

lamBrain 2023

A multidisciplinary association on brain mapping
cognitive neuroscience, neuroimaging
language, neuropsychology and AI

Monday 17-Wednesday 19 April 2023

UCL Institute of Education
London, UK



FULL PROGRAM

www.lamBrain.org

THE 2023 IAMBRAIN WORLDWIDE CONFERENCE

Dear colleagues

BRIEF CONFERENCE HISTORY - In the last several years we started an effort to bridge the gap between surgical brain mapping and cognitive neuroscience, bringing together specialisms including fibre dissection, functional neuroimaging, neuropsychology, speech and language, motor neuroscience, computer science and AI, and clinical and cognitive neurology.

WORLDWIDE IAMBRAIN CONFERENCE - In April 2023, we have planned a three-day World Course in London, again in person following our last, in person event in 2020.

We are thrilled to welcome some of the most well known neuroscientists in the world, pillars of current thinking, hoping that this newly established, and very special, community, will inspire further collaborations and research efforts to better understand the many, still unclear, brain functions.

We offer both in person and on-line attendance. The registration fees are the same for either option. Those who will be joining in person will have the opportunity to experience the community atmosphere of our conference, meet in person our extraordinary speakers and participate in networking events in the heart of central London.

Whether in person or online, we adhere strictly to the same principles of high educational content, professionalism, originality, and attention to detail, that our conference delegates expect from us. We are committed in delivering the same high standards, in every detail possible, during this conference.

To that end, we also expect our online delegates to participate from start to finish, taking only the allocated breaks, and contributing within our online community with the same spirit of collegiality. For this reason, personalised links will be sent to registered users, subject to terms and conditions.

2023 COURSE FACULTY - The people who will be talking in person during the three days, are an extraordinary array of experts, never been before, in a single event, together. Without any exaggeration, their expertise, understanding and research drive is unparalleled; some are *living legends* .

We would like to welcome you, wholeheartedly, to a unique educational endeavour. We look forward to your active participation.

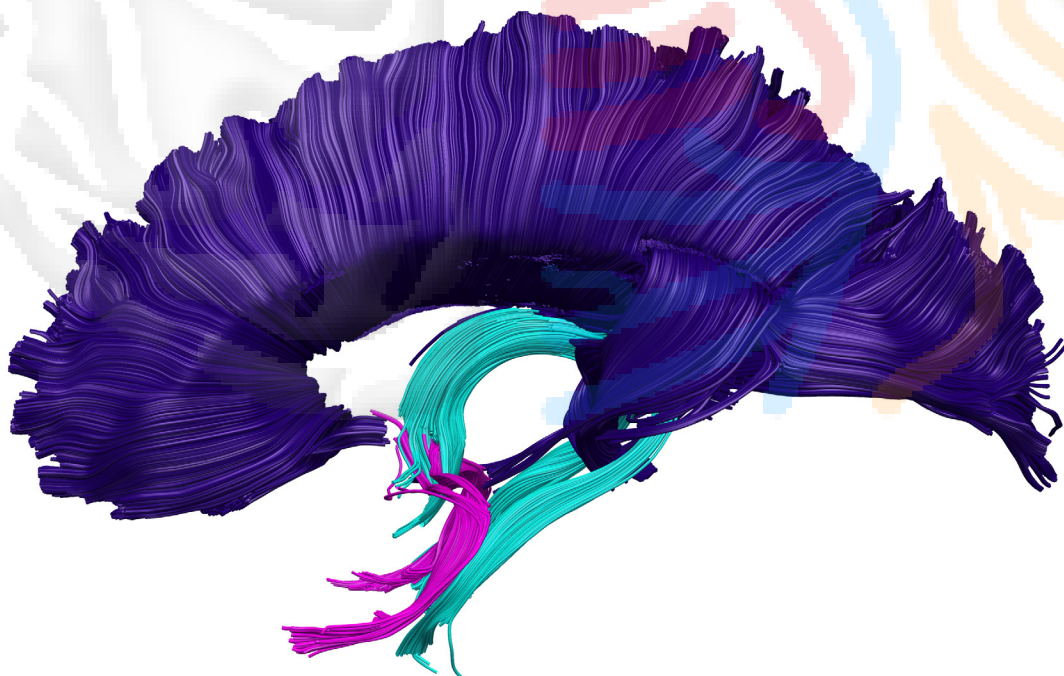
THE CONFERENCE ORGANISING COMMITTEE IAMBRAIN.ORG

December 2022

KEY TERMS AND CONDITIONS (2 DECEMBER 2022)

By participating in this conference, both in person and remotely, you confirm that:

1. You are a qualified healthcare professional or an academic researcher with interest in brain mapping, connectivity or brain research
2. The aim of your participation is to enhance your personal education and personal studies
3. You will not pass or transfer your allocated, individualised connection link to another person.
4. You will **not record, store, disseminate, post online or publish any of the material, regardless of duration, including videos, presentations slides, photographs, screen-shots, or voice recordings for any personal or public use, either currently or in the future.**
5. For full terms and conditions please visit the website www.lamBrain.org

