

# Brain research center in the World

## Top 11



Lingzhong.Fan

# Outline

- ✿ **Laboratory of Neuro Imaging, UCLA**
- ✿ **Martinos Center for Biomedical Imaging, Harvard**
- ✿ **Van Essen Lab, Washington University in St. Louis**
- ✿ **The Section for Biomedical Image Analysis, Penn**
- ✿ **Research Imaging Institute, University of Texas**
- ✿ **McConnell Brain Imaging Center, McGill**
- ✿ **Wellcome Trust Centre for Neuroimaging, UCL**
- ✿ **FMRIB Center, Oxford**
- ✿ **MRC Cognition and Brain Sciences Unit, Cambridge**
- ✿ **Max Planck Institute for Human Cognitive and Brain Sciences**
- ✿ **Institute of Neuroscience and Medicine (INM), Julich**

- **International Consortium for Brain Mapping (ICBM)**
  - The International Consortium for Brain Mapping (ICBM) was formed in 1993 with a grant from the NIMH.
  - This consortium is composed of four core research sites, UCLA, Montreal Neurologic Institute, University of Texas at San Antonio, and the Institute of Medicine, Juelich/Heinrich Heine University - Germany.

**ICBM** International Consortium for Brain Mapping

ABOUT ICBM RESEARCH RESOURCES DATABASES DOWNLOADS PUBLICATIONS LONI HOME

**About ICBM**

International Consortium for Brain Mapping

The International Consortium for Brain Mapping (ICBM) was formed in 1993 with a grant from the NIMH. The primary goal of the ICBM project is the continued development of a probabilistic reference system for the human brain. [More](#)

**Research**

The goal of ICBM is the development of a probabilistic reference system for the human brain. To this end we have been incrementing existing data sets, expanding the range of studies with the inclusion of additional *in vivo* and post mortem data sets, and integrating the existing structural, functional and structure-function atlases that we

**Databases**

The ICBM Subject Database is a web-based database infrastructure that simplifies image dataset collection, organization and dissemination. A web interface provides the means to query the data base using a combination of subject demographics and scan-related attributes. [More](#)

Laboratory of Neuro Imaging, UCLA

McConnell Brain Imaging Centre

University of Texas at San Antonio Research Imaging Center


C & O Vogt Institute of Brain Research & The Institute of Medicine in Juelich

# Research

- The primary goal of ICBM has been and remains, the development of a probabilistic reference system for the human brain as an important neuroinformatics tool for use by the neuroscience community.
- To this end we have been incrementing existing data sets, analysis software and data base capabilities, expanding the range of studies with the inclusion of additional *in vivo* and post mortem data sets, and integrating the existing structural, functional and structure-function atlases that we have produced.

# Organization of Human Brain Mapping (OHBM)

- The OHBM is the primary international organization dedicated to neuroimaging research.
- The organization was created in 1995 and has since evolved in response to the explosion in the field of human functional neuroimaging and its movement into the scientific mainstream.



The screenshot shows the OHBM website homepage. At the top, there is a dark green header with the OHBM logo (a stylized brain) and the text "Organization for Human Brain Mapping". To the right of the header, contact information is listed: "5841 Cedar Lake Road, Suite 204, Minneapolis, MN 55416 USA", "Email: info@humanbrainmapping.org", "Phone: 952-646-2029", and "Fax: 952-545-6073". Below the header is a navigation bar with a "MEMBER LOGIN" link. The main content area features three brain images with colored regions, the tagline "Advancing Understanding of the Human Brain", and a "Welcome!" section. The "Welcome!" section includes a "Who We Are" paragraph and a "16th Annual Meeting - Save the Date!" announcement for the 2010 meeting in Barcelona. On the left side, there is a vertical menu with links: "Login", "Home", "About OHBM", "Meetings", "Membership", "Publications/Resources", "Awards", "Career Opportunities", "Related Links", and "Search". Below the menu is a "Contact Us" section with the same contact information as the header. On the right side, there are two boxes: "HBM 2010 Abstracts" with a "Click here" link to submit an abstract and an "Abstract Deadline: Friday, January 22, 2010." notice, and "HBM 2010" with a "Click here" link for information regarding the 2010 meeting.



# Future Meetings



**2010 Barcelona, Spain**  
**June 6 – June 10**



**2011 Quebec City Quebec City, Canada**  
**June 26 – June 30**



**2012 Beijing, China**  
**June 2012**



**2013 Seattle, WA – USA**  
**June 16 – June 20**

# <http://brainmapping.org/>

- Dedicated to the communication of news, science, and information of interest to the brain mapping community, and to sharing and promoting the science of brain mapping.

**www.brainmapping.org** Dedicated to the communication of news, science, and information of interest to the brain mapping community, and to sharing and promoting the science of brain mapping.

The purpose and goal of brain mapping is to advance the understanding of the relationship between structure and function in the human brain. Scientists in this field seek to gain knowledge of the physical processes that underly human sensation, attention awareness and cognition. These results are immediately applicable to surgical intervention, to the design of medical interventions and to the treatment of psychological and psychiatric disorders.

**Latest News:**

- NIH News Feed**
  - 01/11 Gene Mutations Reveal Potential New Targets for Treating a Type of Non-Hodgkin's Lymphoma
  - 01/11 NIH Broadens Eligibility for NIH Diversity and Re-Entry Supplements
  - 01/11 ARRA OS: Recovery Act 2009: Accelerating Adoption of Comparative Effectiveness Research Results by Providers and Patients (R18)
  - 01/11 HHS Intent to Publish Grant and Contract Solicitations for Comparative Effectiveness Research (CER) Projects with Funds Allocated to the Office of the Secretary from the American Recovery and Reinvestment Act
- Brain Mapping News Feed**
  - 01/11 Got cognitive activity? It does a mind good
  - 01/11 Disconnect between brain regions in ADHD
  - 01/11 Impact of FDA safety warnings examined
  - 01/11 Study reveals how one form of natural vitamin E protects brain after stroke
  - 01/11 Neuroimaging may shed light on how Alzheimer's disease develops
  - 01/11 Weekend strokes may receive more

**Image of the Day:**

**At left: Pre-Colombian Brain Surgery**

Rock art, and healed trephined skulls, from the early Peruvians show considerable sophistication in performing open brain surgeries. It is not clear why such surgeries were performed. The link below presents

**NEW 7/10/2009: NEUROIMAGING SUMMER PROGRAM LIVE WEBCAST. CLICK FOR DETAILS**

<http://brainmapping.org/>

[http://ccn.ucla.edu/wiki/index.php/Principles\\_of\\_Neuroimaging\\_A](http://ccn.ucla.edu/wiki/index.php/Principles_of_Neuroimaging_A)



# Laboratory of Neuro Imaging (LONI)

**LONI seeks to improve understanding of the brain in health and disease. The laboratory is dedicated to the development of scientific approaches for the comprehensive mapping of the brain structure and function.**

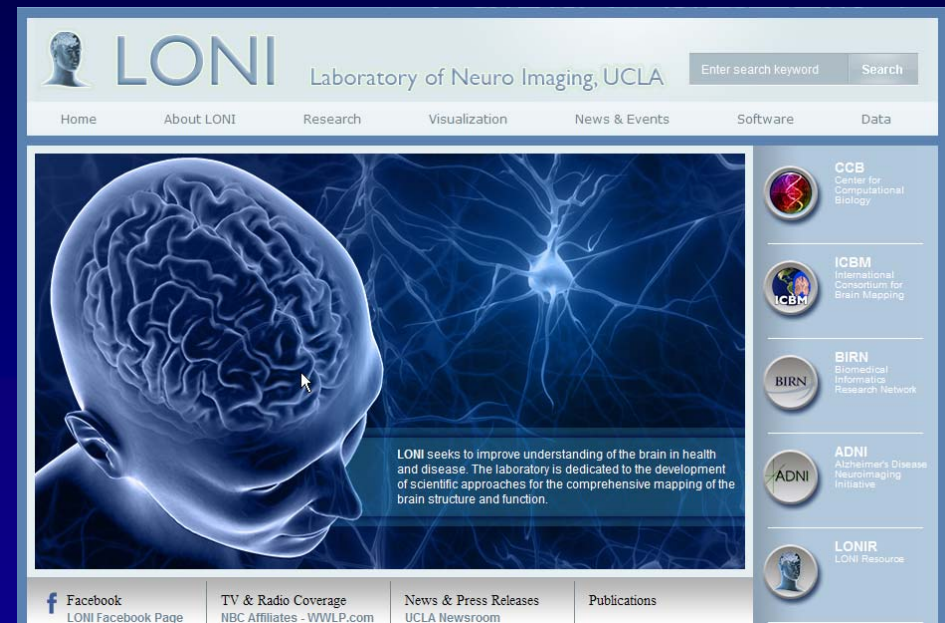
Laboratory of Neuro Imaging  
Department of Neurology, UCLA School of Medicine  
635 Charles E. Young Drive South, Suite 225

Los Angeles, CA 90095-7334

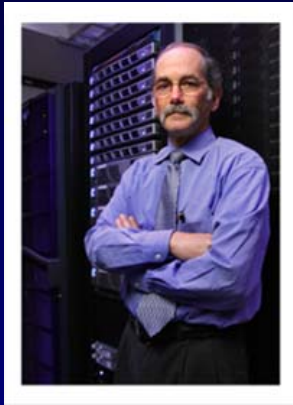


# Laboratory of Neuro Imaging (LONI)

- **LONI was originally established to study cerebral metabolism with the goal of understanding the relationship between brain structure and function using image data.**
- **Work progressed into three-dimensional reconstruction and visualization. This enabled the study of functional anatomy in the same geometric configuration as that found in the living animal.**
- **As these reconstructions became more sophisticated, their application to computational atlases became possible.**



