



University of Cyprus
Center for Applied
Neuroscience

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6th Scientific Conference
of the Center for Applied Neuroscience

October 4, 2016
9:00 am—15:00 pm
Building 07, Hall 010
NEW CAMPUS

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PROGRAM

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| 8:30-9:00 | Registration |
| Welcome Address | |
| 9:00-9:30 | Prof. Constantinos Christophides , Rector, University of Cyprus Prof. Fofi Constantinidou , Director, CAN, University of Cyprus |
| Keynote Speaker | |
| 9:30-10:30 | Prof. Steven C. R. Williams , Director Institute of Psychiatry, Psychology and Neuroscience, King's College London. Contemporary MRI in Neurology & Psychiatry |
| Invited Speaker | |
| 10:30-11:20 | Prof. Kleopas A. Kleopa , Cyprus School of Molecular Medicine, Institute of Neurology and Genetics. Insights into molecular mechanisms of neurological disorders using models of neuroinflammation |
| 11:20-11:50 | Coffee Break |
| Invited Speakers | |
| 11:50-12:40 | Prof. Panayiotis Zaphiris , Professor and Dean of School of Fine and Applied Arts at Cyprus University of Technology. Human Computer Interaction Design Methods |
| 12:40-13:30 | Dr. Jeffrey C. Glennon , Department of Cognitive Neuroscience, Donders Center for Neuroscience Radboud University Medical Center. Compulsive behavior is associated with alterations in insulin signaling: a translational approach |
| 13:30-14:00 | Discussion and Wrap Up |
| 14:00-15:00 | Scientific Poster session & Reception |

Prof. Steven C. R. Williams

Contemporary MRI in Neurology & Psychiatry

Abstract:

The more recent advent of dynamic MR imaging methods such as BOLD based fMRI have, over the past decade, complemented earlier radionuclide imaging techniques and blossomed into a widely used psychiatric research tool. The improved spatial acuity to interrogate complex networks of structures including deep seated regions of the temporal lobe, thalamus and cingulate often implicated in mental illness had previously been impervious to more superficial (cortical) methods such as EEG. Since the mid 1990's one might argue that psychiatry is one of the clinical disciplines which has most willingly embraced the field of functional MRI. The transition from the chaise longue to the scanner couch has gained even greater momentum with the advent of motion tolerant imaging sequences, more standardized, quantitative neuroimaging data collection [6] and multivariate analytical approaches which are now being applied to the discrimination and classification of numerous psychiatric conditions such as autism [7], schizophrenia [8] and Alzheimer's disease [9]. Many of these studies are, however, restricted to specialist centres with the critical mass of expertise and patient data to allow the first generation of MRI based "classifiers" to be created. Scaling up our effort and moving from such boutiques to the collection, analysis and classification of data from a broader range of imaging centres and system manufacturers is now warranted. The ADNI initiative (www.adni-info.org) is a stellar example of this concept in practice for dementia research.

Professor Steven Williams is the founder and Head of Department of Neuroimaging at the Centre for Neuroimaging Sciences, based at the IoPPN and Maudsley Hospital, King's College London. Steven has co-authored over 500 papers and chapters in leading neuroscience journals and has already achieved an *h-index* of >110 and more than 50,000 citations for his work.

He graduated from Loughborough University in 1985 and spent a formative year working for Beecham Pharmaceuticals in Harlow before seeking the first ever PhD in Magnetic Resonance Imaging from the University of Cambridge. He went on to set up a University of London Intercollegiate Imaging facility which focused on the development and application of magnetic resonance techniques in a wide range of pre-clinical models of disease. In the mid '90s he then moved to the Institute of Psychiatry to champion the application of neuroimaging in a broad range of neurological and psychiatric disorders and, in 2014 he was elected a Fellow to the Academy of Medical Sciences in recognition of his scientific achievements.

For the past decade Steven has aimed to make brain imaging an essential clinical tool in neuropsychiatry. He is extremely grateful for the wide range of funding which supports him and his department. These include the Wellcome Trust, NIHR, Medical Research Council, EPSRC and European Union as well as numerous industrial partners including GSK, GE Healthcare, Pfizer, Lilly, Roche, Eisai, Takeda and Janssen.

