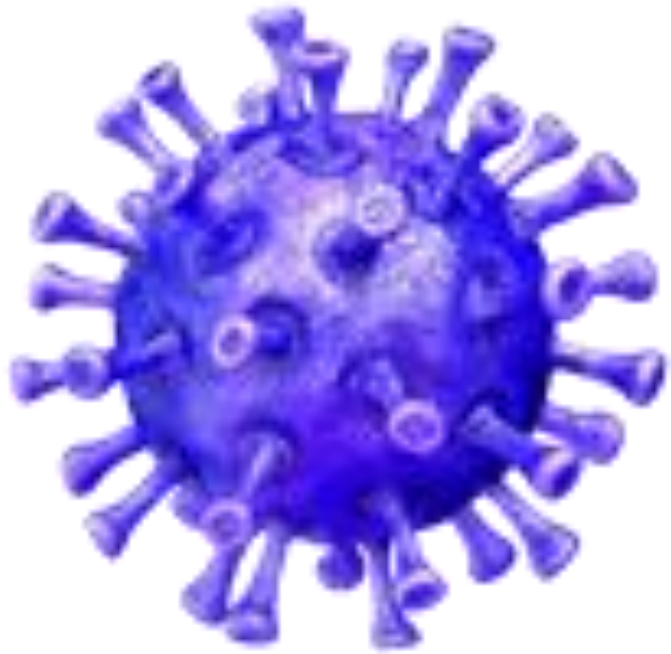




**QS IoN ANNUAL ADDRESS 2023
REVIEW OF THE PAST YEAR 02.11.23**



2021 and 2022



Prof Michael Hanna @MikeHanna18 · Jul 23

...

Thank you- our great research, teaching, professional services teams -very successful year! - thanks to your hard work we are world leading in translating science to improve patient lives - hope get summer rest/break if you can! [@uclh](#) [@UCLBrainScience](#) [@UCLIoN](#) [@uclnews](#) [@UCLGiving](#)

Institute Deputy Directors



Helene Crutzen
IoN Manager



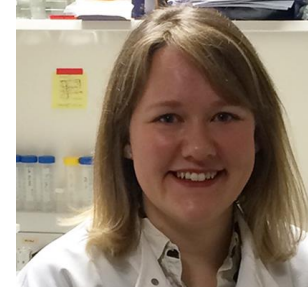
Gipi Schiavo
Strategy



Helene PF
EDI



Alex Leff
Education



Selina Wray
Partnerships



Sanjay Sisodiya
Climate Change



D Kullmann
Enterprise

ION PROFESSIONAL SERVICES TEAM



DEPARTMENTAL MANAGERS

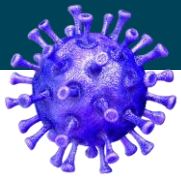


Faculty Office



Cross-Faculty Leadership





COVID-19 Research at the Queen Square Institute of Neurology

QS-ION PIs pursuing
COVID-19 research

25
Principal
investigators

QS-ION publications

145
Research
papers

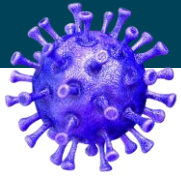
Research
Departments

Divisions
e.g.
(Neurosurgery)



QS-ION activities

- Medicinal Chemistry (COV-SARS-2 inhibitors)
- Assay Development
- COVID-19 100,000 project /GenOMICC
- COVID-CNS neurology & long-COVID-19 clinic
- EULAR COVID-19 Database
- Long-term COVID-19 outcome in epilepsy
- COVID-19 based collaborations China, India Brazil
- Respondent to the Module 2 UK COVID-19 Inquiry
- Membership of the Independent SAGE Committee
- National policy (Scientific Advisory Board of Cabinet Office modelling COVID-19)



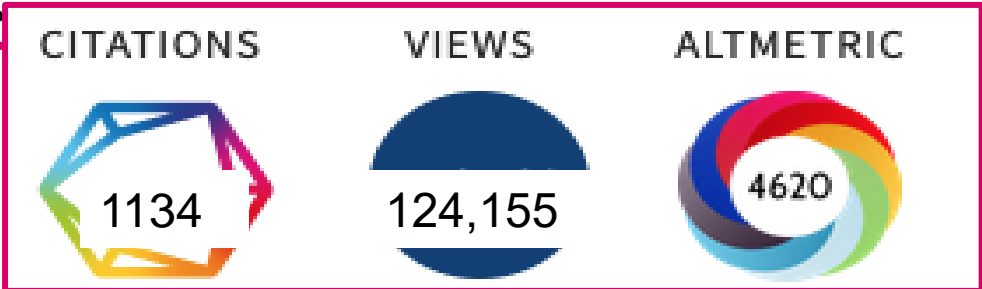
COVID-19 Research at the Queen Square Institute of Neurology

doi:10.1093/brain/awaa240 BRAIN 2020; 143; 3104–3120 | 3104

BRAIN
A JOURNAL OF NEUROLOGY

The emerging spectrum of COVID-19 neurology: clinical, radiological and laboratory findings

Ross W. Paterson,^{1,2,3,*} Rachel L. Brown,^{1,4,*} Laura Benjamin,^{5,6} Ross Nortley,^{1,7} Sarah Wiethoff,^{1,8} Tehmina Bharucha,^{9,10,11} Dipa L. Jayaseelan,^{1,12} Guru Kumar,² Rhian E. Raftopoulos,¹³ Laura Zambreau,^{1,12} Vinojini Vivekanandam,⁹ Anthony Khoo,⁹ Ruth Geraldes,^{7,14} Krishna Chinthapalli,^{1,7} Elena Boyd,⁷ Hatice Tuzlali,⁷ Gary Price,⁹ Gerry Christofi,⁹ Jasper Morrow,^{1,9} Patricia McNamara,⁹ Benjamin McLoughlin,⁹ Soon Tjin Lim,⁹ Puja R. Mehta,⁹ Viva Levee,⁹ Stephen Keddie,¹ Wisdom Yong,¹⁵ S. Anand Trip,^{1,15} Alexander J. M. Foulkes,^{1,12} Gary Hotton,⁹ Thomas D. Miller,¹⁶ Alex D. Everitt,¹⁷ Christopher Carswell,^{17,18} Nicholas W. S. Davies,¹⁸ Michael Yoong,¹⁹ David Attwell,²⁰ Jemeen Sreedharan,¹³ Eli Silber,¹³ Jonathan M. Schott,¹ Arvind Chandratheva,⁵ Richard J. Perry,⁵ Robert Simister,⁵ Anna Checkley,²¹ Nicky Longley,²¹ Simon F. Farmer,⁹ Francesco Carletti,²² Catherine Houlihan,^{9,23} Maria Thom,¹ Michael P. Lunn,¹ Jennifer Spillane,^{9,24} Robin Howard,^{9,24} Angela Vincent,^{1,14} David J. Werring,⁵ Chandrashekar Hoskote,²² Hans Rolf Jäger,^{1,22} Hadi Manji,^{1,9,*} and Michael S. Zandi,^{1,9,*} for the UCL Queen Square National Hospital for Neuro



QS IoN discoveries covered by national international media and editorials including:



e.g., Karl Friston interviewed on *BBC Newsnight* and *Channel 4 News*

CONTENTS

INTRODUCTION

EDUCATION

RESEARCH

OPERATIONS

ION-DRI PROGRAMME



UCL Queen Square Institute of Neurology

Annual Review 2022–23

Explore



THANKS TO SELINA WRAY!

Peer reviewed publication outputs 2022-23

- 1959 papers  *cf* (1726 21-22)
- 34 book chapters

One peer reviewed publication every 4h!



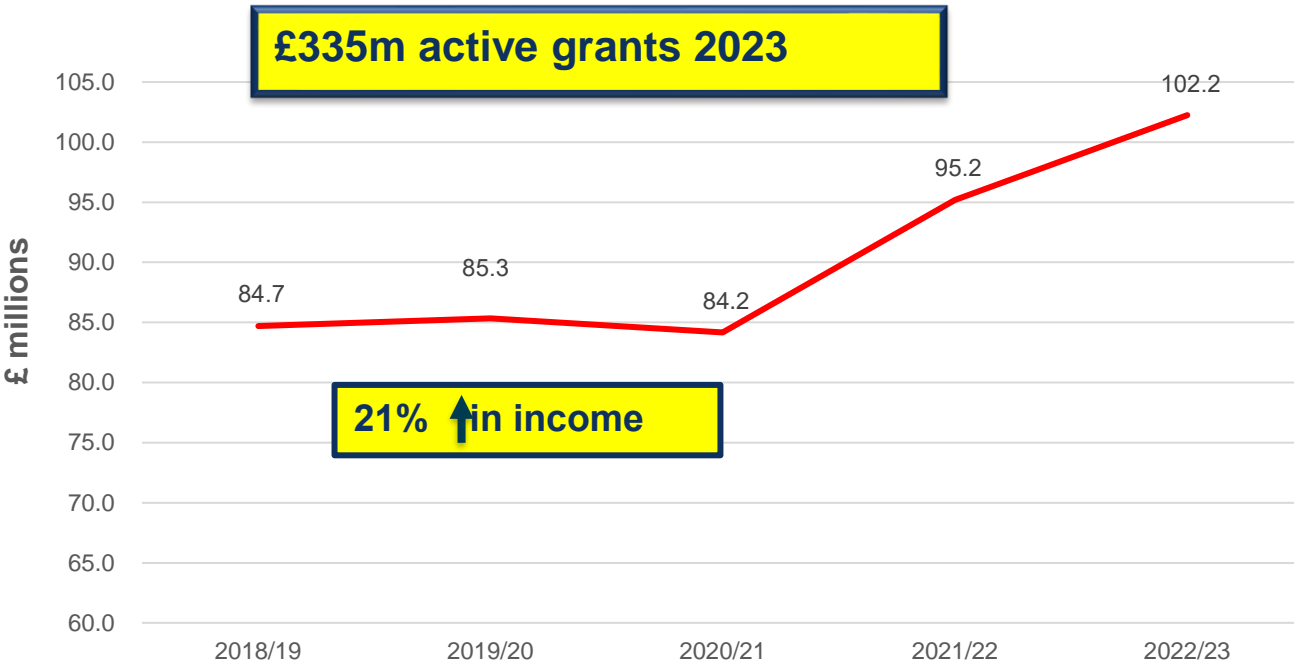
61 publications in the top 50 “top tier” journals:

BMJ(2) Cancer Cell(1) Cell(1) European Heart J(2) Lancet(5) Lancet Neurology(19) Lancet Resp Med(2) Nature(12) Nature Med(11) Nature Rev Clin Oncology(1) Nature Rev Disease Primers(1) Nature Rev Drug Discovery(1) Nature Rev Methods Primers(1) Science(2)

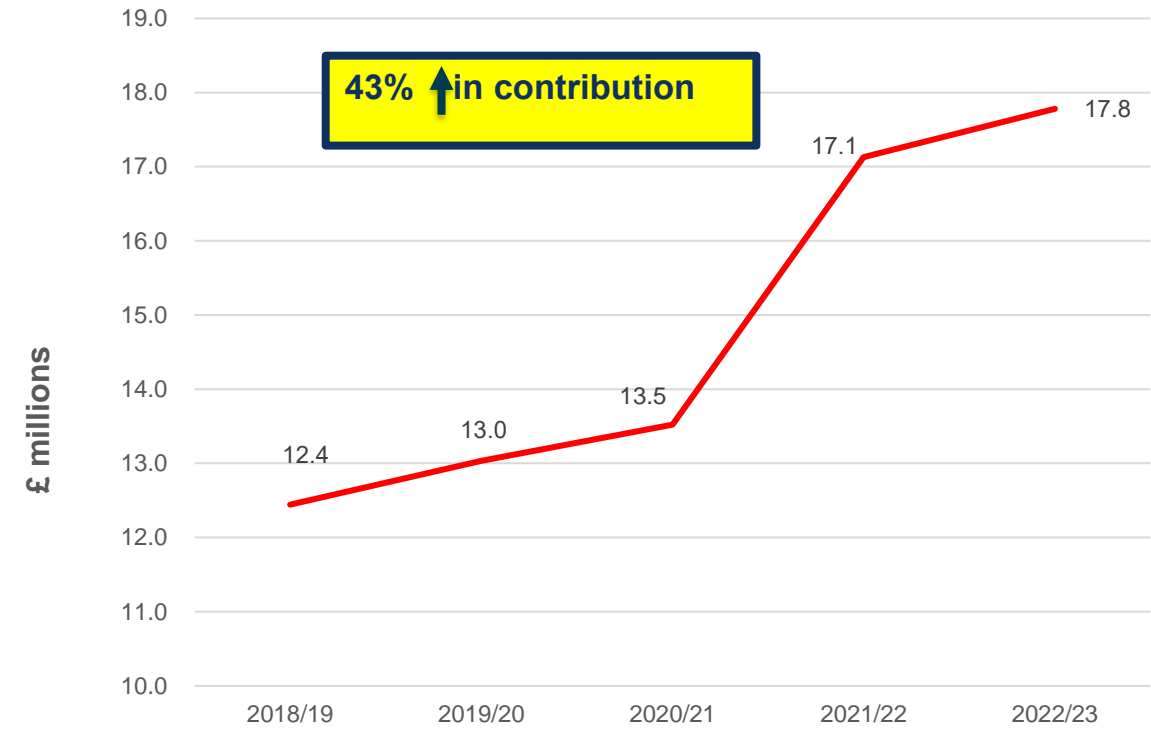
ESI world ranking for highly cited authors in Neuroscience and Behaviour:

- 3 in the top 100 authors / 2 in the top 50

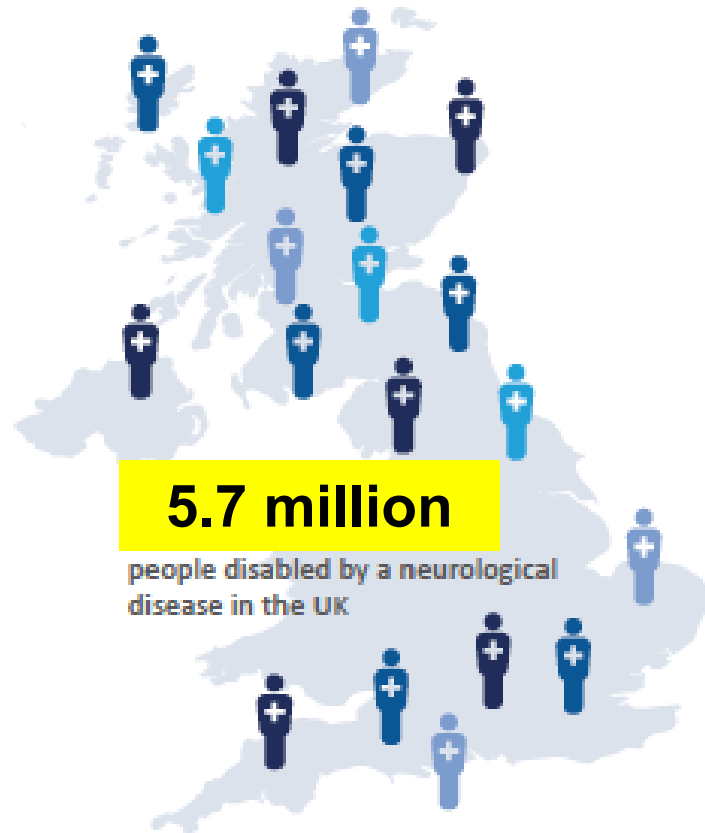
5 Year Trend – ION Income



5 Year Trend - ION Contribution



Our mission; translate Neuroscience Discovery Research into Treatments for Neurological Diseases



£4.4 billion NHS annual cost

ION Strategic Plan 2022-2027-mission

Deeply understand mechanisms of brain health & disease at multiple scales

Translate, discoveries into prevention, diagnostics, therapies

Education, train next generation

Impacts locally, nationally, internationally

Supportive, respectful, diverse community, driving partnerships

Financially and carbon sustainable

Translational to patients

NIHR | University College London Hospitals
Clinical Research Facility

W Leonard Wolfson
Experimental Neurology Centre



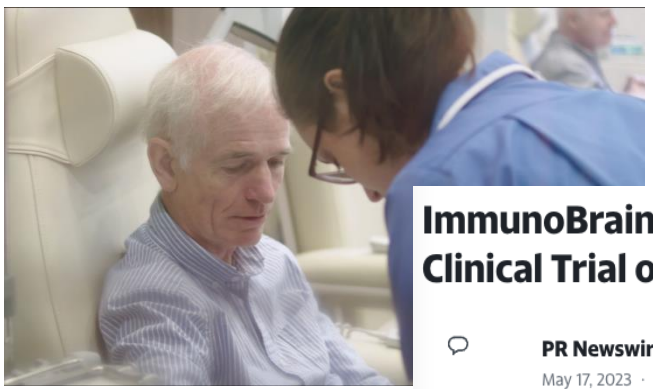
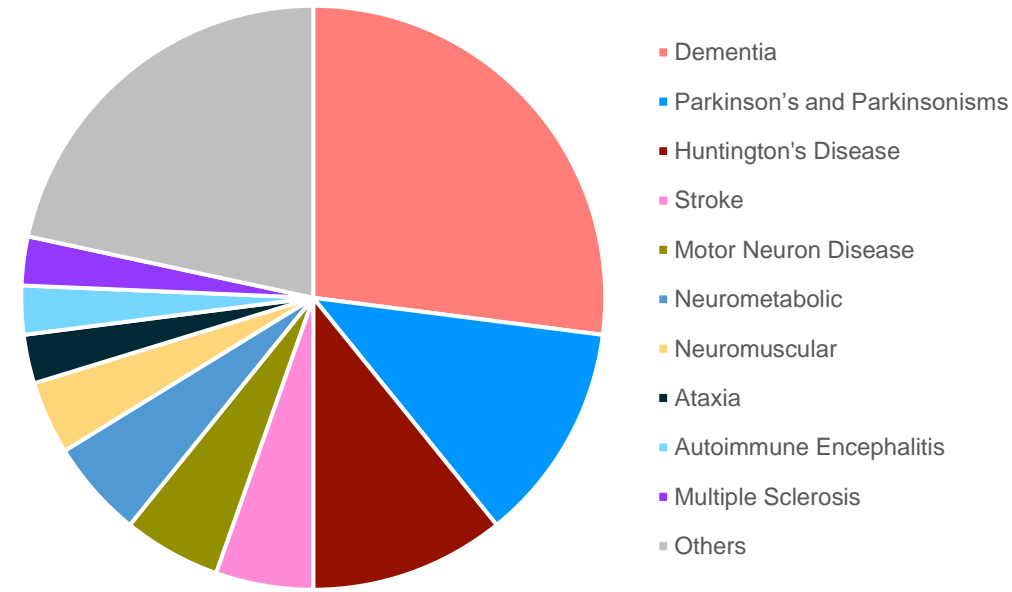
Prof Vincenzo Libri

SEP 2022 – SEP 2023

67 active clinical studies

271 recruited participants

> 1480 research visits



ImmunoBrain Checkpoint Doses First Patients in Phase 1b Clinical Trial of IBC-Ab002 for Alzheimer's Disease

PR Newswire
May 17, 2023 · 4 min read

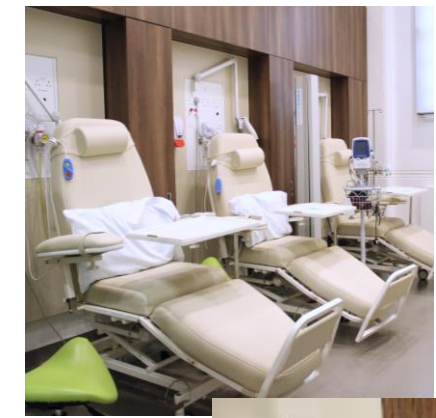
• First human subjects have been treated with ImmunoBrain Checkpoint's novel anti-PD-L1 antibody, IBC-Ab002, in the Phase 1b IBC-01-01 clinical trial

First global dose – April 2023

66% Commercial Sponsors

34% Non-commercial Sponsors

Lead UK site > 70% of studies



NIHR awards our BRC £90million

📅 14 October 2022

The Biomedical Research Centre at UCLH and UCL has been awarded over £90million from the National Institute for Health and Care Research (NIHR) to support our world class research.

- Competitive process judged by international panel - £800m awarded to 20 BRCs across England
- Five year 2022-2027
- UCL/UCLH BRC one of only two BRCs awarded > £90m
 - 14 themes submitted with 2 at Queen Square
 - **Translational neuroscience & Dementia (in the Neuro Cluster)**
~£13M

Neuro Cluster Board

TRANSLATIONAL
NEUROSCIENCE

DEMENTIA

MENTAL
HEALTH

HEARING
HEALTH



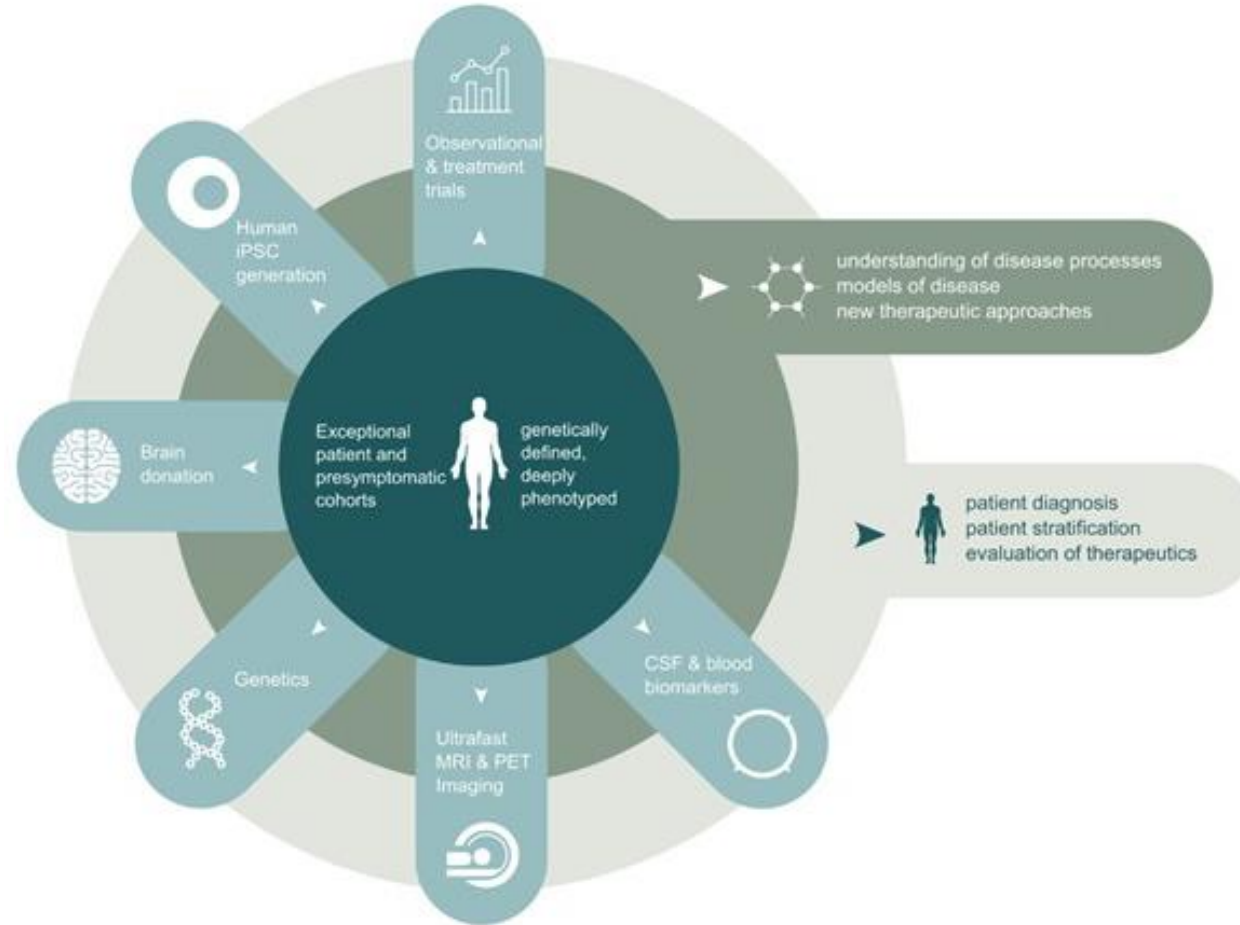
Nick Fox
Theme
Lead



Selina Wray
Co-Lead,
G&C



Gisela
Barreto
Ops Mgr



**BRC DEMENTIA
THEME ~£4.5m**

Three sub-themes:

- Genetics & Cells
- Therapies
- Biomarkers



Cath Mummery
Therapies Lead



Jon Schott
Biomarkers



Jon Rohrer
Co-Leads



Seb Crutch
PPI/E Lead



Olga Ciccarelli
Theme Lead



Matthew Walker
Co-Lead



Rob Brownstone
Sub-theme Lead



Sonia Gandhi
Sub-theme Lead



Parashkev Nachev
Sub-theme Lead



Laura Benjamin
Sub-theme Lead



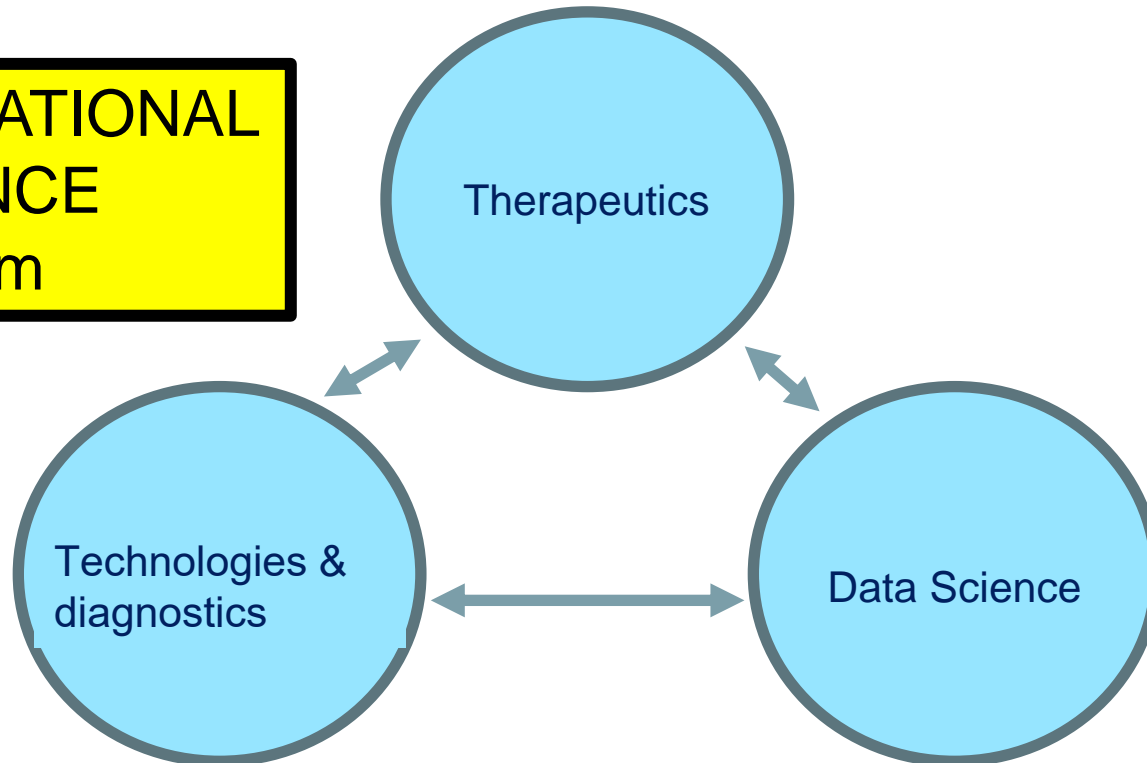
Henry Houlden
Sub-theme Lead



Gisela Barreto
Ops Mgr

3 sub-themes

BRC TRANSLATIONAL NEUROSCIENCE THEME ~£8.5m

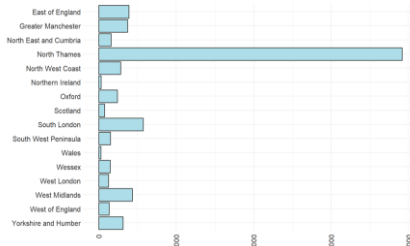


- 7 multi-disciplinary, clinical academic centres:**
1. Epilepsy
 2. Motor Neuron Disease;
 3. Movement Disorders - Neurodegeneration;
 4. Multiple Sclerosis and Neuroinflammatory Diseases;
 5. Neuromuscular diseases;
 6. Neuro-oncology;
 7. Stroke - Rehabilitation

GENE DISCOVERY



Illumina HiSeq



FIRST IN MAN TRIALS 2020-

21

W Leonard Wolfson
Experimental Neurology Centre £20M



Clinical Research Facility



Research Training Programme



International Centre for
**Genomic Medicine in
Neuromuscular Diseases**



GENETIC THERAPY TECHNIQUES

PRECLINICAL GENE THERAPY REFRACTORY EPILEPSY

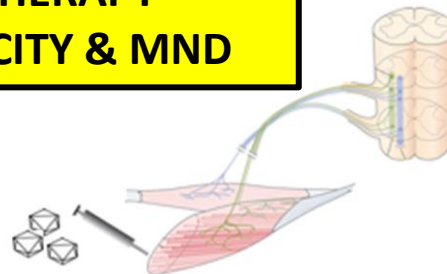
RNA ASO
DNA CRISPR



AAV
virus



GENE THERAPY SPASTICITY & MND



SIGRID RAUSING TRUST

UCL Neurogenetic Therapies Programme

- First-in-human tau ASO for Alzheimer's **ION**
- First-in-human gene therapy for Huntington's
- Triple gene therapy for Parkinson's **Oxford Biomedic**

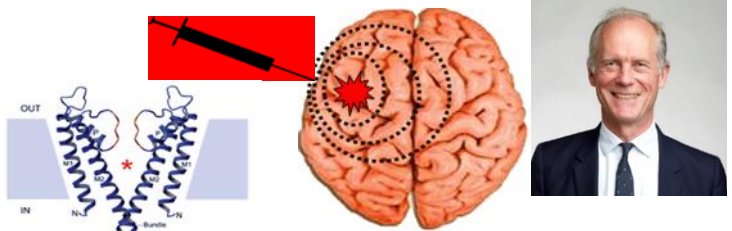
The NEW ENGLAND JOURNAL of MEDICINE



ORIGINAL ARTICLE

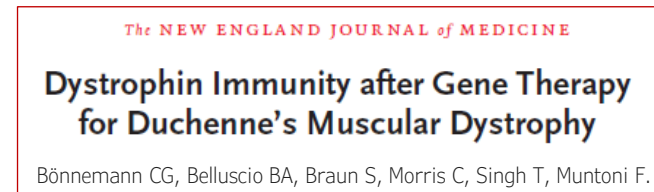
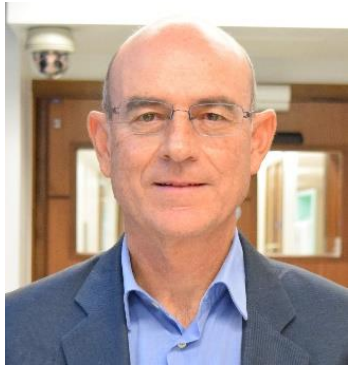
Targeting Huntingtin Expression in Patients with Huntington's Disease

Sarah J. Tabrizi, M.B., Ch.B., Ph.D., Blair R. Leavitt, M.D., C.M., G. Bernhard Landwehrmeyer, M.D., Edward J. Wild, M.B., B.Chir., Ph.D., Carsten Saft, M.D., Roger A. Barker, M.R.C.P., Ph.D., Nick F. Blair, M.B., B.S.,* David Craufurd, M.B., B.S., Josef Priller, M.D., Hugh Rickards, M.D., Anne Rosser, M.B., B.Chir., Ph.D., Holly B. Kordasiewicz, Ph.D., Christian Czech, Ph.D., Eric E. Swayze, Ph.D., Daniel A. Norris, Ph.D., Tiffany Baumann, B.S., Irene Gerlach, Ph.D., Scott A. Schobel, M.D., Erika Paz B.S., Anne V. Smith Ph.D., C. Frank Bennett Ph.D.



Mission:

Embed RNA & AAV Genetic Therapies into basic & clinical research cross-cutting activity IoN QS, GOS ICH, FBS, FPHS

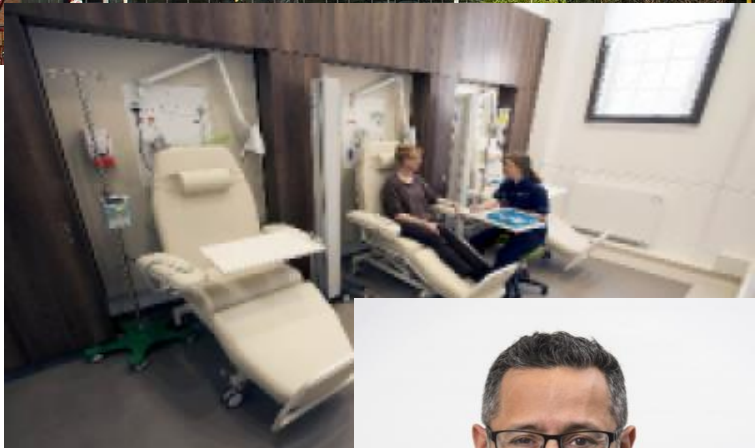
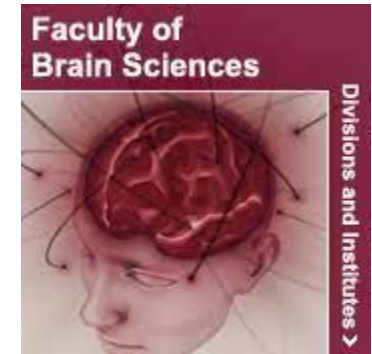


Planning of Genetic Therapy Vector Core facility at the new GIR

- Recruitment of senior fellows with RNA (Sara Aguti) and AAV (Jo Ng) expertise
- IoN Genetic Therapy Board- linking across Faculty
- UKRI Nucleic Acid Therapy Acc Award £8M (UCL £1.8M Tabrizi, Muntoni, Bates Wray)
- MRC Node: Establishing a National Platform for the Development of Nucleic Acid Therapy for Rare Disease £1,200,000 (Zhou & Muntoni co-PI)



GTAC Director, Francesco Muntoni, GTAC is honored with the 2023 EPNS Aicardi Lecture Award



£4m UCLH-UCL STRATEGIC FUND



Jat Harchowal
UCLH Chief Pharmacist



Laura Churchward
UCLH Director Strategy

OPENING
2024



NHS
University College London Hospitals
NHS Foundation Trust



Sainsbury Wellcome Centre

Crick Institute

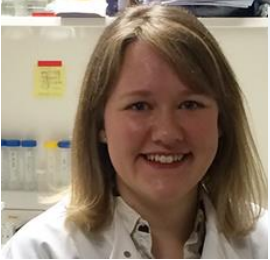


Faculty, LMS, UCL



UCL Partners

KEY LOCAL ALIGNMENTS & PARTNERSHIPS FOR EFFECTIVE TRANSLATION



NIHR Biomedical Research Centre: TN and Dementia



NHNN Hospital / UCLH Trust



UCL Neuroscience Domain

UCL OVPA



Brain Research UK



National Brain Appeal



Many charities and patient organisations e.g.
Epilepsy Society, SameYou, Alzheimer's Society, ARUK, MDUK, UCLH Charity

A photograph of a university campus. In the foreground, there is a green lawn with several people sitting on the grass. A statue on a pedestal is visible on the left. The middle ground features a large, multi-story red brick building with many windows. In the background, a tall, white, modern building with a grid-like facade is visible. The sky is blue, and there are trees with green leaves in the foreground and background.

(Some!) research highlights 2022-23

The logo for the Athena SWAN Silver Award. It features a stylized grey icon of a person's head and shoulders on the left. To the right of the icon, the text "Athena SWAN" is written in a bold, blue, sans-serif font, with "Athena" on the top line and "SWAN" on the bottom line. Below "Athena SWAN", the words "Silver Award" are written in a smaller, grey, sans-serif font.