# People



**Arthur Toga**

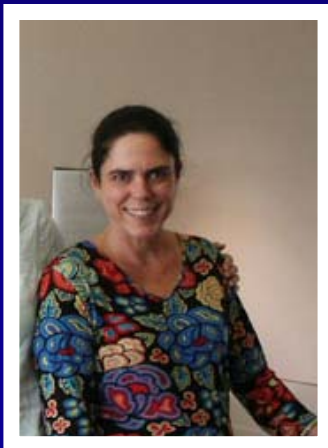
[http://www.loni.ucla.edu/About\\_Loni/people/indiv\\_detail.php?people\\_id=1](http://www.loni.ucla.edu/About_Loni/people/indiv_detail.php?people_id=1)



**Paul Thompson**

[thompson@loni.ucla.edu](mailto:thompson@loni.ucla.edu)

<http://www.loni.ucla.edu/~thompson/thompson.html>



**Elizabeth Sowell**

[esowell@loni.ucla.edu](mailto:esowell@loni.ucla.edu)

<http://www.loni.ucla.edu/~esowell/elevel/>



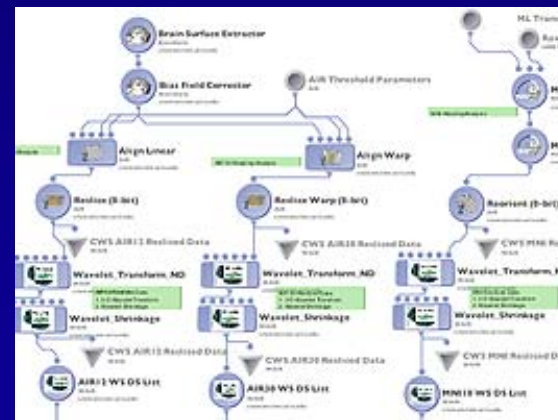
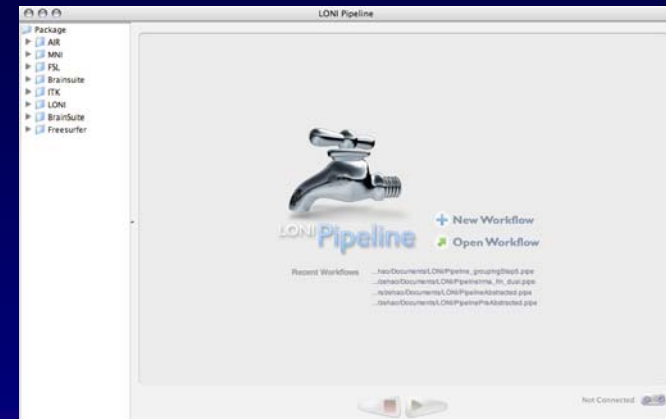
**Katherine Narr**

[narr@loni.ucla.edu](mailto:narr@loni.ucla.edu)

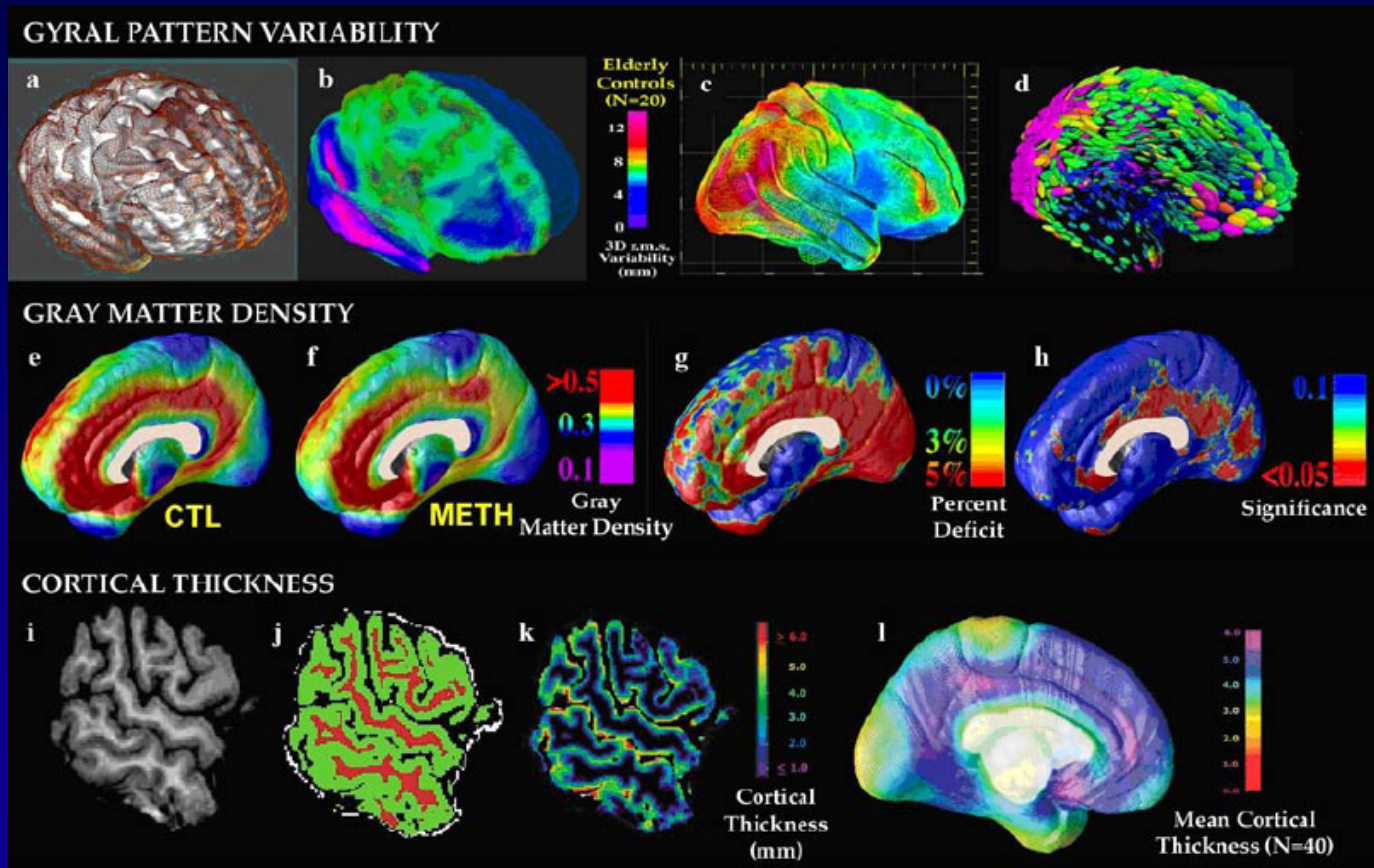
<http://users.loni.ucla.edu/~narr/>

# Software

- The LONI Pipeline is a free workflow application primarily aimed at Neuroimaging Researchers.
  - The LONI Pipeline Processing Environment is a simple, efficient, and distributed computing solution to these problems enabling software inclusion from different laboratories in different environments.
  - With the LONI Pipeline, users can create workflows that take advantage of all the greatest Neuroimaging tools available, quickly.



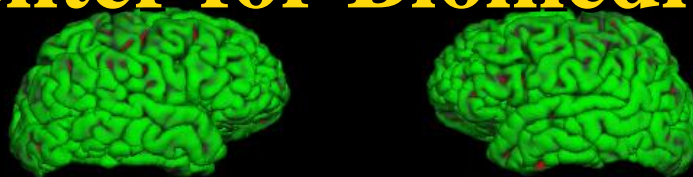
# Research







# Martinos Center for Biomedical Imaging



**FreeSurfer**



Creating and applying innovative imaging technologies toward more comprehensive understanding and better care of the human mind and body.

# Martinos Center

- **The Martinos Center's dual mission includes translational research and technology development**
  - A particular area of innovation at the Center is **Multimodal Functional Neuroimaging** which involves the integration of imaging technologies.
  - We are also world leaders in the development of primate neuroimaging techniques.

The screenshot shows the homepage of the Athinoula A. Martinos Center for Biomedical Imaging. At the top left are logos for HST, MIT, and Harvard. The main title is 'Athinoula A. Martinos Center for Biomedical Imaging'. A central graphic shows a brain with one side in red and the other in grey. To the right of the brain is the text: 'Creating and applying innovative imaging technologies toward more comprehensive understanding and better care of the human mind and body.' Below this is a navigation menu with links: About Us, Center Funding, Research, People, Publications, Training & Events, Opportunities, Contact Us, and User Information. Further down are links for 'Volunteer for a Study' and 'See What's New'. A search bar with a 'GO' button and a 'Site Map' link are also present. At the bottom right, there are three boxes labeled 'Research', 'Multimedia Gallery', and 'Calendar'. The footer contains the copyright notice: 'copyright 2005, Massachusetts General Hospital design by Digizyme'.

