

QUEEN SQUARE INSTITUTE OF NEUROLOGY
DIVISION OF NEUROSURGERY



UCL

A photograph of the Queen Square Institute of Neurology building, a large, ornate red brick structure with many windows. A large tree is in the foreground on the right, and a street sign for 'QUEEN SQUARE' is visible in the lower right. The image is the background for the entire page.

ANNUAL REVIEW 2022



Vision

To develop and implement novel, safe, and effective treatments to advance neurosurgical care.



Mission

The Division of Neurosurgery in the UCL Queen Square Institute of Neurology, through its close partnership with the National Hospital for Neurology and Neurosurgery, is committed to advancing neurosurgical care for the current and next generations of patients through world class research, excellent training and education, and top-quality clinical care.



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Foreword

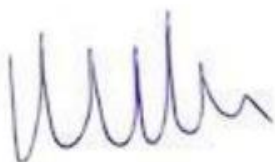
I invite you to browse the following pages for a snapshot of the 2022 activity of the Division of Neurosurgery (UCL Queen Square Institute of Neurology), a year that saw the slow return of more “normal” activity around the world as we began to emerge from various lockdowns due the COVID-19 pandemic.

We continue to make impactful advances in adult neurosurgical domains, bridging from fundamental mechanistic research through to clinical trials. This work is supported by grants from a number of sources and has resulted in publications in dozens of different journals.

You will get a glimpse of our values and see our commitment to active enquiry aimed at advancing our understanding of the nervous system and the diseases that afflict it as we strive to improve the lives of our patients and those of future generations.

We look forward to the continued successes of this hard work in the years to come.

We continue to make impactful advances in adult neurosurgical domains, bridging from fundamental mechanistic research through to clinical trials.

A handwritten signature in blue ink, appearing to read 'Rob Brownstone'.

Professor Rob Brownstone

Head of UCL Queen Square Institute of Neurology Division of Neurosurgery, Brain Research UK Chair in Neurosurgery

Key Achievements



Value of Grant Portfolio

£16M



Awards

7

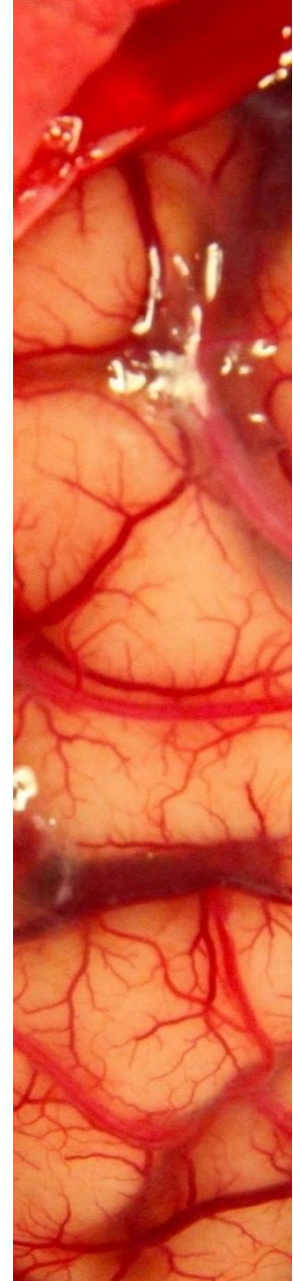


Peer Reviewed Papers Published

120

Clinical Subspecialties

- ❖ Cerebrovascular
- ❖ Epilepsy
- ❖ Functional
- ❖ Hydrocephalus
- ❖ Neuro-Oncology
- ❖ Pituitary
- ❖ Skull Base
- ❖ Spine



Who We Are



Rob Brownstone - Head of UCL Queen Square Institute of Neurology Division of Neurosurgery

Harith Akram - Functional

James Allibone - Complex Spine

Adrian Casey - Complex Spine

Pedro Castanho - Cerebrovascular

David Choi - Complex Spine

Neil Dorward - Pituitary & Central Skull Base, Spine

Anouk Borg - Pituitary & Central Skull Base

Patrick Grover - Skull Base, Cerebrovascular

Ciaran Hill - Neuro-oncology

Jonathan Hyam - Functional, Spine

Neil Kitchen - Neuro-oncology, Skull Base

Hani Marcus - Pituitary, Central Skull Base

Andrew McEvoy - Epilepsy, Neuro-oncology

Anna Miserocchi - Epilepsy, Neuro-oncology

Mary Murphy - Neurosurgery Clinical Lead, NHNN; Cerebrovascular, Spine

Georgios Prezerakos - Complex Spine

Vittorio Russo - Complex Spine

Antonino Russo - Complex Spine

Parag Sayal - Complex Spine

George Samandouras - Neuro-oncology

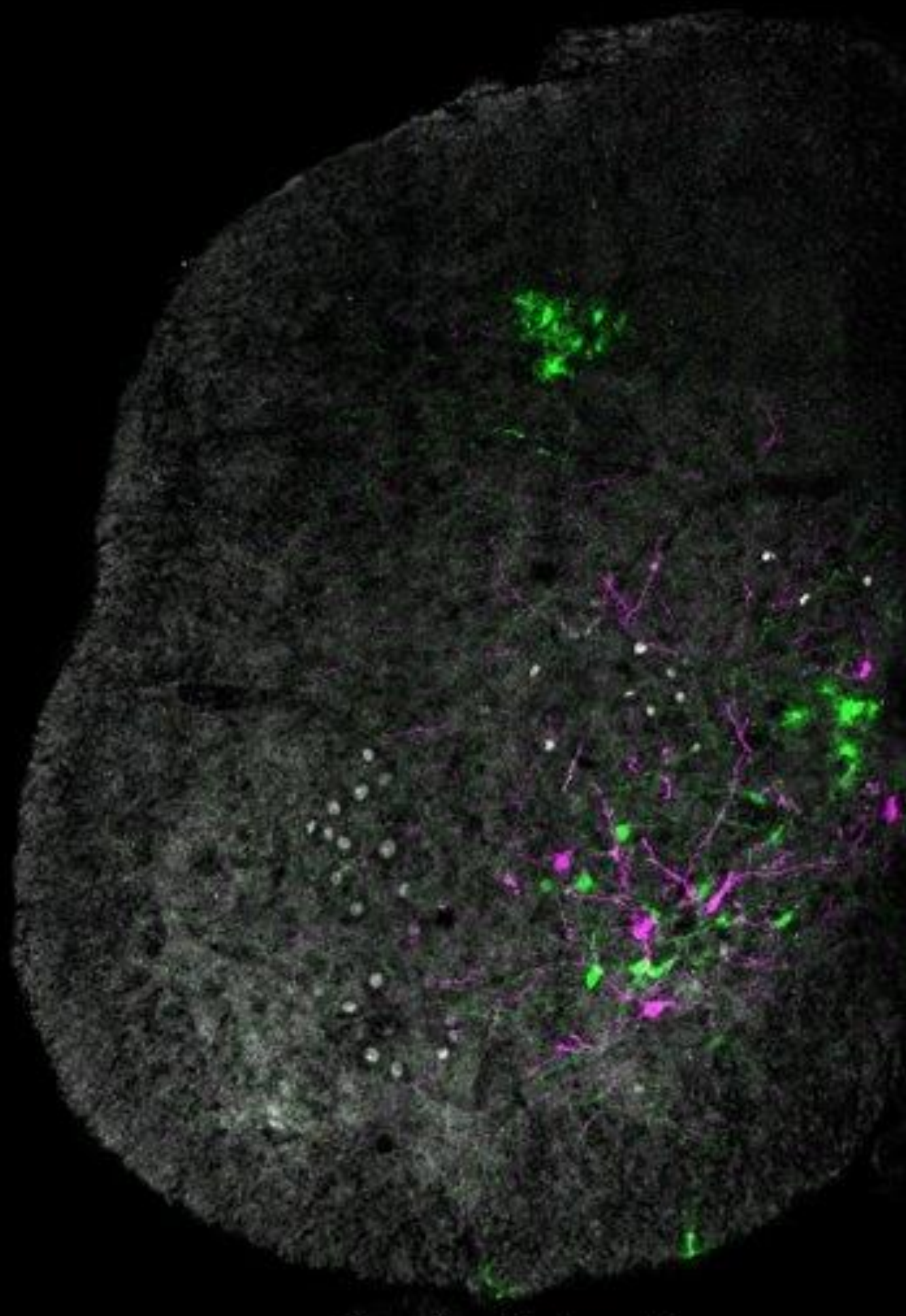
Huma Sethi - Neuro-oncology, Spine

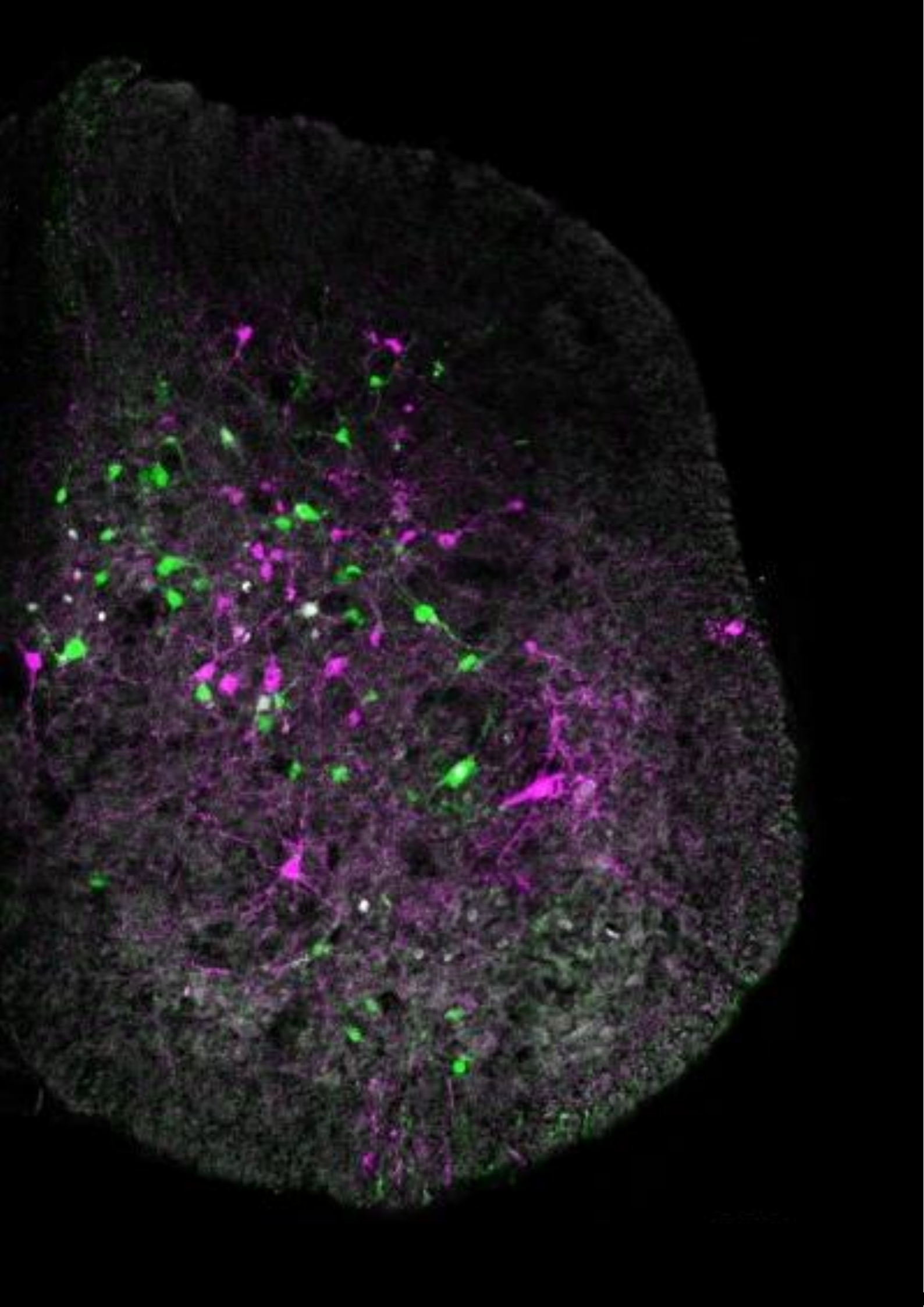
Lewis Thorne - Neuro-oncology, Hydrocephalus, Spine

Ahmed Toma - Hydrocephalus, Cerebrovascular

Laurence Watkins - Hydrocephalus

Ludvic Zrinzo - Functional





Spotlight on

The National Neurosurgical Oncology Unit

This specialised multi-disciplined team includes seven dedicated neurosurgeons working closely with neuro-oncologists, neurologists, pathologists, radiologists, neurophysiologists, rehabilitation specialists and specialist nurses.

