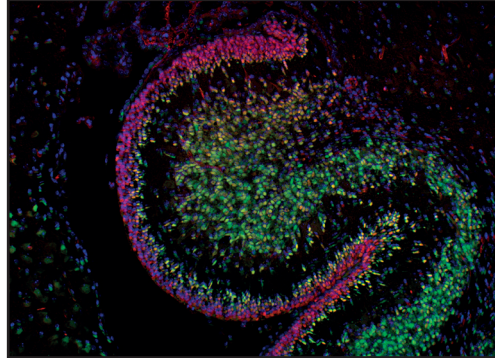
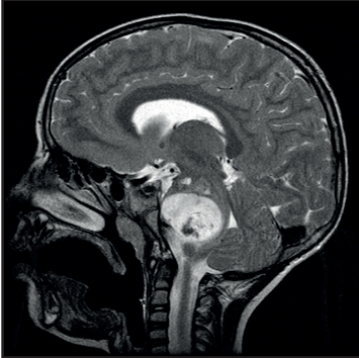


UCL CANCER INSTITUTE



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UCL Workshop on Nervous System Tumour Research

Monday 8 September 2014
9am-5.30pm

Royal College of General Practitioners
30 Euston Square
London

Contact

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Darren.Hargrave@gosh.nhs.uk

Introduction

Tumours of the nervous system have a high cost and unmet need with over 10,000 new cases and almost 5,000 deaths each year in the UK, many survivors are left with significant disability.

Brain tumours are the leading cause of childhood cancer deaths and one of the first causes of cancer death in economically active adults. Critically, there has been little improvement in survival rates for high-risk brain tumours in both adults and children. Cancer Research UK, the main sponsor of this event, has identified brain cancer as one of its four cancers with substantial unmet need and has stated that they will increase focus on these tumours and prioritise them within funding streams.

Nervous system tumour research is a major theme across many research institutions in the London area. In particular, neurological disease and neurosciences research represent a great proportion of UCL's biomedical science activity. Notably, there are two Brain Tumour Charity-funded programmes at UCL Cancer Institute/IoN and ICH covering adult and paediatric neuro-oncology translational research, with the latter involving researchers at the Institute of Cancer Research and Newcastle University.

London Cancer, an integrated cancer system working with UCL Partners, has one of the largest paediatric (GOSH), adolescent (UCLH, NHNN) and adult (NHNN, BH & BHRUT) neuro-oncology services in the UK. There are strong clinical research interests in imaging, neurosurgery, oncology (radiotherapy and medical oncology) and neuro-rehabilitation with multiple principal investigators of local, national and international clinical studies.

These are exciting times for neuro-oncology research given the fundamental discoveries in the area of (epi)genomics of nervous system tumours. It is now crucial to translate these breakthroughs into novel therapies and improve the often dismal prognosis of these neoplasms. We are convinced that this can be achieved only by fostering interactions and collaborative efforts across different research groups and disciplines.

As part of this effort, we have organized the Nervous System Tumour Workshop, which will provide an overview of neuro-oncology research in the London area and at other leading European research institutions, and, critically, it will represent a forum to discuss future research directions in this area.

Welcome

On behalf of UCL and the UCL Cancer Institute Director Tariq Enver, it is our pleasure to welcome you to this one-day CRUK and BRC sponsored workshop.

We have an exciting programme with a focus on **Nervous System Tumour Research**, which we hope will provide a stimulating forum for discussion on how to facilitate future collaborative neuro-oncology research in the London area and beyond.

Some of the major themes under discussion will include:

- [Clinical Neuro-oncology](#)
- [Target Identification and Validation](#)
- [Imaging](#)
- [Basic Mechanisms and Experimental Models](#)

We have three outstanding plenary speakers who will provide an insight into their own research programmes and more broadly neuro-oncology research at their respective institutions.

We extend a special thanks to all of our speakers and chairs and to our sponsors. We hope that you enjoy hearing about the outstanding work taking place and that you will take the opportunity to interact with other attendees throughout the day.