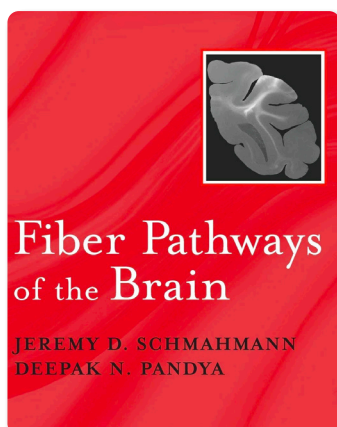


Courtesy of Stephanie Forkel

MONDAY 17 APRIL



ANATOMICAL PREREQUISITES OF MODERN NEUROSCIENCE

Time	Speaker	Theme
8:30-9:30	REGISTRATION COFFEE & PASTRIES	
9:30-9:50 + 10 mins discussion	George SAMANDOURAS THE NATIONAL HOSPITAL & UNIVERSITY COLLEGE LONDON London, UK	 INTERACTIVE TALK One surgeon's way of looking at the anatomy and connectivity of the living brain
10:00-10:20 + 10 mins discussion	Jeremy SCHMAHMANN HARVARD MEDICAL SCHOOL Boston, USA	 INTERACTIVE TALK Zooming out; how the white matter is organised
10:30-10:50 + 10 mins discussion	George SAMANDOURAS THE NATIONAL HOSPITAL & UNIVERSITY COLLEGE LONDON London, UK	 INTERACTIVE TALK Searching meaningful cortical parcellations and white matter segmentations
11:00-11:20 + 10 mins discussion	Jeremy SCHMAHMANN HARVARD MEDICAL SCHOOL Boston, USA	 INTERACTIVE TALK Power review: the arcuate and inferior-frontal-occipital fasciculi
11:30-12:00	QUICK COFFEE & PASTRIES BREAK	
12:00-12:20 + 10 mins discussion	Jeremy SCHMAHMANN HARVARD MEDICAL SCHOOL Boston, USA	 INTERACTIVE TALK Power review: the motor pathways of the brain
12:30-12:50 + 10 mins discussion	Chris KOUTSARNAKIS UNIVERSITY OF ATHENS Athens, GREECE	 INTERACTIVE TALK Parcellation, connectivity and function of the corpus callosum and cingulum
13:00-13:20 + 10 mins discussion	Michel THIEBAUT DE SCHOTTEN, SORBONNE UNIVERSITY & UNI- VERSITY OF BORDEAUX, FRANCE	 INTERACTIVE TALK Tractographic anatomy of the supe- rior longitudinal, arcuate and inferi- or-frontal-occipital fasciculi
13:30-14:00	QUICK LUNCH	



FACULTY SPOTLIGHT - JEREMY SCHMAHMANN MD, HARVARD MEDICAL SCHOOL Director, Massachusetts General Hospital Ataxia Center, Director, Laboratory for Neuroanatomy and Cerebellar Neurobiology Dr. Schmahmann won the American Academy of Neurology's Norman Geschwind Prize for pioneering work on the role of the cerebellum and description of the cerebellar cognitive affective syndrome (now, Schmahmann's syndrome) and received the ANA's Distinguished Neurology Teacher Award, and visiting professorships throughout the USA and Europe. He has > 250 publications in peer-reviewed journals and academic texts. He co-authored and edited 6 monographs – The Cerebellum and Cognition, MRI Atlas of the Human Cerebellum, *Fiber Pathways of the Brain* (image, left), Handbook of the Cerebellum, and more.

MONDAY 17 APRIL
IAMBRAIN MASTERCALSS

Time	Speaker	Theme
14:00-14:20 + 10 mins discussion	Marsel MESULAM NORTHWESTERN UNIVERSITY Chicago, USA	 LANGUAGE MASTERCLASS Behavioral Neuroanatomy of the anterior temporal lobe
14:30-14:50 + 10 mins discussion	David VAN ESSEN WASHINGTON UNIVERSITY St Louis, USA	 CONNECTOME MASTERCLASS The neuroimaging approach of the Human Connectome Project

MONDAY 17 APRIL
HANDS-ON WORKSHOPS ON TRACTOGRAPHY AND DATA VISUALISATION

15:00-16:00

David **VAN ESSEN WASHINGTON UNIVERSITY** in St Louis, USA



HANDS-ON WORKING WITH HCP AND HCP-STYLE DATA FOR HIGH-QUALITY ANALYSES OF FMRI AND DIFFUSION IMAGING DATA

1. **Download** Connectome Workbench software: <https://www.humanconnectome.org/software/get-connectome-workbench>
2. **Accept** HCP Data Use Terms: <https://db.humanconnectome.org/app/template/Login.vm>

16:00-16:30

QUICK COFFEE & PASTRIES BREAK



16:30-17:30

Michel **THIEBAUT DE SCHOTTEN, SORBONNE UNIVERSITY & UNIVERSITY OF BORDEAUX** France & Stephanie **FORKEL, RADBOUD UNIVERSITY**, Netherlands



HANDS-ON TRACTOGRAPHY OF SUPERIOR LONGITUDINAL (SLF) AND ARCUATE (AF) FASCICULI

1. Please **download** trackvis at <http://www.trackvis.org> & **activate** the software and request a **serial number**.
2. Please **download** a dataset here http://www.bcblab.com/BCB/MSc_files/Tractography.zip (simplified for computing purposes but you also can download a full version here https://www.dropbox.com/s/nud2dt14z8voosk/Po2_1mm.trk?dl=o)

17:30-18:30

Parashkev **NACHEV, UNIVERSITY COLLEGE LONDON** London, UK




HANDS-ON FLEXIBLE LESION-DEFICIT BRAIN MAPPING

Use of image binary masks of stimulation points or pathological lesions & a clinical or behavioural target of interest to extract an inferential map of anatomical dependents