These are supported by the advanced resources of the National Hospital for Neurology and Neurosurgery and linked with multiple specialist neuro-oncology units in London and across the country.

Since 2021

The Brain Tumour Unit has been awarded a Tessa Jowell Centre of Excellence and is part of the Tessa Jowell Training Academy.

The Unit's research strategy is focussed on improving our understanding of brain tumours with the eventual goal of curing these devastating diseases.

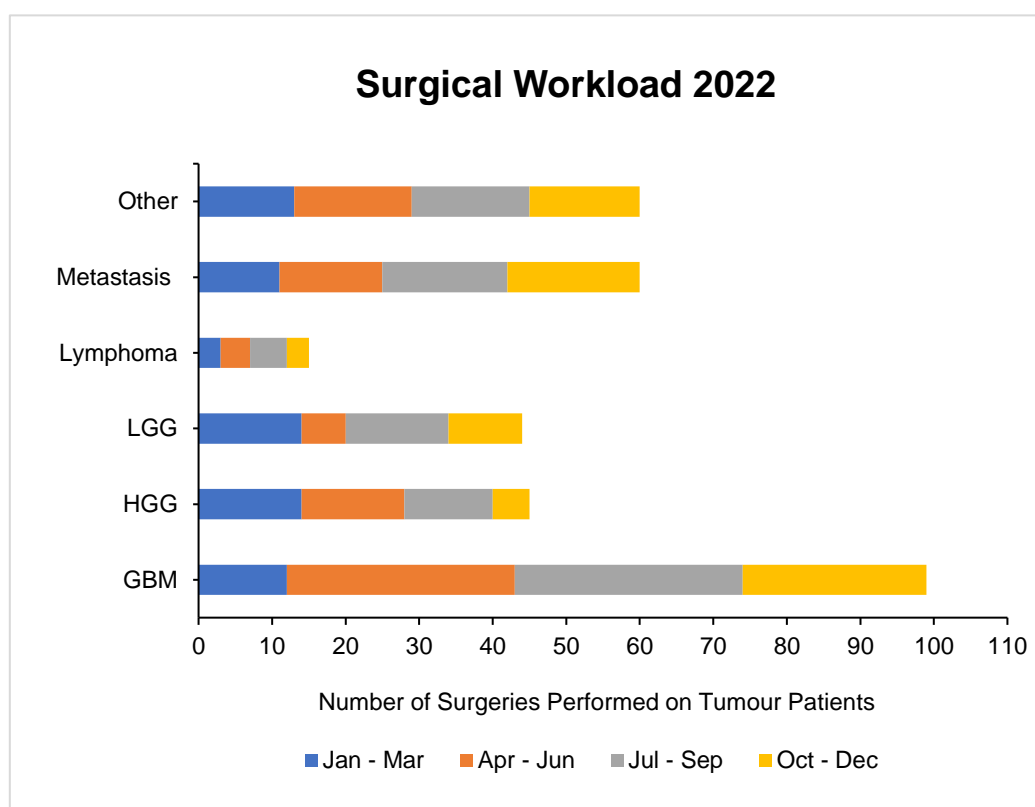
We have a full programme of fundamental discovery science, clinical and patient-centred research, and technological developments. We are focussed on improving outcomes and the quality of life of patients, and to advance therapies for patients with brain tumours. The approach is multidisciplinary, multicentre, multinational. We collaborate closely with neuroscientists and patients to develop new therapies and apply these clinically.



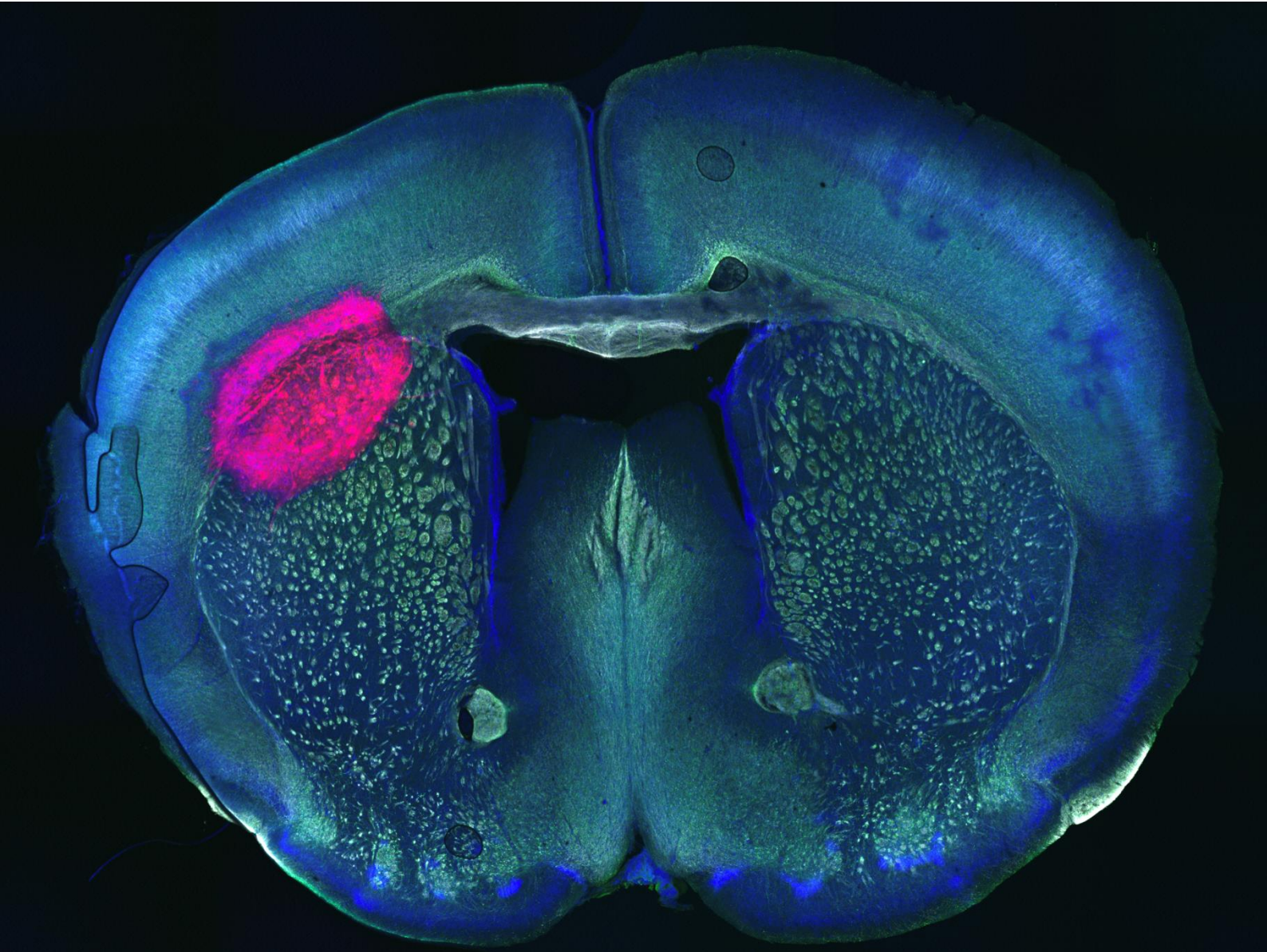
Tessa Jowell
Centre of Excellence

Surgical Workload

UCLH is a Trust with a large catchment area and high numbers of referrals of patients with brain tumours. The Brain Tumour Unit at UCLH/NHNN sees more than 2,500 brain tumour patients a year.



Overview of brain tumour surgeries performed at the Brain Tumour Unit, National Hospital for Neurology & Neurosurgery (GBM – Glioblastoma, LGG – Low Grade Glioma, HGG – High Grade Glioma).



Brain Tumour Research

We work closely with investigators across UCL, our clinical partners at the NHNN and GOSH, and the Francis Crick Institute, collaborating on research projects across the translational pipeline to further brain tumour research. We have been supported in part from the UCL/UCLH Biomedical Research Centre (BRC).

Spotlight on

Brain Tumour Research Activity

The National Gamma Knife Research Collaborative

Ciaran Hill has assembled a core group of GK practitioners and specialist team members to facilitate the design and delivery of a portfolio of GKRC-approved research studies. It ensures comprehensive clinical baseline and outcome data are collected for all treated patients, a project supported by Amethyst.

Local Glioma Trials

Glioma invasion trial funded by CRUK (led by Ciaran Hill) - Recruitment for this translational project exploring fundamental mechanisms of brain cancer invasion in human subjects has made excellent progress.

CAR-T /immunotherapy (led by Claire Roddie) – recruitment is now ongoing.

Advanced imaging (Led by Harpreet Hyare) –10 patients have been successfully scanned in advance of surgical management/pathology. The initial data has been very encouraging.



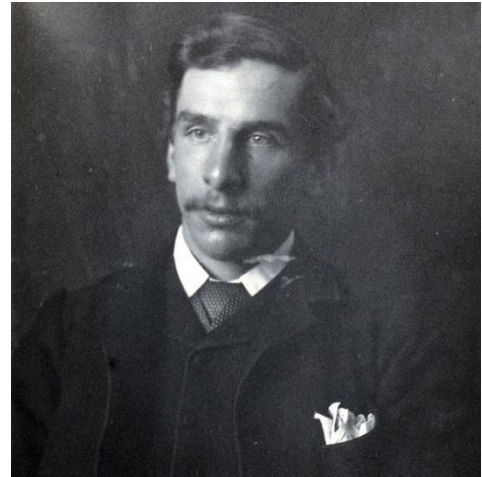
Ciaran Hill

Sir Victor Horsley Memorial Lecture

The annual meeting celebrates the enduring legacy of one of the greatest National Hospital for Neurology and Neurosurgery doctors.