Professor Paolo Salomoni

Brian Cross
Professorial
Research Associate
Samantha Dickson
Brain Cancer Unit,
UCL Cancer Institute



Dr Darren Hargrave

Consultant
Paediatric
Oncologist
Great Ormond
Street Hospital
London

Organising Committee

Professor Paolo Salomoni -
UCL Cancer Institute

Dr Darren Hargrave -
Great Ormond Street Hospital, London

Professor Tariq Enver -
Director, UCL Cancer Institute

Dr Matt Wakelin -
Office of Vice Provost (Health)

Ms Rachel Heatley -
Office of Vice Provost (Health)

Programme

Registration 8.45–9.20am

9.20–9.30am
**Dr Darren Hargrave and
Professor Paolo Salomoni**
– *Introduction*

Session 1 – Plenary Talk 9.30–10.00am Chair: Professor Paolo Salomoni

Professor Ruggero De Maria
– *Strategies for glioblastoma stem
cell targeting*

Session 2 10.00am–12.30pm Chairs: Professor John Anderson and Dr Naomi Fersht Theme: Neuro-oncology

10.00–10.15am
Dr Darren Hargrave
– *Targeted therapies in paediatric
neuro-oncology; opportunities and
challenges*

10.15–10.30am
Dr Jeremy Rees
– *Imaging of Low-Grade
Gliomas: anticipating malignant
transformation*

10.30–10.45am
Professor Anthony Chalmers
– *Improving outcomes for
glioblastoma patients by targeting
intrinsic and microenvironment
related radiation resistance*

Theme: Target identification/ Validation

10.45–11.00am
Dr Robin Ketteler
– *High-throughput screening in
primary cells and 3D model systems*

11.00–11.15am
Dr Chris Jones
– *Unique genetic and epigenetic
drivers of paediatric high grade
glioma*

11.15–11.30am
Dr Tim Forshew
– *Molecular stratification, tumour
heterogeneity and minimally
invasive genetics*

Break: 11.30–11.45am

Theme: Imaging

11.45am–12.00pm
Professor Xavier Golay
– *The role of Exchange-mediated
MRI contrast in animal models of
brain cancer*

12.00–12.15pm
Dr Adam Badar
– *Multimodal in vivo imaging of cell
therapies targeted at brain tumours*

12.15–12.30pm
Discussion

**Session 3 – Plenary Talk
12.30–1.15pm**

Chair: Dr Darren Hargrave

Professor Stefan Pfister
– *Clinical neuro-oncology in the omics era*

1.00–1.15pm

Discussion

Lunch: 1.15–2.15pm

**Session 4 –
2.15–4.15pm**

Chairs: Professor Bill Richardson and
Professor Nick Wood

**Theme: Basic Mechanisms and
experimental models**

2.15–2.30pm
Professor Alison Lloyd
– *Links between nerve injury and
NF1 tumourigenesis*

2.30–2.45pm
Professor Paolo Salomoni
– *Nuclear subdomains and
chromatin function in nervous
system tumourigenesis*

2.45–3.00pm
Professor Denise Sheer
– *Defining the genetic and
epigenetic landscape in paediatric
low-grade gliomas*

3.00–3.15pm

Dr Juan Pedro Martinez-Barbera
– *Adult pituitary stem cells induce
tumours in a non-cell autonomous
manner*

Break: 3.15–3.30pm

3.30–3.45pm
Professor Silvia Marino
– *Chromatin modifiers in brain
tumourigenesis*

3.45–4.00pm
Professor Sebastian Brandner
– *Neural stem cells in the
pathogenesis of brain tumours*

4.00–4.15pm
Dr Tom Jacques
– *The neuropathology perspective:
Tissue research at Great Ormond
Street*

**Session 5 – Plenary Talk
4.15–4.45pm**

Chair: Professor Jonathan Ledermann

Professor Phillipe Lambin
– *Research in Neuro-oncology:
What should we do? The Maastricht
point of view*

4.45–5.30pm
**- Discussion and Closing
Remarks**

Drinks Reception

Chairs



Professor John Anderson
Professor of Experimental
Paediatric Oncology
UCL Institute of Child Health



Dr Naomi Fersht
Consultant Clinical Oncologist
University College Hospital
and National Hospital for
Neurology and Neurosurgery



Dr Darren Hargrave
Consultant Paediatric
Oncologist
Great Ormond Street
Hospital London



Professor Jonathan Ledermann
Professor of Experimental
Paediatric Oncology
UCL Institute of Child Health