# People



**Bruce R Rosen, MD, PhD**  
**Professor in Radiology at Harvard Medical School**  
**Director, Athinoula A. Martinos Center for Biomedical Imaging**



**Bruce Fischl, PhD**  
**Director, Computational Core**  
**Computational & Data Processing Resources**

# Research Unit



Analog Brain Imaging Laboratory



Biomaterials Laboratory



Biomedical Informatics Research Network



[Center for Acupuncture Neuroimaging](#)



Cardiovascular MR Program



Center for Biomarkers in Imaging (MGH/HST)



Center for the Development of a Virtual Tumor (CViT)



[Center for Functional Neuroimaging Technologies](#)



[Center for Morphometric Analysis](#)



[Center for Neuroimaging of Aging & Degenerative Disease](#)



[Laboratory of Aging and Emotion](#)



[Language and Reading Research Lab](#)



Low-field Imaging Laboratory



[CRC Biomedical Imaging Core](#)



MEG Core Laboratory



[Molecular Imaging Laboratory](#)



Neural Systems Group



[Neurorecovery Laboratory](#)



Perceptual Learning and Sleep Laboratory



PET-MAG-NET Network for Multimodal Imaging



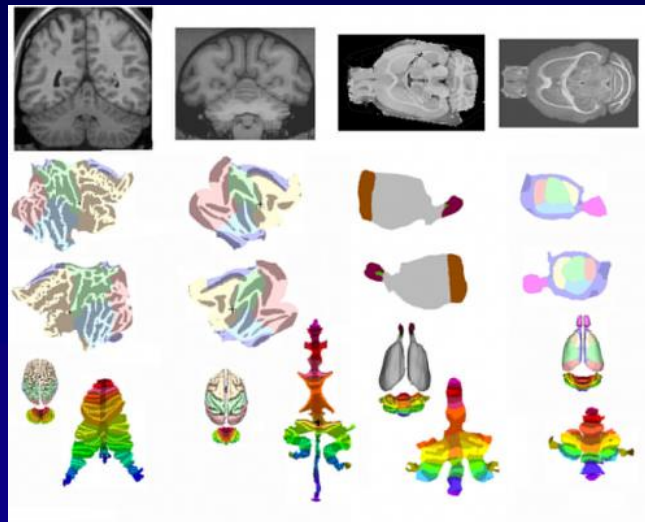
# Software

- **Freesurfer & FS-Fast**
- The Freesurfer package is tools for segmentation, surface reconstruction and processing of surface models of the human cerebral cortex. It includes FS-Fast fMRI data analysis tools.
- **HomER**
- HomER (Hemodynamic Evoked Response) graphical interface for visualization and analysis of Near Infra-Red Spectroscopy (NIRS) data
- **MNE**
- Minimum Norm Estimates software for MEG source modeling.
- **PMI Toolbox**
- Photon Migration Imaging (PMI) Toolbox for solving diffuse optical imaging (DOI) forward and inverse problems
- **WRST Analysis Toolbox**
- Wavelet Regularized Spatiotemporal Analysis Toolbox for single subject fMRI

# Van Essen Lab

Department of Anatomy and Neurobiology at Washington University

Medical School



**Our laboratory develops and uses computerized brain mapping techniques to study the structure, function, and development of cerebral cortex in humans and nonhuman primates.**

# People

 <p><b>Dora Angelaki</b> Multisensory spatial perception</p>	 <p><b>Nancy Baenziger</b> Alzheimer's disease</p>	 <p><b>Paul Bridgman</b> Growth cone motility</p>
 <p><b>Andreas Burkhalter</b> Structure and function of cortical circuits</p>	 <p><b>Harold Burton</b> Brain imaging of adaptive plasticity</p>	 <p><b>Valeria Cavalli</b> Axonal transport and nerve regeneration</p>
 <p><b>James M Cheverud</b> Gene mapping for complex traits</p>	 <p><b>Glenn C. Conroy</b> Hominid brain evolution</p>	 <p><b>J. David Dickman</b> Motion detection and spatial guidance</p>
 <p><b>Krikor Dikranian</b> Neurodegeneration in the developing and aged brain</p>	 <p><b>David Gottlieb</b> Neural development and stem cells</p>	 <p><b>Paul Gray</b> Development of neural circuits</p>
 <p><b>Timothy Holy</b> Sensory neurophysiology, behavior, and optics</p>	 <p><b>Arthur Loewy</b> Central autonomic control</p>	 <p><b>Michael Nonet</b> Synaptic development</p>
 <p><b>Karen O'Malley</b> Neurodegeneration of dopaminergic systems</p>	 <p><b>Camillo Padoa-Schioppa</b> Neuronal mechanisms of economic choice and decision making</p>	 <p><b>Jane E. Phillips-Conroy</b> Primate biology</p>
 <p><b>Joseph Price</b> Neuroanatomy of prefrontal cortical circuits</p>	 <p><b>Narendrakumar Ramanan</b> Transcriptional control of synaptic plasticity</p>	 <p><b>Lawrence Salkoff</b> Molecular genetics and physiology of ion channels</p>
 <p><b>Paul Shaw</b> Molecular/genetic analysis of sleep function</p>	 <p><b>Lawrence Snyder</b> Sensory-motor processing</p>	 <p><b>Paul Taghert</b> Circadian neurobiology/development</p>
 <p><b>William Thomas Thach</b> Neural control of posture and movement</p>	 <p><b>David Van Essen</b> Structure and function of cerebral cortex</p>	

# People



**David Van Essen**

Professor of Neurobiology and Department Head



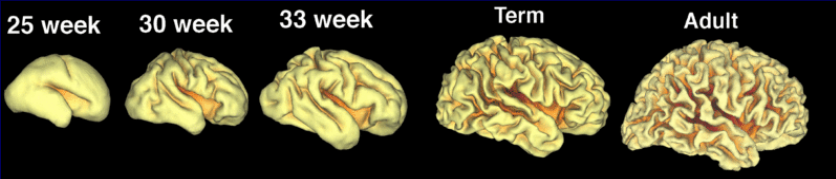
**John Harwell**



**Ping Gu**



# Research

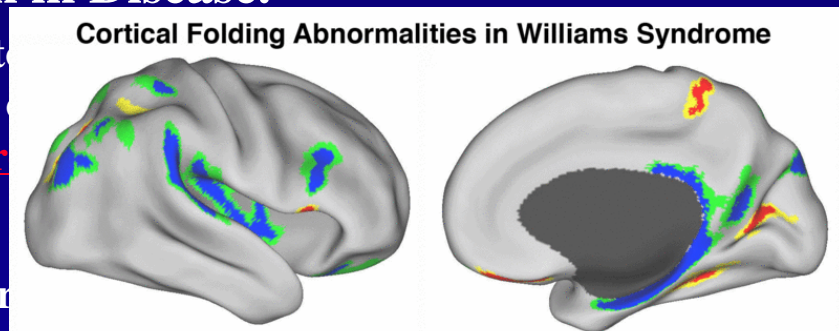
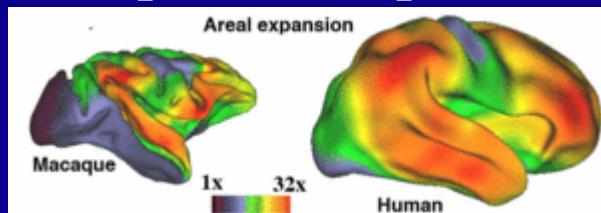
-  collaboration with Terrie Inder, Jeff   
 human cortical development in   
 nts.

- Our objectives are to better understand normal cortical maturation and to characterize cortical abnormalities that correlate with abnormal childhood development.

- **Cortical Structure and Function in Disease.**

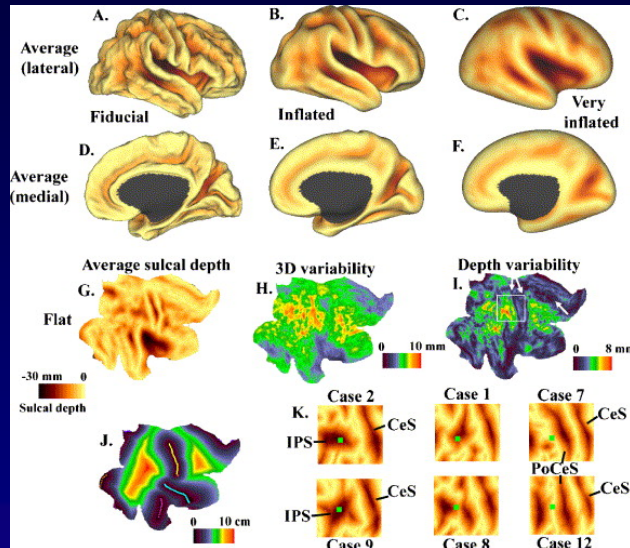
- We use surface-based approaches to study cortical structure and function in a variety of conditions including **schizophrenia**, and **Williams Syndrome**

- **Interspecies Comparisons.**

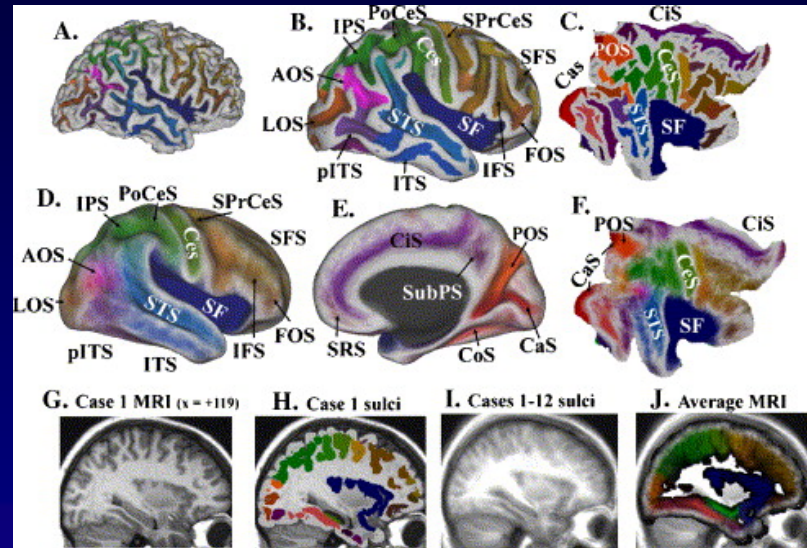


based on studies in apes (Olbart et al., 2004, van Essen, 2004, and van

# PALS and Other Atlases



Population-average representations of cortical shape.




Surface-based and volume-based sulcal identity maps for individuals and the population average.