20:00-23:00

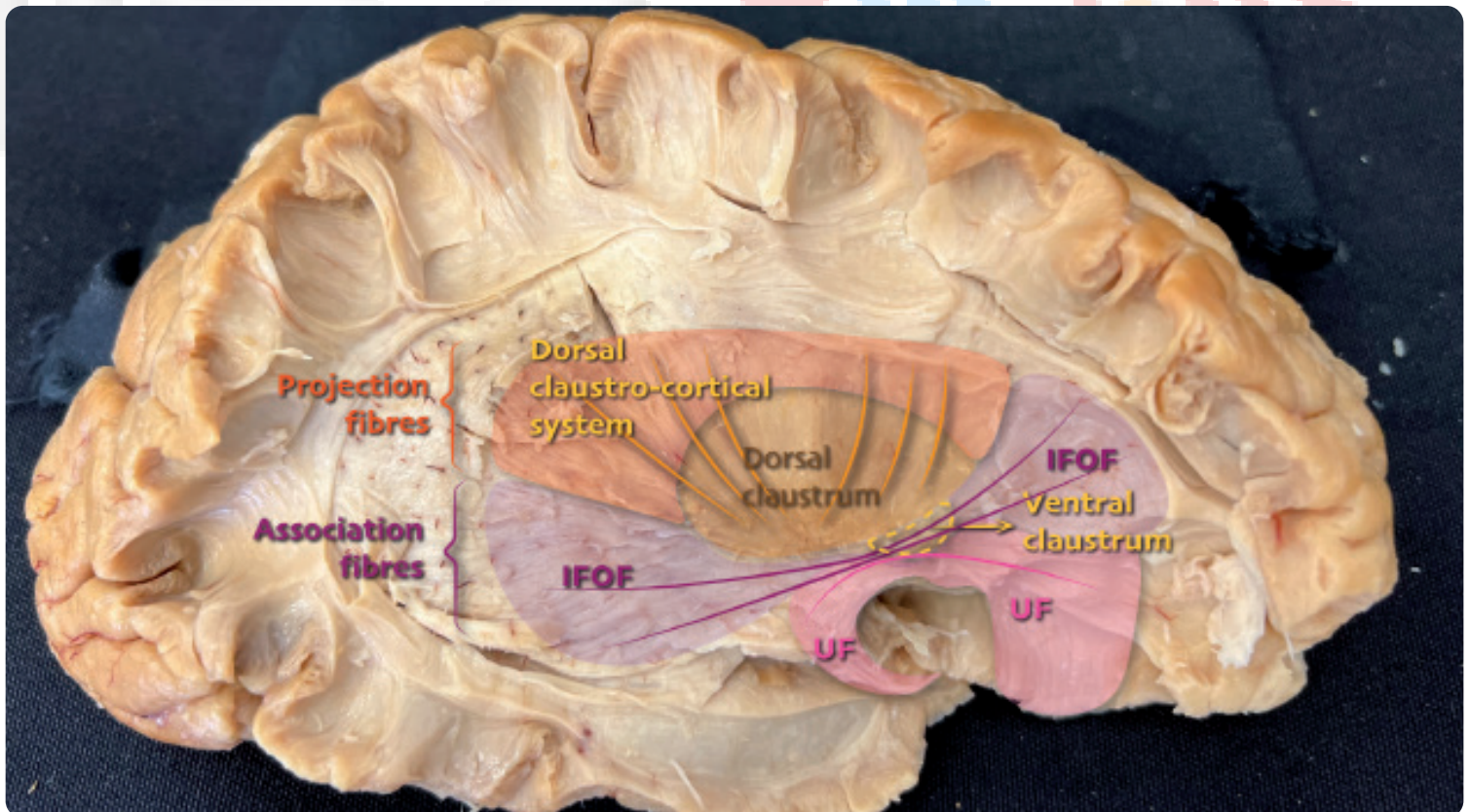
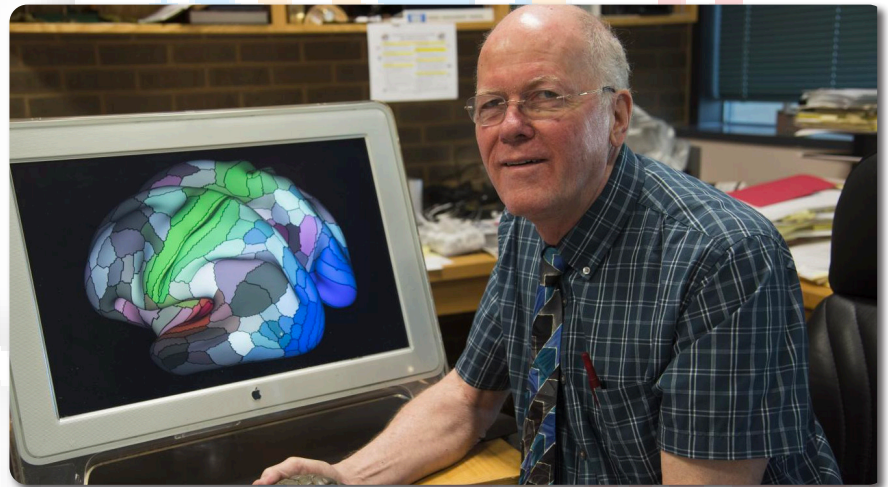
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FACULTY SPOTLIGHT - MARCEL MESULAM Founding Director Emeritus of the Mesulam Center for Cognitive Neurology and Alzheimer's Disease and Chief of Behavioral Neurology, at Northwestern University, Chicago, is one of the most important contributors of modern cognitive neurology and behavioural neuroanatomy, with stellar work spanning five decades. He has received numerous prestigious awards including the Bengt Winblad Lifetime Achievement Award, Alzheimer's Association, the Lishman Lectureship Award, International Neuropsychiatric Association and the Potamkin Prize, American Academy of Neurology.

FACULTY SPOTLIGHT - DAVID VAN ESSEN has been studying HCP and other high-quality datasets to better understand cortical parcellation and connectivity in humans and nonhuman primates. He developed and utilized methods for computerized brain mapping as well as neuroinformatics tools that facilitate data analysis and data mining. He has served as a Principal Investigator for the Human Connectome Project (HCP), a large-scale effort to acquire, analyze, and freely share high-quality neuroimaging data from 1200 healthy adults, in order to enable exploration of brain connectivity and its relationship to behavior.