Professor Bill Richardson
Professor of Biology
Wolfson Institute for Biomedical Research
UCL Division of Medicine



Professor Paolo Salomoni
Brian Cross Professorial
Research Associate
Samantha Dickson Brain Cancer Unit
UCL Cancer Institute



Professor Nick Wood
Professor of Clinical
Neurogenetics
UCL Institute of Neurology

Plenary Speakers



Professor Ruggero De Maria, MD
Scientific Director, Regina Elena
National Cancer Institute, Rome, Italy

Professor Ruggero De Maria graduated in Medicine and specialized in Endocrinology. He is Scientific Director of the Regina Elena National Cancer Institute (Rome, Italy) and is internationally renowned for his research on cancer stem cells.

His research aims to discover innovative biomarkers and develop novel cancer therapies. Other research comprises studying microRNA and microenvironment in solid tumours.

He is President of the Italian Alliance Against Cancer, the association of all comprehensive cancer institutes in Italy, and holds several Editorial Board positions on internationally renowned scientific journals.

He has over 140 publications and sits on various prestigious Advisory Boards.



Professor Stefan M. Pfister
Head, Division of Pediatric
Neurooncology (German Cancer
Research Center (DKFZ) Heidelberg

Stefan Pfister was appointed acting head of the Division Pediatric Neurooncology at the German Cancer Research Center (DKFZ) in 2012. Since 2014 he is professor for pediatric neurooncology at the DKFZ and heading the department permanently. Being a pediatrician by training, Pfister received his MD from Tübingen University, and his clinical education at Mannheim and Heidelberg University Hospitals.

As a physician-scientist, he completed postdoctoral fellowships with Christopher Rudd at the Dana-Faber Cancer Institute/Harvard Medical School, and with Peter Lichter at the German Cancer Research Center, Division of Molecular Genetics.

Pfister's research focuses on the genetic and epigenetic characterization of childhood brain tumours by applying next-generation profiling methods and subsequently translating novel findings into a clinical context. For his translational neurooncology projects, Pfister received amongst others the German Cancer Award in 2012.

Plenary Speaker



Professor Philippe Lambin
Doctor of Medicine (MD, Université Catholique de Louvain, Belgium), Doctor of Sciences (PhD), Specialist in Radiation-Oncology, Professor of Radiation Oncology

Professor Philippe Lambin is a Clinician, Radiation Oncologist and pioneer in translational research with a focus on tumour hypoxia, imaging and Decision Support Systems.

He has a PhD in Radiation Biology and is Professor at the University of Maastricht (Radiation Oncology) and at the University of Eindhoven (Functional Imaging). He is co-author of more than 315 peer reviewed scientific papers (Hirsch Index: 59), co-inventor of more than 13 patents (filed or submitted) and (co) promoter of more than 30 completed PhD's.

Moreover, Professor Lambin has extensive experience with clinical trials. He was one of the international experts in the Flims workshop Methods in Clinical Cancer Research, organised jointly by the FECS, AACR and ASCO and he is leading several clinical trials (see www.clinicaltrials.gov: his name is mentioned as Principal Investigator in 18 clinical trials).

Speakers



Dr Adam Badar
Research Associate, UCL Centre for Advanced Biomedical Imaging

Adam Badar obtained his PhD in the field of Imaging Sciences at Kings College London specializing in the development of protein-based radiopharmaceuticals for PET and SPECT imaging.

Adam now leads the preclinical nuclear imaging unit within the Centre for Biomedical Imaging (CABI) at University College London.

Adam is involved in multiple multimodality (PET/SPECT/CT/MRI/Optical) imaging projects and closely supports the evaluation of novel and established radiotracers in various animal models of human disease.

His own research focuses on supporting the advance of cellular therapies by developing non-invasive strategies to track T and stem cells in animal and man.

Speakers



Professor Sebastian Brandner
Professor of Neuropathology, UCL
Institute of Neurology

Professor Brandner's group studies the role of CNS stem cells in the pathogenesis of primary brain tumours. Their study led to the discovery that adult brain stem cells can give rise to brain tumours. The translational aspect of this study demonstrated that the brain tumour microenvironment strongly modifies tumour genetics, directing the pathway for growth dynamics, and ultimately therapeutic responsiveness of brain tumours, with implications for understanding how to properly model and treat disease more effectively.