- **The Population-Average, Landmark- and Surface-based (PALS) atlas approach involves surface-based and volume-based representations of cortical shape, each available as population averages and as individual subject data.**

# Software

**CARET**

Computerized  
Anatomical  
Reconstruction  
and Editing Toolkit



John Harwell, Heather A. Drury, Donna Hanlon, and David C. Van Essen

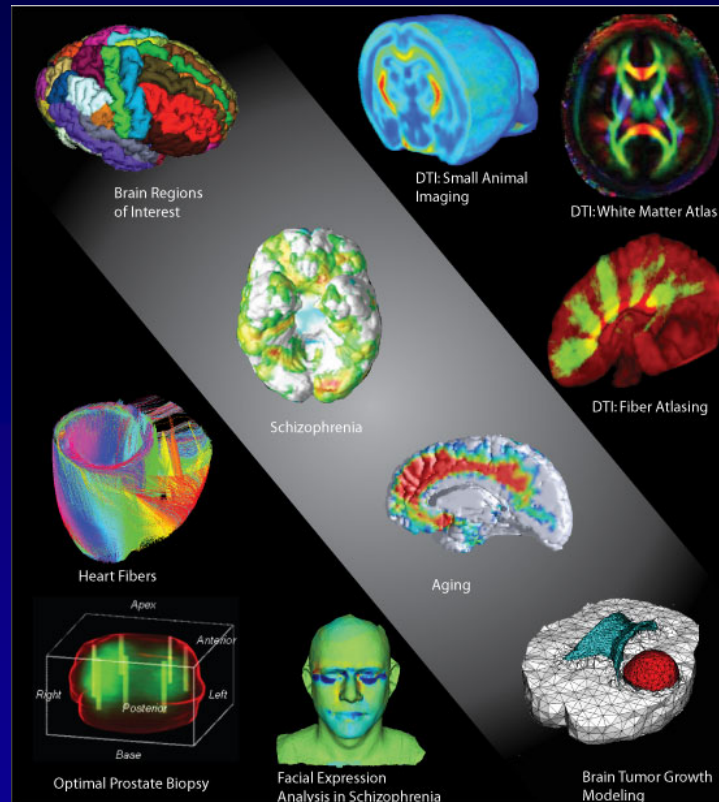
Washington University School of Medicine  
Department of Anatomy and Neurobiology  
660 S. Euclid Ave. St. Louis, MO 63110  
Copyright 1995-2004 Washington University  
<http://brainmap.wustl.edu/caret.html>  
[caret@brainmap.wustl.edu](mailto:caret@brainmap.wustl.edu)

Washington University  
in St. Louis

- Surface visualization, analysis, and editing
- Surface flattening
- Surface-based warping

- Caret is a free, open-source, software package for structural and functional analyses of the cerebral and cerebellar cortex.

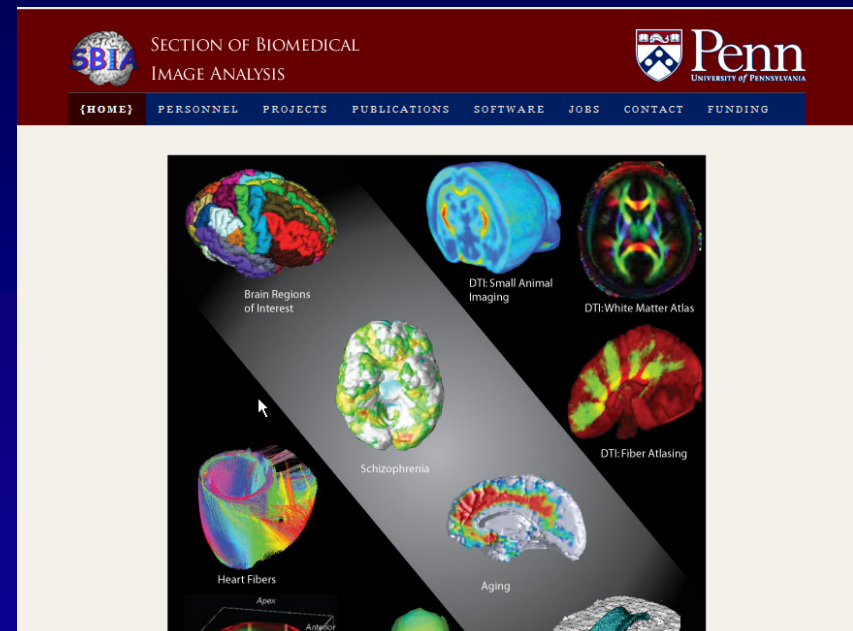
# The Section for Biomedical Image Analysis (SBIA)



3600 Market St.  
Suite 380  
Philadelphia, PA 19104



- **The Section for Biomedical Image Analysis (SBIA) is devoted to the development of computer-based image analysis methods, and their application to a wide variety of clinical research studies.**



# People



**Christos Davatzikos**

Director Section of Biomedical Image Analysis  
Professor, Department of Radiology



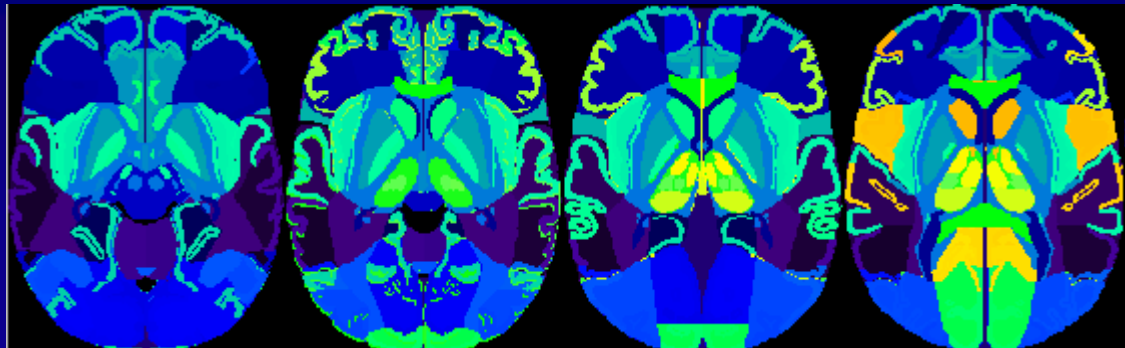
# Research

- **Image analysis methodologies include image registration, segmentation, population-based statistical analysis, biophysical modeling of anatomical deformations, and high-dimensional pattern classification.**
- **Clinical research studies span a variety of clinical areas and organs, and are performed within a wide network of collaborations from within and outside Penn.**
  - **They include brain diseases such as Alzheimer's and schizophrenia, evaluation of treatment effects in large clinical trials, diagnosis of cardiac diseases, and diagnosis prostate, breast and brain cancer.**
- **SBIA also performs small animal imaging research aiming to understand brain development in mouse models.**

# Software

- [HAMMER](#)
- [TetSplit](#)
- [SSD](#)
- [Atrophy Simulation](#)
- [Optimized Prostate Cancer Detection](#)
- [Mouse Brain Maturation Atlas](#)
- [DTI GUI](#)
- [COMPARE](#)
- [BRAID](#)
- [White Matter Lesion Segmentation](#)
- [CLASSIC](#)

# University of Texas Health Science Center: Research Imaging Institute



Talairach Label Data



# People



Jack Lancaster, Ph.D.  
Professor, Radiology  
[jlancaster@uthscsa.edu](mailto:jlancaster@uthscsa.edu)

<http://ric.uthscsa.edu/lancasterj.php>



Peter Fox, MD  
Neuroimaging Core Director

[fox@uthscsa.edu](mailto:fox@uthscsa.edu)

# Research Imaging Institute

- **The mission of the RII is to perform basic, clinical and translational research using noninvasive, biomedical imaging methods for measuring the structure and function of living organisms.**

**Neuroscience research is given highest priority.**

- **Positron Emission Tomography (Paul Jerabek, Chief);**
- **Magnetic Resonance Imaging (Timothy Duong, Chief);**
- **Human Electrophysiology (Shalini Narayana, Chief);**
- **Biomedical Image Analysis (Jack Lancaster, Chief);**
- **Translational Imaging (M. Duff Davis, Chief);**

# Talairach Software

- The Talairach software, generally known as the Talairach Daemon, was created and developed by Jack Lancaster and Peter Fox at the Research Imaging Center of the University of Texas Health Science Center San Antonio (UTHSCSA).
  - Talairach Client: a Java application for finding individual and batch labels as well as command-line tools for accessing the daemon.
  - Talairach Applet: a web application for the daemon which includes graphical overlays and nearest gray matter searches.
  - Talairach Daemon: a high-speed database server for querying and retrieving data about human brain structure over the internet.



# McConnell brain mapping center

Montreal Neurological Institute (MNI)



**The Problem of Neurology is to Understand Man Himself !**

McConnell Brain Imaging Center  
Montreal Neurological Institute, room: WB-325  
3801 University St  
Montreal (QC), H3A 2B4  
CANADA

# Research Unit

- **The Montreal Neurological Institute and Hospital is a unique academic medical centre dedicated to neuroscience.**
- **Here multidisciplinary teams of basic and clinical scientists generate fundamental information about the nervous system and apply that knowledge to understanding and treating neurological diseases.**

## THE NEURO TEAM

- ⇒ [Brain Tumour Research Centre](#)
- ⇒ [Cell Biology of Excitable Tissues](#)
- ⇒ [Centre for Neuronal Survival](#)
- ⇒ [Clinical Research Unit](#)
- ⇒ [Cognitive Neurosciences](#)
- ⇒ [Complex Neural Systems](#)
- ⇒ [Epilepsy](#)
- ⇒ [McConnell Brain Imaging Centre](#)
- ⇒ [Neuroimmunology](#)
- ⇒ [Neuromuscular Research](#)
- ⇒ [Neuroradiology](#)
- ⇒ [Neurosurgical Research](#)



# McConnell brain mapping center (BIC)

- The BIC is a multidisciplinary research centre dedicated to advancing our understanding and treatment of neurological diseases by creating and using imaging methods to study the human nervous system.
- Research interests include MR and PET imaging, image post processing, MR spectroscopy, small animal imaging, and imaging of epilepsy, human dopamine, and multiple sclerosis.