Fibre dissection of the external capsule and the dorsal claustrоcortical system Copyright © George Samandouras

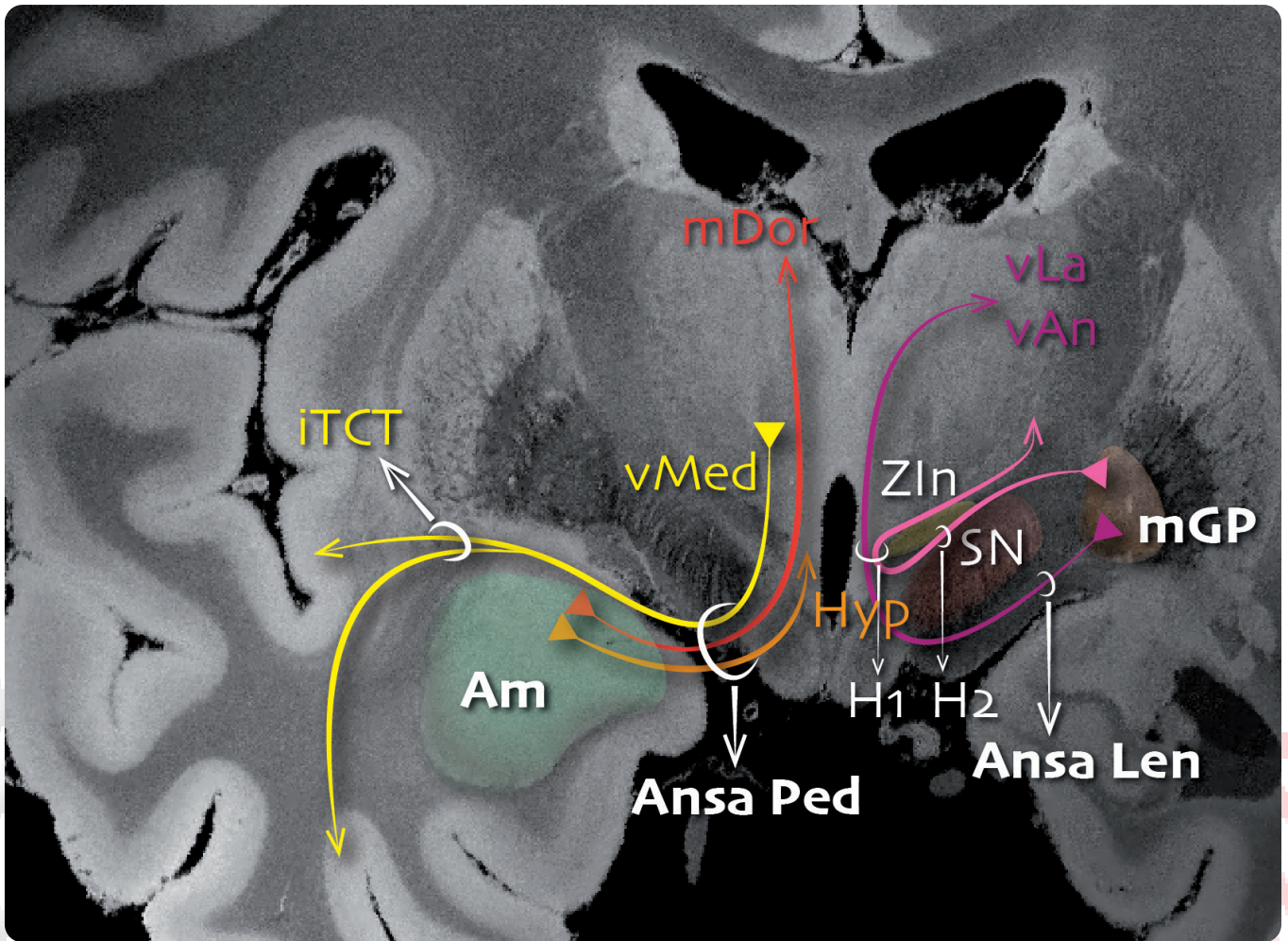


Diagram demonstrating amygdala, thalamic and putaminal connectivity Copyright © George Samandouras.



FACULTY SPOTLIGHT - GREGORY S. HICKOK, PH.D. PROFESSOR, UNIVERSITY OF CALIFORNIA, IRVINE, USA Cognitive Sciences, School of Social Sciences, Center for Language Science - Gregory Hickok's research focuses on the neurobiology of language, speech, and hearing with application to understanding the nature of aphasia. He has published over 165 peer-reviewed scientific papers and book chapters and edited several book volumes on the neurobiology of language and hearing. His research uses a multi-method approach including functional MRI, ECoG, neuropsychology, and computational modeling, and has been funded by the National Institutes of Health for the last three decades. He is also a PI on the NIH funded Center for the Study of Aphasia Recovery (C-STAR). He is the author of *The Myth of Mirror Neurons: The Real Neuroscience of Communication and Cognition*.



FACULTY SPOTLIGHT - PROFESSOR KATRIN AMUNTS, VOGT INSTITUTE FOR BRAIN RESEARCH, UNIVERSITY OF DÜSSELDORF - Director of the Institute of Neuroscience and Medicine in INM-1 Jülich Katrin Amunts has developed multi-level, multimodal atlas of the human brain, with cytoarchitectonic, molecular and fiber architecture combined with image analysis, high-performance computing and big data analytics allowing a comprehensive understanding of brain structure and function of the brain. She and her team have produced very high-resolution 3D digital brain atlases. She is also the Research Director of the Human Brain Project (HBP), overseeing a European collaboration of over 100 institutions "EBRAINS", a shared research infrastructure for neuroscience. During her talk on Wednesday she will be discussing the results of the HBP.

TUESDAY 18 APRIL

UNDERSTANDING LANGUAGE AND ATTENTION

Time	Speaker	Theme
8:00-8:30	QUICK COFFEE & PASTRIES	
8:30-9:00	Marsel MESULAM NORTHWESTERN UNIVERSITY Chicago, USA	 INTERACTIVE TALK Connectivity and functional considerations of the basal forebrain cholinergic system
9:00-9:20 + 10 mins discussion	George SAMANDOURAS THE NATIONAL HOSPITAL & UNIVERSITY COLLEGE LONDON	 INTERACTIVE TALK Language models and the reality of awake cognitive testing
9:30-9:50 + 10 mins discussion	Gregory HICKOK UNIVERSITY OF CALIFORNIA, IRVINE, USA	 INTERACTIVE TALK The neuroanatomy of aphasias and speech production
10:00-10:20 + 10 mins discussion	David VAN ESSEN WASHINGTON UNIVERSITY in St Louis, USA	 INTERACTIVE TALK Neuroimaging-based parcellation of language-sub-serving regions
10:30-10:50 + 10 mins discussion	Cathy PRICE, WELLCOME CENTRE FOR NEUROIMAGING London, UK	 INTERACTIVE TALK Functional anatomical models of speech and reading loss and recovery following damage.
11:00-11:20 + 10 mins discussion	Anthony DICK FLORIDA INTERNATIONAL UNIVERSITY, Miami, USA	 INTERACTIVE TALK Contemporary Models of Language Neurobiology
11:30-12:00	QUICK COFFEE & PASTRIES BREAK	
12:00-12:20 + 10 mins discussion	Nina DRONKERS UNIVERSITY OF CALIFORNIA, BERKELEY, USA	 INTERACTIVE TALK What we learnt about aphasia from lesion-analysis in stroke patients
12:30-12:50 + 10 mins discussion	Sotirios BISDAS UNIVERSITY COLLEGE LONDON London, UK	 INTERACTIVE TALK The present and future of DWI-MRI for neurooncology
13:00-13:30	FACULTY ROUND TABLE	 How far are we from understanding language networks, localisation and connectivity?
13:30-14:00	QUICK LUNCH	