Horsley (1857 – 1916) was the first neurosurgeon appointed to the National Hospital, Queen Square, and was known worldwide as the ‘Father of Neurosurgery’.

Wellcome Collection



Photograph of Sir Victor Horsley, at the far left, taken for his address in Toronto

Digitised by the Queen Square Archive

Sir Victor Horsley Memorial Lecture

Our 2022 lecturer was Professor Philip Starr, Dolores Cakebread Professor of Neurological Surgery, at the University of California, San Francisco. His presentation,

"Chronic invasive brain recording and adaptive deep brain stimulation: A new era in neuromodulation."



Phil Starr & Rob Brownstone

Integrated Academic Training (IAT) Programmes

Over the last number of years, we have been expanding and improving our Integrated Academic Training (IAT) Programmes. These programmes are funded by the NIHR and provide trainees with the time necessary to progress along academic neurosurgical career paths. Funding for these positions is very competitive across England. We feel fortunate that our programmes continue to be supported.

There are two IAT programmes. The first is the Academic Clinical Fellowship (ACF), which is aimed at new trainees, and protects 25% of their first 3 years of training for research.

We have typically been successful in being granted one of these positions every 1-2 years, and currently have three trainees in each of the first 3 years of training (ST1-3).

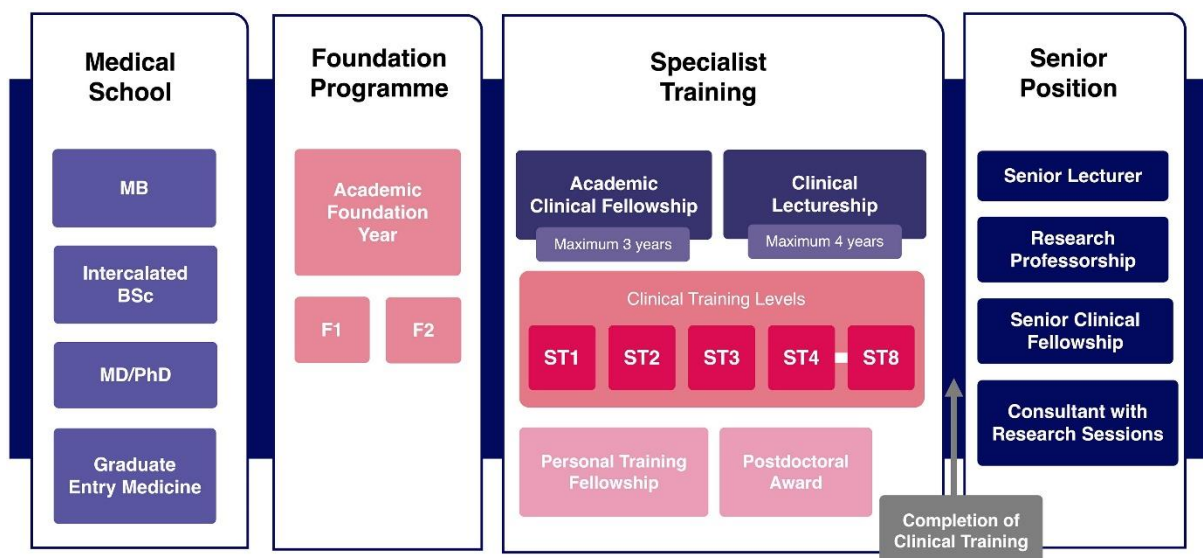
Many of these trainees pursue doctoral training after ST3 if they do not already have their PhD.

The second level is the Clinical Lecturer (CL). These positions are even more competitive as there are far

fewer of them. They are geared to senior trainees (ST5 or above), and provide up to 4 years of funding, with 50% of time protected for research.

We have been very successful in recent years in being granted these positions, with 2 CLs in post in 2022.

All Clinical Lecturers have a PhD, and their research during these years is postdoctoral training to prepare them to transition to independence. Their last period of clinical training will typically be focussed on the subspecialty area to which their research is aligned to ensure integration of their academic research with patient problems.



Schematic of the Integrated Academic Training (IAT) pathway funded by the NIHR, from Lee *et al.* 2023, Br J Neurosurg, May 18;1-7. doi: 10.1080/02688697.2023.2213329

Fellowships

The Victor Horsley Department of Neurosurgery has several peri-CCT senior clinical fellowships, that help bridge the gap involving transitioning from a senior trainee to a consultant. Most of these fellowships are currently RCS England approved. Below is a list of current RCS England Senior Clinical Fellowships in the Department.

- ❖ NHNN Pituitary Fellowship: 1 year fellowship, first established in 2019.
- ❖ Queen Square Functional Neurosurgery Fellowship: 1 year fellowship, first established in 2019.
- ❖ Queen Square Hydrocephalus Neurosurgery Fellowship: 1 year fellowship, first established in 2019.
- ❖ Queen Square Neurovascular Fellowship: 12-18 month fellowship, first established in 2019.
- ❖ NHNN Complex Epilepsy Fellowship: 1 year fellowship, first established in 2020.
- ❖ Central London Complex Spine Fellowship: 18 month fellowship: 9 months each at Queen Square and St Thomas's hospital, first established 2021.

These fellowships have proven track records, with fellows being appointed to consultant positions after completion.

In addition to these RCS approved fellowships, Queen Square has a second senior spinal peri-CCT fellowship. Work is underway to establish skull base and oncology fellowships.

Education

The Division of Neurosurgery is an innovative academic hub that hosts a wide range of educational activities.

Education & continual improvement are at the heart of what we do.

Neurosurgery MRes

This Master's of Neurosurgery by Research (MRes) is a one-year postgraduate research degree, which aims to provide the knowledge and skills to allow students to undertake meaningful novel research and participate in advancing the field.

The Queen Square Simulation Centre

We are establishing the UK's premier neuroscience simulation centre – leveraging the world-renowned multidisciplinary team at Queen Square - to deliver state-of-the-art high-fidelity simulations and augmented clinical training.

The Queen Square Review Course

We host a comprehensive and up to date review of neurosurgery each year, which is our flagship course.

The Future of Neurosurgery Series

We host an online collaborative lecture series delivered by world experts on advancements and innovations in neurosurgery.

The Brain Cancer Seminar Series

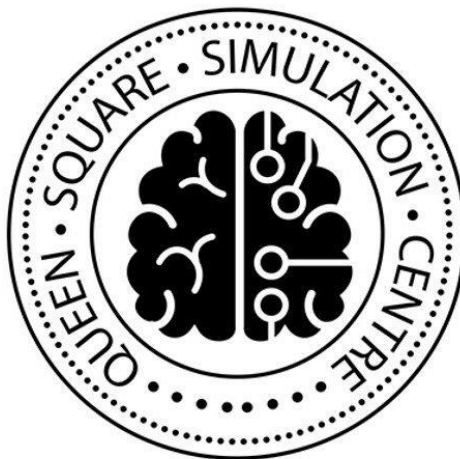
We have quarterly online seminars connecting neuro-oncology clinicians and researchers across UCL and the University of Toronto.

Queen Square Simulation Centre

Establishing the UK's premier neuroscience simulation centre to deliver state-of-the-art high fidelity simulations and augmented clinical training.

Through education and research we will address the growing training challenges in UK neurosurgery, neuroanaesthesia, neurocritical care, neurology and neuroradiology to ultimately improve patient outcomes.

We will achieve this through an immersive experience using high-fidelity models and simulating real life scenarios in an operating theatre environment.







Since 2021

27 Courses delivered

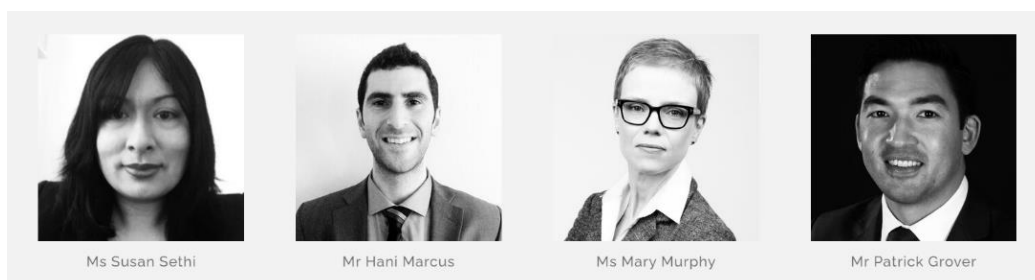
488 Participants attended

100% of participants would attend another course

Funding

HEE COVID Recovery Fund • UCLH Internal Transformation Fund • Industry sponsorship

London Trainees attend for free – Funded by HEE Covid Recovery Grant



Management Team

Grants

Principal Investigator

Andrew McEvoy: Medtronic, 2019-2023, Use of Autoguide and EpiNav™ for directing SEEG electrodes and cranial biopsies, £47,628

Hani Marcus: EPSRC, 2021-2024, Context Aware Augmented Reality for Endonasal Endoscopic Surgery, £1,109,056

Hani Marcus: Health Education England, 2021 – 2022, Simulation in Neurosurgery, £50,000

Hani Marcus: National Brain Appeal, 2019 – 2022, A "smart" instrument for the extended transsphenoidal approach, £100,060

Rob Brownstone: MRC, 2020-2023, Beyond the basal ganglia: spinal circuit dysfunction as a final pathway for movement disorganisation in tor1a dystonia, £801,576

Rob Brownstone: NIHR-UCLH Biomedical Research Centre, 2017-2022, Neuro-oncology research, £359,459

Rob Brownstone: Wellcome Trust Investigator Award, 2016-2022, Tuning spinal motoneurons for movement, £3,608,163

Co-Investigator

Andrew McEvoy: MRC-DPFS, 2018-2023, Engineered potassium channel gene therapy for epilepsy, £2,488,648

Andrew McEvoy: Wellcome Trust Innovator Award, 2020-2024, Navigation to improve outcome of epilepsy surgery, £752,983

Andrew McEvoy & Anna Miserocchi: NIHR BRC UCLH/UCL, 2020-2022, Cognition and Epilepsy, £195,181

Hani Marcus: The Francis Crick Institute, 2021 – 2022, Idea to Innovation, (i2i), Electrophysiological monitoring for the prevention of brain retraction injury in neurosurgery, £75,000

Harith Akram: NIHR EME, 2021 - 2024 Double blind comparison of optimised Deep Brain Stimulation for severe Tourette syndrome, £500,000 plus £500,000 from Boston Scientific

Harith Akram: The Brain Research Trust, 2013 - 2027 PhD project titled “Advanced imaging and connectivity in DBS” to investigate the use of connectivity imaging in mapping neural circuitries affected by DBS, £250,000

Lewis Thorne: Macmillan Cancer Support, 2019 - 2022, Treatment in an Era of Molecular Technologies and Personalized Medicine: Understanding and Anticipating the Social Impacts for People Affected by Cancer, £201,900

Ludvic Zrinzo: NIHR, 2021 – 2024, Double blind comparison of optimised Deep Brain Stimulation for severe Tourette syndrome, £538,999

Patrick Grover: NIHR, 2020-2023, The Cavernomas a Randomised Effectiveness (CARE) Pilot Trial, £973,835

Rob Brownstone: MRC World Class Labs Award, equipment grant, 2022 – 2023, Wearable brain and spinal cord imaging for real-world neuroscience, £216,906

