Professor Zoe Kourtzi

Professor Kourtzi focuses her research on imaging the neural processes in the human brain that mediate complex, adaptive cognitive functions and behaviour. The aim being to understand the neural processes that mediate complex cognitive functions (i.e. object categorization, recognition, perceptual decisions) and their experience-based and developmental neural plasticity. In particular, Professor Kourtzi combines multimodal brain imaging methods (structural and functional MRI, EEG, MEG), established behavioural paradigms from cognitive psychology and state-of-the art mathematical algorithms to understand the link between brain structure, neural function and behaviour. The development of these multidisciplinary and advanced tools has direct applications for translational research in ageing and neurological disorders with potential impact for the prevention and treatment of nervous system disorders. Within this framework research in my lab spans diverse areas in neuroscience: visual brain imaging, learning and plasticity, cognitive development of the intact and impaired brain across the lifespan from infancy to ageing.

Recent Publications

Learning acts on distinct processes for visual form perception in the human brain. Mayhew SD, Li S, Kourtzi Z.
Learning Shapes Spatiotemporal Brain Patterns for Flexible Categorical Decisions.
Li S, Mayhew SD, Kourtzi Z.

Neural representations for object perception: structure, category, and adaptive coding.
Kourtzi Z, Connor CE.

Learning Shapes Spatiotemporal Brain Patterns for Flexible Categorical Decisions.
Li S, Mayhew SD, Kourtzi Z.
Cereb Cortex. 2011 Nov 10. [Epub ahead of print]

Neural representations for object perception: structure, category, and adaptive coding.
Kourtzi Z, Connor CE.

Ideal observer analysis for task normalization of pattern classifier performance applied to EEG and fMRI data.
Peterson MF, Das K, Sy JL, Li S, Giesbrecht B, Kourtzi Z, Eckstein MP.

Learning alters the tuning of functional magnetic resonance imaging patterns for visual forms.
Zhang J, Meeson A, Welchman AE, Kourtzi Z.
J Neurosci. 2010 Oct 20;30(42):14127-33

Professor Glyn Humphreys

Glyn Humphreys is Watts Professor of Experimental Psychology. He has interests across many areas in visual cognition, spanning both cognitive and social neuroscience. Recent work has examined the ability to select stimuli by perceptual saliency, the role of learning in binding, the interaction between working memory, action and attention. It covers a wide range of neuropsychological disorders including agnosia, apraxia, action disorganisation syndrome, alexia and amnesia, and includes the development of new clinical screening instruments for detecting cognitive problems after brain injury. Glyn has been awarded the Spearman and President’s Medals from the British Psychological Society and also that society’s Cognitive Psychology Prize. He is a Fellow of the Royal Society of Medicine, the Humboldt Foundation and the British Academy. He has been Special Professor at the Universities of Leipzig, Peking and the National Academy of Sciences, China. He has edited the Quarterly Journal of Experimental Psychology, Visual
Cognition and the Journal of Experimental Psychology: Human Perception and Performance. He is a former President of the Experimental Psychology Society and is President–elect of the British Neuropsychology Society.

Recent Publications


Dynamic cultural modulation of neural responses to one’s own and friend’s faces. Sui J, Hong YY, Hong Liu C, Humphreys GW, Han S. Soc Cogn Affect Neurosci. 2012 Feb 15


Professor Stefan Treue

Director, German Primate Center
Head, Cognitive Neuroscience Laboratory,
German Primate Center
Professor for Biological Psychology and Cognitive Neuroscience,
Dept. of Biology, University of Göttingen

Recent Publications

A flanker effect for moving visual stimuli.
Lange-Malecki B, Treue S.

Multifocal attention filters targets from distracters within and beyond primate MT neurons' receptive field boundaries.
Niebergall R, Khayat PS, Treue S, Martinez-Trujillo JC.

Expansion of MT neurons excitatory receptive fields during covert attentive tracking.
Niebergall R, Khayat PS, Treue S, Martinez-Trujillo JC.

Transcranial alternating stimulation in a high gamma frequency range applied over V1 improves contrast perception but does not modulate spatial attention.
Laczó B, Antal A, Niebergall R, Treue S, Paulus W.
Brain Stimul. 2011 Sep 15.