Full course information and registration

www.IamBrain.org

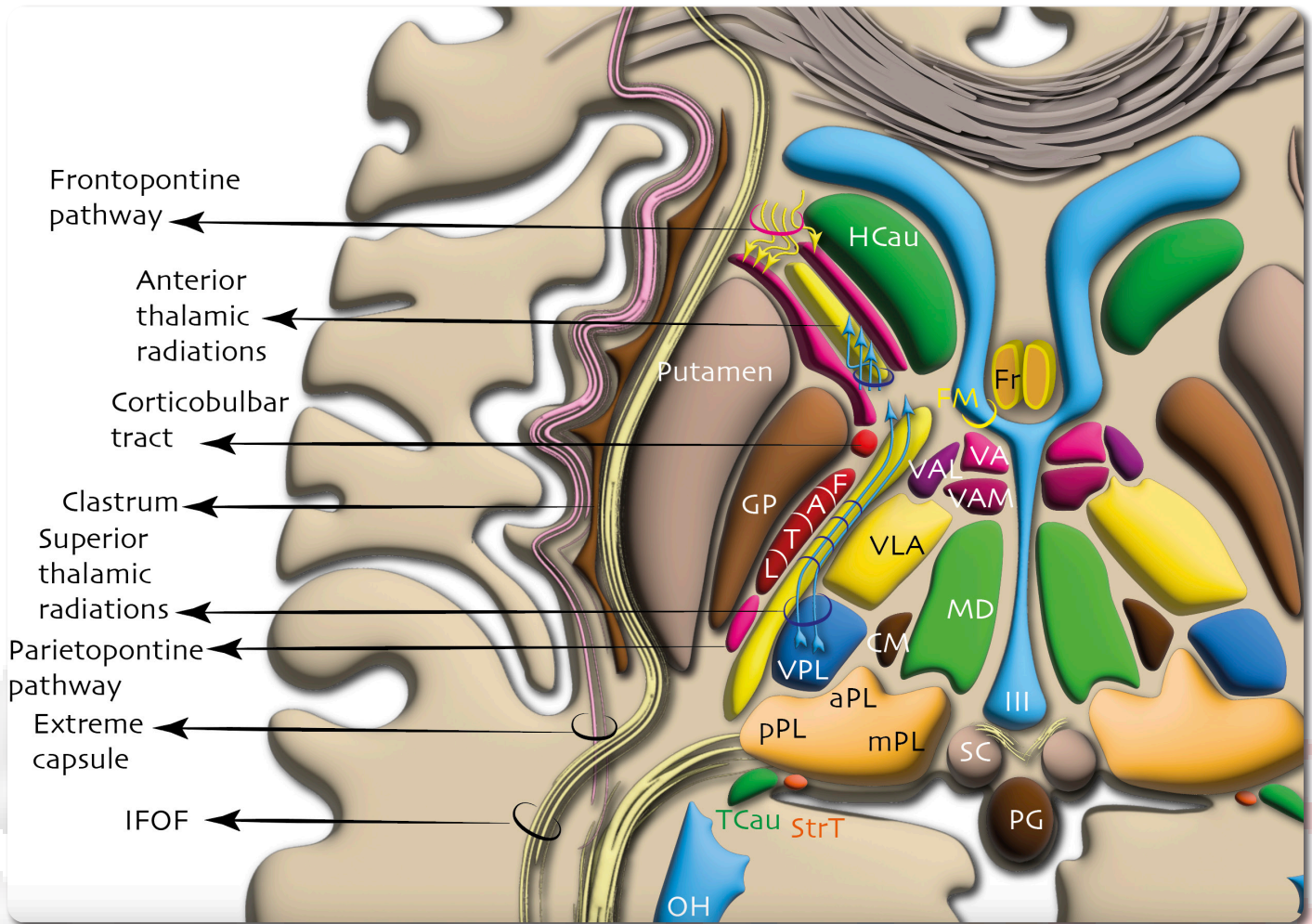
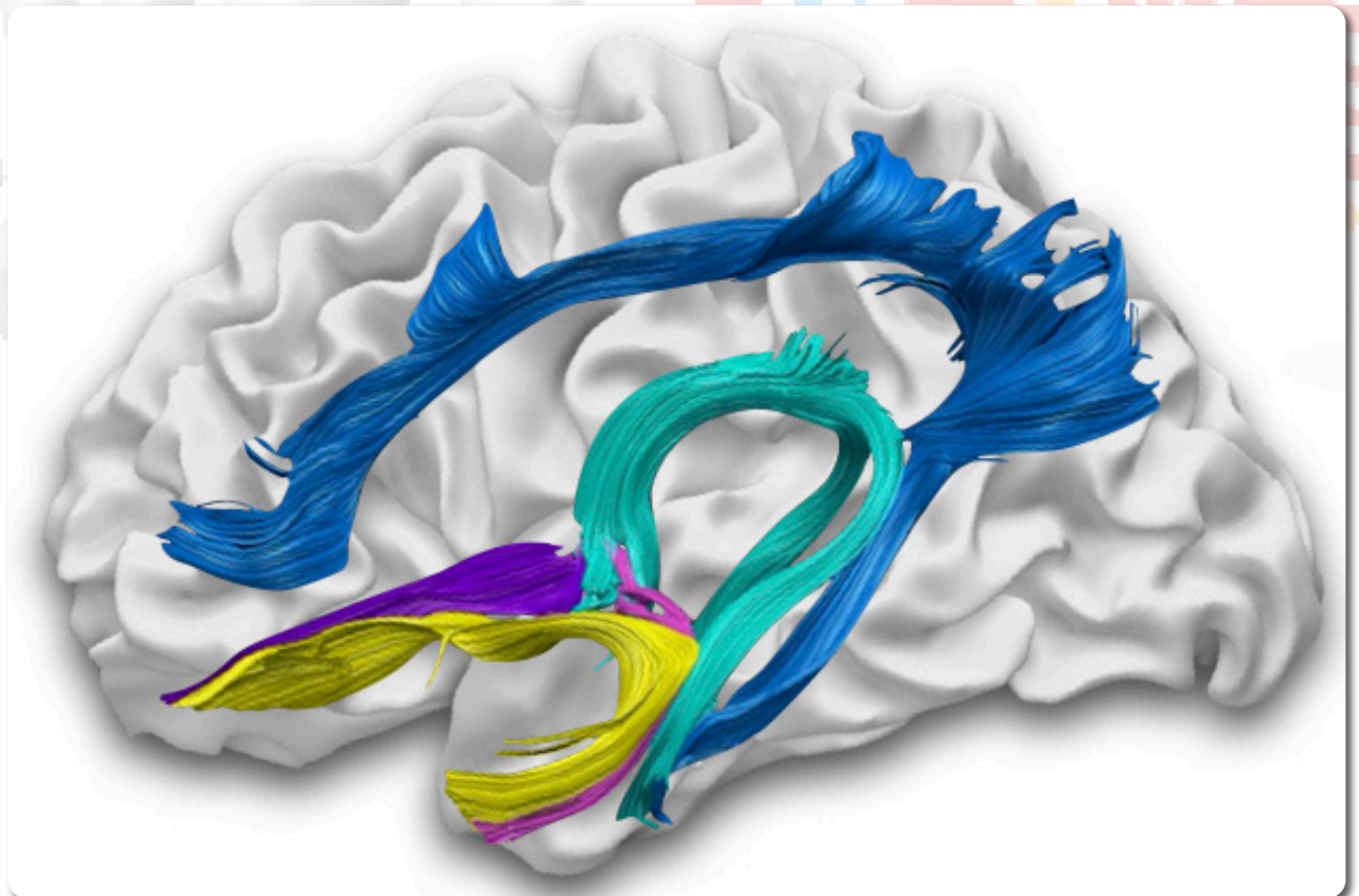