Rob Brownstone: Wellcome Technology Development Grant, 2022 – 2025, Concurrent non-invasive millisecond imaging of brain and spinal cord in health and disease, £659,982

Collaborator

Andrew McEvoy: Wellcome Trust Investigator Award in Science, 2021-2026, Epilepsy and neurodegeneration: disease mechanisms and early detection, £2,367,251

Trainee Grant Funding

Anand Pandit: UCL Community eResearch Grant, 2022, Digital literacy training and clinical neuroscience hackathon, £1,000

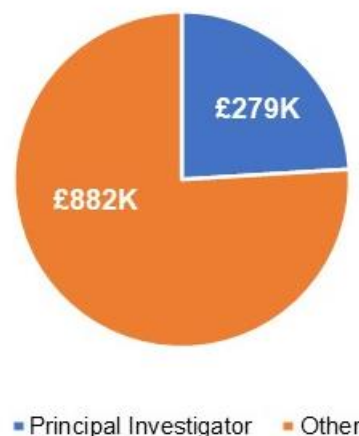
Danyal Khan: Priority Setting Partnership for Pituitary Adenoma Research, Small Acorns Fund, National Brain Appeal, 2022, Co-Investigator, £3,000

Danyal Khan: Priority Setting Partnership for Pituitary Adenoma Research Public Engagement Fund, WEISS UCL, 2022, Co-Investigator, £3,000

Imran Noorani: CRUK Therapeutic Catalyst Award, 2022 – 2024, Principal Investigator, £248,182

Imran Noorani: AMS Starter Grant for Clinical Lecturers, 2022 – 2023, Principal Investigator, £30,000

New Grants Awarded in 2022



As of 2022, our active grant portfolio has a value of over £16M. In 2022, the division was awarded grants to the value of over £1M, over £279K with a consultant/trainee named as the principal investigator and over £882K with a consultant/trainee named as a collaborator/co-PI/Co-investigator.

Awards

Ciaran Hill

- ❖ Selected for RCSEd Future Leadership Programme by SBNS

Anand Pandit (Trainee)

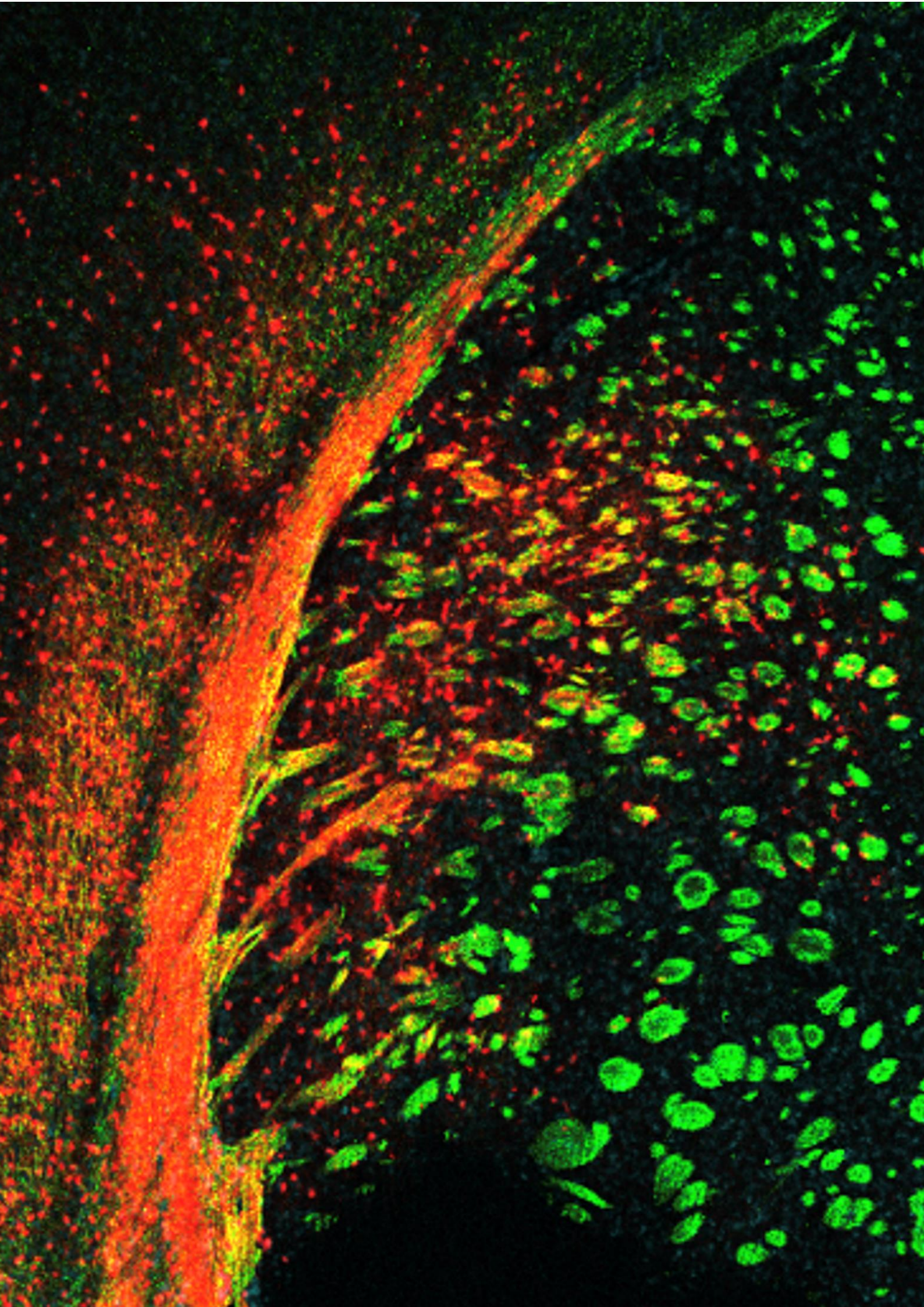
- ❖ Hydrocephalus Society - Young Investigator Award. Awarded to supervised MSc student, and Anand is the lead author on the project

Danyal Khan (Trainee)

- ❖ Sir Hugh Cairns Essay Prize 2022, SBNS
- ❖ Associate Faculty Member Travel Award 2022, Faculty Opinions
- ❖ Queen Square Neurosurgery “Research and Audit” Prize 2022
- ❖ Queen Square Neurosurgery “Microsurgical Skills” Trainee Award 2022

Debayan Dasgupta (Trainee)

- ❖ Best Oral Presentation, Society of British Neurological Surgeons, Blackpool Conference, 2022



Publications

Peer reviewed papers

Trainees

Consultant

Cerebrovascular

Banerjee G, Samra K, Adams ME, Jaunmuktane Z, Parry-Jones AR, Grieve J, **Toma AK**, Farmer SF, Sylvester R, Houlden H, Rudge P, Mead S, Brandner S, Schott JM, Collinge J, Werring DJ. Iatrogenic cerebral amyloid angiopathy: an emerging clinical phenomenon. *J Neurol Neurosurg Psychiatry*. 2022 May 16;jnnp-2022-328792. doi: 10.1136/jnnp-2022-328792. Epub ahead of print. PMID: 35577510.

China M, Vastani A, **Hill CS**, Tancu C, **Grover PJ**. Gamma Knife radiosurgery for cerebral arteriovenous malformations: a systematic review and meta-analysis. *Neurosurg Rev*. 2022 Jun;45(3):1987-2004. doi: 10.1007/s10143-022-01751-1. Epub 2022 Feb 18. PMID: 35178626; PMCID: PMC9160151.

Clarke RE, Jelen MB, Jones B, **Toma AK**, Pandit AS. Letter: "How to Defuse a Ticking Time Bomb?" Considering Psychosocial Factors in Patients With Small Unruptured Intracranial Aneurysms. *Neurosurgery*. 2022 Feb 1;90(2):e45-e46. doi: 10.1227/NEU.0000000000001764. PMID: 34995243.

Harris L, Poorthuis MHF, **Grover P**, **Kitchen N**, Al-Shahi Salman R. Surgery for cerebral cavernous malformations: a systematic review and meta-analysis. *Neurosurg Rev*. 2022 Feb;45(1):231-241. doi: 10.1007/s10143-021-01591-5. Epub 2021 Jun 30. PMID: 34191202.

Hirunpattarasilp C, Barkaway A, Davis H, Pfeiffer T, **Sethi H**, Attwell D. Hyperoxia evokes pericyte-mediated capillary constriction. *J Cereb Blood Flow Metab*. 2022 Nov;42(11):2032-2047. doi: 10.1177/0271678X221111598. Epub 2022 Jul 3. PMID: 35786054; PMCID: PMC9580167.

Kanapathy M, Nikkhah D, Singh P, Solomon J, Mosahebi A, **Murphy M**, Cabrilo I. A neuro-plastics approach for extracranial-to-intracranial bypass: Video and technical considerations. *J Plast Reconstr Aesthet Surg*. 2022 Jun;75(6):2001-2018. doi: 10.1016/j.bjps.2022.02.074. Epub 2022 Mar 8. PMID: 35300927.

Korte N, Ilkan Z, Pearson CL, Pfeiffer T, Singhal P, Rock JR, **Sethi H**, Gill D, Attwell D, Tammaro P. The Ca²⁺-gated channel TMEM16A amplifies capillary pericyte contraction and reduces cerebral blood flow after ischemia. *J Clin Invest*. 2022 May 2;132(9):e154118. doi: 10.1172/JCI154118. PMID: 35316222; PMCID: PMC9057602.

Muirhead WR, Layard Horsfall H, Khan DZ, Koh C, **Grover PJ**, **Toma AK**, **Castanho P**, Stoyanov D, **Marcus HJ**, **Murphy M**. Microsurgery for intracranial aneurysms: A

qualitative survey on technical challenges and technological solutions. *Front Surg.* 2022 Aug 4;9:957450. doi: 10.3389/fsurg.2022.957450. PMID: 35990100; PMCID: PMC9386123.

Palasz J, D'Antona L, Farrell S, Elborady MA, **Watkins LD**, **Toma AK**. External ventricular drain management in subarachnoid haemorrhage: a systematic review and meta-analysis. *Neurosurg Rev.* 2022 Feb;45(1):365-373. doi: 10.1007/s10143-021-01627-w. Epub 2021 Aug 26. PMID: 34448080.

Rojas-Villabona A, Sokolska M, Solbach T, Grieve J, Rega M, Torrealdea F, Pizzini FB, De Vita E, Suzuki Y, Van Osch MJP, Biondetti E, Shmueli K, Atkinson D, **Murphy M**, Paddick I, Golay X, **Kitchen N**, Jäger HR. Planning of gamma knife radiosurgery (GKR) for brain arteriovenous malformations using triple magnetic resonance angiography (triple-MRA). *Br J Neurosurg.* 2022 Apr;36(2):217-227. doi: 10.1080/02688697.2021.1884649. Epub 2021 Feb 28. PMID: 33645357.

CSF

Cheema S, Anderson J, Duncan C, Davagnanam I, Armstrong P, Redfern N, Ordman A, D'Antona L, Nissen J, **Sayal P**, Vaughan-Huxley E, Lagrata S, Iodice V, Snape-Burns J, Joy C, Matharu M. Survey of healthcare professionals' knowledge, attitudes and practices regarding spontaneous intracranial hypotension. *BMJ Neurol Open.* 2022 Sep 5;4(2):e000347. doi: 10.1136/bmjno-2022-000347. PMID: 36110926; PMCID: PMC9445790.