<http://noodles.bic.mni.mcgill.ca/Main/HomePage>

<http://wiki.bic.mni.mcgill.ca/>

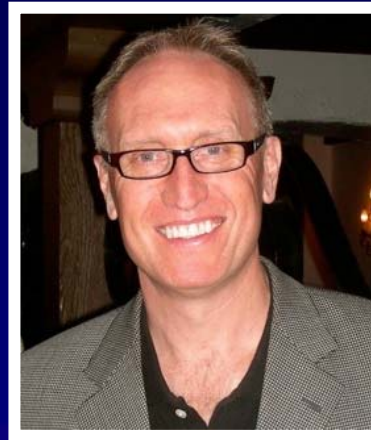
# People in BIC



Alan C. Evans, PhD

<http://www.bic.mni.mcgill.ca/~alan/>

<http://noodles.bic.mni.mcgill.ca/PersonalCollinsdlouis/HomePage>



Bruce Pike, PhD

[http://web.me.com/bruce.pike/Bruce\\_Pike\\_-\\_MNI/Welcome.html](http://web.me.com/bruce.pike/Bruce_Pike_-_MNI/Welcome.html)



Alain Dagher, PhD



Andrea Bernasconi, PhD

[http://www.mni.mcgill.ca/neuro\\_team/mbic/andrea\\_bernasconi/](http://www.mni.mcgill.ca/neuro_team/mbic/andrea_bernasconi/)



Louis Collins, PhD

# Research

- The **CIVET** project was initiated in order to create an environment that allows for easy use of all the important software tools available at the **BIC** by researchers that are not inclined to delve into the coding and developing of code, as well as offer a flexible platform for developers.
- The objective is to make it possible for someone with little or no programming background to make full use of the available software for automated structural (anatomical) research, while simultaneously allowing developers to have maximal capacity to customize, add or improve various functions to the platform.

# Software

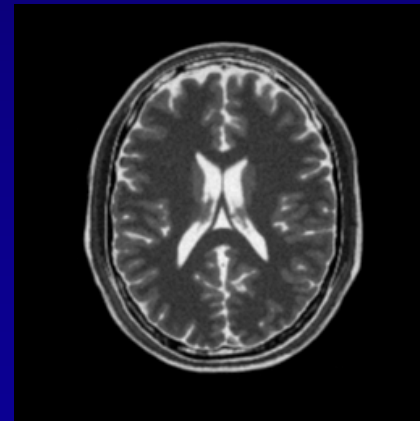
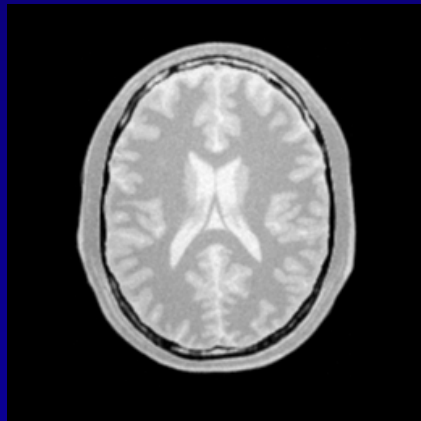
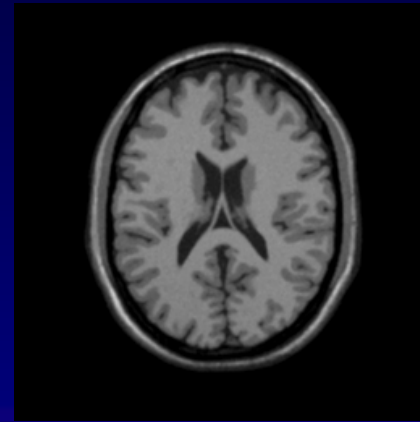
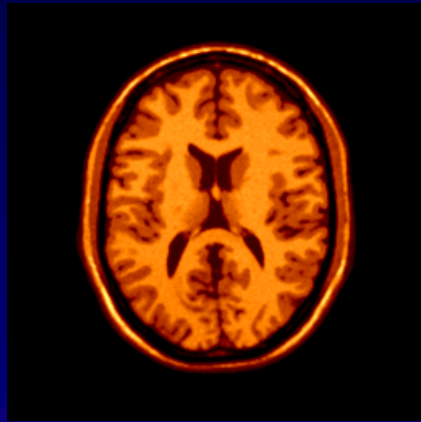
- **Applications**

- [BrainView](#) - all things related to the pretty little brain spinning application
- [BrainRender](#) - tutorial on how to volume render MINC files
- [Register](#)
- [DisplayManual](#)
- [WindowsBicSoftware](#)

- **MINC programs**

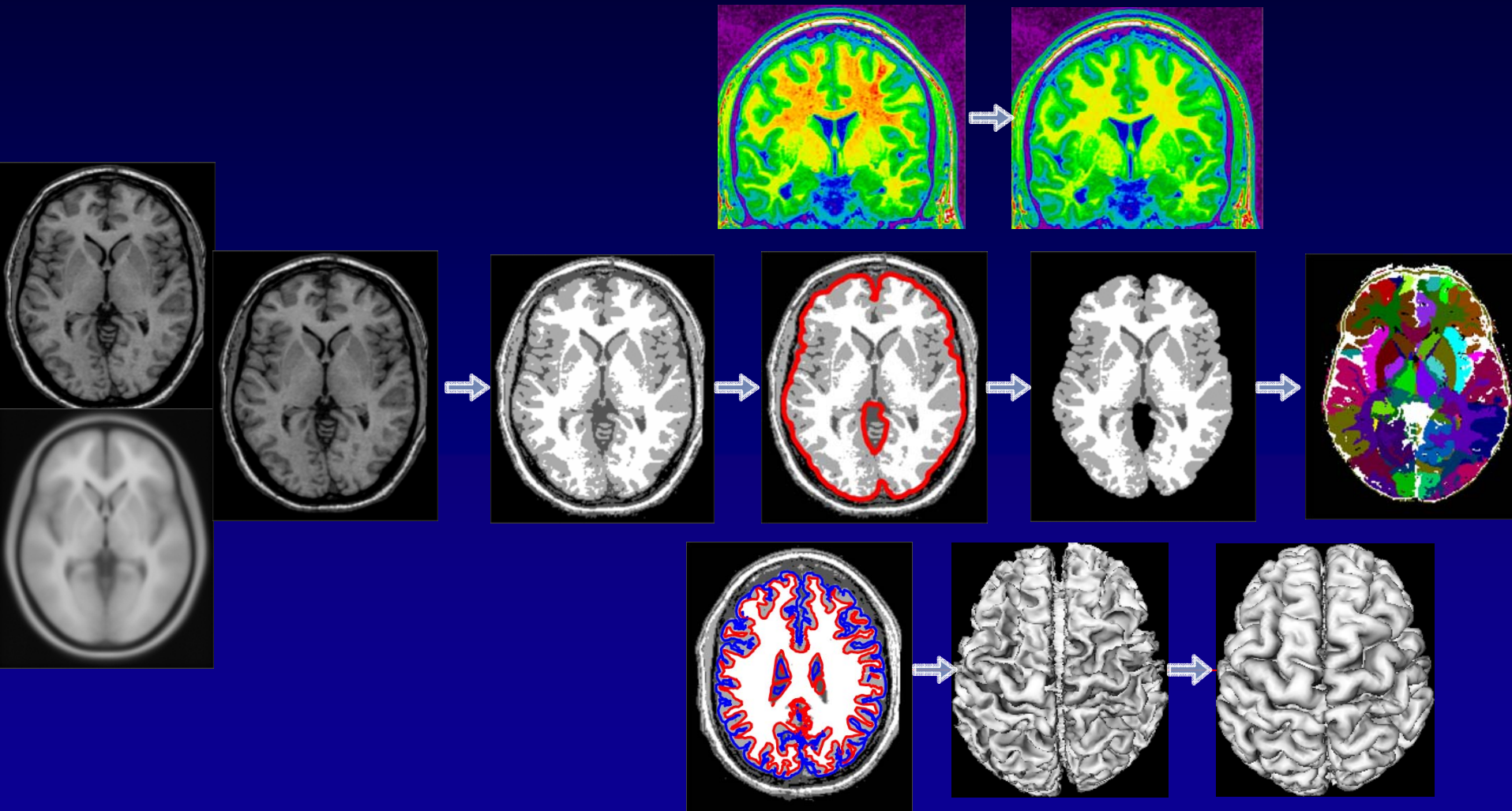
- [conglomerate](#)
- [minctotag](#)
- [mni autoreg](#)
- [nlfit smr](#)
- [postf](#)
- [volume io](#)
- [nu correct](#) (see also [WikiNuCorrectFaq](#))
- [CLASP](#)