Diagram demonstrating axial with fibre components and connectivity of internal capsule and thalamic nuclei
 Copyright © George Samandouras.



Fibre tractography demonstrating the accumbofrontal tract, cingulum, anterior commissure, IFOF, fornix and uncinate fasciculus Courtesy of Stephanie Forkel

TUESDAY 18 APRIL

RESEARCHING BRAIN CONNECTIVITY

Time	Speaker		Theme
14:00-14:20 + 10 mins discussion	Anastasia YENDIKI, ATHINOULA MARTINOS CENTER & HARVARD UNIVERSITY , Boston, USA		Large-scale imaging of human brain pathways with microscopy
14:30-14:50 + 10 mins discussion	Stephanie FORKEL, RADBOD UNIVERSITY , Netherlands		INTERACTIVE TALK Brain connectivity beyond straight signal transfers
15:00-15:20 + 10 mins discussion	Valentina PACELLA, UNIVERSITY OF BORDEAUX France		INTERACTIVE TALK Unravelling the fabric of the human mind: the brain-cognition space
15:30-15:50 + 10 mins discussion	Andrew MCEVOY THE NATIONAL HOSPITAL & UNIVERSITY COLLEGE LONDON UK		INTERACTIVE TALK Technological developments in epilepsy surgery; robotics, EpiNav and novel treatment strategies
16:00-16:30	QUICK COFFEE & PASTRIES BREAK		
16:30-16:50 + 10 mins discussion	Gregory HICKOK UNIVERSITY OF CALIFORNIA, IRVINE , USA		INTERACTIVE TALK How I study language and propose models in the lab
17:00-17:20 + 10 mins discussion	Michel THIEBAUT DE SCHOTTEN SORBONNE UNIVERSITY & UNIVERSITY OF BORDEAUX France		INTERACTIVE TALK How I study language using the disconnectome
17:30-17:50 + 10 mins discussion	Jinsong WU FUDAN UNIVERSITY, SHANGHAI China		INTERACTIVE TALK Language maps and connectivity of multilingual patients based on direct electrical stimulation
18:00-18:20 + 10 mins discussion	Brian NAHED HARVARD UNIVERSITY USA		INTERACTIVE TALK Methods of language mapping in tumour patients; the Mass General experience
20:00-23:00	BLACK TIE NETWORKING DINNER	 	



FACULTY SPOTLIGHT - CATHY PRICE, PROFESSOR OF COGNITIVE NEUROSCIENCE AND DIRECTOR OF THE WELLCOME TRUST CENTRE FOR NEUROIMAGING, UNIVERSITY COLLEGE LONDON Cathy Price's research program aims to establish a functional anatomical model of language that predicts how speech and reading are lost and recovered following neurological damage or developmental delay. The hypothesis is that there are multiple ways that the brain can perform each language task (degeneracy). To dissociate the neuronal systems for the same task, her group uses structural and functional MRI of subjects who vary in their cognitive abilities, demographics and neurological status. This allows them to characterize individual variability in the neuronal networks of neurologically normal populations. In particular, her group aims to determine how the impact of damage to one system depends on the integrity of another.