D'Antona L, Craven CL, Haq H, **Thorne L**, Matharu MS, **Toma AK**, **Watkins LD**. A case of recurrent flight-induced cerebrospinal fluid shunt overdrainage. *Br J Neurosurg.* 2023 Feb;37(1):112-115. doi: 10.1080/02688697.2022.2066629. Epub 2022 May 13. PMID: 35549965.

Funnell JP, Noor K, Khan DZ, D'Antona L, Dobson RJB, Hanrahan JG, Hepworth C, Moncur EM, Thomas BM, **Thorne L**, **Watkins LD**, Williams SC, Wong WK, **Toma AK**, **Marcus HJ**. Characterization of patients with idiopathic normal pressure hydrocephalus using natural language processing within an electronic healthcare record system. *J Neurosurg.* 2022 Nov 18:1-9. doi: 10.3171/2022.9.JNS221095. Epub ahead of print. PMID: 36401545.

Goel A, Asif H, Craven C, D'Antona L, Das P, **Thorne L**, **Toma A**. Regional Scalp Blockade for Painless Removal of Intracranial Pressure Bolts: Technical Note and Patient-Reported Outcomes. *World Neurosurg.* 2022 Jun;162:43-46. doi: 10.1016/j.wneu.2022.03.020. Epub 2022 Mar 12. PMID: 35292411.

Hill CS, **Borg A**, Horsfall HL, Al-Mohammad A, **Grover P**, **Kitchen N**. Cerebral cavernous malformation: Management, outcomes, and surveillance strategies - A single centre retrospective cohort study. *Clin Neurol Neurosurg.* 2023 Feb;225:107576. doi: 10.1016/j.clineuro.2022.107576. Epub 2022 Dec 26. PMID: 36608471.

Khawari S, Tariq K, Darie L, Moncur E, **Toma A, Watkins L**. Novel telemetric pressure monitoring in lumbar theca. *Brain Spine*. 2022 Mar 31;2:100886. doi: 10.1016/j.bas.2022.100886. PMID: 36248096; PMCID: PMC9562246.

Pandit AS, Palasz J, Nachev P, **Toma AK**. Mechanical Complications of External Ventricular and Lumbar Drains. *World Neurosurg*. 2022 Oct;166:e140-e154. doi: 10.1016/j.wneu.2022.06.127. Epub 2022 Jul 1. PMID: 35787961.

Epilepsy

Binding LP, Dasgupta D, Giampiccolo D, Duncan JS, Vos SB. Structure and function of language networks in temporal lobe epilepsy. *Epilepsia*. 2022 May;63(5):1025-1040. doi: 10.1111/epi.17204. Epub 2022 Mar 4. PMID: 35184291; PMCID: PMC9773900.

Chari A, Adler S, Wagstyl K, Seunarine K, **Marcus H**, Baldeweg T, Tisdall M. IDEAL approach to the evaluation of machine learning technology in epilepsy surgery: protocol for the MAST trial. *BMJ Surg Interv Health Technol*. 2022 Jan 27;4(1):e000109. doi: 10.1136/bmjst-2021-000109. PMID: 35136859; PMCID: PMC8796270.

Dasgupta D, **Miserocchi A, McEvoy AW**, Duncan JS. Previous, current, and future stereotactic EEG techniques for localising epileptic foci. *Expert Rev Med Devices*. 2022 Jul;19(7):571-580. doi: 10.1080/17434440.2022.2114830. Epub 2022 Aug 24. PMID: 36003028; PMCID: PMC9612928.

Ferreira-Atuesta C, de Tisi J, **McEvoy AW, Miserocchi A**, Khoury J, Yardi R, Vegh DT, Butler J, Lee HJ, Deli-Peri V, Yao Y, Wang FP, Zhang XB, Shakhathreh L, Siriratnam P, Neal A, Sen A, Tristram M, Varghese E, Biney W, Gray WP, Peralta AR, Rainha-Campos A, Gonçalves-Ferreira AJC, Pimentel J, Arias JF, Terman S, Terziev R, Lamberink HJ, Braun KPJ, Otte WM, Rugg-Gunn FJ, Gonzalez W, Bentes C, Hamandi K, O'Brien TJ, Perucca P, Yao C, Burman RJ, Jehi L, Duncan JS, Sander JW, Koepp M, Galovic M. Predictive models for starting antiseizure medication withdrawal following epilepsy surgery in adults. *Brain*. 2022 Nov 23:awac437. doi: 10.1093/brain/awac437. Epub ahead of print. PMID: 36415957.

Khoo A, de Tisi J, Foong J, Bindman D, O'Keeffe AG, Sander JW, **Miserocchi A, McEvoy AW**, Duncan JS. Long-term seizure, psychiatric and socioeconomic outcomes after frontal lobe epilepsy surgery. *Epilepsy Res*. 2022 Oct;186:106998. doi: 10.1016/j.epilepsyres.2022.106998. Epub 2022 Aug 13. PMID: 35985250.

Sone D, Ahmad M, Thompson PJ, Baxendale S, Vos SB, Xiao F, de Tisi J, **McEvoy AW, Miserocchi A**, Duncan JS, Koepp MJ, Galovic M. Optimal Surgical Extent for Memory and Seizure Outcome in Temporal Lobe Epilepsy. *Ann Neurol*. 2022 Jan;91(1):131-144. doi: 10.1002/ana.26266. Epub 2021 Nov 20. PMID: 34741484; PMCID: PMC8916104.