Prof. Kleopas A. Kleopa

Insights into molecular mechanisms of neurological disorders using models of neuroinflammation

Abstract:

Glial cells are coupled extensively through gap junctions (GJs) formed by cell type-specific connexins. Inherited human disorders affecting glial connexins and respective animal models have highlighted the crucial role of GJ connectivity for CNS myelination and homeostasis suggesting that they may also be involved in acquired CNS demyelination and remyelination. We have studied GJ alterations in post-mortem brain samples from multiple sclerosis (MS) patients as well as during the course of experimental autoimmune encephalomyelitis (EAE). Using morphological, biochemical, and gene expression studies we found significant alteration in astrocyte and oligodendrocyte connexins in MS lesions as well as in the normal appearing white matter. These alterations were replicated in different stages of the EAE mouse model, while EAE clinical severity and CNS pathology were exacerbated in Cx32 or in Cx47 knockout mice, indicating increased vulnerability of myelin and axons. The presence of mutant connexins in oligodendrocytes additionally induced ER stress in a model of encephalopathy occurring in patients with connexin mutations. Thus, disrupted oligodendrocyte GJ connectivity and disconnection from reactive astrocytes in the CNS in the setting of inflammation and astrogliosis emerge as important aspects of both focal and diffuse MS pathology and may play a role in failed remyelination and disease progression. Furthermore, impaired GJ connectivity in the CNS may account for transient encephalopathy syndromes by increasing vulnerability to metabolic stress and systemic inflammation.

Prof. Kleopas A. Kleopa studied medicine at the University of Wuerzburg, Germany where he also obtained his doctoral degree in 1994. He completed a Neurology residency at Drexel University in Philadelphia, a clinical fellowship in neuromuscular disorders and a postdoctoral research fellowship at the University of Pennsylvania in 2001, where he was appointed as clinical instructor in Neurology. He is currently senior consultant neurologist and head of the Neuroscience Lab at CING. He teaches cellular and molecular neuroscience and coordinates the Neuroscience graduate program at the Cyprus School of Molecular Medicine. His research focuses on the molecular mechanisms of peripheral and central nervous system demyelination and the role of gap junctions in inherited and acquired neurological disorders. His group is also developing gene therapy approaches for neuropathies and leukodystrophies.

Prof. Panayiotis Zaphiris

Human Computer Interaction Design Methods

Abstract

This presentation will present the field of Human Computer Interaction (HCI). The presentation will start with an overview of the multidisciplinary field of HCI and the theory and the methodologies that govern it. It will then cover a series of case studies in which the Cyprus Interaction Lab at Cyprus University of Technology has been involved. These studies will demonstrate the link between HCI and neuroscience. Studies from the areas of inclusive design, social computing, human-robot interaction, learning technologies and related fields will be presented.

Prof. Panayiotis Zaphiris is a Professor at the Department of Multimedia and Graphic Arts of the Cyprus University of Technology (CUT). He is also the Dean of School of Fine and Applied Arts and the co-director of the Cyprus Interaction Lab, the first and only research lab in Cyprus specializing in the areas of Human Computer Interaction and Instructional Technology in Cyprus. Panayiotis is also the Director of the Social Computing Research Center at CUT. His research interests lie in Human Computer Interaction with an emphasis on inclusive design and social aspects of computing. He is especially interested in Human Computer Interaction issues related to the analysis the design and the evaluation of interactive systems for the elderly and people with disabilities. He has managed numerous national and international research projects in these areas and he is now the project coordinator of the HORIZON 2020 Network for Social Computing Research (NOTRE) project.

Dr. Jeffrey C. Glennon

Compulsive behavior is associated with alterations in insulin signaling: a translational approach

Abstract

Obsessive compulsive disorder (OCD) is characterized by compulsive behavior punctuated by anxiety-driven obsessive episodes. A genetic network based approach was utilized to construct a genetic landscape of human OCD related targets based on pathway (IPA; WebGestalt) and gene ontology analysis of 2 genome wide association studies (GWAS) of OCD which highlighted the role of 66 candidate genes. Of these, several were associated with insulin signaling including IGF1 and KCNQ1. Furthermore, expression of microRNA associated with insulin signaling (miRs 128, 129, 221 and 455) were increased in a rat OCD model of compulsive lever pressing (signal attenuation). Increased insulin resistance may be key to compulsive behavior, as impaired spontaneous alternation, reversal learning and extinction were observed in a Type II diabetes animal model (the TALLYHO mice) which were correlated with decreased cerebellar IGF1 protein levels. No effect was seen in a Type I diabetes model (Alloxan treated mice). Finally, a current front-line type II diabetes medication (which decreases insulin resistance) metformin in pilot studies demonstrates a marked reduction in quinpirole-induced compulsive checking in rats. Proxy genetic, microRNA and MRI-DTI structural connectivity markers are currently under investigation.