WEDNESDAY 19 APRIL

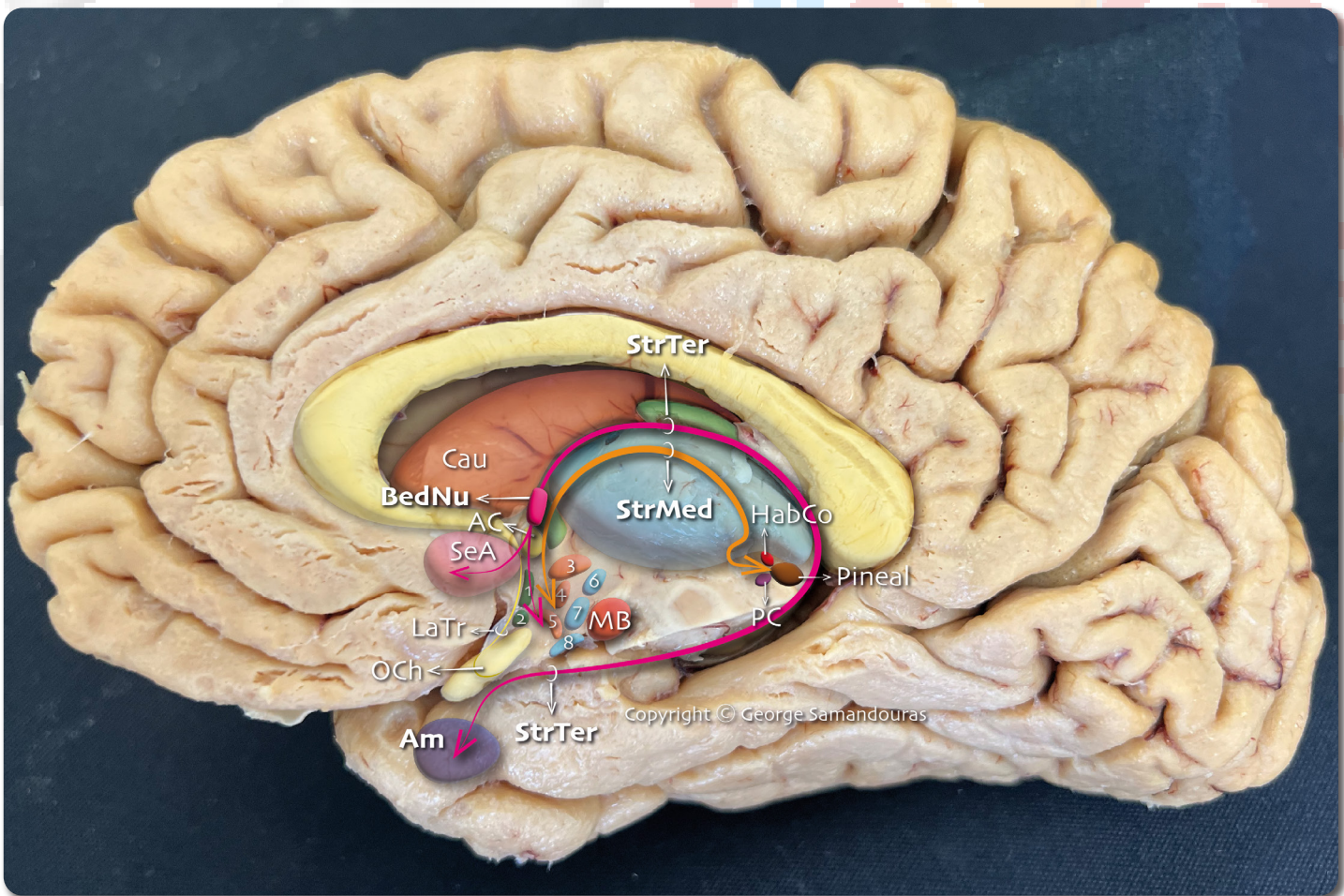
ATLASING, LANGUAGE, MOVEMENT AND SENSORY NETWORKS

Time	Speaker		Theme
8:00-8:30	QUICK COFFEE		
8:30-9:00	Katrin AMUNTS INSTITUTE OF NEUROSCIENCE & MEDICINE Julich, GERMANY		INTERACTIVE TALK Multiscale brain connectome; lessons learned from the HBP
9:00-9:20 + 10 mins discussion	Nina DRONKERS UNIVERSITY OF CALIFORNIA, BERKELEY , USA		INTERACTIVE TALK Lesion and Connectivity Analyses of Language Comprehension
9:30-9:50 + 10 mins discussion	Anthony DICK FLORIDA INTERNATIONAL UNIVERSITY , Miami, USA		INTERACTIVE TALK The connectivity of the sensory-motor speech pathways
10:00-10:20 + 10 mins discussion	Gabriella CERRI UNIVERSITY OF MILAN , Italy		INTERACTIVE TALK Organisation of the motor association areas and the disconnectome of the SMA syndrome
10:30-10:50 + 10 mins discussion	George SAMANDOURAS THE NATIONAL HOSPITAL & UNIVERSITY COLLEGE LONDON London, UK		INTERACTIVE TALK Active intraoperative testing of thalamocortical and corticobulbar tracts
11:00-11:20 + 10 mins discussion	Roger LEMON UNIVERSITY COLLEGE LONDON London, UK		INTERACTIVE TALK Cerebral control of hand and finger movements in humans
11:30-12:00	QUICK COFFEE & PASTRIES BREAK		
12:00-12:20 + 10 mins discussion	Jeremy SCHMAHMANN HARVARD MEDICAL SCHOOL Boston, USA		INTERACTIVE TALK Motor and non-motor roles of the cerebellum
12:30-12:50 + 10 mins discussion	Lorenzo BELLO UNIVERSITY OF MILAN , Italy		INTERACTIVE TALK Neurophysiology methods and lessons learnt from surgery within the primary motor cortex
13:00-13:30	FACULTY ROUND TABLE		What is missing from fully understanding movement
13:30-14:00	QUICK LUNCH		