**Athena
SWAN**
Silver Award

Research Department Groupings at QS ION





Martina Callaghan
15 PIs
Active Grants £42.9 million

JNeurosci
THE JOURNAL OF NEUROSCIENCE

Research Articles, Systems/Circuits

An Official Journal of



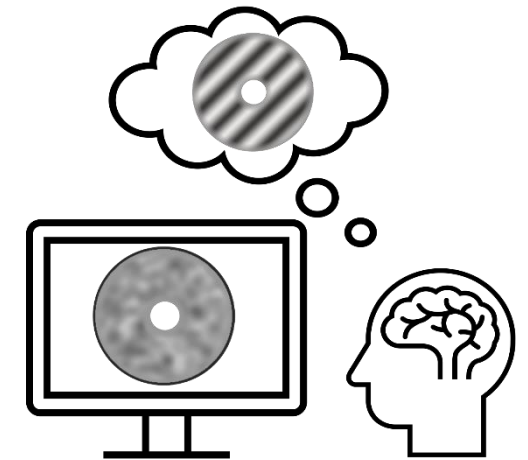
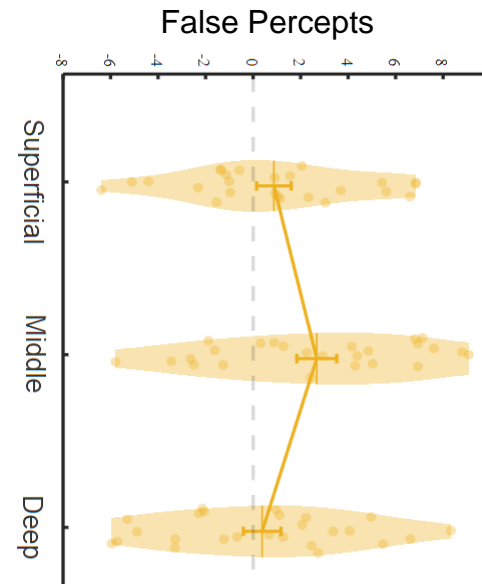
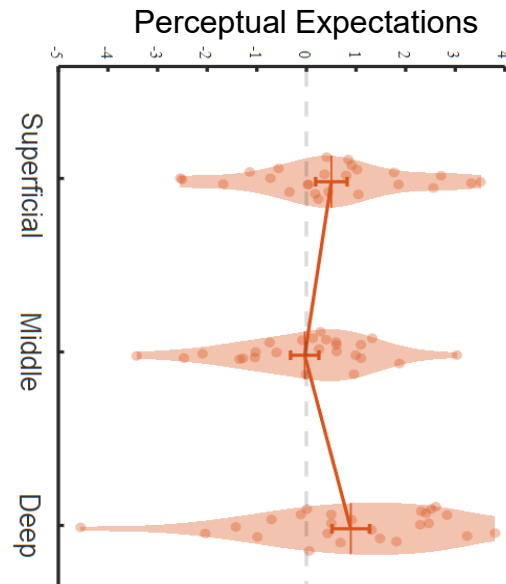
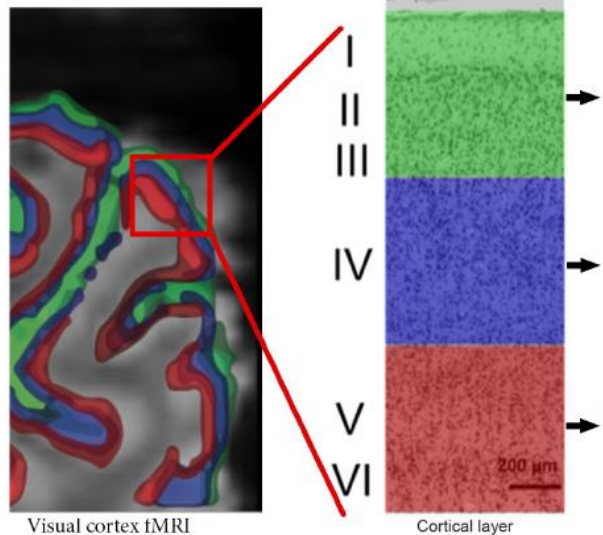
Expectation cues and false percepts generate stimulus-specific activity in distinct layers of the early visual cortex
Laminar profile of visual false percepts

Joost Haarsma, Narin Deveci, Nadège Corbin, Martina F. Callaghan, and Peter Kok

Journal of Neuroscience 22 September 2023, JN-RM-0998-23; DOI: <https://doi.org/10.1523/JNEUROSCI.0998-23.2023>



Peter Kok



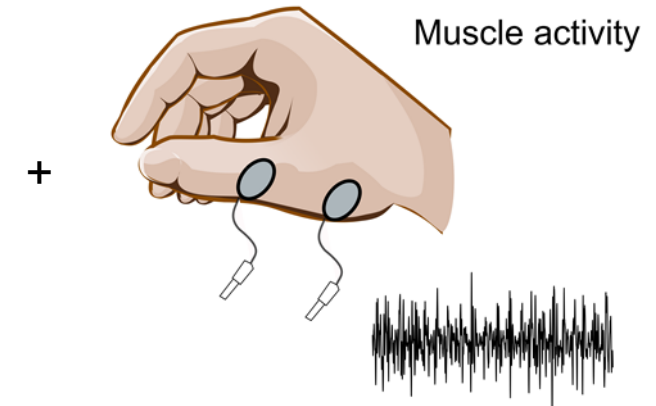
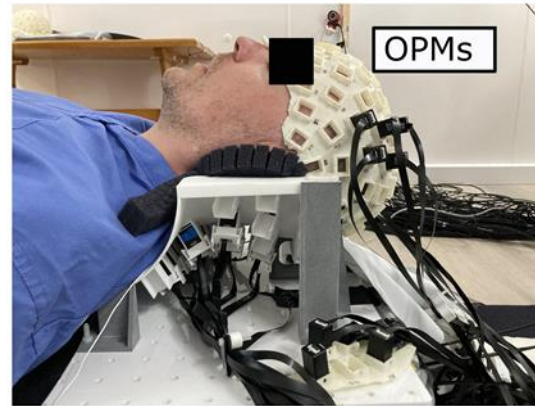
Discovery Neuroscience

Novel Optically-Pumped Magnetometer (OPM) system for concurrent spatiotemporal imaging of human brain and spinal cord.



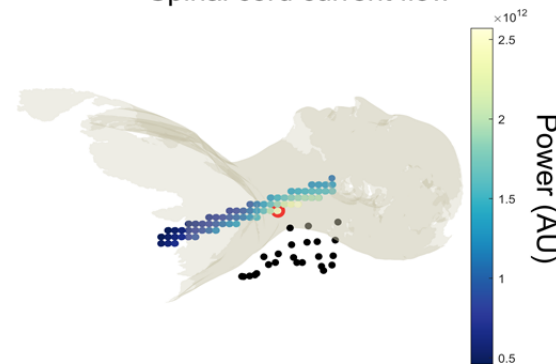
Gareth Barnes

Measured brain and spinal cord activity during simple thumb contraction

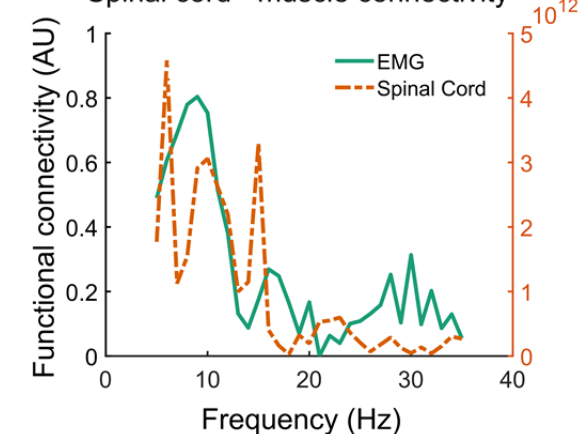


Peak current flow occurred in the region of the spinal cord innervating the thumb muscle and exhibited significant cross-frequency coupling with measured muscle activity (EMG).

Spinal cord current flow



Spinal cord - muscle connectivity



Spedden et al. (2023) Investigating millisecond-scale functional connectivity between the brain and spinal cord using OPMs.

Discovery Neuroscience

nature neuroscience

Article

<https://doi.org/10.1038/s41593-023-01287-7>

Differential replay of reward and punishment paths predicts approach and avoidance

Received: 17 November 2021

Jessica McFadyen^{1,2}✉, Yunzhe Liu^{3,4} & Raymond J. Dolan^{1,2}

Accepted: 16 February 2023

PNAS




RESEARCH ARTICLE

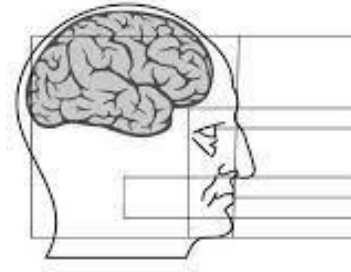
NEUROSCIENCE
PSYCHOLOGICAL AND COGNITIVE SCIENCES

OPEN ACCESS



Trajectories through semantic spaces in schizophrenia and the relationship to ripple bursts

Matthew M. Nour^{a,b,1} , Daniel C. McNamee^c, Yunzhe Liu^{d,e} , and Raymond J. Dolan^{b,d,f} 



MAX PLANCK
UCL CENTRE

for Computational Psychiatry
and Ageing Research

Ray Dolan



Cell

 CellPress
OPEN ACCESS

Article

Generative replay underlies compositional inference in the hippocampal-prefrontal circuit

Philipp Schwartenbeck,^{1,2,3,4,13,*} Alon Baram,⁴ Yunzhe Liu,^{5,6} Shirley Mark,³ Timothy Muller,^{4,8} Raymond Dolan,^{3,5,7,9} Matthew Botvinick,^{10,11} Zeb Kurth-Nelson,^{7,10} and Timothy Behrens^{3,4,12}



Linda Greensmith

16 PIs 221 staff and students
Active Grants £63.9 million

Discovery Science ↔ Clinical research trials

(ALS, Neuromuscular Diseases, Genetics)

Founding member of newly
established UK MND Research
Institute 2023



Global ALS Day: 21st June 2023



1st International London UCL-
Kennedy's Disease Patient
Conference – November 2023



QUEEN SQUARE
INSTITUTE OF NEUROLOGY



BRAIN
ORIGINAL ARTICLE



Post-transcriptional microRNA repression of PMP22 dose in severe Charcot-Marie-Tooth disease type 1

2023 Jun 20;awad203. doi: 10.1093/brain/awad203

Mary Reily & colleagues

nature communications

Integrated transcriptome landscape of ALS identifies genome instability linked to TDP-43 pathology

2023 Apr 20;14(1):2176. doi: 10.1038/s41467-023-37630-6

Rickie Patani & colleagues

nature

Specialized astrocytes mediate glutamatergic gliotransmission in the CNS

06 September 2023

Kenneth Harris and colleagues

THE LANCET
Neurology

Safety and efficacy of arimoclomol for inclusion body myositis: a multicentre, randomised, double-blind, placebo-controlled trial

DOI:[https://doi.org/10.1016/S1474-4422\(23\)00275-2](https://doi.org/10.1016/S1474-4422(23)00275-2)

Pedro Machado, Mike Hanna and colleagues

THE LANCET

Neurology

Identification of genetic risk loci and causal insights associated with Parkinson's disease in African and African admixed populations: a genome-wide association study

Published: August 23, 2023;

DOI: [https://doi.org/10.1016/S1474-4422\(23\)00283-1](https://doi.org/10.1016/S1474-4422(23)00283-1)

Henry Holden and colleagues

Science Translational Medicine

Pathophysiology of Dyt1-Tor1a dystonia in mice is mediated by spinal neural circuit dysfunction

3 May 2023; Vol 15, Issue 694; DOI: [10.1126/scitranslmed.adg3904](https://doi.org/10.1126/scitranslmed.adg3904)

Rob Brownstone and colleagues



Rab10 regulates the sorting of internalised TrkB for retrograde axonal transport

Mar 10, 2023 <https://doi.org/10.7554/eLife.81532>

Gipi Schiavo and colleagues

JCI insight

Boosting peripheral BDNF rescues impaired in vivo axonal transport in CMT2D mice

2023;8(9):e157191. <https://doi.org/10.1172/jci.insight.157191>

James Sleigh, Gipi Schiavo and colleagues

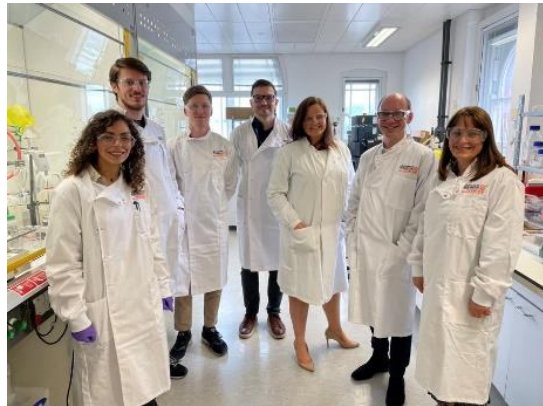
New CSO joined UCL



**Professor Fiona Ducotterd
CSO UCL DDI**

**Hosted ARUK President David
Cameron for a tour of the UDDI and
the new GIR facility –**

Major Donors and President and CEO Tours



**Roger Quinn Memorial
Fund who fund UDDI
Chemistry team – family
tour of UDDI**



Public Engagement





ALZHEIMER'S RESEARCH UK FOR A CURE



DRUG DISCOVERY INSTITUTE



UCL spinout AstronauTx raises £48m funding to create new Alzheimer's treatments

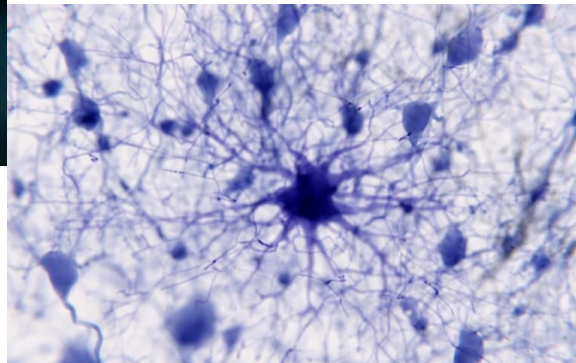
10 October 2023

Biotech company AstronauTx, aiming to develop novel treatments for Alzheimer's disease and other neurodegenerative disorders, has closed a £48m (\$61m) Series A financing.