Dr. Jeffrey Glennon is a neuropharmacologist who spent nearly 10 years post-PhD in scientific and management positions in the pharmaceutical industry focused on psychiatry, coupled to an adjunct professorship in academia, before returning to academia full-time in 2010. He now leads the Translational Psychiatry group focused on cognitive control at the Donders Institute / RadboudUMC in Nijmegen. These 19 researchers (2 postdocs, 15 PhD students and 2 technicians), together with Glennon are involved in many large international consortia: EU FP7 MATRICS (coordinator), AGGRESSOTYPE, IMI2 PRISM, TACTICS, OPTIMISTIC (WP leader in each), and TS-EUROTRAIN, CoCA and EU-AIMS (partner). MATRICS, AGGRESSOTYPE and PRISM focus on callous and unemotional traits, impulsive aggression and social isolation respectively. He leads the EU FP7 MATRICS consortium on conduct disorder and callous unemotional traits (which integrates MRI, phenotypic and epigenetic data from preclinical and clinical datasets).

Research focus:

Glennon's multidisciplinary research team investigates the role of impulsivity / compulsivity (rule making, rule breaking), aggression, antisocial behaviour and decision making in a number of psychiatric and neurological disorders. By encompassing both clinical and preclinical research, he aims to bridge the translational gap by performing matching studies with similar tasks or readouts (e.g. reversal learning, microRNA, MRI-DTI, 1H-MRS) and cross-species interventions (e.g. pharmacology). To ensure the integration is complete, he utilizes a number of data integration and bioinformatics approaches on both clinical and preclinical data sets. The group focus is on a series of interconnected circuits to and from the prefrontal cortex (orbitofrontal, prelimbic, infralimbic and anterior cingulate) to the dorsal / ventral striatum, insula, thalamus, HPA axis and amygdala in mediating impulsivity / compulsivity, aggression, antisocial behaviour and decision making.

POSTERS

| # | Authors | Title |
|----|---|---|
| 1 | Andreou, A. & Panayiotou, G. | Associations and Predictors of Assertiveness and Non-assertiveness in children and adolescents. The role of child characteristics and parenting practices |
| 2 | Xatzipanayiotou, A. & Avraamides, M. | Spatial perspective taking in immersive and non-immersive conditions |
| 3 | Fella, A., Christoforou, C., & Papadopoulos, T. C. | Orthographic processing among average and poor readers in a transparent orthography: Findings from an eye-tracking study |
| 4 | Theofanous, V., Demetriou, F. & Constantinidou, F. | Reliability and validity of the Greek HVLIT |
| 5 | Petteimeridou, E., Konstantinou, N., Seimenis, I. & Constantinidou, F. | The relationship between brain volume loss and executive function tasks in individuals with moderate-to-severe TBI and healthy controls |
| 6 | Gkintoni, E., Giotopoulos, K., Halkiopoulos, K., Antzoulatos, G. & Antonopoulou, H. | Association of Eating Disorders and Psychological Status in University Students with Data Mining Techniques |
| 7 | Sylitzioti, L., Pantelides, S. & Constantinidou, F. | Spatial memory and recall: Investigating age differences |
| 8 | Dimitriadou, M., Michaelides, M. & Constantinidou, F. | Dysexecutive Questionnaire and effects of age Dysexecutive symptoms in normal aging: Psychometric study of the Revised |
| 9 | Pagkratidou, M., Galati, A. & Avraamides, M. | Environmental influences on Spatial Cognition |
| 10 | Theodorou, M., Panayiotou, Γ. & Konstantinou, N. | Emotional dimensions reflected in ratings of pictures (faces and objects) |
| 11 | Demetriadou, E., Kokkinou, M., Metaxas, M., Kyriakides, E. & Kyprianou, T. | Psychological support in the ICU: Ageism as a possible bias |
| 12 | Polycarpou, P., Andreeva, A., Ioannou, A. & Zaphiris, P. | Don't Read My Lips: Assessing Listening and Speaking Skills Through Play with a Humanoid Robot |
| 13 | Michaelides, C. & Avraamides, M. | Transformation of memorized spatial relations by school-aged children and adults |
| 14 | Theocharous, S., Pantelides, S., Avraamides, M. & Panayiotou, G. | Social anxiety and spatial anxiety: Testing for association |
| 15 | Stephanie N. Pantelides, Fofi Constantinidou, & Savvas Papacostas | Spatial Memory Integration and Recall in Patients with Idiopathic Temporal Lobe Epilepsy: Preliminary Findings |
| 16 | Demetriou, F., Theofanous, V. & Constantinidou, F. | The Cypriot Version of AD8 informant interview: Validity and reliability |
| 17 | Demetriou, C. | Stability Subtypes of Callous-Unemotional Traits and Conduct Disorder Symptoms and Their Correlates |
| 18 | Theodorou, C., Ioannou, M., Karekla, M. & Panayiotou, G. | Examining the factors of the Psychiatric Diagnostic Screening Questionnaire (PDSQ) |
| 19 | Koutsogiorgi, C.C., Michaelides, P.M., Lordos, A. & Fanti, A.K. | How does Item Keying Affect the Factorial and the Construct Validity of the Greek Version of the Inventory of Callous-Unemotional Traits? |