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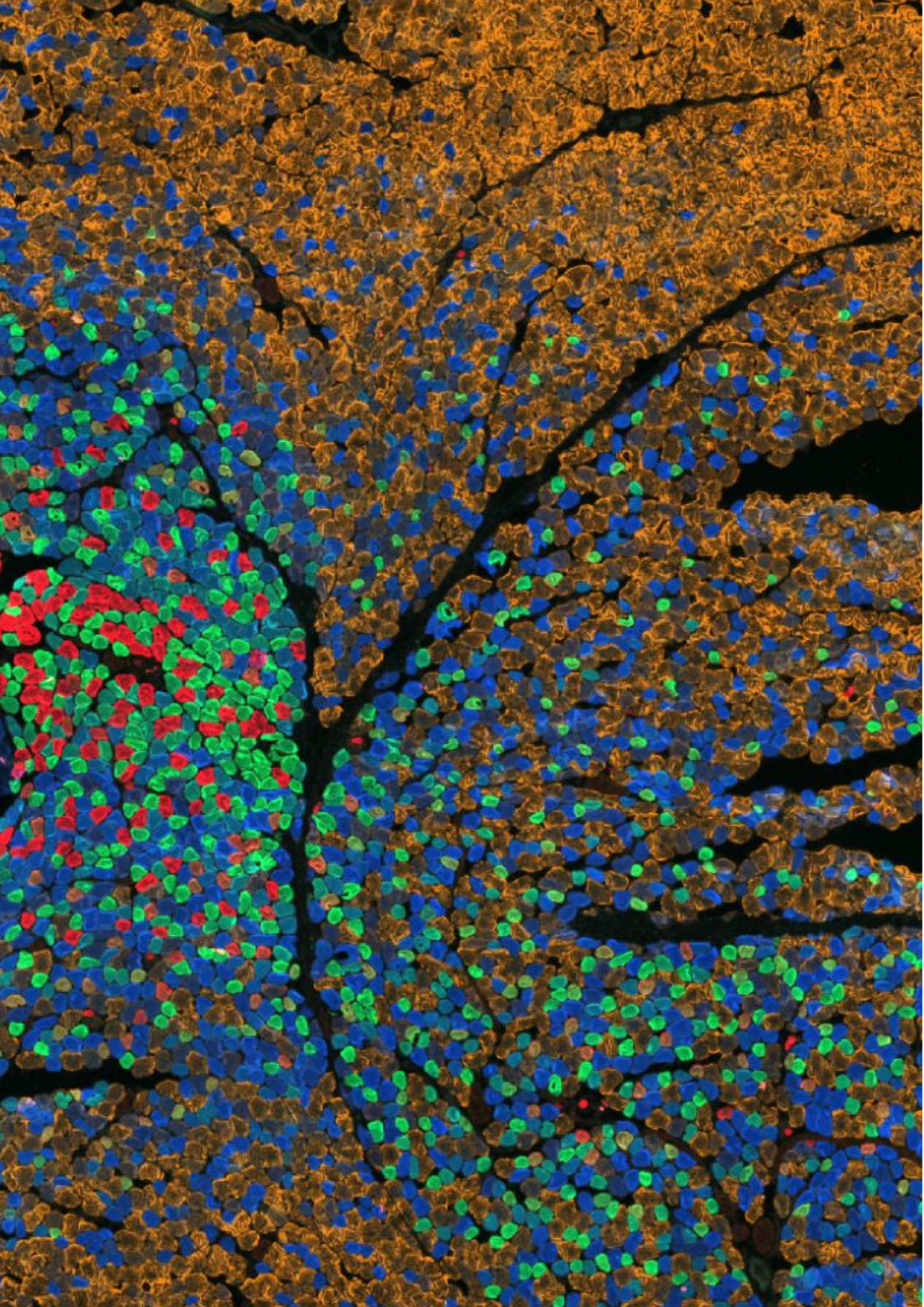
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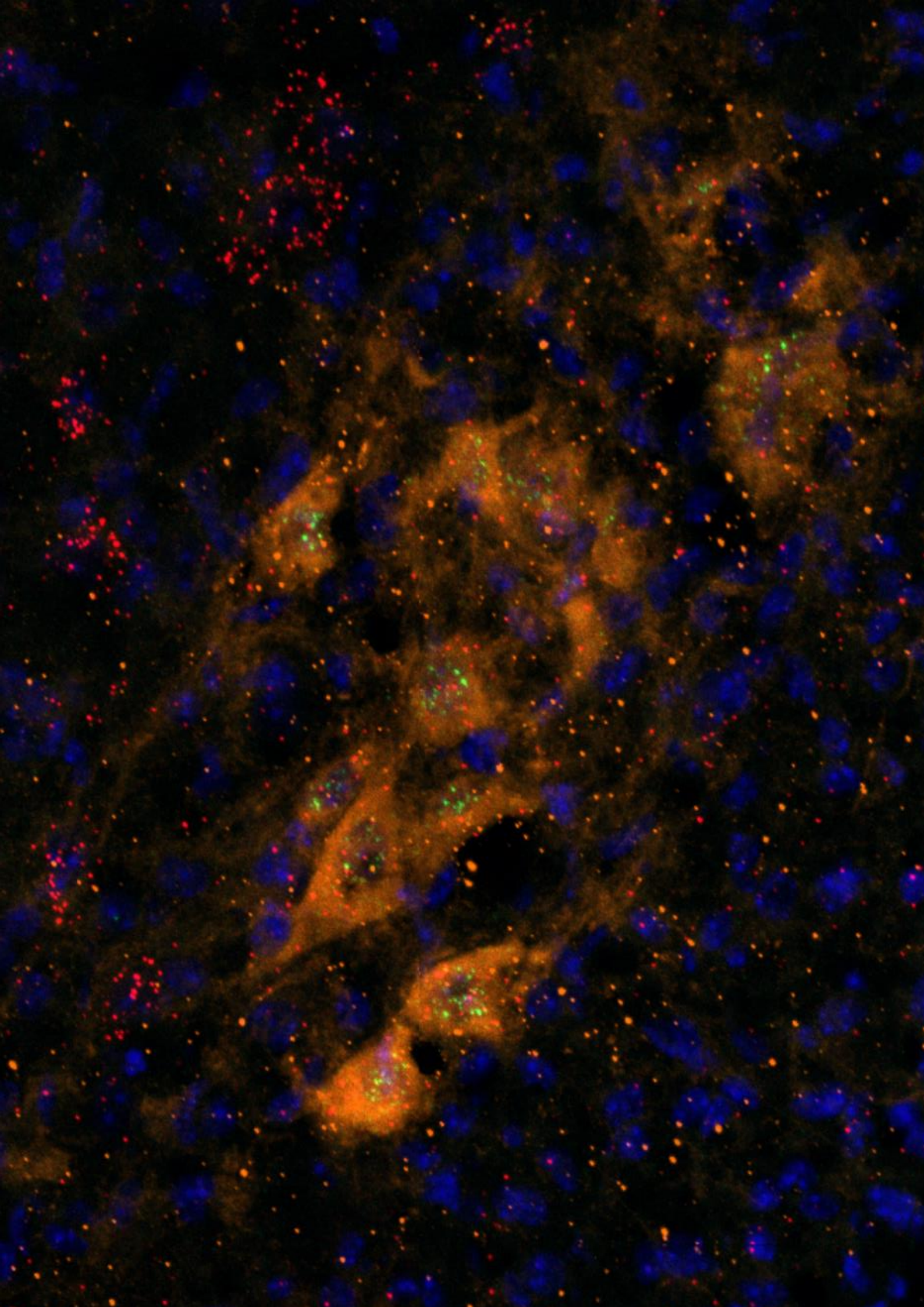
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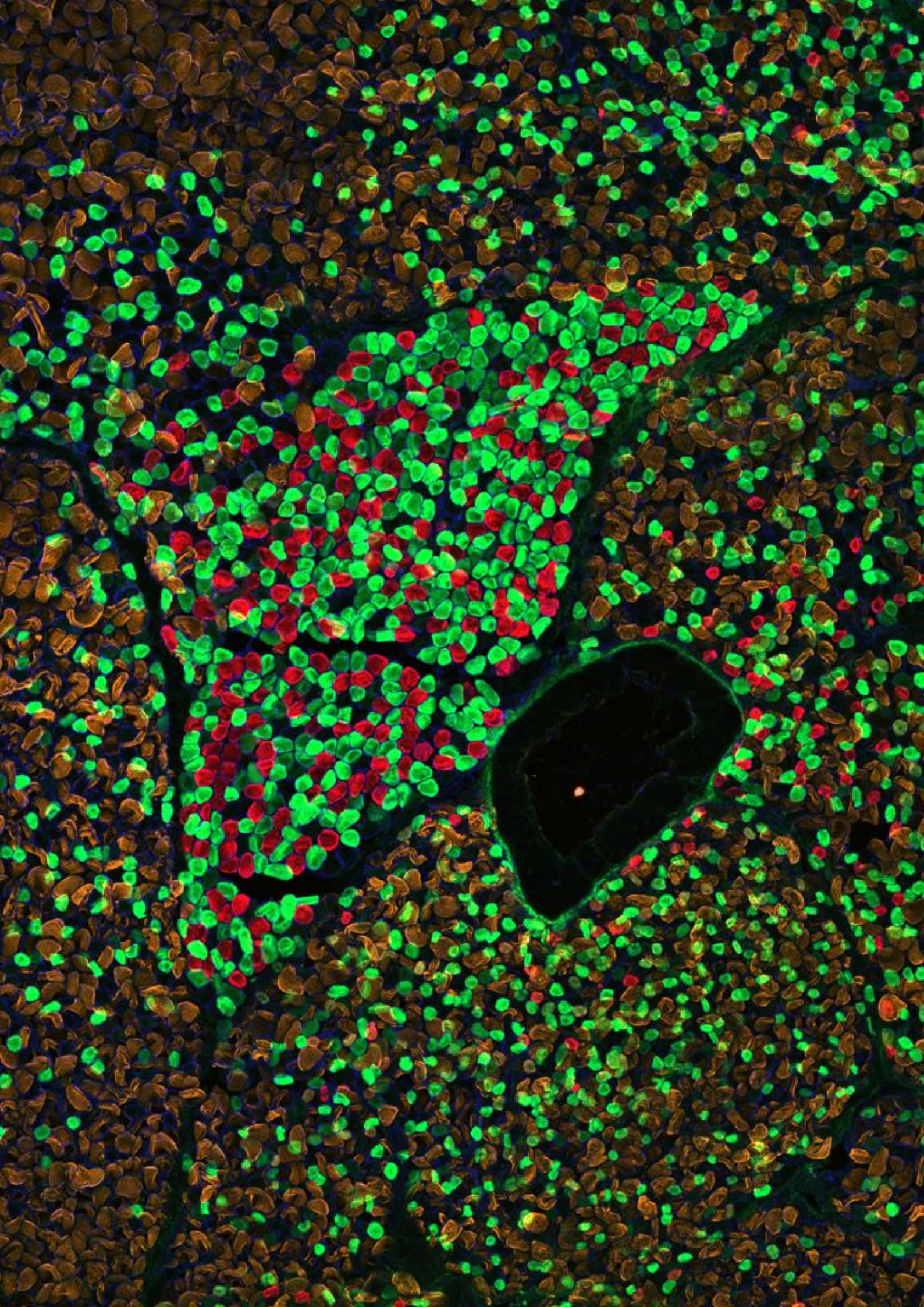
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Editorial

Brownstone R: Faculty Opinions Recommendation of [Sinopoulou E et al., *Neuron* 2022 110(18:2970-2983.e4)]. In Faculty Opinions, 10 Oct 2022;

Hill CS, Henker C, Höhne J. Editorial: Decompressive Craniectomy and Cranioplasty - Challenges and Chances. *Front Surg*. 2022 Jun 9;9:945290. doi: 10.3389/fsurg.2022.945290. PMID: 35756477; PMCID: PMC9218195.

Book Chapter

Akram, H. *et al.* Connectomic Deep Brain Stimulation. xiii–xvii (2022) doi:10.1016/b978-0-12-821861-7.09991-7. (Book Co-author). Ferreira, F. & **Akram, H.** Connectomic Deep Brain Stimulation. 405–431 (2022) doi:10.1016/b978-0-12-821861-7.00005-1. (Book Chapter)

Loh A, Chow CT, Ahrari A, Uludağ K, Kashyap S, **Akram H** et al. Preoperative Planning of DBS Surgery with MRI 35-54. Magnetic Resonance Imaging in Deep Brain Stimulation 2022, doi:10.1007/978-3-031-16348-7_4

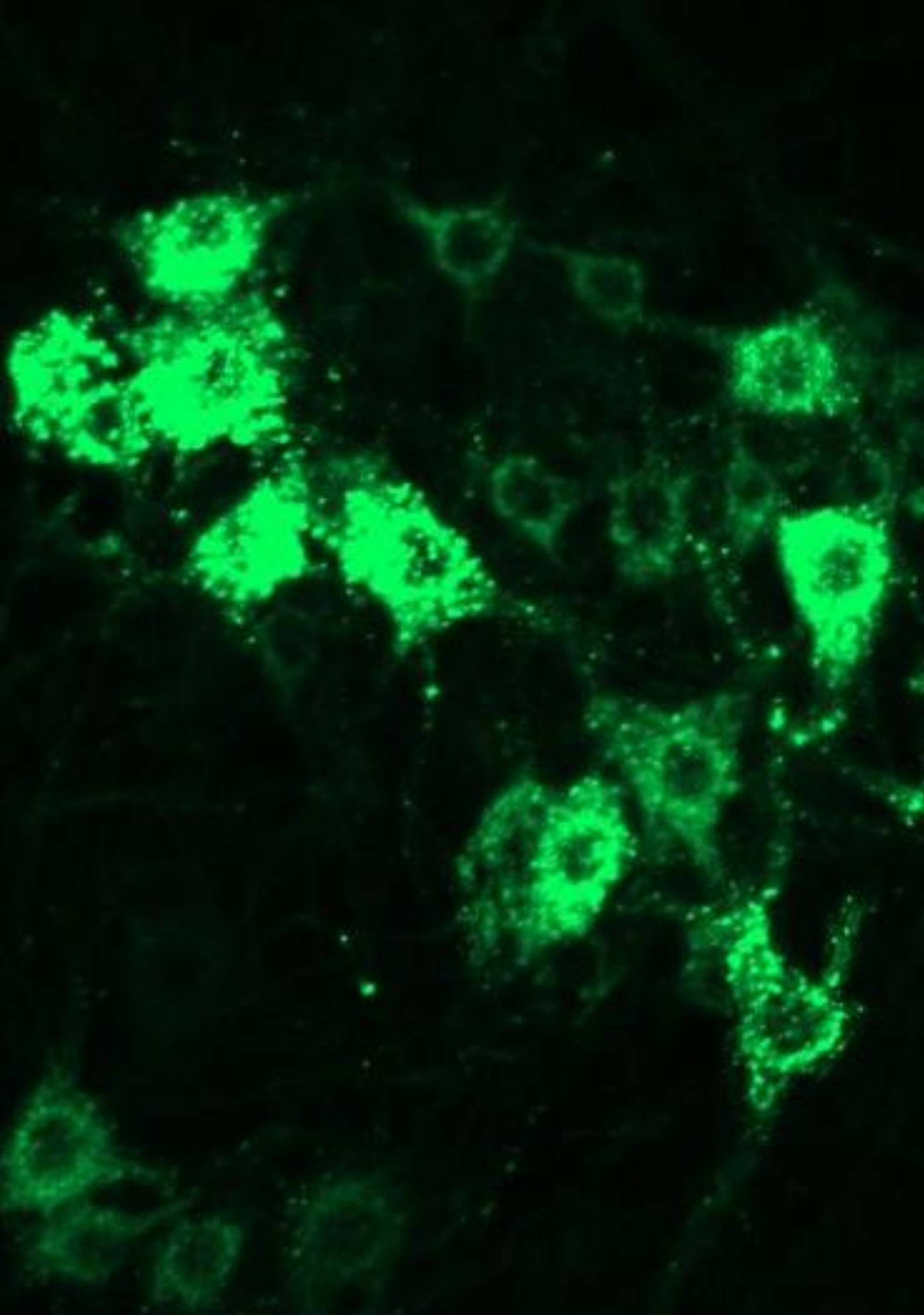
McCormack RM, Lhatoo S, Gonzalez-Martinez JA, **McEvoy AW**, McKhann and Tandon N. Epilepsy Surgery-Overview and Controversies 480-485. Neurological Surgery-Youmanns and Winn 8th Edition, Elsevier 2022

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Smith CC, **Brownstone RM**. Electrical Properties of Adult Mammalian Motoneurons. Adv Neurobiol. 2022;28:191-232. doi: 10.1007/978-3-031-07167-6_9. PMID: 36066827.