WEDNESDAY 19 APRIL

ORAL PRESENTATIONS & THE ANNUAL 2023 IamBrain AWARD

Time	Speaker	Theme
14:00-16:00 + 10 mins discussion		ORAL PRESENTATIONS OF ACCEPTED ABSTRACTS
16:00-16:30	QUICK COFFEE & PASTRIES BREAK	
16:30-16:45	2023 IAMBRAIN AWARD FOR EXCELLENCE IN NEUROSCIENCE RESEARCH	
116:45-17:00	FACULTY & DELEGATES	 Future directions of IamBrain.org

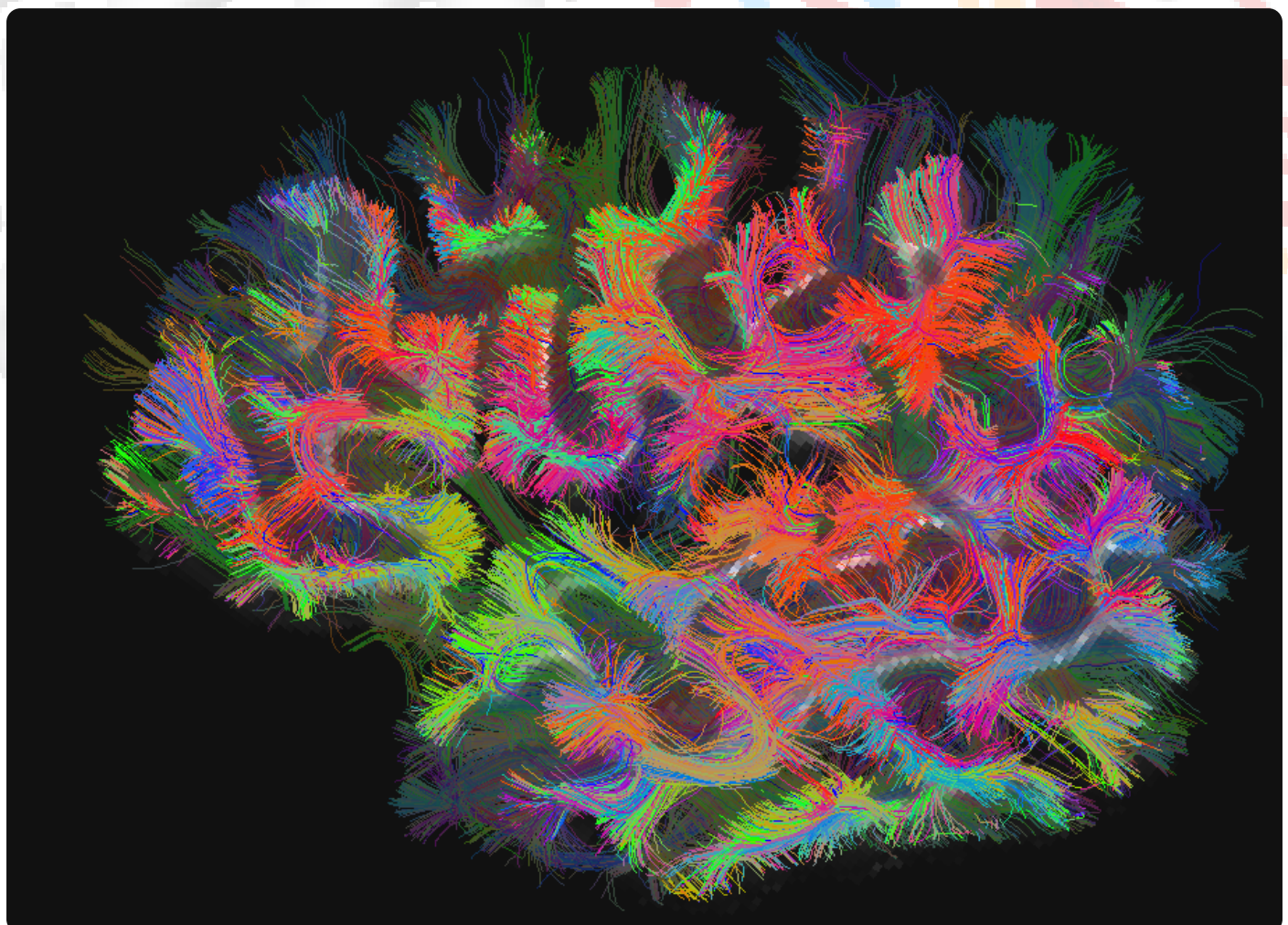


Sagittal interhemispheric view of the right hemisphere with projections of the stria terminallis (StrTer) and stria Medullaris (StrMed) Copyright © George Samandouras

FACULTY SPOTLIGHT - MICHEL THIEBAUT DE SCHOTTEN, DIRECTOR OF RESEARCH, BRAIN CONNECTIVITY AND BEHAVIOUR LABORATORY (BCBLAB), SORBONNE UNIVERSITIES. EDITOR-IN-CHIEF, BRAIN STRUCTURE AND FUNCTION Michel is the Chair of the 2022-2023 Council of the Organisation for Human Brain mapping (OHBM). He has contributed a number of innovative methods and fundamental new discoveries that have important implications for theories of brain structure and function. Hence his work spans the whole gamut from the development of novel methodology to experimental work to theory. Critically, he is dedicating significant effort toward the clinical translation of his neuroscience work through an open model approach that makes his tools freely accessible to the community. He has co-authored with Marco Catani the book “*Atlas of Human brain connections*” OUP.



FACULTY SPOTLIGHT - NINA DRONKERS, APHASIA LAB, PROFESSOR, DEPARTMENT OF PSYCHOLOGY UNIVERSITY OF CALIFORNIA, BERKELEY, USA Nina Dronkers research and clinical work is on understanding the speech, language, and cognitive disorders following brain injury. She has identified a new region in the insula involved in the motor programming of speech. She also reported the lesions and provided analysis on the brain of one of the most famous neurological patients of the 19th century, Louis Victor Leborgne, who could utter one syllable only, from the age of 30 until his death, 21 years later. After his death on 17 April 1861, his autopsy performed by the French surgeon Pierre Paul Broca who had examined Leborgne while he was alive, leading to establishing the famous Broca's area.



Courtesy of Anastasia Yendiki