Misperceptions of speed are accounted for by the responses of neurons in macaque cortical area MT.
Boyraz P, Treue S.

Diverting attention suppresses human amygdala responses to faces.
Morawetz C, Baudewig J, Treue S, Dechent P.
Front Hum Neurosci. 2010 Dec 3;4:226.
Professor Rik Vandenberghe

Rik Vandenberghe received his medical training at the Faculty of Medicine, Katholieke Universiteit Leuven, Belgium (K.U.Leuven). He performed his PhD research at the Laboratory for Neuro- and Psychophysiology, K.U.Leuven (advisor Guy Orban) and at the Wellcome Department of Cognitive Neurology, Institute of Neurology, London (advisor: Cathy Price, Richard Frackowiak) and a postdoctoral behavioral neurology fellowship at the Cognitive Neurology and Alzheimer’s disease Center (CNADC, director Marsel Mesulam), Northwestern University, Chicago. Rik Vandenberghe is currently Professor of Neurology at the Faculty of Medicine, K.U.Leuven, since 2000 director of the memory clinic of the University Hospitals Leuven, since 2005 head of the newly founded Laboratory for Cognitive Neurology (LCN), KU Leuven (http://med.kuleuven.be/lcn/) and since 2010 founding director of the Alzheimer Research Centre K.U.Leuven (ARCK). The memory clinic of the University Hospitals Leuven is part of the European Alzheimer’s Disease Consortium (EADC) and provides early diagnosis, treatment and care for home dwelling patients with Alzheimer’s disease (AD) and frontotemporal degeneration (FTD) across the disease spectrum with a special interest in early-onset dementia as well as atypical variants (primary progressive aphasia, posterior cortical atrophy). The Laboratory for Cognitive Neurology is part of a KU Leuven Excellence Financing programme and combines research in cognitively intact volunteers with studies in patients with cortical neurodegenerative disease and focal cortical stroke using different methodologies from behavioral assessment over functional magnetic resonance imaging and electrophysiology to molecular imaging. ARCK integrates clinical research activities in the AD and FTD field with basic science research in the world-renowned laboratories of Bart De Strooper and Fred Van Leuven at our institution. Rik Vandenberghe is former president of the Flemish Society for Neurology, member of the Society for Neuroscience, the Organisation for Human Brain Mapping and the Alzheimer’s Association International Society to Advance Alzheimer Research and Treatment (ISTAART). He has received several prizes including the Inbev-Baillet Latour Prize for Clinical Research 2007 and the Queen Elisabeth Medical Foundation UCB award for Neuroscience Research 2008. His research is mainly funded by the Flemish Research Foundation, the K.U.Leuven, and the federal government (Interuniversity Attraction Pole programme). He has published more than 70 scientific papers in high-ranking journals such as Nature, Nature Neuroscience, the Journal of Neuroscience, Brain and Annals of Neurology.
Selected publications


Gillebert CR, Dyrholm M, Vangkilde S, Kyllingsbæk S, Peeters R, Vandenberghe R

Vandenberghe R, Molenberghs P, Gillebert CR.

Lesion evidence for the critical role of the intraparietal sulcus in spatial attention. Brain 134 (2011), 1694-1709

Classification of primary progressive aphasia and its variants. Neurology 76 (2011), 1006-14


Lesion neuroanatomy of the sustained attention to response task. Neuropsychologia 47 (2009), 2866-2875

Vandenberghe R, Gillebert CR. Parcellation of parietal cortex: convergence between lesion-symptom mapping and mapping of the intact functioning brain. Behav Brain Res. 199 (2009), 171-182

Molenberghs P, Gillebert CR, Peeters R, Vandenberghe R.
Convergence between lesion-symptom mapping and functional magnetic resonance imaging of spatially selective attention in the intact brain. J Neurosci. 28 (2008), 3359-3373

Molenberghs P, Mesulam MM, Peeters R, Vandenberghe RR.
Recent Publications

**Fractional order time series models for extracting the haemodynamic response from functional Magnetic Resonance Imaging data.**