Report

Anand Pandit, Contributor. Future of Surgery: Technological Enhanced Surgical Training report. RCS Bulletin. https://futureofsurgery.rcseng.ac.uk/wp-content/uploads/2022/08/FOS_Test_Report_2022.pdf



Presentations

Andrew McEvoy & Anna Miserocchi

Cortico-cortical evoked potentials in Intraoperative Neurophysiological Monitoring (IONM), Annual Meeting of the American Society for Clinical Neurophysiology (ACNS), Orlando, USA, Jan 2022

EpiNav computer-assisted trajectory planning for keyhole neurosurgery, University of Liverpool Doctoral training program on data-intensive science, Liverpool, May 2022.

Cortico-cortical connectivity between the superior and inferior parietal lobules and the motor cortex assessed by intraoperative dual cortical stimulation, Workshop on Brain Evoked Potentials in the context of Neurosurgery, Montpellier, France, June 2022

Mapping in intraoperative MRI, Neurosurgical Oncology hands-on Simulation Course, NHNN, London, UK, June 2022.

Robotic placement of electrodes and the future of robotic surgery, Neurosurgical Oncology hands-on Simulation Course, NHNN, London, UK, June 2022.

Contribution of White Matter Fiber Bundle Damage to Language Change After Surgery for Temporal Lobe Epilepsy, FENS Forum, Paris, France July 2022

Steps and phases of anteromesial temporal lobectomy - towards a consensus, computer vision, training and other applications, UK Epilepsy Surgery Network, London, UK, July 2022

Beyond the dorsal and ventral stream model in language: controversies on temporal cortical terminations of the arcuate fasciculus, 30th Annual Congress of the Italian Society for Psychophysiology and Cognitive Neuroscience, Udine, Italy, Sept 2022

Feasibility of cerebello-cortical stimulation for intraoperative neurophysiological monitoring of cerebellar mutism, 1st Global meeting of the Posterior Fossa Society, Liverpool, UK, Sept 2022

Novel high-resolution tractography of the optic radiation improves assessment of postoperative damage after temporal lobe resection when compared against the clinical standard-a prospective validation, SBNS, Blackpool, UK, Sept 2022

Safety and Efficacy of brain biopsies: results from a single institution retrospective cohort study, European Association of Neurosurgical Societies, Belgrade, Serbia, October 2022

Functional anatomy of cortical areas and tracts, Annual Meeting of the International Society for Intraoperative Neurophysiology (ISIN), Chicago, USA, Oct 2022

Feasibility of cerebello-cortical stimulation for intraoperative neurophysiological monitoring of cerebellar mutism, Annual Meeting of the International Society for Intraoperative Neurophysiology (ISIN), Chicago, USA, Oct 2022

Intraoperative neurophysiological recording of cortico-cortical connectivity from the arcuate fasciculus in the asleep patient, Annual Meeting of the International Society for Intraoperative Neurophysiology (ISIN), Chicago, USA, Oct 2022

3D-multimodal imaging and SEEG resection planning, Epilepsy Neuroimaging Course, ILAE British Branch, Chalfont, UK, Oct 2022

Diffusion tensor imaging and tractography, Epilepsy Neuroimaging Course, ILAE British Branch, Chalfont, UK, Oct 2022

Cortico-cortical evoked potentials: a new tool for monitoring cerebral connectivity during asleep brain surgery, Annual Congress of the European Association of Neurosurgical Societies (EANS), Belgrade, Serbia, Oct 2022

Improving outcomes in anteromesial temporal lobe resections-a prospective surgical trial integrating multimodal imaging and

interrogating the effect of piriform cortex resection-a progress update, British Neurosurgery Research Group, Leeds, UK, Nov 2022

Resection of the atrophic hippocampal tail does not improve seizure freedom in anteromesial temporal lobe epilepsy secondary to hippocampal sclerosis, American Epilepsy Society meeting, Nashville, USA, Dec 2022

Long-term seizure freedom in frontal lobe epilepsy is associated with anterior thalamo-cortical disconnection, American Epilepsy Society meeting, Nashville, USA, Dec 2022

Long-term outcome of vagal nerve stimulator implantation for drug resistant epilepsy in adults, American Epilepsy Society meeting, Nashville, USA, Dec 2022

Intracranial EEG Structure-Function Coupling Predicts Surgical Outcomes in Focal Epilepsy, American Epilepsy Society meeting, Nashville, USA, Dec 2022

Mechanisms Relating to Surgical Failure in Patients with Neocortical Epilepsy, American Epilepsy Society meeting, Nashville, USA, Dec 2022

Combined Functional and Structural Network Analysis for Predicting Language Decline in Anterior Temporal Lobe Resection, American Epilepsy Society meeting, Nashville, USA, Dec 2022

Andrew McEvoy

Stereo EEG with frameless and robotic techniques, Cleveland Clinic Abu Dhabi Epilepsy Symposium, Remote, January 2022

Technological developments in brain tumour and epilepsy surgery, 7th British Veterinary Neurology Society (BVNS) Symposium, Seizure disorders: Advancing diagnostics and therapeutics, Manchester, UK, March 2022.

Technological developments in neurosurgery driving novel therapies and improving patient outcomes, Cleveland Clinic London GP Educational Webinar, CCL, London UK, April 2022.



Technological advances in Brain cancer surgery, UCLH Cancer Conference Celebrating excellence and innovation and looking to the future, Royal College of General Practitioners, London UK, May 2022.

Low Grade Gliomas, Queen Square Neurosurgery Review Course, London, UK, May 2022.

Surgery for epilepsy, theory and interactive case discussion, ILAE Specialist Registrar Teaching Weekend in Epilepsy, Oxford, UK, May 2022

Use of haemostats and sealants in neurosurgery, Baxter NeuroSpine Hands-on Wetlab, Vienna, Austria June 2022

Technological developments in Epilepsy Surgery, Clinical Masterclass in Epilepsy, Royal Society of Medicine, London, UK, Sept 2022

Technological Developments in Neuroscience, Cleveland Clinic London Ambassadors Event, London, UK, Sept 2022

Glioma surgery, Awake surgery and Functional mapping, Principles of Neurooncology, Queen Square, London, UK, Sept 2022

Innovative stereotactic implantation systems, Island of Reil (Insula) and its Epilepsies, Cleveland Clinic, Cleveland, USA, Oct 2022

Antonino Russo

Multiplanar spinopelvic fracture reduction and dual triangular osteosynthesis stabilisation for complex multidirectional sacropelvic fractures: A case series and technical note, EANS, Belgrade, October 16-20, 2022

Surgical techniques for the treatment of pyogenic thoracolumbar spondylodiscitis: A systematic review. EANS, Belgrade, October 16 - 20, 2022



Antonino Russo

Hani Marcus

Invited speaker to the 2022 Meeting of the British Endocrine Societies (BES), Society of Endocrinology, Harrogate, UK

Invited speaker to the 2022 Meeting of the British Neuroendoscopy Society, British Neuroendoscopy Society, Oxford, UK (Accredited by the Royal College of Surgeons of England for 5 CPD points)

Invited speaker to the 2022 Meeting of the World Federation of Neurosurgical Societies, World Federation of Neurosurgical Societies, Bogota, Columbia

Harith Akram

Lecture: Connectivity Guided Thalamic Segmentation, Great Ormond Street Neuroscience meeting, Feb 2022

Lecture: Degenerative Spine Disorders, London GP Network, Jan 2022

Presentation: Unit of Functional Neurosurgery Update, Movement Disorders Centre, IoN, Jan 2022

Lecture: Tractography Algorithms, Resident meeting, Department of Neurosurgery, Jefferson's University, Philadelphia, April 2022

Keynote lecture: Connectivity Guided Functional Neurosurgery, Canadian Neuromodulation Society, Newfoundland and Labrador, Canada, Jun 2022

Lecture: Imaging in Trigeminal Neuralgia, the TN Association – UK, Jun 2022

Teaching: Functional Neurosurgery Principles, NHNN Theatres, Aug 2022

Lecture: Imaging in Functional Neurosurgery, Functional Neurosurgery Simulation Course, QS, Sep 2022

Lecture: Targeting in Functional Neurosurgery, Functional Neurosurgery Simulation Course, QS, Sep 2022

Lecture: Tractography Algorithms, The World Society for Stereotactic and Functional Neurosurgery meeting, Seoul, South Korea, Sep 2022

Lecture: Troubleshooting in DBS, Parkinson's Days Workshop, Istanbul, Turkey, Oct 2022

Lecture: Principles of Functional Neurosurgery, UCL Neurosurgery MRes Course, Oct 2022

Keynote lecture: Advanced Tractography Applications, Leuven University Hospital, Belgium, Nov 2022

Lecture: What Image for What Target?, ESSFN Hands on course, Marseille, France, Nov 2022

Lecture: Tractography Algorithms, ESSFN Hands on course, Marseille, France, Nov 2022

Anouk Borg

CSF leak repair techniques, British Neuroendoscopy society BNES presentation, 2022

Rob Brownstone

Plenary Lecture, "The spinal cord and the grammar of (dys)movement", UK Sensorimotor Conference, 2022

Lecture, Advanced course: clinical & basic science for the management of the chronic pain patient – neurostimulation, "Neural mechanisms of spinal cord stimulation?", Barcelona, Spain, 2022

Anand Pandit (Trainee)

A cost-effectiveness evaluation for implanted telemetric ICP monitors. SBNS, Dundee, 2021, & EANS, Belgrade, 2022, & International Hydrocephalus Society, Gothenburg, 2022

Predicting vasospasm using volumetric blood load after subarachnoid haemorrhage, SBNS, Cardiff, 2022

A Python-based AI suite for auditing, data-analysis and prediction for acute neurosurgical referrals, SBNS, Cardiff, 2022, & EANS, Belgrade, 2022

Imran Noorani (Trainee)

Melbourne Brain Cancer Seminar, International invited talk, 2022

Danyal Khan (Trainee)

CSF Rhinorrhoea After Endonasal Intervention to the Skull Base – Results of a Multicentre Observational Study, Oral Podium presentation, European Association of Neurological Surgeons, October 2022

Linda D'Antona (Trainee)

Co-author for 3 oral presentations at the international hydrocephalus society meeting, Gothenburg 2023:

- 1) What exactly happens to ICP and pulse amplitude when humans stand from sitting position?
Eleanor M. Moncur, Matthew M. J. Bancroft, Linda D'Antona, Sogha Khawari, Simon Thompson, Lewis Thorne, Laurence D. Watkins, Ahmed K. Toma
- 2) The utility and reversibility of MRI biomarkers in predicting raised intracranial pressure, Musa China, Anand S. Pandit, Hasan Asif, Linda D'Antona, Shivani B. Joshi, Raunak Jain, Crystallynn Skye The, Arif H.B. Jalal, Zakee Abdi, Ptolemy D. W. Banks, Fleur C. Yildirim, Martyna K. Stasiak, Yousif Aldabbagh, Mohammad Alradhawi, Emily B.C. Tan, Ahmed K. Toma
- 3) 3-Dimensional volumetric segmentation of the optic nerve sheath and hypophysis in patients with raised intracranial pressure, Musa China, Anand S. Pandit, Linda D'Antona, Ahmed K. Toma

Debayan Dasgupta (Trainee)

