated list of publications in PubMed](#)