# Brain Template

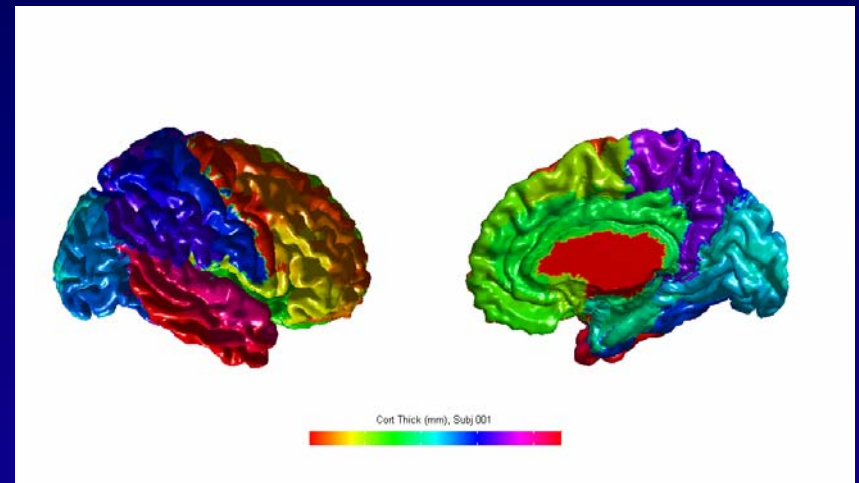
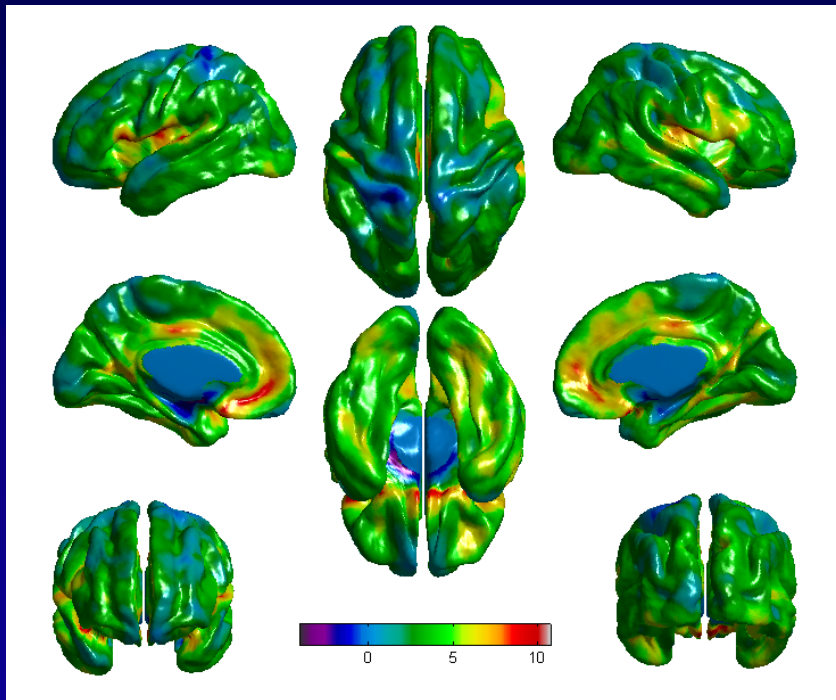


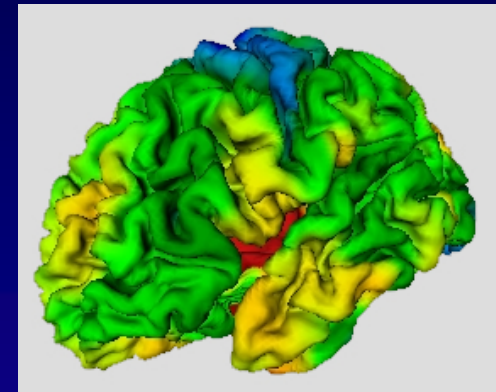
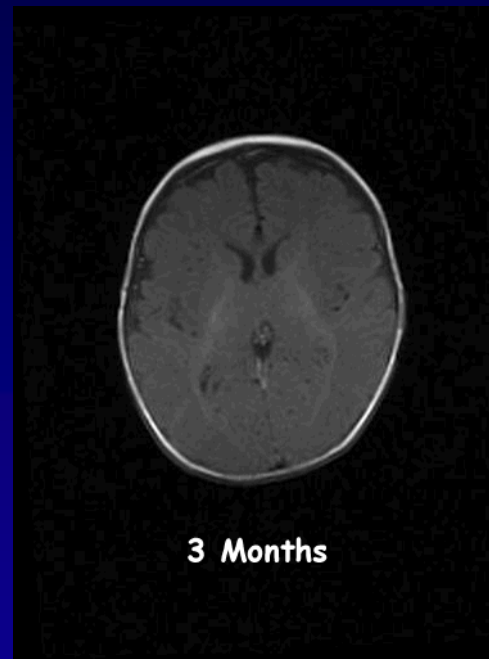
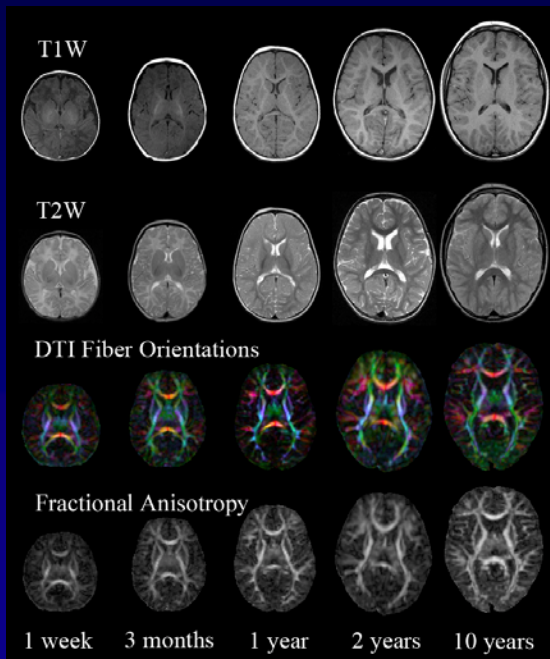


# CIVET



# Cortical Thickness





1. Images of T1W, T2W, DTI Fiber Orientations, Fractional Anisotropy at various stages of development.
2. Image Animation of a T1W image from 3 months to 11 months.
3. Cortical thickness output

**The overarching goal of the Pediatric MRI Study is to foster a better understanding of normal brain maturation as a basis for understanding a typical brain development associated with a variety of disorders and diseases.**



# Wellcome Trust Centre for Neuroimaging at UCL

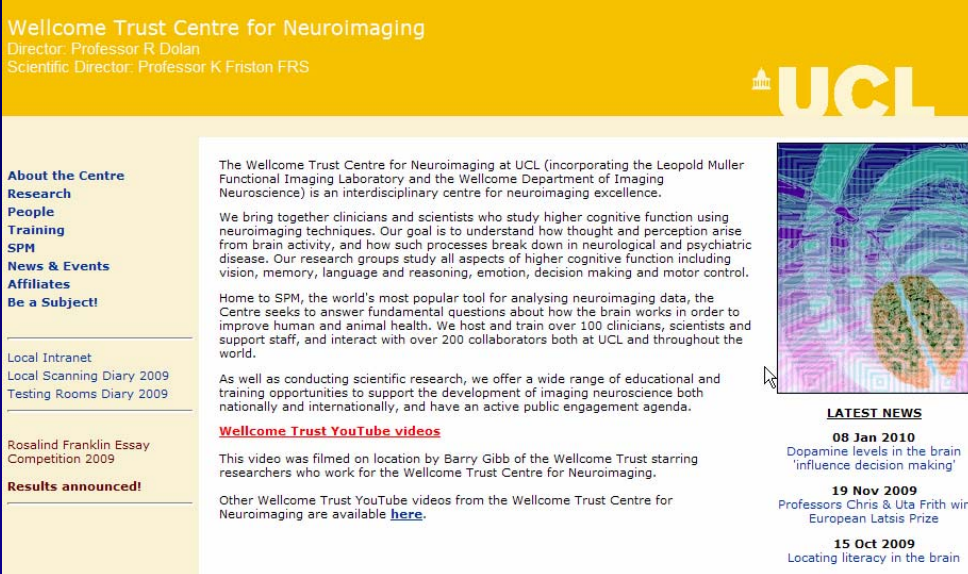


[Functional Imaging Laboratory](#),  
[12 Queen Square](#), London, WC1N 3BG, UK.  
tel:+44 (0)20 78337491 or +44 (0)20 78373611 x4381  
fax:+44 (0)20 78131420  
email:john @ fil.ion.ucl.ac.uk

<http://en.wikibooks.org/wiki/SPM>

# Functional Imaging Laboratory (FIL)

- The Wellcome Trust Centre for Neuroimaging at UCL bring together clinicians and scientists who study higher cognitive function using neuroimaging techniques.
- Our goal is to understand how thought and perception arise from brain activity, and how such processes break down in neurological and psychiatric disease.
- Our research groups study all aspects of higher cognitive function including vision, memory, language and reasoning, emotion, decision making and motor control.



Wellcome Trust Centre for Neuroimaging  
Director: Professor R Dolan  
Scientific Director: Professor K Friston FRS

**UCL**

**About the Centre**  
Research  
People  
Training  
SPM  
News & Events  
Affiliates  
Be a Subject!

Local Intranet  
Local Scanning Diary 2009  
Testing Rooms Diary 2009

Rosalind Franklin Essay Competition 2009

**Results announced!**

The Wellcome Trust Centre for Neuroimaging at UCL (incorporating the Leopold Muller Functional Imaging Laboratory and the Wellcome Department of Imaging Neuroscience) is an interdisciplinary centre for neuroimaging excellence.

We bring together clinicians and scientists who study higher cognitive function using neuroimaging techniques. Our goal is to understand how thought and perception arise from brain activity, and how such processes break down in neurological and psychiatric disease. Our research groups study all aspects of higher cognitive function including vision, memory, language and reasoning, emotion, decision making and motor control.

Home to SPM, the world's most popular tool for analysing neuroimaging data, the Centre seeks to answer fundamental questions about how the brain works in order to improve human and animal health. We host and train over 100 clinicians, scientists and support staff, and interact with over 200 collaborators both at UCL and throughout the world.

As well as conducting scientific research, we offer a wide range of educational and training opportunities to support the development of imaging neuroscience both nationally and internationally, and have an active public engagement agenda.

**Wellcome Trust YouTube videos**

This video was filmed on location by Barry Gibb of the Wellcome Trust starring researchers who work for the Wellcome Trust Centre for Neuroimaging.

Other Wellcome Trust YouTube videos from the Wellcome Trust Centre for Neuroimaging are available [here](#).