**A corrected version of the Timed-25 Foot Walk Test with a dynamic start to capture the maximum ambulation speed in multiple sclerosis patients.**

**Alcohol, coffee, fish, smoking and disease progression in multiple sclerosis.**

**Menarche, oral contraceptives, pregnancy and progression of disability in relapsing onset and progressive onset multiple sclerosis.**

**TNFRSF1A coding variants in multiple sclerosis.**

**Quantitative EEG in ischemic stroke: correlation with functional status after 6 months.**
Professor Guillén Fernández is director of the Donders Center for Neuroscience, head of the Department for Cognitive Neuroscience, and principal investigator at the Donders Center for Cognitive Neuroimaging at the Radboud University Nijmegen Medical Center. He obtained his medical degree, doctorate, and habilitation at Bonn University. He received full training in clinical neurology and cognitive neurosciences in Bonn, Magdeburg, and Stanford. In 2002, he became a founding principal investigator of the Donders Center for Cognitive Neuroimaging in Nijmegen. His area of research is human cognitive neuroscience in which he studies the brain basis of memory, emotion, and their interactions. He applies an interdisciplinary approach integrating cognitive neuroimaging, genetics, pharmacology and diverse clinical disciplines. He is author of more than 130 articles in renowned journals including Science, Nature Neuroscience, Neuron, and PNAS. He is elected member of the Memory Disorder Research Society. He received the Richard-Jung Award of the German Society for Clinical Neurophysiology, the Vici Award of the Dutch Science Foundation, the Radboud Science Award, and an Advanced Investigator Grant from the European Research Council.

Professor Fernandez is conducting a comprehensive translational project that encompasses on one end molecular, electrophysiological, and behavioral work with rodents and on the other end functional neuroimaging combined with pharmacology, transcranial magnetic stimulation, and real-world educational research in humans.

Recent Publications:

Neural basis of recollection in first-episode major depression.

Memory stabilization with targeted reactivation during human slow-wave sleep.
The effect of moderate acute psychological stress on working memory-related neural activity is modulated by a genetic variation in catecholaminergic function in humans.


Neuroprotective effect of the aminoestrogen prolame against impairment of learning and memory skills in rats injected with amyloid-β₁₋₂₅₋₃₅ into the hippocampus.

Professor Eric Salmon

Le professeur Eric Salmon est médecin spécialiste en neuropsychiatrie, docteur en sciences biomédicales expérimentales et spécialiste en médecine nucléaire. Chargé de cours à l'Université de Liège, médecin coordinateur du Centre de la Mémoire et de l'Unité de Neuropsychologie du CHU de Liège, directeur médical du Centre de Recherches du Cyclotron de l'Université de Liège, il a publié de nombreux articles dans des revues internationales et est membre de quatre sociétés scientifiques : la Société Belge de Neurologie, l'European Neurological Society, la Société Belge de Médecine Nucléaire et la Belgian Society for Neuroscience. Les activités de recherche d'Eric Salmon ont trait à l'exploration de la physiologie et de la physiopathologie de certaines fonctions cognitives (les mémoires, les fonctions exécutives et les praxies) et de la motricité chez l'homme normal ou lors de pathologies dégénératives, et ce par l'étude en neuroimagerie fonctionnelle des paramètres hémodynamiques et métaboliques, ainsi que de l'activité des voies de neurotransmission.

Publications
SALMON E, KERROUCHE N, PERANI D, LEKEU F, HOLTHOFF V, BEUTHIEN-BAUMANN B,

Professor Peter Paul De Deyn

Professor De Deyn is full Professor at the University of Antwerp and the University of Groningen. He is also Scientific Director at the Institute Born-Bunge, Scientific Director of the Alzheimer Research Center Groningen, President CME ZNA and Editor-in-Chief of Clinical Neurology and Neurosurgery

Career

Bachelor in Medicine, Free University of Brussels (VUB), 1978
M.D., Free University of Brussels (VUB), 1982
Board Certified Neuropsychiatrist, 1987
Master in Medical and Pharmaceutical Sciences, Free University of Brussels (VUB), 1987
D.Sc, University of Antwerp, 1989
Research Director Institute Born-Bunge since 1989
Chairman Department of Neurology/Memory Clinic, ZNA Middelheim, since 1990
Invited Lecturer Medicine, University of Antwerp, 1994-2002
Senior Lecturer, University of Antwerp, 2002-2005
Scientific Director Institute Born-Bunge since 2005
Professor University of Antwerp since 2006

Recent Publications

**Cellular ageing, increased mortality and FTLD-TDP-associated neuropathology in progranulin knockout mice.**
J Pathol. 2012 Sep;228(1):67-76.