They also have long-standing experience in the generation and analysis of mouse models of developmental and neoplastic phenotypes and have strong links with UCL Cancer Centre, the Blizard Institute and the Brain Tumour Unit at the National Hospital.

Recently, they have established xenograft model systems to study human brain tumours *in vivo*, which have strengthened their network on brain tumour research.

He also leads the Division of Neuropathology to deliver the diagnostic and research infrastructure of the UCLH Brain cancer centre, one of very few departments in the UK that provides molecular pathology analysis for all patients operated on a glioma.



Professor Anthony Chalmers
Chair of Clinical Oncology, University
of Glasgow

Professor Chalmers' main research interest is in improving outcomes for patients with glioblastoma by combining radiotherapy with targeted drug therapy, but his research interest in radiotherapy-drug combinations extend across tumour sites. His clinical practice at the Beatson West of Scotland Cancer Centre is devoted to the treatment of patients with brain tumours, and he runs the Translational Radiation Biology laboratory in the Institute for Cancer Sciences.

He is Deputy Chair of the NCRI Clinical and Translational Radiotherapy Research Working Group (CTRad) and leads the CTRad Radiotherapy-Drug Combinations Consortium.

Prior to taking up his post in Glasgow in September 2010 he studied at Oxford University Medical School and UCLA and has worked in a number of cancer centres in the UK including the Royal Marsden Hospital, Mount Vernon Hospital, the Middlesex Hospital and the Sussex Cancer Centre in Brighton. His scientific training has taken place at the Gray Cancer Institute, where he undertook a PhD in Radiation Biology, and the MRC Genome Damage and Stability Centre at the University of Sussex.

Speakers



Dr Tim Forshew
Senior Research Associate, Research
Department of Pathology, UCL Cancer
Institute

Dr Forshew is a new group leader at UCL. His team focuses on the development of novel techniques for the analysis of cancer mutations.

His current research is based on detecting cancer DNA released by solid tumours into bodily fluids such as blood and urine. Major clinical focuses of the group are sarcoma and childhood brain tumours.

During his time at Cambridge University he was part of the team that first demonstrated detecting solid tumour mutations through next generation sequencing of blood plasma.

As a postdoctoral Researcher at QMUL he won the 2009 Jeremy Jass Prize for a study identifying fusion genes in Pilocytic Astrocytoma.



Professor Xavier Golay
Professor of MR Neurophysics and
Translational Neuroscience, UCL
Institute of Neurology

Professor Golay received a Master of Science Degree in Physics from the Swiss Federal Institute of Technology of Lausanne in 1994. He then moved to the Swiss Federal Institute of Technology of Zurich, where he worked as a research assistant in the group of Professor Peter Boesiger towards his PhD on Functional MRI.

In 1999, he moved to Johns Hopkins University, Baltimore, as a post-doctoral fellow. In 2002 Dr Golay took up the position of Head of the Laboratory of Molecular Imaging at the Singapore Bioimaging Consortium.

In October 2008, he was appointed Chair of MR Neurophysics and Translational Neuroscience at the UCL Institute of Neurology in London. In May 2012, Professor Golay was promoted to the position of Head of the Department of Brain Repair and Rehabilitation at the UCL Institute of Neurology.

His research interests include the development of MRI as a translational tool for neurological diseases, measuring identical image-based biomarkers from mouse to human, and from the laboratory to the clinical settings.

Speakers



Dr Darren Hargrave
Consultant Paediatric Oncologist,
Great Ormond Street Hospital, London

Dr Darren Hargrave is a Consultant paediatric oncologist at Great Ormond Street Hospital, London having previously worked at the Royal Marsden, London.

He specialises in paediatric neuro-oncology and the development of new anti-cancer drugs for children and adolescents. He trained in the UK and Canada and is a member of both national and international groups in the fields of paediatric neuro-oncology and drug development.

He was the Chair of the SIOPE High Grade Glioma working group. He is a Chief/ Principal Investigator of several completed, on-going and planned clinical trials in paediatric cancer.