AstronauTx biotech closes £48m Series A for Alzheimer's drugs

 growth business

London-based biotech developing drugs to cure Alzheimer's, a disease which affects 55m people a year and costs the economy tens of billions





Dave Werring
15 PIs
Active Grants £9.2m

Colleagues made critical contributions to this new definitive national guideline



NATIONAL CLINICAL GUIDELINE FOR STROKE

for the United Kingdom and Ireland

2023 edition



Safer brain surgery using AI possible within two years

© 28 September

BBC

NEWS

panda
SURGICAL





Tony Schapira
Head

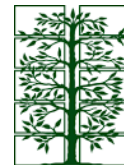
29 PIs Active Grants £43.4 million

Discovery Science **Clinical research trials**

(Movement Disorders Parkinson's, Ataxia, mitochondrial disease),



Tom Warner
Deputy



EDMOND J. SAFRA
PHILANTHROPIC FOUNDATION



Innovate
UK



Aligning Science
Across Parkinson's



EJS-**ACT**-PD

The **Edmond J Safra Accelerating Clinical Trials in Parkinson's Disease Initiative**

We will speed up the testing of treatments that might slow or stop Parkinson's.

Prof. Tom Foltynie (UCL)

Prof. Camille Carroll (Newcastle)

Prof Sonia Gandhi (UCL)

DCMN Team total \$25 million



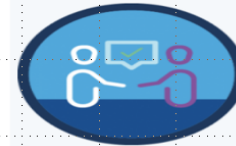
Aligning Science Across Parkinson's



THE MICHAEL J. FOX FOUNDATION FOR PARKINSON'S RESEARCH

Aligning Science Across Parkinson's (ASAP) at UCL

The initiative



Support Collaboration

Fund international multidisciplinary teams to encourage the exchange of ideas, foster innovation, and catalyze new experimental approaches



Generate resources

Build infrastructure to support the next generation of Parkinson's research through genetic analysis efforts, training support, natural history studies, and other research tools



Share data

Implement open science policies to ensure that ASAP-funded research outputs, and tools can be leveraged by the broader community

Prof. Tony Schapira
Prof. Nick Wood
Prof John Hardy
Prof Christos Proukakis





Nick Fox



Sarah Tabrizi

26 PIs
Active Grants £69.2 million

**BRC DEMENTIA
THEME**





> [Brain](#). 2022 Dec 19;145(12):4349-4367. doi: 10.1093/brain/awac325.

Regulation of mitophagy by the NSL complex underlies genetic risk for Parkinson's disease at 16q11.2 and MAPT H1 loci

Marc P M Soutar¹, Daniela Melandri¹, Benjamin O'Callaghan^{1 2}, Emily Annuario³, Amy E Monaghan^{4 5}, Natalie J Welsh⁶, Karishma D'Sa^{2 7}, Sebastian Guelfi⁸, David Zhang^{1 2}, Alan Pittman⁹, Daniah Trabzuni¹, Anouk H A Verboven^{10 11}, Kylie S Pan¹, Demis A Kia^{2 12}, Magda Bictash^{4 5}, Sonia Gandhi^{2 7 12}, Henry Houlden¹³, Mark R Cookson¹⁴, Nael Nadif Kasri^{10 11}, Nicholas W Wood^{2 12}, Andrew B Singleton^{14 15}, John Hardy^{1 2 5}, Paul J Whiting^{4 5}, Cornelis Blauwendraat^{14 15}, Alexander J Whitworth⁶, Claudia Manzoni¹⁶, Mina Ryten^{2 8 17}, Patrick A Lewis^{1 2 18}, H el ene Plun-Favreau^{1 2}

Affiliations + expand

PMID: 36074904 PMCID: PMC9762952 DOI: 10.1093/brain/awac325

[Free PMC article](#)

> [Brain](#). 2023 Jul 31;awad246. doi: 10.1093/brain/awad246. Online ahead of print.

The non-specific lethal complex regulates genes and pathways genetically linked to Parkinson's disease

Amy R Hicks^{1 2}, Regina H Reynolds^{1 2 3}, Ben O'Callaghan^{1 2}, Sonia Garcia Ruiz^{1 2 3}, Ana Luisa Gil Martinez^{1 2 3 4}, Juan Botia^{1 4}, Helene Plun-Favreau^{1 2}, Mina Ryten^{1 2 3 5}

Affiliations + expand

PMID: 37522749 DOI: 10.1093/brain/awad246

Helene Plun-Favreau

> [Brain](#). 2023 Apr 19;146(4):1240-1242. doi: 10.1093/brain/awad049.

An anti-amyloid therapy works for Alzheimer's disease: why has it taken so long and what is next?

John Hardy^{1 2}, Catherine Mummery²

Affiliations + expand

PMID: 36797987 PMCID: PMC10115350 DOI: 10.1093/brain/awad049

[Free PMC article](#)



John Hardy

Could new drugs for early Alzheimer's really signal the end of dementia? These women say 'breakthrough' medicines have halted their mental decline. But do side-effects – and cost – outweigh the benefits...

- New drug aducanumab targets plaque in the brain that can cause the disease
- Read more: Blood test can predict who'll develop Alzheimer's disease

By JO WATERS
PUBLISHED: 20:25, 29 May 2023 | UPDATED: 08:34, 31 May 2023



Discovery Neuroscience

- **Tabrizi receives £1.1m UK DRI** funding to investigate DNA repair in HD
- **Tabrizi led the UCL arm (Bates, Wray, Muntoni)** of the £8m **Nucleic Acid Therapy Accelerator Award** from UKRI MRC



Progress in Neurobiology

PolyQ length-dependent metabolic alterations and DNA damage drive human astrocyte dysfunction in Huntington's disease

Jenny Lange^a, Olivia Gillham^{b,d,1}, Michael Flower^{a,1}, Heather Ging^a, Simon Eaton^b, Sneha Kapadia^a, Andreas Neueder^c, Michael R. Duchen^d, Patrizia Ferretti^{b,2}, Sarah J. Tabrizi^{b,c,5,2}

Molecular Therapy

Can MSH3 lowering stop HTT repeat expansion in its CAG tract?

Ross Ferguson^{1,2} and Sarah J. Tabrizi^{1,2}

<https://doi.org/10.1016/j.jmhe.2023.05.010>

Translational Neuroscience

The **NEW ENGLAND** JOURNAL of **MEDICINE**

ESTABLISHED IN 1812 2023

Tominersen in Adults with Manifest Huntington's Disease

P. McColgan, A. Thobhani, L. Boak, S.A. Schobel, A. Nicotra, G. Palermo, D. Trundell, J. Zhou, V. Schlegel, P. Sanwald Ducray, D.J. Hawellek, J. Dorn, C. Simillion, M. Lindemann, V. Wheelock, A. Durr, K.E. Anderson, J.D. Long, **E.J. Wild**, G.B. Landwehrmeyer, B.R. Leavitt, **S.J. Tabrizi**, R. Doody, for the GENERATION HD1 investigators*



Clinical trials

- **UniQure (Phase I/II)** first HTT-lowering gene therapy trial for Huntington's disease
- **PTC (Phase 1/II)** small molecule splicing modulator trials
- **Roche (phase II)** ASO safety trial initiated

Selected Industry collaborations





12 UCL Group Leaders
Active Grant £54.7 million
6 PIs

Quinquennial Review

The institute received excellent reviews and panel scores. The new 5-years of funding for the institute started April 2023

Karen Duff
Centre Director
UK DRI at UCL

1. UK DRI at UCL

Prof Karen Duff

Unravelling pathogenic mechanisms and pathways, from gene to clinical manifestation, to identify therapeutic targets

2. UK DRI at Cambridge

Prof David Rubinsztein
(Interim Director)

Mechanisms underlying the earliest stages of neurodegeneration and ageing

3. UK DRI at Cardiff

Prof Julie Williams

Utilising dementia genetics and computational biology to identify disease mechanisms & therapies

4. UK DRI at Edinburgh

Prof Giles Hardingham

Elucidating the interplay between immune, vascular & metabolic factors contributing to neurodegenerative disease

5. UK DRI at Imperial

Prof Paul Matthews

Novel approaches & technologies to study dementia in the context of the body and environment

6. UK DRI at King's

Prof Jernej Ule

Understanding cellular mechanisms to design novel diagnostics and treatments for ALS & FTD

7. UK DRI Care Research & Technology, Imperial & Univ. Surrey

Prof David Sharp

Creating dementia-friendly homes as intelligent environments that transform and personalise care



UK DRI Fluid Biomarker Platform was launched in 2022 to find new ways to detect and monitor neurodegenerative disease



Henrik Zetterberg & Amanda Heslegrave

Founding funders



**UK Dementia
Research Institute**



UK DRI Headquarters



Professor Siddharthan Chandran
appointed as new Director of the UK DRI



Adrian Ivinson
COO

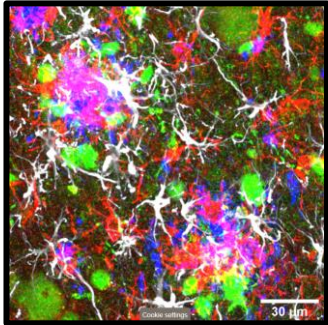
Discovery Neuroscience

Bart De Strooper



MEG3 activates necroptosis in human neuron xenografts modeling Alzheimer's disease

A research team led by Prof Bart De Strooper (UK DRI at UCL and VIB-KU Leuven) and Dr Sriram Balusu (VIB-KU Leuven) has finally discovered how neurons die in Alzheimer's disease



Soyon Hong

nature neuroscience



Microglia Detect Externalized Phosphatidylserine on Synapses for Elimination via TREM2 in Alzheimer's Disease Models

Javier Rueda-Carrasco, Dimitra Sokolova, Sang-Eun Lee, Thomas Childs, Natálie Jurčáková, Sebastiaan De Schepper, Judy Z. Ge, Joanne I. Lachica, Christina E. Toomey, Oliver J. Freeman, John Hardy, Beth Stevens, Tammarnyn Lashley, Sunghoe Chang, Soyon Hong

THE LANCET
Neurology

Schlepckow K, Morenas-Rodriguez E, **Hong S**, Haass C. *In Press in Lancet Neurology* Stimulated TREM2 dependent protective functions of microglia with agonistic antibodies – a novel therapeutic option for Alzheimer's disease?



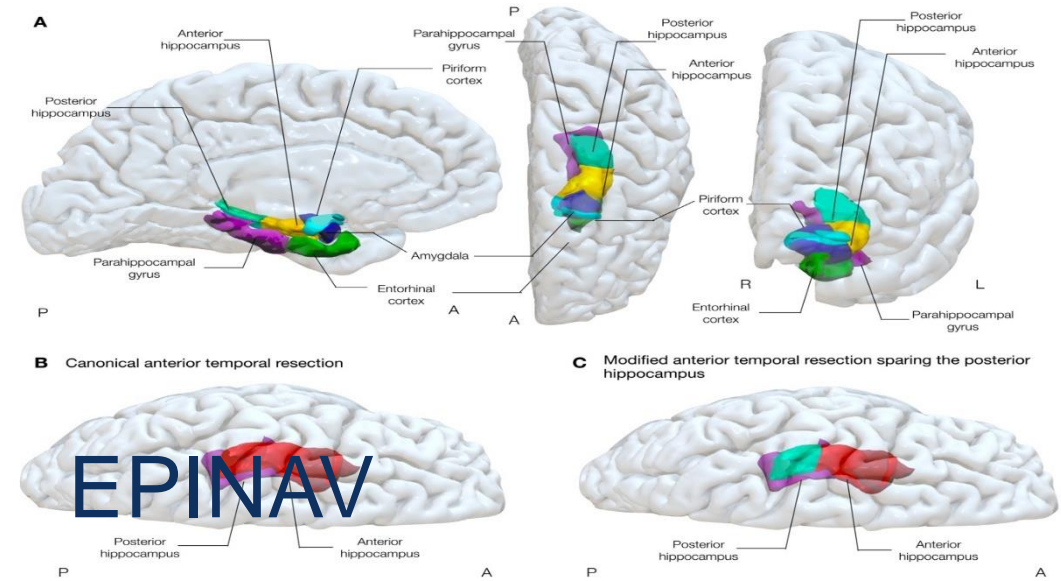
Prof Ley Sander

18 PIs
Active grants £35.4 million

Discovery Science Clinical research trials

UCL Queen Square Institute of Neurology @UCLIoN · Feb 23

We're delighted that UCL's President and Provost, Dr Michael Spence visited the Chalfont Centre for Epilepsy on 17th February 2023 to see first-hand the excellent research and clinical care at the site. ucl.ac.uk/ion/news/2023/...