**Apixaban compared with warfarin in patients with atrial fibrillation and previous stroke or transient ischaemic attack: a subgroup analysis of the ARISTOTLE trial.**

**Behavioral symptoms in mild cognitive impairment as compared with Alzheimer's disease and healthy older adults.**
Van der Mussel S, Le Bastard N, Vermeiren Y, Saerens J, Somers N, Mariën P, Goeman J, De Deyn PP, Engelborghs S.

**DLB and PDD: a role for mutations in dementia and Parkinson disease genes?**

**Sinus sigmoideus thrombosis secondary to graves' disease: a case description.**
Hermans E, Mariën P, De Deyn PP.

**Ataxin-2 polyQ expansions in FTLD-ALS spectrum disorders in Flanders-Belgian cohorts.**

**Genes involved in cerebrospinal fluid production as candidate genes for late-onset Alzheimer's disease: a hypothesis.**
Wostyn P, van Dam D, Audenaert K, de Deyn PP.

**Effects of cholinesterase inhibitors in Parkinson's disease dementia: a review of clinical data.**
Recent Publications

Increased sensitivity to proactive and retroactive interference in amnestic mild cognitive impairment: New insights.
Hanseeuw BJ, Seron X, Ivanoiu A.

COGNOS: Care for People With Cognitive Dysfunction: A National Observational Study.
Alzheimer Dis Assoc Disord. 2012 Apr 25

Performance on the RI-48 Cued Recall Test Best Predicts Conversion to Dementia at the 5- and 10-Year Follow-Ups.

Mild cognitive impairment: differential atrophy in the hippocampal subfields.
Hanseeuw BJ, Van Leemput K, Kavec M, Grandin C, Seron X, Ivanoiu A.

Associative encoding deficits in amnestic mild cognitive impairment: a volumetric and functional MRI study.
Hanseeuw B, Dricot L, Kavec M, Grandin C, Seron X, Ivanoiu A.

18F-flutemetamol amyloid imaging in Alzheimer disease and mild cognitive impairment: a phase 2 trial.

Increased sensitivity to proactive interference in amnestic mild cognitive impairment is independent of associative and semantic impairment.
Hanseeuw BJ, Seron X, Ivanoiu A.
Professor Chris Baeken

Chris Baeken: Department of Psychiatry and Medical Psychology UGent, Ghent University, Belgium

Recent Publications

The influence of emotional priming on the neural substrates of memory: A prospective fMRI study using portrait art stimuli.

Inter-individual differences in the habitual use of cognitive reappraisal and expressive suppression are associated with variations in prefrontal cognitive control for emotional information: An event related fMRI study.

No influence of one right-sided prefrontal HF-rTMS session on alcohol craving in recently detoxified alcohol-dependent patients: Results of a naturalistic study.

Is treatment-resistance in unipolar melancholic depression characterized by decreased serotonin₂A receptors in the dorsal prefrontal - anterior cingulate cortex?

The effect of one left-sided dorsolateral prefrontal sham-controlled HF-rTMS session on approach and withdrawal related emotional neuronal processes.

The impact of HF-rTMS treatment on serotonin(2A) receptors in unipolar melancholic depression.
Recent Publications

**Parsing the components of the psychomotor syndrome in schizophrenia.**

**Serotonin 2A receptor, serotonin transporter and dopamine transporter alterations in dogs with compulsive behaviour as a promising model for human obsessive-compulsive disorder.**

**Brainpeps: the blood-brain barrier peptide database.**

**Genes involved in cerebrospinal fluid production as candidate genes for late-onset Alzheimer's disease: a hypothesis.**
Professor Stanislas Dehaene

Stanislas Dehaene is professor at the Collège de France, where he holds the chair of Experimental Cognitive Psychology. He is also the head of the INSERM-CEA Cognitive Neuroimaging Unit at NeuroSpin in Saclay, just south of Paris -- France’s most advanced neuroimaging research center. His research investigates the neural bases of human cognitive functions such as reading, calculation and language, with a particular interest for the differences between conscious and non-conscious processing.