His research interests include: the biology of childhood malignant glioma and DIPG, the use of innovative imaging techniques in childhood cancer, neurofibromatosis related tumours and drug development of targeted therapies in childhood and adolescent oncology.



Dr Thomas Jacques MA PhD MRCP
FRCPath
HEFCE Clinical Senior Lecturer &
Honorary Consultant Paediatric
Neuropathologist

Dr Jacques is a neuropathologist who runs a research group at the UCL Institute of Child Health focusing on brain tumours and epilepsy. He provides the diagnostic neuropathology service for Great Ormond Street Hospital.

He holds a national HEFCE Clinical Senior Lectureship and has published over 75 papers and a textbook of surgical pathology.

Dr Jacques received the Cavanagh prize of the British Neuropathological Society. He is the chair of the scientific committee and chief investigator of the CCLG tumour bank.

He is also the secretary of the clinical practices group of the British Neuropathological Society and executive editor at Neuropathology and Applied Neurobiology.

Speakers



Dr Chris Jones
Research team leader, Divisions of Molecular Pathology and Cancer Therapeutic, The Institute of Cancer Research

Dr Jones' lab is focused on translating genomics findings to new treatments in paediatric glioblastoma and diffuse intrinsic pontine glioma (DIPG), and is active in international paediatric brain tumour collaborative groups and clinical trials.

Dr Jones achieved his PhD in 1998 from the University of London, after first attaining a Bachelor of Science with First Class Honours in Toxicology and Pharmacology. He was elected Fellow of the Royal College of Pathologists in 2008 for his significant contribution to molecular pathology research. He was awarded a Readership in 2013.

Dr Jones is the Translational Science Lead for international clinical trials in paediatric high grade glioma for the International Society for Paediatric Oncology (SIOP) European Brain Tumour Group.

He is a Fellow of the Royal College of Pathologists and is Biology Lead for the International Society for Paediatric Oncology European High Grade Glioma Working Group.



Dr Robin Ketteler
TRCC Leader, MRC Laboratory for Molecular Cell Biology, UCL

Robin Ketteler studied biochemistry at the Free University Berlin and graduated at the Max-Planck-Institute for Immunobiology in Freiburg, Germany.

After post-doctoral work at the Massachusetts General Hospital, Boston, Robin established the Translational Research Resource Centre at MRC LMCB, University College London in 2009.

This academic high-throughput screening centre facilitates siRNA, cDNA and chemical screening in primary cells and cell lines.

Main research interests focus on autophagy, protein trafficking, mitogenic signaling and virus infection.

Speakers



Professor Alison Lloyd
Professor of Cell Biology, MRC
Laboratory for Molecular Cell Biology,
UCL

Professor Lloyd is studying schwannoma - a cancer affecting Schwann cells, which surround and protect our nerve cells. Professor Lloyd and her team are finding out more about how Schwann cells grow out of control, leading to cancer.

In particular she studies the signals that determine how Schwann cells switch their characteristics, and how this process goes out of control in cancer. Her research will shed light on how schwannomas and other types of tumour develop, and will give clues for new ways to prevent and treat these diseases in the future.

The tumours that her work is most relevant to are the tumours that develop in the peripheral nervous system in patients with NF1.



Professor Silvia Marino
Professor of Neuropathology, Barts
and The London School of Medicine
and Dentistry, QMUL

Silvia Marino is Professor of Neuropathology at Barts and The London School of Medicine and Dentistry, Queen Mary University of London and also Honorary Consultant Neuropathologist at Barts and The London NHS Trust and at the National Hospital for Neurology and Neurosurgery, Queen Square.

After studying Medicine at the University of Turin in Italy, Professor Marino trained in Neuropathology and Histopathology at the University of Zurich in Switzerland. She trained in molecular genetics with Professor Anton Berns at The Netherlands Cancer Institute in Amsterdam as a Marie Curie Postdoctoral Fellow of the European Community studying the role of the tumour suppressor Rb and p53 in the pathogenesis of medulloblastoma in genetically engineered mouse models. She established her own laboratory research group in 2002 firstly at the Institute of Pathology, University of Zurich and then since 2006 at the Blizard Institute in London, studying basic cellular and molecular mechanisms controlling the development of the central nervous system and how these mechanisms can contribute to brain tumourigenesis when deregulated. She is particularly interested in Polycomb-mediated regulation of gene expression in normal and neoplastic neural stem cells.