**LATEST NEWS**

**08 Jan 2010**  
Dopamine levels in the brain "influence decision making"

**19 Nov 2009**  
Professors Chris & Uta Frith win European Latsis Prize

**15 Oct 2009**  
Locating literacy in the brain



# People



**Karl Friston PhD**



**Ray Dolan PhD**



**Jon Driver PhD**



**John Ashburner PhD**

# Principal areas of investigation

- Cognition & emotion (Professor Ray Dolan)

Attention (Professor Jon Driver)

Computational Neuroscience (Dr John Ashburner)

Imaging neuroscience & theoretical neurobiology  
(Professor Karl Friston FRS)

Consciousness & higher brain function  
(Emeritus Professor Chris Frith FRS)

- Memory & space (Professor Eleanor Maguire)

Language (Professor Cathy Price)

Visual awareness (Professor Geraint Rees)

MRI Physics (Dr Nikolaus Weiskopf)

Methods (Dr Will Penny)

MEG (Dr Gareth Barnes)

# Research

- **Statistical Parametric Mapping** refers to the construction and assessment of spatially extended statistical processes used to test hypotheses about functional imaging data. These ideas have been instantiated in software that is called SPM.
- The SPM software package has been designed for the analysis of brain imaging data sequences. The sequences can be a series of images from different cohorts, or time-series from the same subject. The current release is designed for the analysis of **fMRI**, **PET**, SPECT, **EEG** and **MEG**.

# Oxford Centre for Functional MRI of the Brain



FMRIB Centre,  
John Radcliffe Hospital,  
Oxford OX3 9DU, UK

# FMRIB Centre

- **The FMRIB Centre is a multi-disciplinary neuroimaging research facility, which focuses on the use of Magnetic Resonance Imaging (MRI) and related technologies.**
- **The centre is composed of research groups in all aspects of brain imaging research, including physics, analysis, basic science and clinical neuroscience.**

The screenshot shows the homepage of the FMRIB Centre website. The header features the University of Oxford logo and the text 'FMRIB Centre DEPARTMENT OF CLINICAL NEUROLOGY'. A navigation bar includes links for 'Site Map', 'Accessibility', 'Contact us', and 'Log in'. The main content area is titled 'Oxford Centre for Functional MRI of the Brain' and contains a paragraph describing the centre's multi-disciplinary research focus. Below this, there are two columns of links: 'Further information' and 'Research groups'. The 'Further information' column includes links to 'Background and Organisational Structure', 'FMRIB Publications', 'Collaborations', 'Research Ethics', 'Future Goals', and 'What is FMRIB?'. The 'Research groups' column lists 'Analysis', 'Physics', 'Pain', 'Connectivity', 'Plasticity in Disease', 'Language and Development', 'Vision', 'Neurodegeneration', 'Cognition', and 'Psychiatry'. On the right side, there is a section for 'Upcoming Events' with three entries: 'Graduate Program Lecture - Registration and unwarping', 'Graduate Program Practical - Registration and unwarping', and 'Graduate Program Deadline - First term report hand-in'. A sidebar on the left contains a 'You are here: Home' breadcrumb, a 'FMRIB' menu, and 'Quick Links'.

UNIVERSITY OF OXFORD  
FMRIB Centre  
DEPARTMENT OF CLINICAL NEUROLOGY

You are here: Home

FMRIB

Home  
People  
Research  
FSL  
Support  
Education  
Seminars  
Intranet

FMRI Information

Introduction to FMRI

Quick Links

Contact us  
How to find us  
Job Vacancies  
University staff Directory  
University of Oxford

Oxford Centre for Functional MRI of the Brain

The FMRIB Centre is a multi-disciplinary neuroimaging research facility, which focuses on the use of Magnetic Resonance Imaging (MRI) and related technologies. The centre is composed of research groups in all aspects of brain imaging research, including physics, analysis, basic science and clinical neuroscience. FMRIB was recently awarded £4.2m by the MRC and EPSRC to purchase new 7T and 3T leading-edge MRI systems to enable us to image brain structure and function at even higher resolution than currently possible.

To find out more about the history of the Centre, our future plans and a flavour of the research we carry out, view our lab overview.

Further information

- Background and Organisational Structure
- FMRIB Publications
- Collaborations
- Research Ethics
- Future Goals
- What is FMRIB?

Research groups

- Analysis
- Physics
- Pain
- Connectivity
- Plasticity in Disease
- Language and Development
- Vision
- Neurodegeneration
- Cognition
- Psychiatry

Upcoming Events

Graduate Program  
Lecture - Registration and unwarping  
Seminar Room B - West Wing,  
Monday 18 January 2010

Graduate Program  
Practical - Registration and unwarping  
Seminar Room B - West Wing,  
Monday 18 January 2010

Graduate Program  
Deadline - First term report hand-in  
Monday 18 January 2010

# Research

- **Research groups**

- FMRIB is a recognised world-class MR imaging laboratory that integrates research into key neurological and neuroscientific problems with cutting-edge developments in MR physics and data analysis.
- Our core research strengths include the following areas of translational neuroscience: Pain, Plasticity in Disease, Cognition, in vivo Neuroanatomy, MR Physics, and Image Analysis.

Analysis

Physics

Pain

Connectivity

Plasticity in Disease

Language and Development

Vision

Neurodegeneration

Cognition

Psychiatry



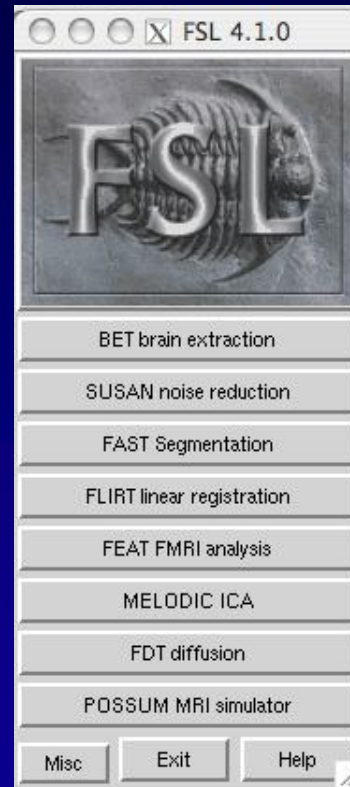
# People

## Directorate

Prof. Irene Tracey	Director of FMRIB Centre
Prof. Steve Smith	Associate Centre Director
Prof. Peter Jezzard	Department of Clinical Neurology
Dr Heidi Johansen-Berg	Department of Clinical Neurology
Dr Matthew Rushworth	Department of Experimental Psychology
Prof. Andrew Parker	Department of Physiology, Anatomy and Genetics
Prof. Alan Cowey	Department of Experimental Psychology



# Software

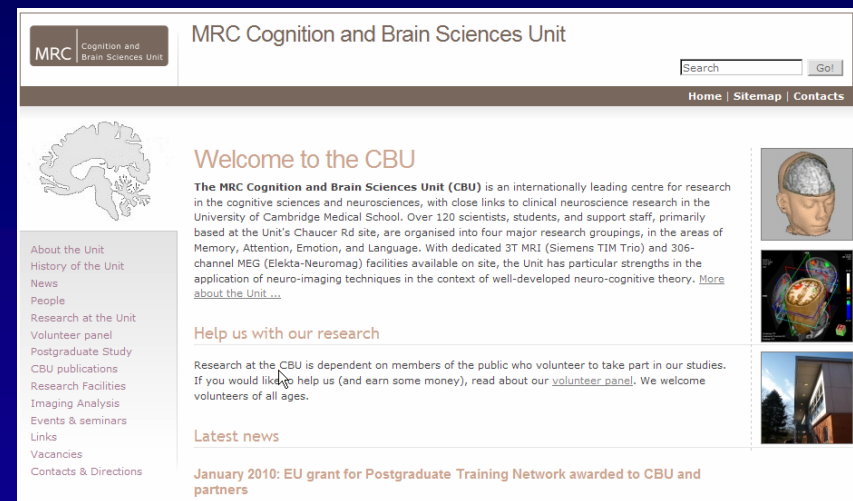


**FSL is a comprehensive library of analysis tools for FMRI, MRI and DTI brain imaging data.**

# MRC Cognition and Brain Sciences Unit



- The CBU now constitutes one of the largest concentrations of cognitive scientists and neuroscientists on a single site anywhere in the world, with nearly 100 active scientists, students and research staff.
- A priority in the CBU research strategy over the last 5 years has been to develop a strong research programme in neuroimaging, working closely with the Wolfson Brain Imaging Centre, and more than half of the scientific staff and students are actively involved in neuroimaging projects.



The screenshot shows the homepage of the MRC Cognition and Brain Sciences Unit. The header includes the MRC logo and the unit name. A search bar is located in the top right corner. Below the header, there is a navigation menu with links for Home, Sitemap, and Contacts. The main content area features a large brain icon on the left and a welcome message on the right. The welcome message describes the unit as an internationally leading centre for research in cognitive sciences and neurosciences, with close links to clinical neuroscience research in the University of Cambridge Medical School. It mentions over 120 scientists, students, and support staff, primarily based at the Unit's Chaucer Rd site, organized into four major research groupings in the areas of Memory, Attention, Emotion, and Language. It also highlights dedicated 3T MRI (Siemens TIM Trio) and 306-channel MEG (Elekta-Neuromag) facilities available on site, and the unit's strengths in the application of neuro-imaging techniques in the context of well-developed neuro-cognitive theory. A link to 'More about the Unit...' is provided. Below the welcome message, there is a section titled 'Help us with our research' which states that research at the CBU is dependent on members of the public who volunteer to take part in their studies. If you would like to help us (and earn some money), read about our 'volunteer panel'. We welcome volunteers of all ages. A 'Latest news' section follows, with a headline: 'January 2010: EU grant for Postgraduate Training Network awarded to CBU and partners'. On the right side of the page, there are three small images: a brain scan, a person's head with a brain scan overlay, and a building.

# People



**Michael Anderson**  
michael.anderson@mrc-cbu.cam.ac.uk



**William Marslen-Wilson**  
Unit Director, Speech and Language Group

# Principal areas of investigation

- **Attention**
- **Emotion**
- **Speech and language**
- **Memory and perception**
- **Methods research and infrastructure**





# Max Planck Institute for Human Cognitive and Brain Sciences



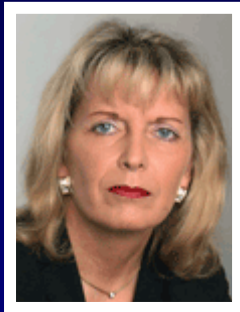
*Max Planck Institute for Human Cognitive and Brain  
Sciences*  
Stephanstraße 1A, 04103 Leipzig, Germany

# Max Planck Institute

- Research at the Max Planck Institute for Human Cognitive and Brain Sciences revolves around human cognitive abilities and cerebral processes, with a focus on language, music, and action.
- Studies look into the perception of language; music; actions (and their outcome); the planning and generation of language and activity; and the interaction between, and common functional principles of, generation and perception in various cognitive fields .