Oral Presentation, UK Epilepsy Surgery Network, London, UK, July 2022

Novel high-resolution tractography of the optic radiation improves assessment of postoperative damage after temporal lobe resection when compared against the clinical standard – a prospective validation, Oral Presentation, Society of British Neurological Surgeons, Blackpool, UK, September 2022

Improving Outcomes in Anteromesial Temporal Lobe Resections – a prospective surgical trial integrating multimodal imaging & novel high-resolution tractography, Oral Presentation, British Neurosurgery Research Group, Society of British Neurological Surgeons, Leeds, UK, November 2022

Resection of the atrophic hippocampal tail does not improve seizure freedom in anteromesial temporal lobe resection for temporal lobe epilepsy secondary to hippocampal sclerosis, Poster Presentation, American Epilepsy Society, Nashville, USA, December 2022

 BRAINLAB

Transforming Surgery

 Loop-X
Mobile Imaging Robot

 Curve
Navigation

 Cirq



Organisation of Courses & Symposia

Harith Akram

- ❖ Queen Square FRCS Viva Course
- ❖ Queen Square MRes Course
- ❖ Queen Square Functional Neurosurgery Simulation Course
- ❖ ESSFN Hands On Course, Marseille
- ❖ WSSFN meeting, South Korea, Pre-congress symposia
- ❖ DBS Masters Debate, France, Dec 2022

Ciaran Hill

- ❖ Run the QS Advanced neuro-oncology course
- ❖ Trauma section and Oncology section lead for QS review course
- ❖ Course convener for UCL MSc in Clinical Neuroscience, Neurology and Neurosurgery modules - Basic and Advanced
- ❖ Successfully bidded to host BNOS 2025

Hani Marcus

- ❖ 2022 Innovation skills masterclass, Royal College of Surgeon of England, London, UK, Member of the faculty
- ❖ 2022 British Neurosurgical Research Group (BNRG), Meeting & Inaugural Neurosurgical Innovation and Technology Symposium (NITS), British Neurosurgical Research Group, Leeds, UK, Member of the organising committee for NITS

Anouk Borg

- ❖ Clinicopathological Conference (CPC) on Pituitary disease



Anouk Borg

Andrew McEvoy & Anna Miserocchi

- ❖ Laser Safety Course, UCLH, London, UK
- ❖ Noras coil and headholder training, Cleveland Clinic London, London, UK
- ❖ Queen Square Neurosurgery Review Course, London, UK (Faculty)
- ❖ Neurosurgical Oncology hands-on Simulation Course, NHNN, London, UK (Faculty)
- ❖ Biosurgery workshop. Haemostat and Sealants in Spine and Cranial Neurosurgery wet-lab, Vienna, Austria (Faculty)
- ❖ Principles of Neurooncology, Queen Square, London, UK (Faculty)
- ❖ Island of Reil (Insula) and its Epilepsies, Cleveland Clinic, Cleveland, US (Faculty)

Aswin Chari (Trainee)

- ❖ Helped organise the UK Paediatric SEEG Course 2022

Anand Pandit (Trainee)

- ❖ Digital literacy for clinical neurosciences
- ❖ International virtual course – in partnership with QS Simulation Centre, WEISS, IoN and HDN

Imran Noorani (Trainee)

- ❖ Organisation of Queen Square Neurosurgery Review Course

Danyal Khan (Trainee)

- ❖ Course Organiser, Neurosurgical Innovation & Technology Symposium, Leeds
- ❖ Course Organiser, Inaugural Digital Literacy for Neurosurgeons Course, Online Course Organiser (for 3rd consecutive year)
- ❖ Queen Square Neurosurgery Review Course (for 3rd consecutive year)
- ❖ Trainee Lead (for 2nd consecutive year), Queen Square Simulation Centre.

Debayan Dasgupta (Trainee)

- ❖ Epilepsy Co-Lead, UCL MRes in Neurosurgery
- ❖ UCL MBBS Year 4 Neurosurgery Teaching Co-Lead

Scientific Advisory Boards & Other Professional Activities

Rob Brownstone

- ❖ Trustee, International Spinal Research Trust
- ❖ Trustee, Stoke Mandeville Spinal Research
- ❖ Brain Research UK Scientific Advisory Board
- ❖ Turnbull-Tator Award selection committee, Canada
- ❖ Associate editor, Journal of Neurophysiology
- ❖ Faculty of 1000 / Faculty Opinions

Harith Akram

- ❖ Board member of the WSSFN
- ❖ Editor of the Newsletter of the WSSFN
- ❖ NHNN Clinical Guidelines Committee board

Ciaran Hill

- ❖ NHNN representative on the Pan London neuro-oncology group
- ❖ Tessa Jowell Academy Core Committee
- ❖ Data Safety Monitoring Board for a Phase I clinical trial

Hani Marcus

- ❖ Pituitary Society and IDEAL

Neil Kitchen

- ❖ Co-chief investigator for the CARE trial-sponsored by NIHR



Neil Kitchen

Patrick Grover

- ❖ PI for the CARE trial and the ROAR study, both of which are NIHR funded.

Anand Pandit (Trainee)

- ❖ Trainee committee member of NNAP (National Neurosurgical Audit Programme) of the SBNS
- ❖ BNTA representative to the RCS (England) Trainee Surgical Technology Group

Aswin Chari (Trainee)

- ❖ Associate editor, British Journal of Neurosurgery

Debayan Dasgupta (Trainee)

- ❖ Trial Management Group Member for UCL Gene Therapy for Epilepsy Trial

Linda D'Antona (Trainee)

- ❖ Member of the UK Spontaneous Intracranial Hypotension Special Interest Group, for the development of national guidelines

Emma Dalton (Trainee)

- ❖ Clinical Neurosciences Section Council, The Royal Society of Medicine
- ❖ Associate PI, IIH Intervention Trial



Emma Dalton

Teaching

Ciaran Hill

- ❖ A career in neurosurgery (for iBSc Surgical Sci)
- ❖ Gliomas (for MRes Neurosurgery course)
- ❖ ACF careers talk
- ❖ Gowers Grand Round
- ❖ iBSc in Surgical Sciences programme lecture "surgical career pathways"
- ❖ Brain school lecture "Preserving function and extending resection in neuro-oncology"

Anouk Borg

- ❖ Pituitary Simulation Course – Queen Square Simulation Centre
- ❖ MRes Neurosurgery, spine workshop
- ❖ ED Neurosurgery course, Queen Square Simulation Centre

Hani Marcus

- ❖ 2022 Pituitary Surgery – Director (annual, ongoing), National Hospital for Neurology and Neurosurgery, London, UK, Comprehensive day of didactic lectures and practical workshops ranging from basic principles to high fidelity surgical simulation of pituitary surgery.
- ❖ 2022 Digital Literacy for Neurosurgeons – Director (annual, ongoing), National Hospital for Neurology and Neurosurgery - London, UK, Comprehensive day of didactic lectures and

practical workshops on machine learning aimed at neurosurgeons.

- ❖ 2022 Queen Square Neurosurgery Review Course – Director (annual, ongoing), National Hospital for Neurology and Neurosurgery, London, UK, Course designed for trainees completing their training, with international faculty, roundtable discussions, and mock oral exams. Accredited by the Royal College of Surgeons of England for 25 CPD points.

Emma Dalton (Trainee)

- ❖ Senior tutor, UCL

Formal Visiting Attachments

Andrew McEvoy & Anna Miserocchi

- ❖ Miss Roisin Finn (Ireland), Epilepsy surgery fellowship
- ❖ Dr Giorgio Fiore (Italy), Epilepsy and tumour fellowship

Public Engagement

Harith Akram

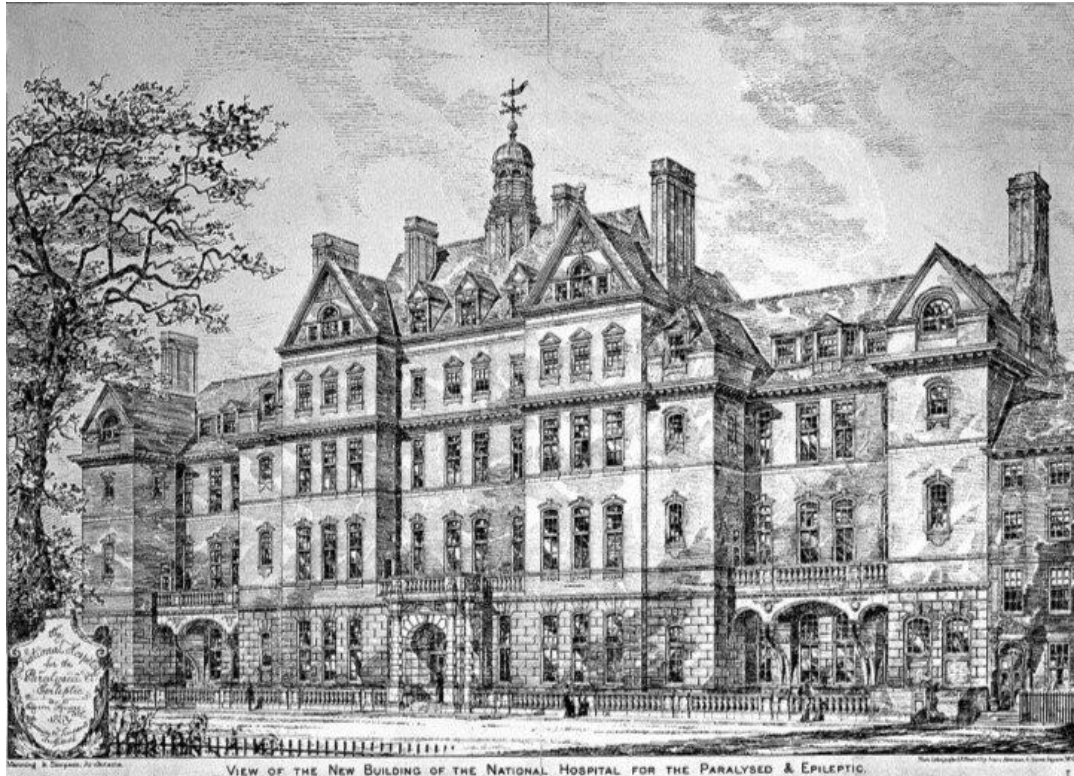
- ❖ Trigeminal Neuralgia Association (UK), delivered a lecture to patients and carers on the condition and its management

Anand Pandit (Trainee)

- ❖ Awarded eResearch grant for improving machine learning digital literacy and pioneering the first neurosurgical datathon to learn clinical neuroscience and perform research. The educational methodology of this approach was tested and was nominated for the ASiT prize at the Surgical Research Society

Danyal Khan (Trainee)

- ❖ Produced weekly “tweetorials” (~80) summarising contemporary research in pituitary and skull base neurosurgery for 2 years via the British Neuroendoscopy Society Twitter page (>1500 international followers): https://twitter.com/bnes_uk



Departmental Contact Details

Head of Division

Professor Rob Brownstone

Brain Research Trust Chair in
Neurosurgery

r.brownstone@ucl.ac.uk

Personal Assistant

Kay Clarke

nmd.brownstone-pa@ucl.ac.uk

Division of Neurosurgery

UCL Queen Square Institute of
Neurology

University College London

Queen Square

London, UK

WC1N 3BG