MICHAEL FOUNDATION
for people with epilepsy

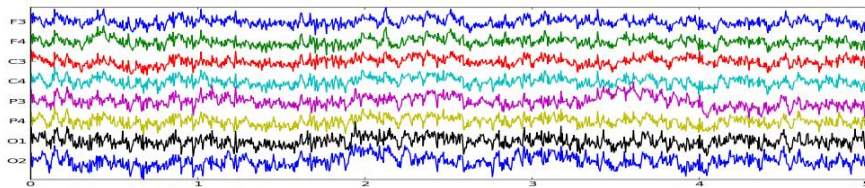
Gabriele Lignani
Michael Prize 2023 for best contribution in experimental Epilepsy Worldwide by young scientists



**Matthias Koepp PhD FRCP
2023 Clinical Science Research
Recognition Award**

Each year, American Epilepsy Society honours two most accomplished professionals in epilepsy worldwide with the Clinical & Basic Research Recognition Awards

2023 - The first time ever that both Awards went to the same Department!



**Dimitri Kullmann FMedSci FRS
2023 Basic Science Research
Recognition Award**

UCL has now received five of the six awards that have ever come to the UK

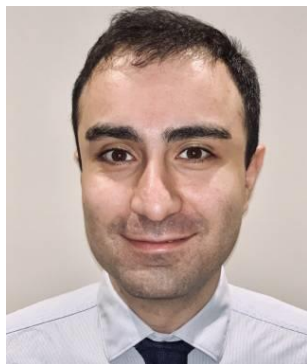


Prof Olga Ciccarelli
12 PIs
Active grants £13.2 million

NIHR | National Institute
for Health Research

Precision Treatment Strategies in Multiple Sclerosis Using Next-generation Machine Learning

Dr Arman Eshagi
awarded £965,915
NIHR Fellowship



Discovery Science ↔ Clinical research trials

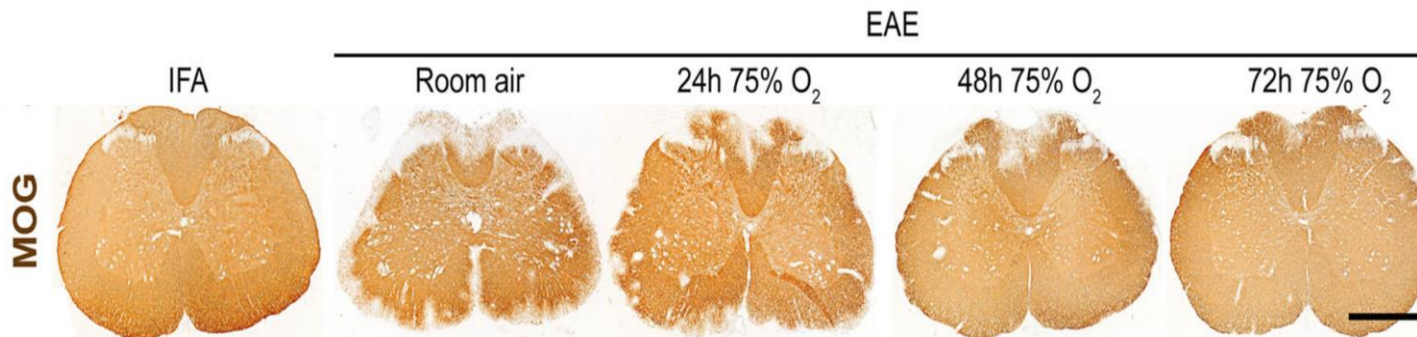
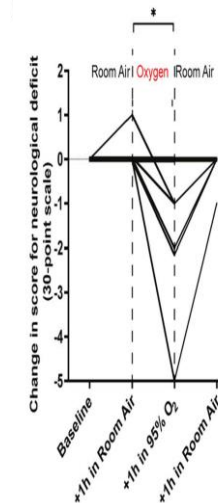
ORIGINAL ARTICLE

Neuropathology and Applied Neurobiology WILEY

Oxygen treatment reduces neurological deficits and demyelination in two animal models of multiple sclerosis

Mario Amatruda^{1,2} | Kate Harris¹ | Alina Matis¹ | Andrew L. Davies¹ |
Daniel McElroy³ | Michael Clark¹ | Christopher Linington³ | Roshni Desai¹ |
Kenneth J. Smith¹

Severe neurological deficits in different models of multiple sclerosis may be due to tissue hypoxia, and reduced by oxygen treatment.



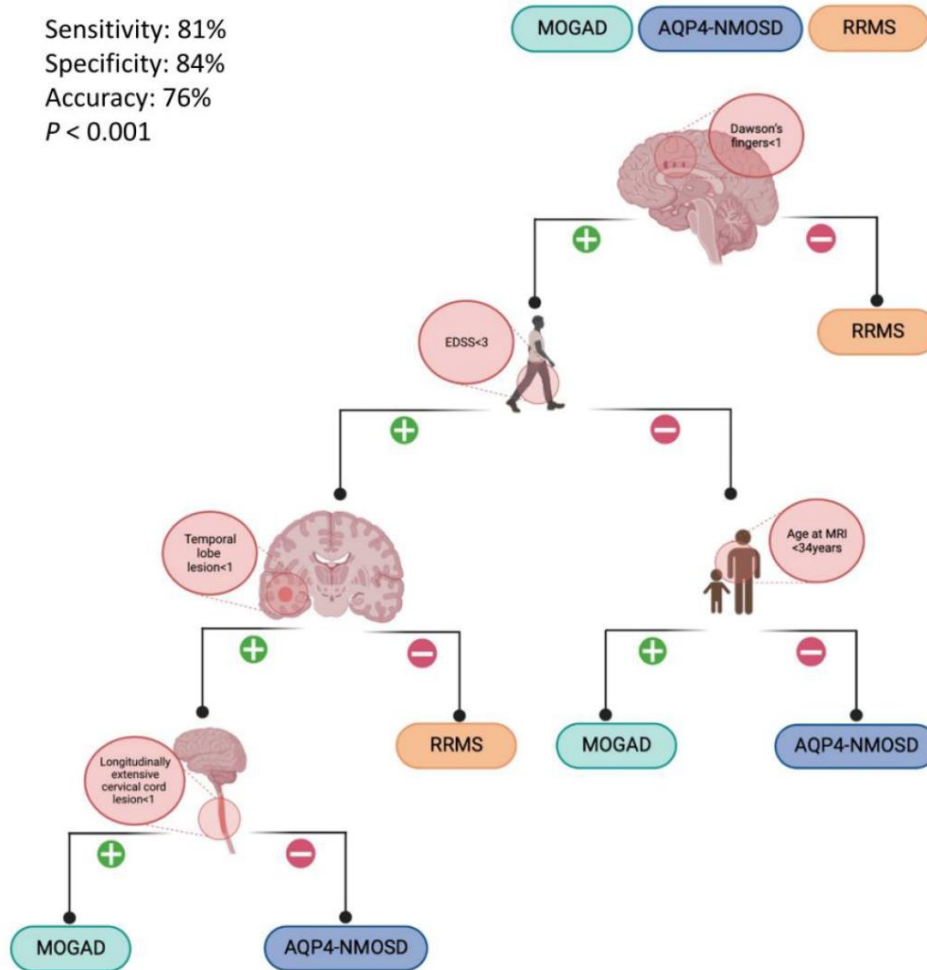
TRANSLATIONAL NEUROSCIENCE

Discovery of biomarkers to differentiate MS from its mimics (Ciccarelli et al.)

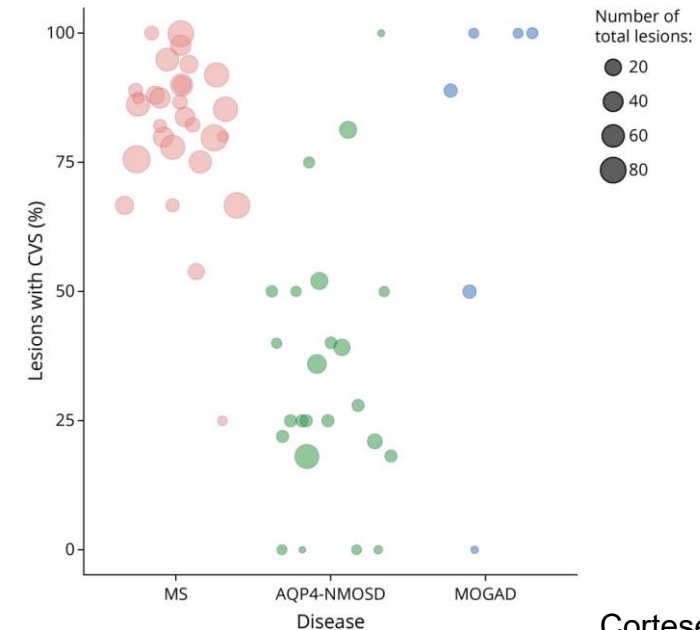
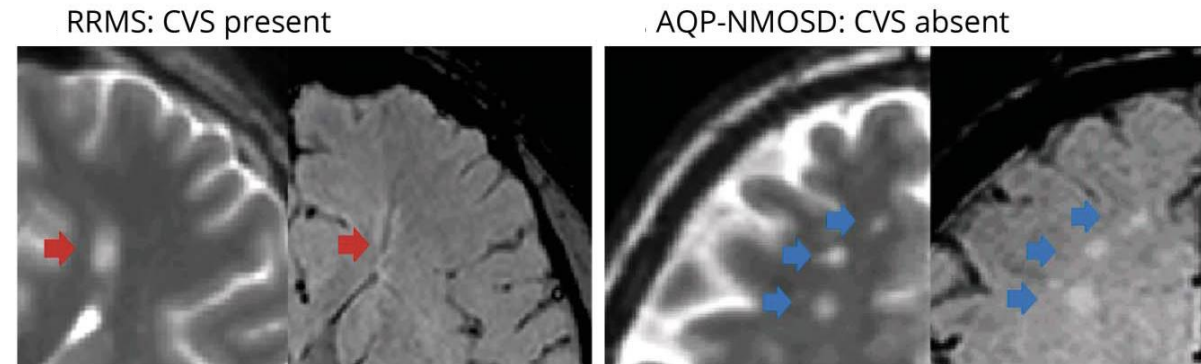
MRI and clinical markers of MOGAD

BRAIN 2023; 146; 2489–2501 | 2495

Sensitivity: 81%
Specificity: 84%
Accuracy: 76%
 $P < 0.001$



Cortese, Brain 2023



Cortese, Neurology 2023

Green Impact (Office awards)

Gold

- IoN Admin
- Dementia Research Centre
- Queen Square Library



Sanjay Sisodiya
Deputy IoN Director
Climate Change



The Hot Brain - Climate Change and Neuroscience conference

LEAF (Lab awards)

Gold

- Department of Neurodegenerative Diseases
- Department of Neuromuscular Diseases
- Department of Clinical & Experimental Epilepsy
- Department of Clinical and Movement Neuroscience
- NMD-Cruciform Building
- Brain Repair and Rehabilitation - Spinal Repair Unit
- UK DRI
- Wellcome Centre for Human Neuroimaging



EDI Leadership



Professor H el ene Plun-Favreau,
QS IoN Deputy Director for EDI
h.plun-favreau@ucl.ac.uk