Recent Publications

A temporal bottleneck in the language comprehension network.
Vagharchakian L, Dehaene-Lambertz G, Pallier C, Dehaene S.

From a single decision to a multi-step algorithm.
Dehaene S, Sigman M.

Splitting of the P3 component during dual-task processing in a patient with posterior callosal section.
Hesselmann G, Naccache L, Cohen L, Dehaene S.
Cortex. 2012 Mar 27
The cortical representation of simple mathematical expressions.
Maruyama M, Pallier C, Jobert A, Sigman M, Dehaene S.

A neuronal model of predictive coding accounting for the mismatch negativity.
Wacongne C, Changeux JP, Dehaene S.

Evidence for a hierarchy of predictions and prediction errors in human cortex.
Wacongne C, Labyt E, van Wassenhove V, Bekinschtein T, Naccache L, Dehaene S.

Comment on "preserved feedforward but impaired top-down processes in the vegetative state".
King JR, Bekinschtein T, Dehaene S.
Science. 2011 Dec 2;334(6060):1203.

How awareness changes the relative weights of evidence during human decision-making.
de Lange FP, van Gaal S, Lamme VA, Dehaene S.

A shared cortical bottleneck underlying Attentional Blink and Psychological Refractory Period.
Marti S, Sigman M, Dehaene S.
Neuroimage. 2011 Oct 1. [Epub ahead of print]

The cost of serially chaining two cognitive operations.
Fan Z, Singh K, Muthukumaraswamy S, Sigman M, Dehaene S, Shapiro K.
Psychol Res. 2011 Aug 30. [Epub ahead of print]

The human Turing machine: a neural framework for mental programs.
Zylberberg A, Dehaene S, Roelfsema PR, Sigman M.

Professor John Duncan

From Cambridge scientist John Duncan, How Intelligence Happens tells the story of one of the great scientific mysteries. Human intelligence seems infinite in its variety and power – it builds sprawling cities, plans a dinner party, takes us to the beginnings of time and the limits of the universe. Yet intelligence is created in a brain much like
the brains of other animals, with billions of nerve cells communicating in tiny
electrical impulses. Can science hope to explain how brains build intelligence? Can it
illuminate the controversies of intelligence testing, the bizarre changes that follow
brain damage, the link of human to animal intelligence? For the general reader, *How
Intelligence Happens* is the story of search for an answer.

**Key publication:**

Duncan J, Seitz RJ, Kolodny J, Bor D, Herzog H, Ahmed A, Newell FN, Emslie

**Recent Publications:**

**Task rules, working memory, and fluid intelligence.**
Duncan J, Schramm M, Thompson R, Dumontheil I.

Memory in frontal lobe epilepsy: An fMRI study.
Centeno M, Vollmar C, O'Muircheartaigh J, Stretton J, Bonelli SB, Symms MR,
Barker GJ, Kumari V, Thompson PJ, Duncan JS, Richardson MP, Koepp MJ.
Epilepsia. 2012 Jul 5

Adaptive coding of task-relevant information in human frontoparietal cortex.
Woolgar A, Hampshire A, Thompson R, Duncan J.

Fluid intelligence loss linked to restricted regions of damage within frontal and parietal cortex.
Duncan J.

Lateral prefrontal cortex subregions make dissociable contributions during fluid reasoning.
Hampshire A, Thompson R, Duncan J, Owen AM.

Multi-voxel coding of stimuli, rules, and responses in human frontoparietal cortex.
Woolgar A, Thompson R, Bor D, Duncan J.

The multiple-demand (MD) system of the primate brain: mental programs for intelligent behaviour.
Duncan J.
Recent Publications