Speakers



Dr JP Martinez-Barbera
Wellcome Trust Research Fellow, UCL
Institute of Child Health

Dr Martinez obtained his PhD at the University of Cadiz (Spain). He then moved to the University of Lund as a postdoctoral scientist in the laboratory of Dr. Stefan Krauss, where he changed field to work in developmental biology. In 1997, he joined the laboratory of Dr. Rosa Beddington to pursue the analysis of the Hesx1 null mutant mouse he had engineered. In February 2003 he started his laboratory at the UCL-Institute of Child Health funded by a Research Career Development Fellowship from the Wellcome Trust and sponsored by Dr. Andrew Copp. In 2008, he was awarded a University Award from the Wellcome Trust to characterize the molecular mechanism underlying the forebrain defects observed in Hesx1-deficient mice. His research program aims to understand normal development and pathology of the brain and associated structures. Developmental disorders of the brain have an overall significant prevalence in humans and include congenital defects as well as childhood brain tumours. For the last several years his group has provided important insights into normal brain and pituitary development. They have also contributed significantly to the understanding of the aetiology and pathogenesis of human congenital hypopituitarism and pituitary tumours (eg craniopharyngioma). Their aim is to reveal the aetiology and pathogenesis of these human disorders using a multidisciplinary approach..



Dr Jeremy Rees
Consultant Neurologist, National
Hospital for Neurology and
Neurosurgery and UCLH

Dr Jeremy Rees is an Honorary Senior Lecturer in UCL's Institute of Neurology with a specialty interest in Neuro-oncology. He qualified in 1988 with distinctions in Medicine, Surgery and Therapeutics.

After general professional training in various postgraduate London teaching hospitals and following a period of research culminating in the award of a PhD, he completed his specialist neurology training in London and Memorial Sloan Kettering Cancer Center, New York. He has been a consultant since 1999 and also consults at the Royal Marsden Hospital, Royal National Orthopaedic Hospital and Mount Vernon Cancer Center. He was the Clinical Lead for the neuro-oncology service at UCLH at NHNN until 2013.

He is the Brain Tumour Pathway Director, taking responsibility for the strategic development and integration of care for patients with brain tumours in London Cancer. He has published extensively on brain tumours and has recently co-edited a textbook on Neuro-oncology.

His research interests including advanced imaging techniques in Low-Grade Gliomas and paraneoplastic neurological syndromes.

Speakers



Professor Paolo Salomoni
Brian Cross Professorial Associate
Samantha Dickson Brain Cancer Unit,
UCL Cancer Institute

Paolo Salomoni was appointed Brian Cross Professorial Research Associate at the UCL-Cancer Institute, Department of Cancer Biology in 2009. He leads the Samantha Dickson Brain Cancer Unit, funded by The Brain Tumour Charity. He is also part of the UCL Centre for Stem Cells and Regenerative Medicine and of UCL Neuroscience. Paolo started his PhD training at the Kimmel Cancer Center, Philadelphia, under the supervision of Bruno Calabretta.

He then moved to the Memorial Sloan-Kettering Cancer Center, New York, in the laboratory led by Pier Paolo Pandolfi. After finishing his postdoctoral training at MSKCC, he moved to the Medical Research Council Unit in Leicester, where he was programme leader track and then programme leader. The main focus of his group is on molecular mechanisms underlying cell fate control in normal and neoplastic stem cells, and how alterations of these mechanisms contribute to cancer in the brain and other tissues. In particular, his research team investigates two main processes involved in tumorigenesis alteration of chromatin function and the interchromatin space and metabolic deregulation.



Professor Denise Sheer
Professor of Human Genetics
Blizard Institute, Barts and The
London School of Medicine &
Dentistry, QMUL

A major focus of Denise's research is to understand how paediatric brain tumours arise and grow.

Her team have conducted genetic profiling of a large set of paediatric low-grade gliomas from St Jude Children's Research Hospital, and are complementing these studies with epigenetic analysis on the same tumour set.

They are also collaborating with Dr Thomas Jacques at ICH/UCL, to identify significant microRNA profiles, and to develop minimally invasive diagnostic tests for paediatric brain tumours.

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