Dimitrios Zachos,
QS IoN EDI Project Manager
d.zachos@ucl.ac.uk



Laura Allum,
QS HR Manager
QS IoN Athena Swan Lead
l.allum@ucl.ac.uk

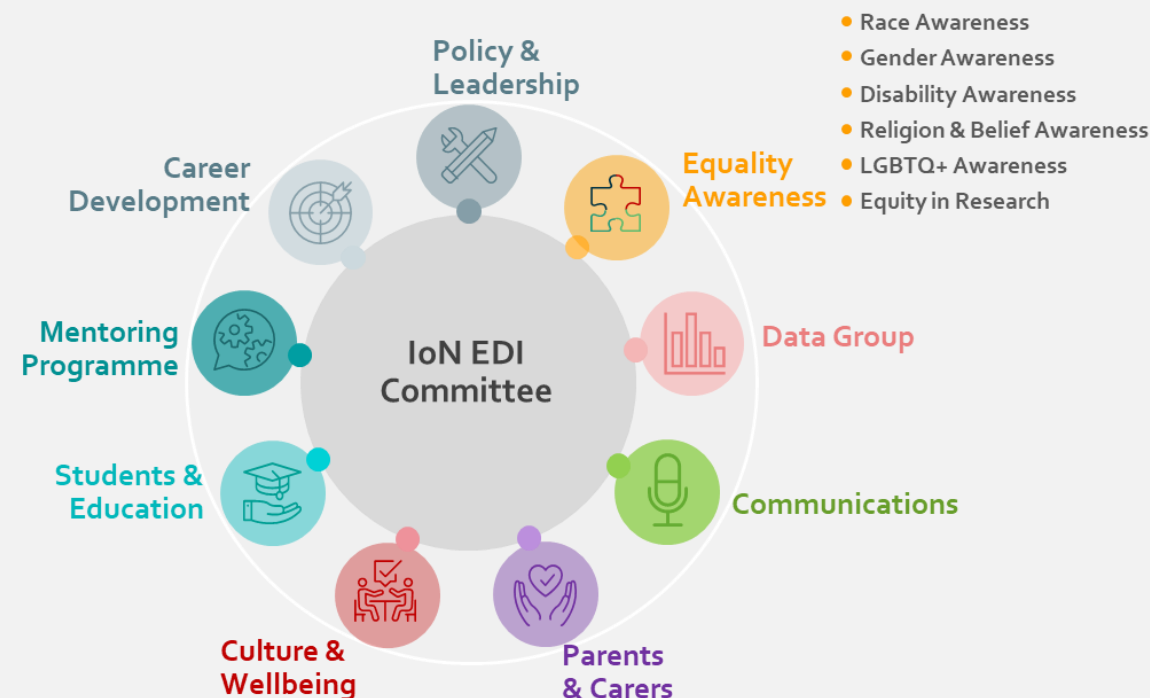


Dr Gabriele Lignani,
QS IoN Athena Swan Lead
g.lignani@ucl.ac.uk

Huge Thank You to everyone working on EDI!

In Numbers:

- 1** EDI Committee
- 9** EDI Action Groups
- 80** IoN EDI Committee members
- 1 in 10** people volunteer to work in EDI at the IoN



Initiatives



Increased Mental Health Support

- ▶ Set up a Mental Health group
- ▶ Organised two Mental Health First Aiders Training sessions
- ▶ Celebrated the Mental Health Awareness Week

Supporting Staff Personal and Professional Development

- ▶ Early Career Researchers (ECR) Careers Day
- ▶ Technician and Research Assistant Leadership Development Programme
- ▶ Academic Promotions Workshops
- ▶ Mentoring schemes

Tackling Bullying and Harassment

- ▶ Produced the IoN Code of Conduct:
 1. Expected Behaviours
 2. Unacceptable Behaviours
 3. Support available for victims

**Become a member of the EDI
Committee!**

E-mail: ion.equality@ucl.ac.uk



Research Fellows



Naomi Hannaway



Rebecca Street



Olivia Wood



Jemima Phillips



Claire Waddington

Senior Research Fellows



Stefano Benvegna



Christina Toomey



Samuel Harris



Viorica Chelban



Suran Nethisinghe



Aitana Sogorb Esteve



Emma Harding



Olga Kopach



Micol Falabella



Jenna Carpenter

Senior Promotions 2023

Rimona Weil
Professor of Neurology



Gabriele Lignani
Professor of Translational
Neuroscience



Beate Diehl
Professor of
Neurophysiology applied
to Epilepsy



Robert Pitceathly
Professor of Clinical Neurology
and Mitochondrial Medicine



Tim Young
Professor (Teaching)

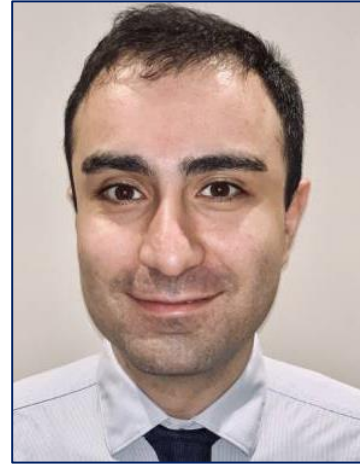


Afm Islam
Associate Professor
(Teaching)





Declan Chard
Professorial Research
Fellow



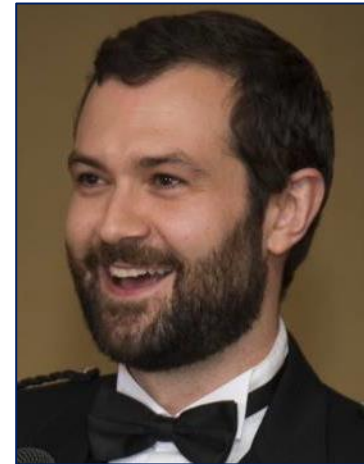
Arman Eshaghi
Principal Research
Fellow



Keir Yong
Principal Research
Fellow



Robert Wykes
Principal Research
Fellow



James Sleight
Principal Research
Fellow

Professor Sarah Tabrizi MRC Millennium Medal 2022



Past winners include:
Cesar Milstein 2000
Peter Mansfield 2004
Ed Southern 2006
Greg Winter 2013
Janet Darbyshire 2017
Rory Collins 2020
Lisa Hall 2022



UK Research
and Innovation

Awards - Oct 2022 – Oct 2023



Professors Ley Sander, Olga Ciccarelli & Henry Houlden elected Academy of Medical Sciences



Dr Soyon Hong (UK DRI at UCL) awarded prestigious Alzheimer's Research UK (ARUK) David Hague award for Early Career Investigator

ACRM AWARD OF EXCELLENCE IN POST-ACUTE STROKE REHABILITATION



NICK WARD, MD, FRCP
Professor of Clinical Neurology & Neurorehabilitation,
University College London



Professor Mary Reilly Awarded ABN Medal 2023



ASSOCIATION OF BRITISH NEUROLOGISTS



Prof Schapira elected to Academia Europaea





Siddharthan Chandran
Director; UK DRI



Fiona Ducotterd
Chief Scientific Officer
UCL Drug Discovery Institute



Jeshma Mehta
Centre Manager, UK DRI



Karl Frontzek
Clinical Associate Professor in
Neuropathology/Honorary Consultant
Neuropathologist
Clinical and Movement Neurosciences



Alex Addo
Returning to IoN as Education Manager

Professor Linda Maitland Luxon CBE



**13th April 1948 –
2 September 2023**

***Pioneer neuro-otology research
established world leading Department***





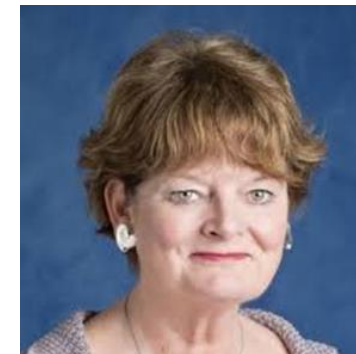
TRAINING THE NEXT GENERATION



Deputy IoN Director Education & Student Experience

IoN Student Numbers		
	Oct 2012	Oct 2023
MSc	80	294
PhD	170	236
TOTAL	250	530

↑ 268%
↑ 39%



PhD student day trip to Hastings - July 2023

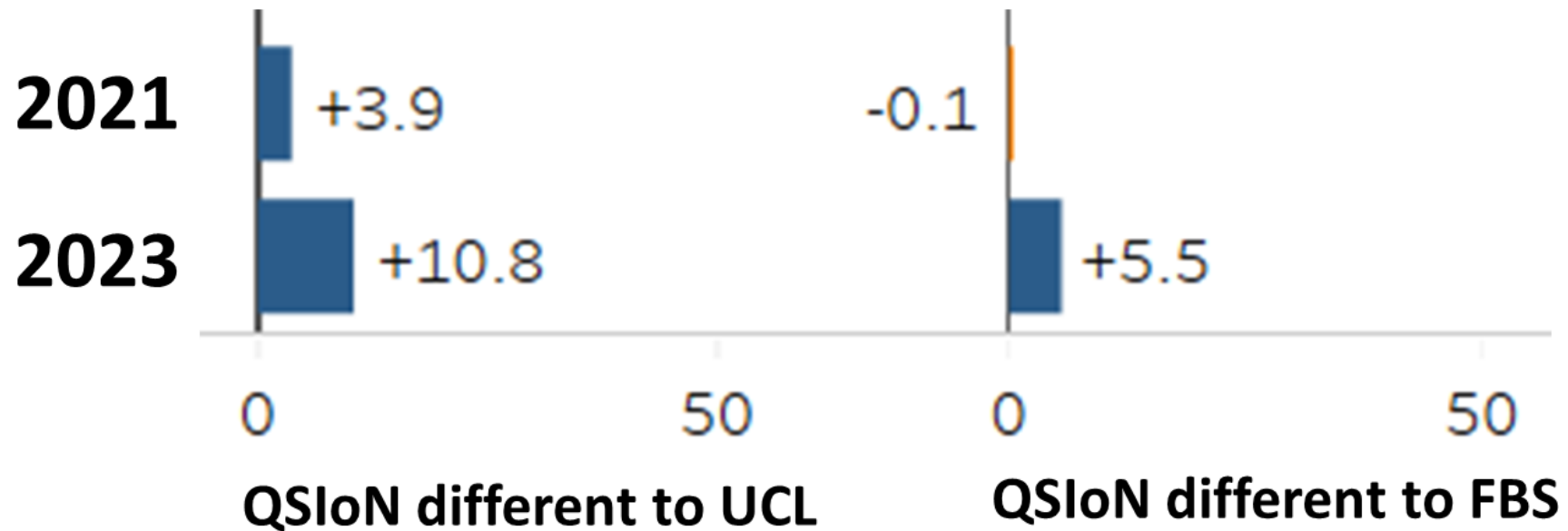


Masters Education Team @ UCL QS IoN



Graduate Education Team @ UCL QS IoN

Overall Experience



New Undergraduate courses for 2023 (iBSc) and 2024 (BSc)

Clinical Neurology & Brain Sciences iBSc for 3rd year MBBS students at UCL


Welcome to this new and exciting Clinical Neurology & Brain Sciences iBSc option!

When medical students qualify as doctors, it is very hard to avoid neurology no matter what specialty they choose. Almost 1 in 10 of primary physician consultations, and up to 1 in 5 of acute medical admissions, feature neurological conditions^{1,2}. Despite this, Neurology



Prof Tim Young

Human Neuroscience BSc

 London, Bloomsbury

Neuroscience is a very broad and exciting field that is studied at many different levels. This programme explores neuroscience by focuses on the human brain and nervous system. You will learn how our brains enable us to perceive the world, move, influence our mental health, and how we communicate and interact with each other.



Prof James Kilner

Thank you!