The screenshot shows the homepage of the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig. The header includes the institute's name in German and English, along with a search bar. A left sidebar contains a navigation menu with links to HOME, NEWS, IMPRS NEUROCOM, INSTITUTE, STAFF, DEPARTMENTS, GROUPS, SERVICE UNITS, LIBRARY, CONTACT, INTERNALS, IMPRINT, and SITEMAP. The main content area features several news items, each with a small image and a title: 'Angela Friederici ist Inhaberin der 11. Johannes Gutenberg-Stiftungsprofessur', 'Babies with an Accent', 'Award for Achievements in Public Understanding of Science (German only)', 'Doing what the brain does – how computers learn to listen', 'Max Planck Public Lectures during stay of 'Expedition Future' train in Leipzig', and 'Rewards make learning easier'. A large photograph of the institute's building is on the right. At the bottom right, there is a list of research areas: Neuropsychology, Cognitive Neurology, Neurophysics, Psychology, and Social Neuroscience, each with a right-pointing arrow.

# People



**Prof. Dr Angela D. Friederici**  
**Neuropsychology**



**Prof. Dr Wolfgang Prinz**  
**Psychology**



**Prof. Dr Robert Turner**  
**Brain Mapping, both Functional and Anatomical**



**Prof. Dr Arno Villringer**  
**Cognitive Neurology**

# Research

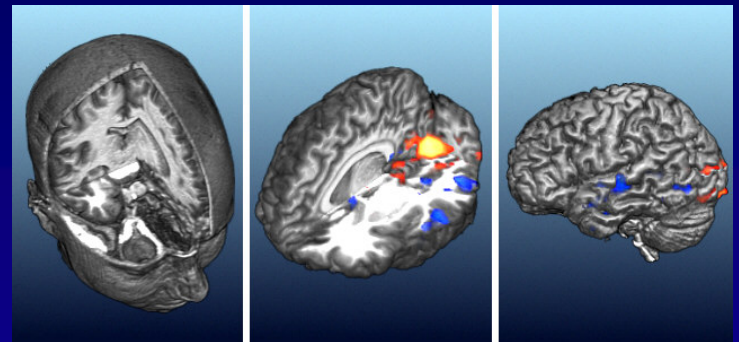
- **Research at the Max Planck Institute for Human Cognitive and Brain Sciences revolves around human cognitive abilities and cerebral processes, with a focus on language, music, and action.**
  - **Neuropsychology ( Professor Angela D. Friederici )**
  - **Cognitive Neurology ( Professor Arno Villringer )**
  - **Neurophysics ( Professor Robert Turner )**
  - **Psychology ( Professor Wolfgang Prinz )**
  - **Social Neuroscience ( Prof. Dr. Tania Singer )**

# Software

- **Lipsia**

- **Leipzig Image Processing and Statistical Inference Algorithms – a tool for fMRI data analysis**

- registration and normalization
- preprocessing
- statistical evaluation
- region of interest analysis
- timecourse analysis
- visualization, rendering
- converters to various data formats



# Institute of Neuroscience and Medicine (INM)

The INM is devoted to brain research.





- **The Institute of Neuroscience and Medicine, INM-1, is devoted to experimental studies about multimodal mapping of the human brain.**
- **Our aim is the development of a new, three-dimensional realistic brain model on the basis of cytoarchitectonic, molecular and functional data as well as connectivity.**

**INSTITUTE OF NEUROSCIENCE AND MEDICINE (INM)**



**JÜLICH**  
FORSCHUNGSZENTRUM

[Institute Home](#) | [Imprint](#)
[Search](#) | [deutsch](#)

**Institute of Neuroscience and Medicine (INM)**



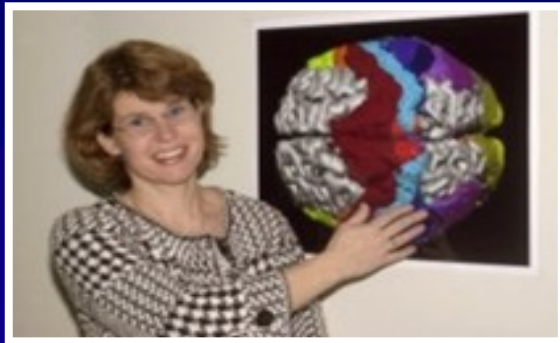
The INM is devoted to brain research. The analysis of the normal and pathologically impaired structure and function of the nervous system with particular emphasis on mechanisms at the molecular, cellular, and systems level as well as the development of novel diagnostic and therapeutic techniques is the main goal of our institute. To reach this goal the INM cooperates with a number of universities, among them the universities of Köln, Bonn and Düsseldorf as well as the RWTH Aachen University in the framework of Jülich Aachen Research Alliance - Brain ([JARA-BRAIN](#)).

Important Research Fields:

- [Brain Imaging Physics](#)
- [Cognitive Neurology](#)
- [Computational and Systems Neuroscience](#)
- [Human Brain Mapping](#)
- [Molecular Organisation of the Human Cortex](#)
- [Neuromodulation](#)

It's a great pleasure for us to inform you that from Friday 04th to Sunday 6th of December 2009 the Third Vogt Brodmann Symposium on "One hundred years anniversary of Brodmann's map: change of concepts" will take place in Juelich, Germany.

# People



**Prof. Dr. med. Katrin Amunts**



**Prof. Dr. med. Karl Zilles**



**Prof. Dr. Gereon R. Fink**

# Research

- **Important Research Fields:**

Brain Imaging Physics

Cognitive Neurology

Computational and Systems Neuroscience

Human Brain Mapping

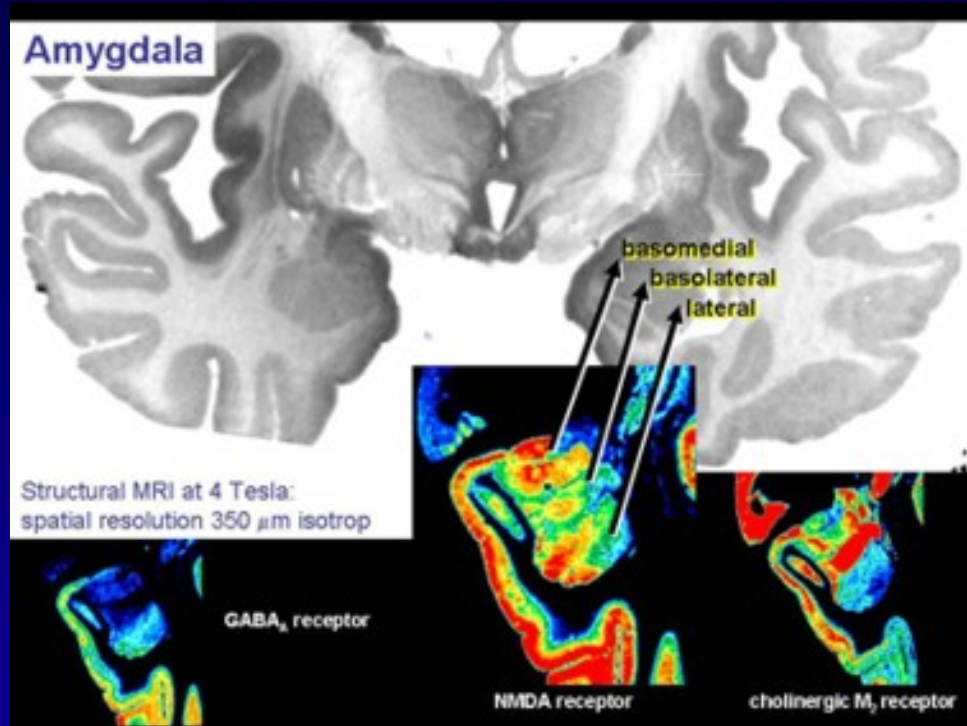
Molecular Organisation of the Human Cortex

Neuromodulation

# Research

- **Mapping of the human cerebral cortex based on the analysis of its neurochemical (receptorarchitecture) and histological (cyto- and myeloarchitecture) structure**
- **Mapping the cerebral cortex of non-human primates based on the analysis of their neurochemical (receptorarchitecture) and histological (cyto- and myeloarchitecture) structure**
- **Analysis of the disease-related changes in the densities of neurotransmitter receptors in brain tissue from patients with focal temporal lobe epilepsy or hepatic encephalopathy**
- **Combination of (receptor-) architectural data with results obtained from functional imaging studies ([\\_SPM Anatomy Toolbox](#))**
- **Methodical developments towards the multimodal integration of structural and functional information concerning the human brain in order to enable analysis of the principals of cortical (hierarchical) organisation**

# Research



## Molecular Organisation of the Human Cortex

# 国内



认知神经科学与学习研究所  
认知神经科学与学习国家重点实验室

<http://psychbrain.bnu.edu.cn/Org.htm>

<http://restfmri.net/forum/index.php>

相关科研人员：臧玉峰，贺永，等



中国科学院自动化研究所  
计算医学研究中心  
Center for Computational Medicine

<http://www.rccm.org.cn/>

<http://www.nlpr.ia.ac.cn/jiangtz>

相关科研人员：蒋田仔，等



华西磁共振研究中心(HMRRRC)  
Huaxi MR Research Center (HMRRRC)

<http://www.hmrrc.org.cn/>

相关科研人员：龚启勇，等





**Research Center for Sectional and Imaging Anatomy**

**Thanks**