David Blundred



Caroline Selai



Queen Square Essay Prize 2023 Joint Winners



Angelo Dawson

**Changing the Narrative: Chronic Stroke
Patients *Can* Recover Lost Motor
Control**



Oliver Ziff

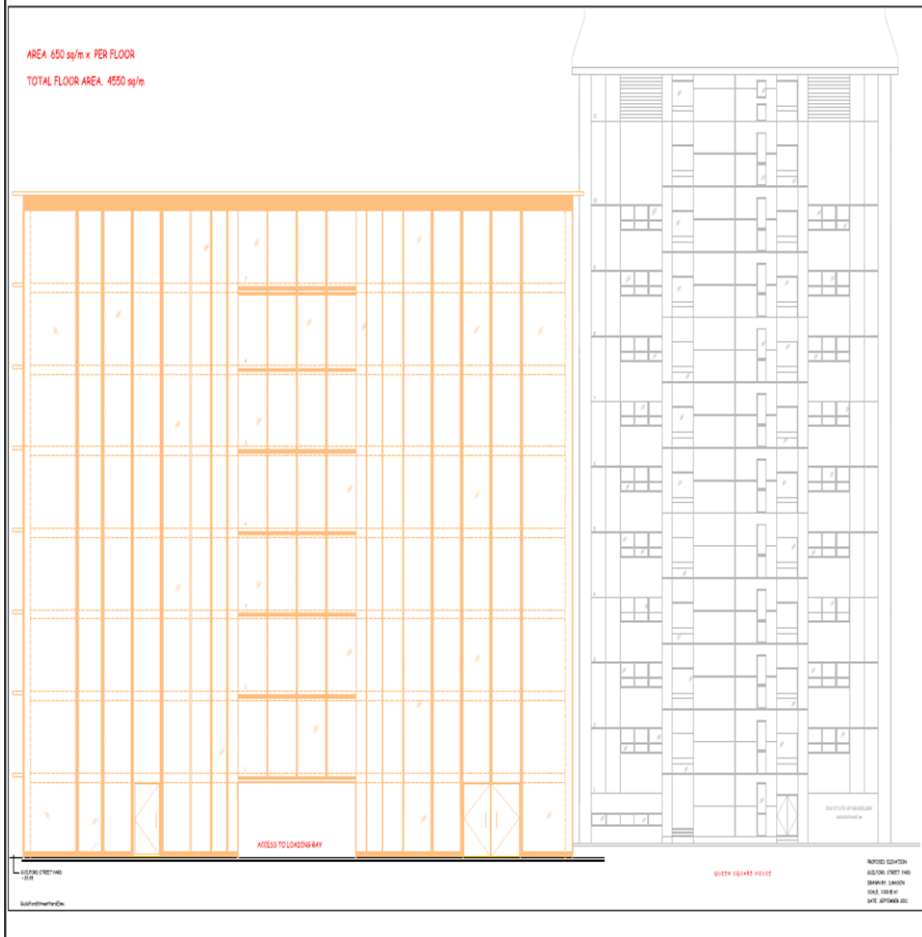
**Decoding Amyotrophic Lateral Sclerosis
through Transcriptomics: The Role of DNA
Damage**

2011



2022

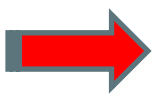
2024/25



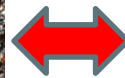
AN IDEA!



£261



£281m



**Dual-hub for Translational Research
Resource for all UCL Neuroscience**

256 Grays Inn Road: Construction Progress Nov 2021 images

Thanks to UCL Estates Team
Sponsor Alan Thompson
Thanks to David Howard



“BIG DIG” STARTED NOV 21- “BOTTOM OUT” FEB 2022 “TOP OUT” May 2023

ION-DRI Programme 2022: Time Capsule Burial: May 2022

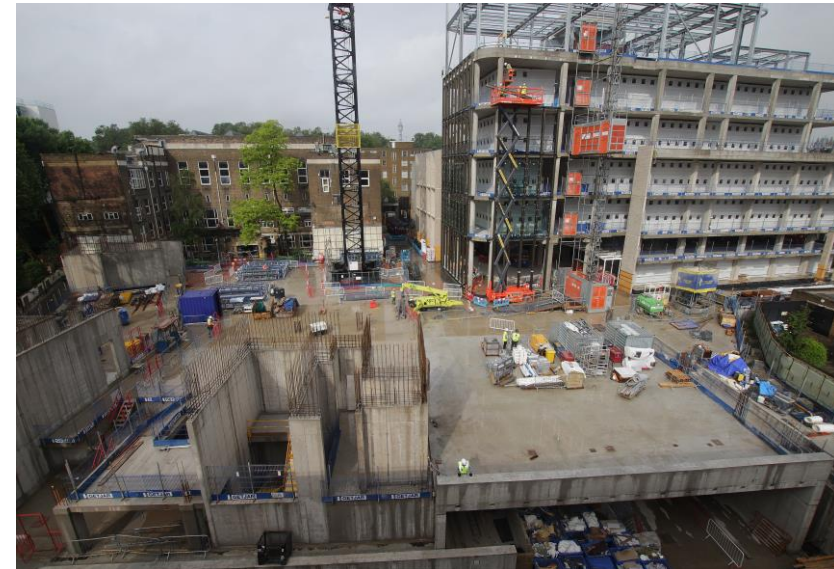


GIR Topping Out Ceremony: 11 May 2023



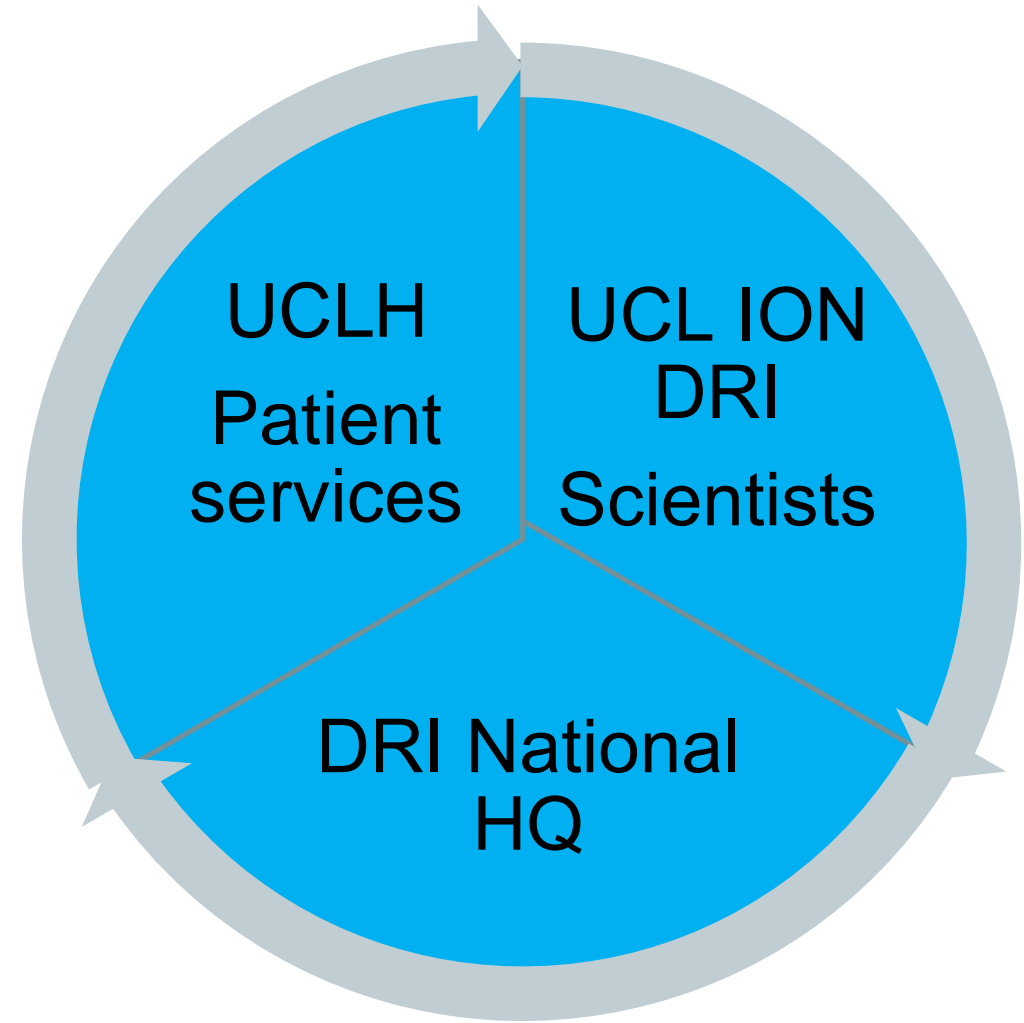
 **Prof Michael Hanna** @MikeHanna18 · May 11
Momentous day welcomed partners to “topping out”- 12 yrs done 1 year left to create worlds best environment & translate science to therapies dementia & neurological diseases - for real impact- humbling & exciting- well done all! [@uclh](#) [@UCLIoN](#) [@UCLBrainScience](#) [@The_MRC](#) [@uclnews](#)





June - August 2023





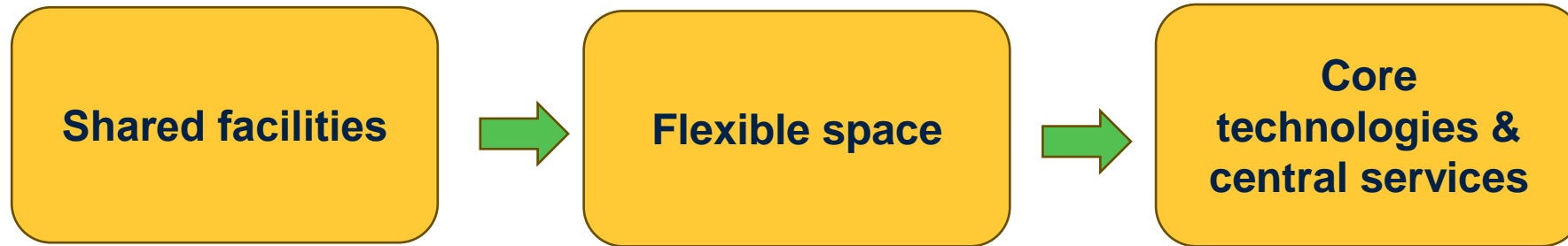
PARTNERSHIP

Our Vision



- **A dual hub for UCL translational neuroscience**
- **A new home for three partners: Queen Square Institute of Neurology, UK Dementia Research Institute and UCLH National Hospital of Neurology Neurosurgery**
- **Unrivalled opportunities for multidisciplinary collaboration**
- **a world-leading technologically-advanced environment, with high performance laboratory equipment and services including nine core technology platforms and services.**
- **Doctors, researchers and patients under one roof**

A new way of working: Core technologies & services



- **Cell imaging & microscopy**
- **hiPSC suite**
- **Tissue processing & analysis**
- **Single cell analysis & transcriptomics**
- **Genetic therapy vector facility**
- **Animal behavioural suite**
- **Genomics and high-throughput sequencing**
- **Bioinformatics**
- **MRI suite**

256 Grays Inn Road: CGI impressions - Co-location patients and science



Looking back to look forward



UCL Founded 1826



**National Hospital
1860**



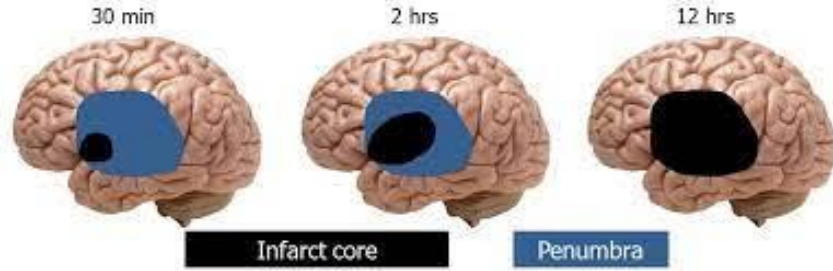
**ION Established
1950**



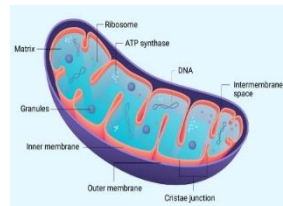
**ION New Building!
1977**



“ONLY” 46 YEARS!



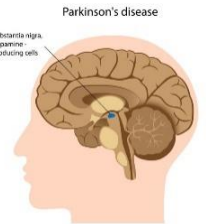
Thrombolysis



Neurogenetics
born

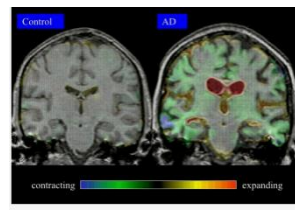


**Diagnostic
neurogenetics**



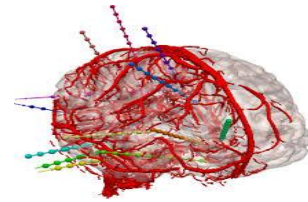
Parkinson's Disease
Dementia/ALS

New therapies/trials



Pioneered MRI in
Alzheimer's
MS & SPM

**Imaging Adopted
globally trials
/diagnosis**



**Neurosurgical
innovations
DBS & Epilepsy**



Success factors for an ecosystem of innovation

Brand new state of the art environment/technology

Attract the best people/interdisciplinary teams

Colocations of patients basic & clinical researchers

Ask the right questions

Inspiring environment for students

1977 to 2023



Colocation
Dual-hub ecosystem

2025 to 2072

Major challenges

Neurodegeneration
Dementia

Neurogenetic
disease

Brain tumours

Neuroinflammatory

Epilepsy

Annual Address 2023

Sir Patrick Vallance

Chair | The Natural History Museum

Chief Scientific Advisor Government 2018-23

“Why governments need science”

